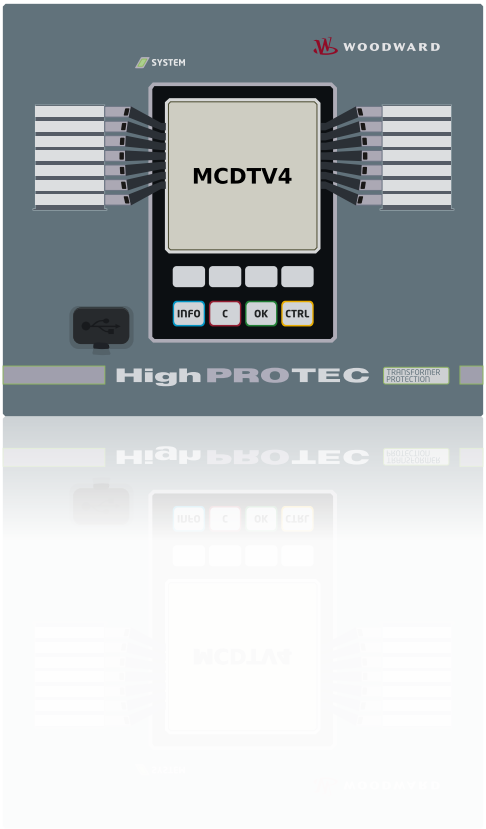
Released

WOODWARD

HighPROTEC

# Reference manual MCDTV4-3.7-EN-REF




# MCDTV4

## Enhanced Transformer Differential Protection

**Version: 3.7.b ( 47159)**

**Original document · English**

**Revision: A 48025**

**© 2020**

**Woodward Kempen GmbH**

Krefelder Weg 47 • D–47906 Kempen (Germany)

Postfach 10 07 55 (P.O.Box) • D–47884 Kempen (Germany)

Telephone: +49 (0) 21 52 145 1

Internet: www.woodward.com

Sales

Telephone: +49 (0) 21 52 145 331

Fax: +49 (0) 21 52 145 354

Email: SalesPGD_EMEA@woodward.com

Service

Telephone: +49 (0) 21 52 145 614

Fax: +49 (0) 21 52 145 354

Email: industrial.support@woodward.com

© 2020 Woodward Kempen GmbH

Released



# Table of Contents


**1 About This Reference Manual . . . 17**

**2 Hardware . . . 20**

2.1 Device Configuration . . . 20

2.2 Digital Inputs . . . 22

2.2.1 “DI8-X1” . . . 22

2.2.2 DI . . . 24

2.2.3 DI . . . 25

2.3 Analog Inputs . . . 26

2.3.1 AnIn[1] ... AnIn[4] – Analog Input . . . 26

2.4 Binary Outputs . . . 28

2.4.1 6 Binary Outputs . . . 28

2.4.2 4 Binary Outputs . . . 40

2.5 Analog Outputs . . . 48

2.5.1 AnOut[1] ... AnOut[4] – Analog Output . . . 48

2.6 LEDs . . . 50

2.6.1 LEDs group A – LEDs at the left side of the display . . . 50

2.6.2 LEDs group B – LEDs at the right side of the display . . . 59

2.7 HMI – front-panel . . . 68

2.7.1 HMI: Settings . . . 68

2.7.2 HMI: Direct Controls . . . 69

2.7.3 HMI: Values . . . 69

**3 Security . . . 70**

**4 Field settings . . . 72**

4.1 Field Para: Settings . . . 72

4.2 VT – Voltage Transformer . . . 73

4.2.1 VT: Settings . . . 73

4.2.2 VT: Signals (Output States) . . . 78

4.2.3 VT: Values . . . 78

4.2.4 VT: Statistical Values . . . 83

Released




4.3 CT W1 – Current Transformer Winding 1 . . . 87
4.3.1 CT W1: Settings . . . 87
4.3.2 CT W1: Signals (Output States) . . . 88
4.3.3 CT W1: Values . . . 89
4.3.4 CT W1: Statistical Values . . . 92
4.4 CT W2 – Current Transformer Winding 2 . . . 96
4.4.1 CT W2: Settings . . . 96
4.4.2 CT W2: Signals (Output States) . . . 97
4.4.3 CT W2: Values . . . 98
4.4.4 CT W2: Statistical Values . . . 101
4.5 Transformer . . . 105
4.5.1 Transformer: Settings . . . 105

**5 System . . . 107**
5.1 Sys: Settings . . . 107
5.2 Sys: Direct Controls . . . 108
5.3 Sys: Input States . . . 109
5.4 Sys: Signals (Output States) . . . 110
5.5 Sys: Values . . . 113

**6 Measured Values . . . 114**
6.1 Id – Motor Differential Protection Module . . . 115
6.1.1 Id: Settings . . . 115
6.1.2 Id: Values . . . 115
6.1.3 Id: Statistical Values . . . 116
6.2 IdG – Restricted Ground Fault Differential Protection Module . . . 117
6.2.1 IdG: Settings . . . 117
6.2.2 IdG: Values . . . 117
6.2.3 IdG: Statistical Values . . . 117
6.3 PQSCr – Power and Energy . . . 119
6.3.1 PQSCr: Settings . . . 119
6.3.2 PQSCr: Direct Controls . . . 119
6.3.3 PQSCr: Signals (Output States) . . . 119
6.3.4 PQSCr: Values . . . 121

Released



6.3.5 PQSCr: Statistical Values . . . 122

**7 Statistics . . . 125**

7.1 Statistics: Settings . . . 125

7.2 Statistics: Direct Controls . . . 128

7.3 Statistics: Input States . . . 129

7.4 Statistics: Signals (Output States) . . . 129

7.5 Statistics: Counters . . . 130

**8 Communication . . . 131**

8.1 Scada: Device Planning Parameters . . . 131

8.2 Scada: Signals (Output States) . . . 131

8.3 TcpIp . . . 132

8.3.1 TcpIp: Settings . . . 132

8.4 DNP3 – Distributed Network Protocol . . . 133

8.4.1 DNP3: Settings . . . 133

8.4.2 DNP3: Direct Controls . . . 138

8.4.3 DNP3: Input States . . . 138

8.4.4 DNP3: Signals (Output States) . . . 139

8.4.5 DNP3: Counters . . . 139

8.5 Modbus . . . 141

8.5.1 Modbus: Settings . . . 141

8.5.2 Modbus: Direct Controls . . . 144

8.5.3 Modbus: Input States . . . 144

8.5.4 Modbus: Signals (Output States) . . . 144

8.5.5 Modbus: Values . . . 145

8.5.6 Modbus: Counters . . . 146

8.6 IEC 61850 – IEC 61850 communication . . . 148

8.6.1 IEC 61850: Settings . . . 148

8.6.2 IEC 61850: Direct Controls . . . 148

8.6.3 IEC 61850: Signals (Output States) . . . 148

8.6.4 IEC 61850: Values . . . 149

8.6.5 IEC 61850: Counters . . . 150

8.6.6 IEC 61850 – Virt.Outp. . . . 152

Released




8.7 IEC103 – IEC 60870-5-103 communication . . . 153
8.7.1 IEC103: Settings . . . 153
8.7.2 IEC103: Direct Controls . . . 155
8.7.3 IEC103: Signals (Output States) . . . 155
8.7.4 IEC103: Values . . . 156
8.7.5 IEC103: Counters . . . 156
8.8 IEC104 – IEC 60870-5-104 communication . . . 158
8.8.1 IEC104: Settings . . . 158
8.8.2 IEC104: Direct Controls . . . 161
8.8.3 IEC104: Signals (Output States) . . . 161
8.8.4 IEC104: Values . . . 161
8.8.5 IEC104: Counters . . . 162
8.9 Profibus – Profibus Module . . . 163
8.9.1 Profibus: Settings . . . 163
8.9.2 Profibus: Direct Controls . . . 164
8.9.3 Profibus: Input States . . . 164
8.9.4 Profibus: Signals (Output States) . . . 164
8.9.5 Profibus: Values . . . 165
8.9.6 Profibus: Counters . . . 166
8.10 IRIG-B – IRIG-B-Module . . . 168
8.10.1 IRIG-B: Device Planning Parameters . . . 168
8.10.2 IRIG-B: Settings . . . 168
8.10.3 IRIG-B: Direct Controls . . . 168
8.10.4 IRIG-B: Signals (Output States) . . . 168
8.10.5 IRIG-B: Counters . . . 169
8.11 SNTP – SNTP-Module . . . 170
8.11.1 SNTP: Device Planning Parameters . . . 170
8.11.2 SNTP: Settings . . . 170
8.11.3 SNTP: Direct Controls . . . 171
8.11.4 SNTP: Signals (Output States) . . . 171
8.11.5 SNTP: Values . . . 171
8.11.6 SNTP: Counters . . . 172

Released



8.12 TimeSync – Time synchronisation . . . 174
8.12.1 TimeSync: Settings . . . 174
8.12.2 TimeSync: Signals (Output States) . . . 176

**9 Protection Parameter . . . 177**
9.1 Prot: Settings . . . 177
9.2 Prot: Direct Controls . . . 178
9.3 Prot: Input States . . . 178
9.4 Prot: Signals (Output States) . . . 178
9.5 Prot: Values . . . 181
9.6 Id – Differential Protection Module . . . 182
9.6.1 Id: Device Planning Parameters . . . 182
9.6.2 Id: Global Parameters . . . 182
9.6.3 Id: Setting Group Parameters . . . 182
9.6.4 Id: Input States . . . 186
9.6.5 Id: Signals (Output States) . . . 186
9.6.6 Id: Values . . . 190
9.6.7 Id: Statistical Values . . . 190
9.7 IdH – High-Set Differential Protection Module . . . 192
9.7.1 IdH: Device Planning Parameters . . . 192
9.7.2 IdH: Global Parameters . . . 192
9.7.3 IdH: Setting Group Parameters . . . 192
9.7.4 IdH: Input States . . . 193
9.7.5 IdH: Signals (Output States) . . . 194
9.8 IdG[1] ... IdG[2] – Restricted Ground Fault Differential Protection Module . . . 196
9.8.1 IdG[1]: Device Planning Parameters . . . 196
9.8.2 IdG[1]: Global Parameters . . . 196
9.8.3 IdG[1]: Setting Group Parameters . . . 197
9.8.4 IdG[1]: Input States . . . 198
9.8.5 IdG[1]: Signals (Output States) . . . 198
9.9 IdGH[1] ... IdGH[2] – Restricted Ground Fault Highset Protection Module . . . 200
9.9.1 IdGH[1]: Device Planning Parameters . . . 200
9.9.2 IdGH[1]: Global Parameters . . . 200

Released




9.9.3 IdGH[1]: Setting Group Parameters . . . 201
9.9.4 IdGH[1]: Input States . . . 202
9.9.5 IdGH[1]: Signals (Output States) . . . 202
9.10 IH2[1] ... IH2[2] – Module Inrush . . . 204
9.10.1 IH2[1]: Device Planning Parameters . . . 204
9.10.2 IH2[1]: Global Parameters . . . 204
9.10.3 IH2[1]: Setting Group Parameters . . . 204
9.10.4 IH2[1]: Input States . . . 205
9.10.5 IH2[1]: Signals (Output States) . . . 205
9.11 I[1] ... I[6] – Phase Overcurrent Stage . . . 207
9.11.1 I[1]: Device Planning Parameters . . . 207
9.11.2 I[1]: Global Parameters . . . 207
9.11.3 I[1]: Setting Group Parameters . . . 208
9.11.4 I[1]: Input States . . . 212
9.11.5 I[1]: Signals (Output States) . . . 213
9.12 IG[1] ... IG[4] – Earth current protection - Stage . . . 215
9.12.1 IG[1]: Device Planning Parameters . . . 215
9.12.2 IG[1]: Global Parameters . . . 215
9.12.3 IG[1]: Setting Group Parameters . . . 216
9.12.4 IG[1]: Input States . . . 220
9.12.5 IG[1]: Signals (Output States) . . . 221
9.13 ThR – Thermal replica module . . . 224
9.13.1 ThR: Device Planning Parameters . . . 224
9.13.2 ThR: Global Parameters . . . 224
9.13.3 ThR: Setting Group Parameters . . . 225
9.13.4 ThR: Direct Controls . . . 226
9.13.5 ThR: Input States . . . 226
9.13.6 ThR: Signals (Output States) . . . 227
9.13.7 ThR: Values . . . 227
9.13.8 ThR: Statistical Values . . . 228
9.14 I2>[1] ... I2>[2] – Unbalanced Load-Stage . . . 229
9.14.1 I2>[1]: Device Planning Parameters . . . 229

Released



9.14.2 I2>[1]: Global Parameters . . . 229
9.14.3 I2>[1]: Setting Group Parameters . . . 230
9.14.4 I2>[1]: Input States . . . 232
9.14.5 I2>[1]: Signals (Output States) . . . 232
9.15 V[1] ... V[6] – Voltage-stage . . . 234
9.15.1 V[1]: Device Planning Parameters . . . 234
9.15.2 V[1]: Global Parameters . . . 234
9.15.3 V[1]: Setting Group Parameters . . . 234
9.15.4 V[1]: Input States . . . 237
9.15.5 V[1]: Signals (Output States) . . . 238
9.16 df/dt – Rate-of-frequency-change. . . . 240
9.16.1 df/dt: Device Planning Parameters . . . 240
9.16.2 df/dt: Global Parameters . . . 240
9.16.3 df/dt: Setting Group Parameters . . . 240
9.16.4 df/dt: Input States . . . 243
9.16.5 df/dt: Signals (Output States) . . . 243
9.17 delta phi – Vector surge . . . 245
9.17.1 delta phi: Device Planning Parameters . . . 245
9.17.2 delta phi: Global Parameters . . . 245
9.17.3 delta phi: Setting Group Parameters . . . 245
9.17.4 delta phi: Input States . . . 248
9.17.5 delta phi: Signals (Output States) . . . 248
9.18 Intertripping . . . 250
9.18.1 Intertripping: Device Planning Parameters . . . 250
9.18.2 Intertripping: Global Parameters . . . 250
9.18.3 Intertripping: Setting Group Parameters . . . 251
9.18.4 Intertripping: Input States . . . 252
9.18.5 Intertripping: Signals (Output States) . . . 252
9.19 P – Reverse Active Power . . . 254
9.19.1 P: Device Planning Parameters . . . 254
9.19.2 P: Global Parameters . . . 254
9.19.3 P: Setting Group Parameters . . . 254

Released




9.19.4 P: Input States . . . 257
9.19.5 P: Signals (Output States) . . . 257
9.20 Q . . . 259
9.20.1 Q: Device Planning Parameters . . . 259
9.20.2 Q: Global Parameters . . . 259
9.20.3 Q: Setting Group Parameters . . . 259
9.20.4 Q: Input States . . . 261
9.20.5 Q: Signals (Output States) . . . 262
9.21 LVRT[1] ... LVRT[2] – Low Voltage Ride Through . . . 264
9.21.1 LVRT[1]: Device Planning Parameters . . . 264
9.21.2 LVRT[1]: Global Parameters . . . 264
9.21.3 LVRT[1]: Setting Group Parameters . . . 264
9.21.4 LVRT[1]: Direct Controls . . . 268
9.21.5 LVRT[1]: Input States . . . 268
9.21.6 LVRT[1]: Signals (Output States) . . . 269
9.21.7 LVRT[1]: Counters . . . 270
9.22 VG[1] ... VG[2] – Residual voltage-Stage . . . 271
9.22.1 VG[1]: Device Planning Parameters . . . 271
9.22.2 VG[1]: Global Parameters . . . 271
9.22.3 VG[1]: Setting Group Parameters . . . 272
9.22.4 VG[1]: Input States . . . 273
9.22.5 VG[1]: Signals (Output States) . . . 274
9.23 V012[1] ... V012[6] – Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence . . . 276
9.23.1 V012[1]: Device Planning Parameters . . . 276
9.23.2 V012[1]: Global Parameters . . . 276
9.23.3 V012[1]: Setting Group Parameters . . . 277
9.23.4 V012[1]: Input States . . . 278
9.23.5 V012[1]: Signals (Output States) . . . 279
9.24 f[1] ... f[6] – Frequency Protection Module . . . 280
9.24.1 f[1]: Device Planning Parameters . . . 280
9.24.2 f[1]: Global Parameters . . . 280
9.24.3 f[1]: Setting Group Parameters . . . 280

Released




9.24.4 f[1]: Input States . . . 282
9.24.5 f[1]: Signals (Output States) . . . 283
9.25 PQS[1] ... PQS[6] – Power Protection - Module . . . 285
9.25.1 PQS[1]: Device Planning Parameters . . . 285
9.25.2 PQS[1]: Global Parameters . . . 285
9.25.3 PQS[1]: Setting Group Parameters . . . 285
9.25.4 PQS[1]: Input States . . . 288
9.25.5 PQS[1]: Signals (Output States) . . . 288
9.26 PF[1] ... PF[2] – Power Factor - Module . . . 290
9.26.1 PF[1]: Device Planning Parameters . . . 290
9.26.2 PF[1]: Global Parameters . . . 290
9.26.3 PF[1]: Setting Group Parameters . . . 290
9.26.4 PF[1]: Input States . . . 292
9.26.5 PF[1]: Signals (Output States) . . . 293
9.27 Q->&V< . . . 294
9.27.1 Q->&V<: Device Planning Parameters . . . 294
9.27.2 Q->&V<: Global Parameters . . . 294
9.27.3 Q->&V<: Setting Group Parameters . . . 294
9.27.4 Q->&V<: Input States . . . 297
9.27.5 Q->&V<: Signals (Output States) . . . 297
9.28 ReCon[1] ... ReCon[2] – Reconnection . . . 299
9.28.1 ReCon[1]: Device Planning Parameters . . . 299
9.28.2 ReCon[1]: Global Parameters . . . 299
9.28.3 ReCon[1]: Setting Group Parameters . . . 300
9.28.4 ReCon[1]: Input States . . . 302
9.28.5 ReCon[1]: Signals (Output States) . . . 303
9.29 UFLS – Under-Frequency Load Shedding based on Active Power Flow Direction . . . 304
9.29.1 UFLS: Device Planning Parameters . . . 304
9.29.2 UFLS: Global Parameters . . . 304
9.29.3 UFLS: Setting Group Parameters . . . 305
9.29.4 UFLS: Input States . . . 308
9.29.5 UFLS: Signals (Output States) . . . 309

Released




9.30 Sync – Synchrocheck . . . 311
9.30.1 Sync: Device Planning Parameters . . . 311
9.30.2 Sync: Global Parameters . . . 311
9.30.3 Sync: Setting Group Parameters . . . 312
9.30.4 Sync: Input States . . . 315
9.30.5 Sync: Signals (Output States) . . . 315
9.30.6 Sync: Values . . . 316
9.31 V/f>[1] ... V/f>[2] – Overexcitation . . . 318
9.31.1 V/f>[1]: Device Planning Parameters . . . 318
9.31.2 V/f>[1]: Global Parameters . . . 318
9.31.3 V/f>[1]: Setting Group Parameters . . . 318
9.31.4 V/f>[1]: Input States . . . 320
9.31.5 V/f>[1]: Signals (Output States) . . . 320
9.32 SOTF – Switch Onto Fault - Module . . . 322
9.32.1 SOTF: Device Planning Parameters . . . 322
9.32.2 SOTF: Global Parameters . . . 322
9.32.3 SOTF: Setting Group Parameters . . . 323
9.32.4 SOTF: Input States . . . 324
9.32.5 SOTF: Signals (Output States) . . . 324
9.33 CLPU – Cold Load Pickup Module . . . 326
9.33.1 CLPU: Device Planning Parameters . . . 326
9.33.2 CLPU: Global Parameters . . . 326
9.33.3 CLPU: Setting Group Parameters . . . 327
9.33.4 CLPU: Input States . . . 328
9.33.5 CLPU: Signals (Output States) . . . 328
9.34 ExP[1] ... ExP[4] – External Protection - Module . . . 330
9.34.1 ExP[1]: Device Planning Parameters . . . 330
9.34.2 ExP[1]: Global Parameters . . . 330
9.34.3 ExP[1]: Setting Group Parameters . . . 331
9.34.4 ExP[1]: Input States . . . 332
9.34.5 ExP[1]: Signals (Output States) . . . 332
9.35 Ext Sudd Press – Sudden Pressure . . . 334

Released




9.35.1 Ext Sudd Press: Device Planning Parameters . . . 334
9.35.2 Ext Sudd Press: Global Parameters . . . 334
9.35.3 Ext Sudd Press: Setting Group Parameters . . . 335
9.35.4 Ext Sudd Press: Input States . . . 336
9.35.5 Ext Sudd Press: Signals (Output States) . . . 336
9.36 Ext Oil Temp – External Oil Temperature . . . 338
9.36.1 Ext Oil Temp: Device Planning Parameters . . . 338
9.36.2 Ext Oil Temp: Global Parameters . . . 338
9.36.3 Ext Oil Temp: Setting Group Parameters . . . 339
9.36.4 Ext Oil Temp: Input States . . . 340
9.36.5 Ext Oil Temp: Signals (Output States) . . . 340
9.37 Ext Temp Superv[1] ... Ext Temp Superv[3] – External Temperature Supervision . . . 342
9.37.1 Ext Temp Superv[1]: Device Planning Parameters . . . 342
9.37.2 Ext Temp Superv[1]: Global Parameters . . . 342
9.37.3 Ext Temp Superv[1]: Setting Group Parameters . . . 343
9.37.4 Ext Temp Superv[1]: Input States . . . 344
9.37.5 Ext Temp Superv[1]: Signals (Output States) . . . 344
9.38 URTD – Universal Resistance Temperature Detector . . . 346
9.38.1 URTD: Settings . . . 346
9.38.2 URTD: Direct Controls . . . 346
9.38.3 URTD: Signals (Output States) . . . 350
9.38.4 URTD: Values . . . 351
9.38.5 URTD: Statistical Values . . . 352
9.39 RTD – Temperature Protection Module . . . 354
9.39.1 RTD: Device Planning Parameters . . . 354
9.39.2 RTD: Global Parameters . . . 354
9.39.3 RTD: Setting Group Parameters . . . 355
9.39.4 RTD: Input States . . . 367
9.39.5 RTD: Signals (Output States) . . . 368
9.39.6 RTD: Values And Counters . . . 376
9.40 AnaP[1] ... AnaP[8] – Analog Input Protection . . . 377
9.40.1 AnaP[1]: Device Planning Parameters . . . 377

Released




9.40.2 AnaP[1]: Global Parameters . . . 377
9.40.3 AnaP[1]: Setting Group Parameters . . . 378
9.40.4 AnaP[1]: Input States . . . 379
9.40.5 AnaP[1]: Signals (Output States) . . . 379
9.41 Supervision . . . 381
9.41.1 CBF[1] ... CBF[2] – Circuit breaker failure protection module . . . 381
9.41.2 TCS[1] ... TCS[2] – Trip circuit supervision . . . 385
9.41.3 CTS[1] ... CTS[2] – CT Supervision . . . 388
9.41.4 LOP – Loss of Potential . . . 391

**10 Control . . . 395**
10.1 Ctrl: Device Planning Parameters . . . 395
10.2 Ctrl: Settings . . . 395
10.3 Ctrl: Direct Controls . . . 395
10.4 Ctrl: Input States . . . 396
10.5 Ctrl: Signals (Output States) . . . 396
10.6 Ctrl: Values . . . 397
10.7 SG[1] ... SG[6] – Switchgear . . . 398
10.7.1 SG[1]: Settings . . . 398
10.7.2 SG[1]: Direct Controls . . . 402
10.7.3 SG[1]: Input States . . . 403
10.7.4 SG[1]: Signals (Output States) . . . 404
10.7.5 Breaker Wear . . . 408

**11 System Alarms . . . 414**
11.1 SysA: Device Planning Parameters . . . 414
11.2 SysA: Settings . . . 414
11.3 SysA: Input States . . . 416
11.4 SysA: Signals (Output States) . . . 416

**12 Records . . . 418**
12.1 Event rec – The event recorder logs all events like switching operations, change of parameters, alarms, trips, operating mode selections, blockings and state transitions of inputs and outputs. . . . 418
12.1.1 Event rec: Direct Controls . . . 418

Released



12.1.2 Event rec: Signals (Output States) . . . 418
12.2 Disturb rec – After a trigger event has become true, the disturbance recorder writes analogue and digital tracks . . . 419
12.2.1 Disturb rec: Settings . . . 419
12.2.2 Disturb rec: Direct Controls . . . 420
12.2.3 Disturb rec: Input States . . . 420
12.2.4 Disturb rec: Signals (Output States) . . . 420
12.2.5 Disturb rec: Values . . . 421
12.3 Fault rec – The values measured at the time of tripping are saved by the Fault Recorder. . . . 422
12.3.1 Fault rec: Settings . . . 422
12.3.2 Fault rec: Direct Controls . . . 422
12.3.3 Fault rec: Signals (Output States) . . . 422
12.4 Trend rec – Trend Recorder . . . 423
12.4.1 Trend rec: Settings . . . 423
12.4.2 Trend rec: Direct Controls . . . 425
12.4.3 Trend rec: Signals (Output States) . . . 425
12.4.4 Trend rec: Counters . . . 425

**13 Logic . . . 426**
13.1 Logics – Logic . . . 426
13.1.1 Logics: Device Planning Parameters . . . 426
13.1.2 Logics ... Logics – Logic . . . 427

**14 Self-Supervision . . . 430**
14.1 SSV: Direct Controls . . . 430
14.2 SSV: Signals (Output States) . . . 430
14.3 SSV: Counters . . . 430

**15 Service . . . 431**
15.1 Sgen – Sine wave generator . . . 432
15.1.1 Sgen: Device Planning Parameters . . . 432
15.1.2 Sgen: Settings . . . 432
15.1.3 Sgen: Direct Controls . . . 433
15.1.4 Sgen: Input States . . . 433

Released



15.1.5 Sgen: Signals (Output States) . . . . . 434
15.1.6 Sgen: Values . . . . . 435
15.1.7 Sgen – Sine wave generator . . . . . 436
15.1.8 Sgen ... Sgen – Sine wave generator . . . . . 440

**16 Selection Lists . . . . . 444**

**17 Index . . . . . 777**

Released



# 1 About This Reference Manual

This document is a reference of all the Setting Values, Direct Commands and Signals of the MCDTV4. In other words, it lists all parameters that are available (or can be made available) with the (optionally) full featured versions of the MCDTV4 protection device.

**CAUTION!**

This document does not intend to give long and/or detailed description, nor does it intend to replace the full Technical Manual in any way. Only a quite short description is given for each parameter.

This document is a reference of all the Setting Values, Direct Commands and Signals of the MCDTV4.

Every HighPROTEC protection device operates using a lot of digital values of various types. Throughout our Technical Documentation, we are talking of “settings” (or “parameters”) or “signals” or “(measured) values”, depending on the type.

Please consult the Technical Manual, in particular Chapter “Modules, Settings, Signals and Values”, for details of the existing data types.

***Modules***

The firmware of every HighPROTEC protection device can be thought of being sub-divided in several independent function blocks, the so-called “modules”. Every protection function, for example, is a module of its own. But one of the fundamental concepts of a HighPROTEC protection device is to implement this with great consequence: The functionality of calculating statistical data is a module (named »Statistics«), every communication protocol is a module, the control of switchgear devices is a module (named »Ctrl«), but the properties of the switchgear itself is part of another module. There is even a general protection module (named »Prot«) that interacts all specific protection modules.

Every parameter, every value and every signal is therefore a member of some module.

But note that the settings dialogs (on the panel (HMI) or in the *Smart view* operating software) often omit the module name whenever it is clear from the menu branch. This means the parameters are often displayed only with their individual parameter names, i. e. simply *»Function«* instead of the full-blown *»I[1] . Function«*. This increases the overview and simplifies all configuration and operation work; however, it is good to know that the writing *»Function«* is just an abbreviation. In fact, **every** parameter **always** belongs to a module, and therefore – to make this concept absolutely clear – the reference tables have always the module name added in front of every parameter name

Especially for protection functions it is often required to have several instances active. For example, overcurrent protection usually has several “stages”, and all of these are running at the same time (using their individual setting values). Therefore it is an important feature of every HighPROTEC protection device that a lot of modules exist in several “instances”, which are numbered (in brackets): For the overcurrent protection, for example: »I[1]«, I[2]«, …

In the reference tables, usually every module has its own dedicated chapter, which lists the available number of instances at the beginning. Then, however, in the sub-chapters listing the various parameter types, only the first instance (e. g. »I[1]«) is mentioned, because all the other instances are identical anyway.

Released



### *Structure of a Reference Table*

Since (almost) every module can be activated or deactivated independently of the other modules and all parameters of an inactive module disappear from the menu branch it would not be helpful if this Reference Manual would list parameters sorted according to the menu structure. Instead, we list categories of modules (e. g. “Protection Functions”) and all the modules within a category.

For each parameter, there is a table with its properties, looking like this:

| **Module . Parameter** | [Menu Path to This Parameter] | |
|---|---|---|
| Default Value<br><br>For some parameters:<br><br>• Availability restrictions | Value Range | Perm. |
| Type | *Short descriptive text explaining the functionality of this parameter.* | |

“Type” is the data type of the parameter, which is denoted by a small icon. The following types are possible:

- Setting Parameter
- Direct Control
- Input State
- Signal (Output State)
- Statistical Value
- Counter
- (Measuring) Value
- Dialog — Such a dialog can feature several data objects using a special representation and/or functionality.

“Perm.” means “permission”, i. e. the access level and password that is required to modify the parameter. (Please refer to the “Security” chapter in the full Technical Manual for details.)

“ Adapt. Param.” means that this parameter supports Adaptive Parameter Sets. (See the “Adaptive Parameter Sets” section in the User Manual.)

For some parameter types (e. g. Input and Output States), the second row (default, value range, permission) is useless and therefore omitted.

Example of a parameter:

| I[1] . **Mode** | [Device planning] | |
|---|---|---|
| non directional | Selection List  Mode:<br><br>-, non directional, forward, reverse | S.3 |
| | *general operation mode* | |

Released



This means that one can find the parameter in the menu [Device planning], and its values are picked from a selection list named “Mode”. The “⮡” arrow indicates a cross-reference (hyperlink) into the “Selection Lists” chapter, and a click takes you to a table that lists all available choices. The access level “S.3” means the access level “Supervisor-Lv3”, which is required to modify the parameter.

### *Audience of This Manual*

The manual serves as working basis for:

- Engineers in the protection field,
- commissioning engineers,
- people dealing with setting, testing and maintenance of protection and control devices,
- as well as trained personnel for electrical installations and power stations.

All functions concerning the MCDTV4 are listed. Should there be a description of any functions, parameters or inputs/outputs which do not apply to the device in use, please ignore that information.

This manual describes the (optionally) full featured versions of the devices.

All technical information and data included in this manual reflect their state at the time this document was issued. We reserve the right to carry out technical modifications in line with further development without changing this manual and without previous notice. Hence no claim can be brought based on the information and descriptions this manual includes.

We do not accept any liability for damage and operational failures caused by operating errors or disregarding the directions of this manual.

No part of this manual is allowed to be reproduced or passed on to others in any form, unless *Woodward* have approved in writing.

This Reference Manual is part of the delivery scope when purchasing the device. In case the device is passed on (sold) to a third party, the manual has to be handed over as well.

### *Information Concerning Liability and Warranty*

*Woodward* does not accept any liability for damage resulting from conversions or changes carried out on the device or planning (projecting) work, parameter setting or adjustment changes done by the customer.

The warranty expires after a device has been opened by others than *Woodward* specialists.

Warranty and liability conditions stated in *Woodward* General Terms and Conditions are not supplemented by the above mentioned explanations.

Released



# 2 Hardware

## 2.1 Device Configuration

| Enhanced Transformer Differential Protection | | | | | | |
|---|---|---|---|---|---|---|
| **MCDTV4** | **-2** | **#** | **#** | **#** | **#** | **#** |
| **Hardware Variant 1** | | | | | | |
| 16 digital inputs \| 11 binary output relays Stabilization Range \| Voltage measuring inputs: 0-800VAC | | **A** | | | | |
| 8 digital inputs \| 11 binary output relays \| 2 Analog Inputs \| 2 Analog Outputs Stabilization Range \| Voltage measuring inputs: 0-800VAC | | **B** | | | | |
| **Hardware Variant 2** | | | | | | |
| W1: Default Ground Current - W2: Default Ground Current | | | **0** | | | |
| W1: Sensitive Ground Current - W2: Default Ground Current | | | **1** | | | |
| W1: Default Ground Current - W2: Sensitive Ground Current | | | **2** | | | |
| W1: Sensitive Ground Current - W2: Sensitive Ground Current | | | **3** | | | |
| **Housing** | | | | | | |
| Flush mounting | | | | **A** | | |
| 19 inch mounting (semi-flush) | | | | **B** | | |
| Customized Version 1 | | | | **H** | | |
| Customized Version 2 | | | | **K** | | |
| **Communication** | | | | | | |
| Without | | | | | **A** | |
| RS 485: Modbus RTU \| IEC 60870-5-103 \| DNP3 RTU | | | | | **B** | |
| Ethernet: Modbus TCP \| DNP3 UDP/TCP \| IEC 60870-5-104 | | | | | **C** | |
| Fiber Optics: Profibus-DP | | | | | **D** | |
| D-SUB: Profibus-DP | | | | | **E** | |
| Fiber Optics: Modbus RTU \| IEC 60870-5-103 \| DNP3 RTU | | | | | **F** | |
| RS 485/D-SUB: Modbus RTU \| IEC 60870-5-103 \| DNP3 RTU | | | | | **G** | |
| Ethernet: IEC 61850 communication \| Modbus TCP \| DNP3 UDP/TCP \| IEC 60870-5-104 | | | | | **H** | |
| RS 485, Ethernet: Modbus TCP/RTU \| IEC 60870-5-103 \| IEC 60870-5-104 \| DNP3 UDP/TCP/RTU | | | | | **I** | |
| Ethernet/Fiber Optics: IEC 61850 communication \| Modbus TCP \| DNP3 UDP/TCP \| IEC 60870-5-104 | | | | | **K** | |

Released



| **Enhanced Transformer Differential Protection** | | | | | | |
|---|---|---|---|---|---|---|
| **MCDTV4** | **-2** | **#** | **#** | **#** | **#** | **#** |
| Ethernet/Fiber Optics: Modbus TCP \| DNP3 UDP/TCP \| IEC 60870-5-104 | | | | | **L** | |
| RS 485, Ethernet: IEC 61850 \| Modbus TCP/RTU \| IEC 60870-5-103 \| IEC 60870-5-104 \| DNP3 UDP/TCP/RTU | | | | | **T** | |
| **Printed Circuit Board** | | | | | | |
| Standard | | | | | | **A** |
| printed circuit boards are conformal coated | | | | | | **B** |

Released



# 2.2 Digital Inputs

## 2.2.1 “DI8-X1”

### 2.2.1.1 DI Slot X1: Settings

| DI Slot X1 . **Nom voltage** | [Device Para / Digital Inputs / DI Slot X1 / Group 1]<br>[Device Para / Digital Inputs / DI Slot X1 / Group 2]<br>[Device Para / Digital Inputs / DI Slot X1 / Group 3] | |
|---|---|---|
| 24 VDC | 24 VDC, 48 VDC, 60 VDC, 110 VDC, 230 VDC, 110 VAC, 230 VAC<br>↳ Nom voltage. | S.3 |
| *Nominal voltage of the digital inputs* | | |

| DI Slot X1 . **Inverting 1**<br>**...**<br>DI Slot X1 . **Inverting 8** | [Device Para / Digital Inputs / DI Slot X1 / Group 1]<br>[Device Para / Digital Inputs / DI Slot X1 / Group 2]<br>[Device Para / Digital Inputs / DI Slot X1 / Group 3] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting the input signals.* | | |

| DI Slot X1 . **Debouncing time 1**<br>**...**<br>DI Slot X1 . **Debouncing time 8** | [Device Para / Digital Inputs / DI Slot X1 / Group 1]<br>[Device Para / Digital Inputs / DI Slot X1 / Group 2]<br>[Device Para / Digital Inputs / DI Slot X1 / Group 3] | |
|---|---|---|
| no debouncing time | no debouncing time, 20 ms, 50 ms, 100 ms<br>↳ Debouncing time. | S.3 |
| *A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.* | | |

Released



### 2.2.1.2 DI Slot X1: Signals (Output States)

| | |
|---|---|
| DI Slot X1 . **DI 1**<br>**...**<br>DI Slot X1 . **DI 8** | [Operation / Status Display / DI Slot X1] |
| ⇫ | *Signal: Digital Input* |

## 2.2.2 DI

### 2.2.2.1 DI Slot X5: Settings

| DI Slot X5 . **Nom voltage** | [Device Para / Digital Inputs / DI Slot X5 / Group 1] | |
|---|---|---|
| 24 VDC | 24 VDC, 48 VDC, 60 VDC, 110 VDC, 230 VDC, 110 VAC, 230 VAC<br>↳ Nom voltage. | S.3 |
| *Nominal voltage of the digital inputs* | | |

| DI Slot X5 . **Inverting 1**<br>**...**<br>DI Slot X5 . **Inverting 8** | [Device Para / Digital Inputs / DI Slot X5 / Group 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting the input signals.* | | |

| DI Slot X5 . **Debouncing time 1**<br>**...**<br>DI Slot X5 . **Debouncing time 8** | [Device Para / Digital Inputs / DI Slot X5 / Group 1] | |
|---|---|---|
| no debouncing time | no debouncing time, 20 ms, 50 ms, 100 ms<br>↳ Debouncing time. | S.3 |
| *A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.* | | |

### 2.2.2.2 DI Slot X5: Signals (Output States)

| DI Slot X5 . **DI 1**<br>**...**<br>DI Slot X5 . **DI 8** | [Operation / Status Display / DI Slot X5] |
|---|---|
| *Signal: Digital Input* | |

## 2.2.3 DI

### 2.2.3.1 DI Slot X6: Settings

| DI Slot X6 . **Nom voltage** | [Device Para / Digital Inputs / DI Slot X6 / Group 1] | |
|---|---|---|
| 24 VDC | 24 VDC, 48 VDC, 60 VDC, 110 VDC, 230 VDC, 110 VAC, 230 VAC<br>↳ Nom voltage. | S.3 |
| *Nominal voltage of the digital inputs* | | |

| DI Slot X6 . **Inverting 1**<br>**...**<br>DI Slot X6 . **Inverting 8** | [Device Para / Digital Inputs / DI Slot X6 / Group 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting the input signals.* | | |

| DI Slot X6 . **Debouncing time 1**<br>**...**<br>DI Slot X6 . **Debouncing time 8** | [Device Para / Digital Inputs / DI Slot X6 / Group 1] | |
|---|---|---|
| no debouncing time | no debouncing time, 20 ms, 50 ms, 100 ms<br>↳ Debouncing time. | S.3 |
| *A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.* | | |

### 2.2.3.2 DI Slot X6: Signals (Output States)

| DI Slot X6 . **DI 1**<br>**...**<br>DI Slot X6 . **DI 8** | [Operation / Status Display / DI Slot X6] |
|---|---|
| *Signal: Digital Input* | |

# 2.3 Analog Inputs

## 2.3.1 AnIn[1] . . . AnIn[4] – Analog Input

### 2.3.1.1 AnIn[1]: Settings

| AnIn[1] . **Mode** | [Device Para / Analog Inputs / AnIn[1]] | |
|---|---|---|
| 0...20 mA | 0...20 mA, 4...20 mA, 0...10V<br>↳ Type of Input. | S.3 |
| *The threshold depends to the mode/ mA or V* | | |

| AnIn[1] . **Force Mode** | [Service / Test (Prot inhibit) / Analog Inputs / AnIn[1]] | |
|---|---|---|
| permanent | permanent, timeout<br>↳ Disarm. | S.3 |
| *For commissioning purposes or for maintenance, Analog Inputs can be set by force. By means of this function the normal Analog Inputs can be overwritten (forced).* | | |

| AnIn[1] . **t-Timeout Force** | [Service / Test (Prot inhibit) / Analog Inputs / AnIn[1]] | |
|---|---|---|
| 0.03s<br>*Only available if:* | 0.00s . . . 300.00s | S.3 |
| *The Analog Input Value will be set by force for the duration of this time. That means for the duration of this time the Analog Input does not show the value of the signals that are assigned on it.* | | |

### 2.3.1.2 AnIn[1]: Direct Controls

| AnIn[1] . **Function** | [Service / Test (Prot inhibit) / Analog Inputs / AnIn[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active. | S.3 |
| *Permanent activation or deactivation of module/stage.* | | |

| AnIn[1] . **Force Value** | [Service / Test (Prot inhibit) / Analog Inputs / AnIn[1]] | |
|---|---|---|
| 0% | 0.0% . . . 100.0% | S.3 |
| *By means of this function the Analog Input Value can be overwritten (forced).* | | |

Released



### 2.3.1.3 AnIn[1]: Signals (Output States)

| AnIn[1] . **Broken wire** | [Operation / Status Display / Analog Inputs / AnIn[1]] |
|---|---|
| ⇧ | *Signal: Broken wire. This signal is only valid, if the analog input is used in the 4...20 mA mode.* |

| AnIn[1] . **Input forced** | [Operation / Status Display / Analog Inputs / AnIn[1]] |
|---|---|
| ⇧ | *The value of analog Input has been set by force. That means that the value of the analog Input is forced and does not represent the real measured value.* |

### 2.3.1.4 AnIn[1]: Values

| AnIn[1] . **Value** | [Operation / Measured Values / Analog Inputs] |
|---|---|
| ⇘ | *Measured value of the Input in percent* |

# 2.4 Binary Outputs

## 2.4.1 6 Binary Outputs

### 2.4.1.1 BO Slot X2: Settings

| BO Slot X2 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X2 / BO 1] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X2 . **t-hold** | [Device Para / Binary Outputs / BO Slot X2 / BO 1] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X2 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X2 / BO 1] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X2 . **Latched** | [Device Para / Binary Outputs / BO Slot X2 / BO 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X2 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X2 / BO 1] | |
|---|---|---|
| "-"<br>*Only available if:* | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X2 . **Inverting** | [Device Para / Binary Outputs / BO Slot X2 / BO 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X2 . **Assignment 1** | [Device Para / Binary Outputs / BO Slot X2 / BO 1] | |
|---|---|---|
| SG[1] . TripCmd | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X2 . **Inverting 1**<br>**. . .**<br>BO Slot X2 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X2 . **Assignment 2**<br>**. . .**<br>BO Slot X2 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 1] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X2 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X2 / BO 2] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X2 . **t-hold** | [Device Para / Binary Outputs / BO Slot X2 / BO 2] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X2 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X2 / BO 2] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X2 . **Latched** | [Device Para / Binary Outputs / BO Slot X2 / BO 2] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X2 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X2 / BO 2] | |
|---|---|---|
| "-"<br>*Only available if:* | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X2 . **Inverting** | [Device Para / Binary Outputs / BO Slot X2 / BO 2] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X2 . **Assignment 1** | [Device Para / Binary Outputs / BO Slot X2 / BO 2] | |
|---|---|---|
| SG[2] . TripCmd | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X2 . **Inverting 1**<br>**...**<br>BO Slot X2 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 2] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X2 . **Assignment 2**<br>**...**<br>BO Slot X2 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 2] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X2 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X2 / BO 3] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X2 . **t-hold** | [Device Para / Binary Outputs / BO Slot X2 / BO 3] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X2 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X2 / BO 3] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X2 . **Latched** | [Device Para / Binary Outputs / BO Slot X2 / BO 3] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X2 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X2 / BO 3] | |
|---|---|---|
| "-"<br><br>*Only available if:* | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X2 . **Inverting** | [Device Para / Binary Outputs / BO Slot X2 / BO 3] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X2 . **Assignment 1** | [Device Para / Binary Outputs / BO Slot X2 / BO 3] | |
|---|---|---|
| Prot . Alarm | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X2 . **Inverting 1**<br><br>**. . .**<br><br>BO Slot X2 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 3] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X2 . **Assignment 2**<br><br>**. . .**<br><br>BO Slot X2 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 3] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X2 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X2 / BO 4] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X2 . **t-hold** | [Device Para / Binary Outputs / BO Slot X2 / BO 4] | |
|---|---|---|
| 0.00s | 0.00s . . . 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X2 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X2 / BO 4] | |
|---|---|---|
| 0.00s | 0.00s . . . 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X2 . **Latched** | [Device Para / Binary Outputs / BO Slot X2 / BO 4] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X2 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X2 / BO 4] | |
|---|---|---|
| “-”<br>*Only available if:* | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X2 . **Inverting** | [Device Para / Binary Outputs / BO Slot X2 / BO 4] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X2 . **Assignment 1**<br>**...**<br>BO Slot X2 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 4] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X2 . **Inverting 1**<br>**...**<br>BO Slot X2 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 4] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X2 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X2 / BO 5] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X2 . **t-hold** | [Device Para / Binary Outputs / BO Slot X2 / BO 5] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X2 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X2 / BO 5] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X2 . **Latched** | [Device Para / Binary Outputs / BO Slot X2 / BO 5] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X2 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X2 / BO 5] | |
|---|---|---|
| "-"<br><br>*Only available if:* | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X2 . **Inverting** | [Device Para / Binary Outputs / BO Slot X2 / BO 5] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X2 . **Assignment 1**<br>**. . .**<br>BO Slot X2 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 5] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X2 . **Inverting 1**<br>**. . .**<br>BO Slot X2 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 5] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X2 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X2 / BO 6] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br><br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X2 . **t-hold** | [Device Para / Binary Outputs / BO Slot X2 / BO 6] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X2 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X2 / BO 6] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X2 . **Latched** | [Device Para / Binary Outputs / BO Slot X2 / BO 6] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X2 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X2 / BO 6] | |
|---|---|---|
| "-"<br>*Only available if:* | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X2 . **Inverting** | [Device Para / Binary Outputs / BO Slot X2 / BO 6] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X2 . **Assignment 1**<br>**...**<br>BO Slot X2 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 6] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X2 . **Inverting 1**<br>**...**<br>BO Slot X2 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X2 / BO 6] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X2 . **DISARMED Ctrl** | [Service / Test (Prot inhibit) / DISARMED / BO Slot X2] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | S.3 |
| *Enables and disables the disarming of the relay outputs. This is the first step of a two step process, to inhibit the operation or the relay outputs. Please refer to "DISARMED" for the second step.* | | |

| BO Slot X2 . **Disarm Mode** | [Service / Test (Prot inhibit) / DISARMED / BO Slot X2] | |
|---|---|---|
| permanent | permanent, timeout<br>↳ Mode. | S.3 |
| *CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance.* | | |

| BO Slot X2 . **t-Timeout DISARM** | [Service / Test (Prot inhibit) / DISARMED / BO Slot X2] | |
|---|---|---|
| 0.03s<br>*Only available if:* | 0.00s ... 300.00s | S.3 |
| *The relays will be armed again after expiring of this time.* | | |

| BO Slot X2 . **Force Mode** | [Service / Test (Prot inhibit) / Force OR / BO Slot X2] | |
|---|---|---|
| permanent | permanent, timeout<br>↳ Mode. | S.3 |
| *By means of this function the normal Output Relay States can be overwritten (forced) in case that the Relay is not in a disarmed state. The relays can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state.* | | |

| BO Slot X2 . **t-Timeout Force** | [Service / Test (Prot inhibit) / Force OR / BO Slot X2] | |
|---|---|---|
| 0.03s<br><br>*Only available if:* | 0.00s ... 300.00s | S.3 |

*The Output State will be set by force for the duration of this time. That means for the duration of this time the Output Relay does not show the state of the signals that are assigned on it.*

### 2.4.1.2 BO Slot X2: Direct Controls

| BO Slot X2 . **DISARMED** | [Service / Test (Prot inhibit) / DISARMED / BO Slot X2] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | S.3 |

*This is the second step, after the "DISARMED Ctrl" has been activated, that is required to DISARM the relay outputs. This will DISARM those output relays that are currently not latched and that are not on “hold” by a pending minimum hold time. CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: Zone Interlocking and Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance.*

| BO Slot X2 . **Force all Outs** | [Service / Test (Prot inhibit) / Force OR / BO Slot X2] | |
|---|---|---|
| Normal | Normal, De-Energized, Energized<br><br>↳ Relay operating modes. | S.3 |

*By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. Forcing all outputs relays of an entire assembly group is superior to forcing a single output relay.*

| BO Slot X2 . **Force OR1**<br><br>**...**<br><br>BO Slot X2 . **Force OR6** | [Service / Test (Prot inhibit) / Force OR / BO Slot X2] | |
|---|---|---|
| Normal | Normal, De-Energized, Energized<br><br>↳ Relay operating modes. | S.3 |

*By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state.*

Released



### 2.4.1.3 BO Slot X2: Signals (Output States)

| | |
|---|---|
| BO Slot X2 . **BO 1**<br>**...**<br>BO Slot X2 . **BO 6** | [Operation / Status Display / BO Slot X2] |
| ⇧ | *Signal: Binary Output Relay* |

| | |
|---|---|
| BO Slot X2 . **DISARMED!** | [Operation / Status Display / BO Slot X2] |
| ⇧ | *Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Self Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance* |

| | |
|---|---|
| BO Slot X2 . **Outs forced** | [Operation / Status Display / BO Slot X2] |
| ⇧ | *Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals.* |

Released



## 2.4.2 4 Binary Outputs

### 2.4.2.1 BO Slot X5: Settings

| BO Slot X5 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X5 / BO 1] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X5 . **t-hold** | [Device Para / Binary Outputs / BO Slot X5 / BO 1] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X5 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X5 / BO 1] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X5 . **Latched** | [Device Para / Binary Outputs / BO Slot X5 / BO 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X5 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X5 / BO 1] | |
|---|---|---|
| “-”<br>*Only available if:* | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X5 . **Inverting** | [Device Para / Binary Outputs / BO Slot X5 / BO 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X5 . **Assignment 1**<br>**...**<br>BO Slot X5 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X5 / BO 1] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X5 . **Inverting 1**<br>**...**<br>BO Slot X5 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X5 / BO 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X5 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X5 / BO 2] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X5 . **t-hold** | [Device Para / Binary Outputs / BO Slot X5 / BO 2] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X5 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X5 / BO 2] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X5 . **Latched** | [Device Para / Binary Outputs / BO Slot X5 / BO 2] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X5 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X5 / BO 2] | |
|---|---|---|
| "-"<br><br>*Only available if:* | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X5 . **Inverting** | [Device Para / Binary Outputs / BO Slot X5 / BO 2] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X5 . **Assignment 1**<br>**. . .**<br>BO Slot X5 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X5 / BO 2] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X5 . **Inverting 1**<br>**. . .**<br>BO Slot X5 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X5 / BO 2] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X5 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X5 / BO 3] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br><br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X5 . **t-hold** | [Device Para / Binary Outputs / BO Slot X5 / BO 3] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X5 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X5 / BO 3] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X5 . **Latched** | [Device Para / Binary Outputs / BO Slot X5 / BO 3] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X5 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X5 / BO 3] | |
|---|---|---|
| "-"<br>*Only available if:* | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X5 . **Inverting** | [Device Para / Binary Outputs / BO Slot X5 / BO 3] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X5 . **Assignment 1**<br>**...**<br>BO Slot X5 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X5 / BO 3] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X5 . **Inverting 1**<br>**. . .**<br>BO Slot X5 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X5 / BO 3] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X5 . **Operating Mode** | [Device Para / Binary Outputs / BO Slot X5 / BO 4] | |
|---|---|---|
| Normally open (NO) | Normally open (NO), Normally closed (NC)<br>↳ 1...n Operating Modes. | S.3 |
| *Operating Mode* | | |

| BO Slot X5 . **t-hold** | [Device Para / Binary Outputs / BO Slot X5 / BO 4] | |
|---|---|---|
| 0.00s | 0.00s . . . 300.00s | S.3 |
| *To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.* | | |

| BO Slot X5 . **t-Off Delay** | [Device Para / Binary Outputs / BO Slot X5 / BO 4] | |
|---|---|---|
| 0.00s | 0.00s . . . 300.00s | S.3 |
| *Switch Off Delay* | | |

| BO Slot X5 . **Latched** | [Device Para / Binary Outputs / BO Slot X5 / BO 4] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Relay Output will be latched when it picks up.* | | |

| BO Slot X5 . **Acknowledgement** | [Device Para / Binary Outputs / BO Slot X5 / BO 4] | |
|---|---|---|
| “-”<br>*Only available if:* | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.* | | |

| BO Slot X5 . **Inverting** | [Device Para / Binary Outputs / BO Slot X5 / BO 4] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).* | | |

| BO Slot X5 . **Assignment 1**<br>**...**<br>BO Slot X5 . **Assignment 7** | [Device Para / Binary Outputs / BO Slot X5 / BO 4] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| BO Slot X5 . **Inverting 1**<br>**...**<br>BO Slot X5 . **Inverting 7** | [Device Para / Binary Outputs / BO Slot X5 / BO 4] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| BO Slot X5 . **DISARMED Ctrl** | [Service / Test (Prot inhibit) / DISARMED / BO Slot X5] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | S.3 |
| *Enables and disables the disarming of the relay outputs. This is the first step of a two step process, to inhibit the operation or the relay outputs. Please refer to "DISARMED" for the second step.* | | |

| BO Slot X5 . **Disarm Mode** | [Service / Test (Prot inhibit) / DISARMED / BO Slot X5] | |
|---|---|---|
| permanent | permanent, timeout<br>↳ Mode. | S.3 |
| *CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance.* | | |

| BO Slot X5 . **t-Timeout DISARM** | [Service / Test (Prot inhibit) / DISARMED / BO Slot X5] | |
|---|---|---|
| 0.03s<br><br>*Only available if:* | 0.00s ... 300.00s | S.3 |
| *The relays will be armed again after expiring of this time.* | | |

| BO Slot X5 . **Force Mode** | [Service / Test (Prot inhibit) / Force OR / BO Slot X5] | |
|---|---|---|
| permanent | permanent, timeout<br><br>↳ Mode. | S.3 |
| *By means of this function the normal Output Relay States can be overwritten (forced) in case that the Relay is not in a disarmed state. The relays can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state.* | | |

| BO Slot X5 . **t-Timeout Force** | [Service / Test (Prot inhibit) / Force OR / BO Slot X5] | |
|---|---|---|
| 0.03s<br><br>*Only available if:* | 0.00s ... 300.00s | S.3 |
| *The Output State will be set by force for the duration of this time. That means for the duration of this time the Output Relay does not show the state of the signals that are assigned on it.* | | |

### 2.4.2.2 BO Slot X5: Direct Controls

| BO Slot X5 . **DISARMED** | [Service / Test (Prot inhibit) / DISARMED / BO Slot X5] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | S.3 |
| *This is the second step, after the "DISARMED Ctrl" has been activated, that is required to DISARM the relay outputs. This will DISARM those output relays that are currently not latched and that are not on “hold” by a pending minimum hold time. CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: Zone Interlocking and Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance.* | | |

| BO Slot X5 . **Force all Outs** | [Service / Test (Prot inhibit) / Force OR / BO Slot X5] | |
|---|---|---|
| Normal | Normal, De-Energized, Energized<br><br>↳ Relay operating modes. | S.3 |
| *By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. Forcing all outputs relays of an entire assembly group is superior to forcing a single output relay.* | | |

| | | |
|---|---|---|
| BO Slot X5 . **Force OR1**<br>**...**<br>BO Slot X5 . **Force OR4** | [Service / Test (Prot inhibit) / Force OR / BO Slot X5] | |
| Normal | Normal, De-Energized, Energized<br>Relay operating modes. | S.3 |
| *By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state.* | | |

### 2.4.2.3 BO Slot X5: Signals (Output States)

| | |
|---|---|
| BO Slot X5 . **BO 1**<br>**...**<br>BO Slot X5 . **BO 4** | [Operation / Status Display / BO Slot X5] |
| *Signal: Binary Output Relay* | |

| | |
|---|---|
| BO Slot X5 . **DISARMED!** | [Operation / Status Display / BO Slot X5] |
| *Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Self Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance* | |

| | |
|---|---|
| BO Slot X5 . **Outs forced** | [Operation / Status Display / BO Slot X5] |
| *Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals.* | |

Released



# 2.5 Analog Outputs

## 2.5.1 AnOut[1] . . . AnOut[4] – Analog Output

### 2.5.1.1 AnOut[1]: Settings

| AnOut[1] . **Assignment** | [Device Para / Analog Outputs / AnOut[1]] | |
|---|---|---|
| "-" | "-" . . . PQSCr . Wq-<br>↳ 1..n, AnalogOutputList. | S.3 |
| *Assignment* | | |

| AnOut[1] . **Range** | [Device Para / Analog Outputs / AnOut[1]] | |
|---|---|---|
| 0...20mA | 0...20mA, 4...20mA, 0...10V<br>↳ Type of Output. | S.3 |
| *Adjustable range* | | |

| AnOut[1] . **Range max** | [Device Para / Analog Outputs / AnOut[1]] | |
|---|---|---|
| 1.00°C | -999999.00°C . . . 999999.00°C | S.3 |
| *Adjustable range maximum.* | | |

| AnOut[1] . **Range min** | [Device Para / Analog Outputs / AnOut[1]] | |
|---|---|---|
| 0.00°C | -999999.00°C . . . 999999.00°C | S.3 |
| *Adjustable range minimum.* | | |

| AnOut[1] . **Force Mode** | [Service / Test (Prot inhibit) / Analog Outputs / AnOut[1]] | |
|---|---|---|
| permanent | permanent, timeout<br>↳ Disarm. | S.3 |
| *For commissioning purposes or for maintenance, Analog Outputs can be set by force. By means of this function the normal Analog Outputs can be overwritten (forced).* | | |

| AnOut[1] . **t-Timeout Force** | [Service / Test (Prot inhibit) / Analog Outputs / AnOut[1]] | |
|---|---|---|
| 0.03s<br><br>*Only available if:* | 0.00s ... 300.00s | S.3 |
| *The Analog Output Value will be set by force for the duration of this time. That means for the duration of this time the Analog Output does not show the value of the signals that are assigned on it.* | | |

### 2.5.1.2 AnOut[1]: Direct Controls

| AnOut[1] . **Function** | [Service / Test (Prot inhibit) / Analog Outputs / AnOut[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active. | S.3 |
| *Permanent activation or deactivation of module/stage.* | | |

| AnOut[1] . **Force Value** | [Service / Test (Prot inhibit) / Analog Outputs / AnOut[1]] | |
|---|---|---|
| 0% | 0.00% ... 100.00% | S.3 |
| *By means of this function the Analog Output Value can be overwritten (forced).* | | |

### 2.5.1.3 AnOut[1]: Signals (Output States)

| AnOut[1] . **Force Mode** | [Operation / Status Display / Analog Outputs / AnOut[1]] |
|---|---|
| *For commissioning purposes or for maintenance, Analog Outputs can be set by force. By means of this function the normal Analog Outputs can be overwritten (forced).* | |

# 2.6 LEDs

## 2.6.1 LEDs group A – LEDs at the left side of the display

### 2.6.1.1 LEDs group A: Settings

| LEDs group A . **Latched** | [Device Para / LEDs / LEDs group A / LED 1] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group A . **Ack signal** | [Device Para / LEDs / LEDs group A / LED 1] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group A . **LED active color** | [Device Para / LEDs / LEDs group A / LED 1] | |
|---|---|---|
| green | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group A . **LED inactive color** | [Device Para / LEDs / LEDs group A / LED 1] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group A . **Assignment 1** | [Device Para / LEDs / LEDs group A / LED 1] | |
|---|---|---|
| Prot . active | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Inverting 1**<br>**...**<br>LEDs group A . **Inverting 5** | [Device Para / LEDs / LEDs group A / LED 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group A . **Assignment 2**<br>**...**<br>LEDs group A . **Assignment 5** | [Device Para / LEDs / LEDs group A / LED 1] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Latched** | [Device Para / LEDs / LEDs group A / LED 2] | |
|---|---|---|
| active | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group A . **Ack signal** | [Device Para / LEDs / LEDs group A / LED 2] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group A . **LED active color** | [Device Para / LEDs / LEDs group A / LED 2] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group A . **LED inactive color** | [Device Para / LEDs / LEDs group A / LED 2] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group A . **Assignment 1** | [Device Para / LEDs / LEDs group A / LED 2] | |
|---|---|---|
| SG[1] . TripCmd | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Inverting 1**<br>**. . .**<br>LEDs group A . **Inverting 5** | [Device Para / LEDs / LEDs group A / LED 2] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group A . **Assignment 2** | [Device Para / LEDs / LEDs group A / LED 2] | |
|---|---|---|
| SG[2] . TripCmd | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Assignment 3**<br>LEDs group A . **Assignment 4**<br>LEDs group A . **Assignment 5** | [Device Para / LEDs / LEDs group A / LED 2] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Latched** | [Device Para / LEDs / LEDs group A / LED 3] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group A . **Ack signal** | [Device Para / LEDs / LEDs group A / LED 3] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group A . **LED active color** | [Device Para / LEDs / LEDs group A / LED 3] | |
|---|---|---|
| red flash | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group A . **LED inactive color** | [Device Para / LEDs / LEDs group A / LED 3] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group A . **Assignment 1** | [Device Para / LEDs / LEDs group A / LED 3] | |
|---|---|---|
| Prot . Alarm | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Inverting 1**<br>**. . .**<br>LEDs group A . **Inverting 5** | [Device Para / LEDs / LEDs group A / LED 3] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group A . **Assignment 2**<br>**...**<br>LEDs group A . **Assignment 5** | [Device Para / LEDs / LEDs group A / LED 3] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Latched** | [Device Para / LEDs / LEDs group A / LED 4] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group A . **Ack signal** | [Device Para / LEDs / LEDs group A / LED 4] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group A . **LED active color** | [Device Para / LEDs / LEDs group A / LED 4] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group A . **LED inactive color** | [Device Para / LEDs / LEDs group A / LED 4] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group A . **Assignment 1**<br>**...**<br>LEDs group A . **Assignment 5** | [Device Para / LEDs / LEDs group A / LED 4] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Inverting 1**<br>**...**<br>LEDs group A . **Inverting 5** | [Device Para / LEDs / LEDs group A / LED 4] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group A . **Latched** | [Device Para / LEDs / LEDs group A / LED 5] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group A . **Ack signal** | [Device Para / LEDs / LEDs group A / LED 5] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group A . **LED active color** | [Device Para / LEDs / LEDs group A / LED 5] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group A . **LED inactive color** | [Device Para / LEDs / LEDs group A / LED 5] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group A . **Assignment 1**<br>**. . .**<br>LEDs group A . **Assignment 5** | [Device Para / LEDs / LEDs group A / LED 5] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Inverting 1**<br>**. . .**<br>LEDs group A . **Inverting 5** | [Device Para / LEDs / LEDs group A / LED 5] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group A . **Latched** | [Device Para / LEDs / LEDs group A / LED 6] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group A . **Ack signal** | [Device Para / LEDs / LEDs group A / LED 6] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group A . **LED active color** | [Device Para / LEDs / LEDs group A / LED 6] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group A . **LED inactive color** | [Device Para / LEDs / LEDs group A / LED 6] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group A . **Assignment 1**<br>**. . .**<br>LEDs group A . **Assignment 5** | [Device Para / LEDs / LEDs group A / LED 6] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Inverting 1**<br>**. . .**<br>LEDs group A . **Inverting 5** | [Device Para / LEDs / LEDs group A / LED 6] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group A . **Latched** | [Device Para / LEDs / LEDs group A / LED 7] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group A . **Ack signal** | [Device Para / LEDs / LEDs group A / LED 7] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group A . **LED active color** | [Device Para / LEDs / LEDs group A / LED 7] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group A . **LED inactive color** | [Device Para / LEDs / LEDs group A / LED 7] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group A . **Assignment 1**<br>**. . .**<br>LEDs group A . **Assignment 5** | [Device Para / LEDs / LEDs group A / LED 7] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group A . **Inverting 1**<br>**. . .**<br>LEDs group A . **Inverting 5** | [Device Para / LEDs / LEDs group A / LED 7] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

## 2.6.2 LEDs group B – LEDs at the right side of the display

### 2.6.2.1 LEDs group B: Settings

| LEDs group B . **Latched** | [Device Para / LEDs / LEDs group B / LED 1] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group B . **Ack signal** | [Device Para / LEDs / LEDs group B / LED 1] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group B . **LED active color** | [Device Para / LEDs / LEDs group B / LED 1] | |
|---|---|---|
| red | green, red, red flash, green flash, "-"<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group B . **LED inactive color** | [Device Para / LEDs / LEDs group B / LED 1] | |
|---|---|---|
| "-" | green, red, red flash, green flash, "-"<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group B . **Assignment 1**<br>**. . .**<br>LEDs group B . **Assignment 5** | [Device Para / LEDs / LEDs group B / LED 1] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group B . **Inverting 1**<br>**. . .**<br>LEDs group B . **Inverting 5** | [Device Para / LEDs / LEDs group B / LED 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group B . **Latched** | [Device Para / LEDs / LEDs group B / LED 2] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group B . **Ack signal** | [Device Para / LEDs / LEDs group B / LED 2] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group B . **LED active color** | [Device Para / LEDs / LEDs group B / LED 2] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group B . **LED inactive color** | [Device Para / LEDs / LEDs group B / LED 2] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group B . **Assignment 1**<br>**...**<br>LEDs group B . **Assignment 5** | [Device Para / LEDs / LEDs group B / LED 2] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group B . **Inverting 1**<br>**...**<br>LEDs group B . **Inverting 5** | [Device Para / LEDs / LEDs group B / LED 2] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group B . **Latched** | [Device Para / LEDs / LEDs group B / LED 3] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group B . **Ack signal** | [Device Para / LEDs / LEDs group B / LED 3] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group B . **LED active color** | [Device Para / LEDs / LEDs group B / LED 3] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group B . **LED inactive color** | [Device Para / LEDs / LEDs group B / LED 3] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group B . **Assignment 1**<br>**. . .**<br>LEDs group B . **Assignment 5** | [Device Para / LEDs / LEDs group B / LED 3] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group B . **Inverting 1**<br>**. . .**<br>LEDs group B . **Inverting 5** | [Device Para / LEDs / LEDs group B / LED 3] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group B . **Latched** | [Device Para / LEDs / LEDs group B / LED 4] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group B . **Ack signal** | [Device Para / LEDs / LEDs group B / LED 4] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group B . **LED active color** | [Device Para / LEDs / LEDs group B / LED 4] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group B . **LED inactive color** | [Device Para / LEDs / LEDs group B / LED 4] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group B . **Assignment 1**<br>**...**<br>LEDs group B . **Assignment 5** | [Device Para / LEDs / LEDs group B / LED 4] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group B . **Inverting 1**<br>**...**<br>LEDs group B . **Inverting 5** | [Device Para / LEDs / LEDs group B / LED 4] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group B . **Latched** | [Device Para / LEDs / LEDs group B / LED 5] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group B . **Ack signal** | [Device Para / LEDs / LEDs group B / LED 5] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group B . **LED active color** | [Device Para / LEDs / LEDs group B / LED 5] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group B . **LED inactive color** | [Device Para / LEDs / LEDs group B / LED 5] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group B . **Assignment 1**<br>**. . .**<br>LEDs group B . **Assignment 5** | [Device Para / LEDs / LEDs group B / LED 5] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group B . **Inverting 1**<br>**. . .**<br>LEDs group B . **Inverting 5** | [Device Para / LEDs / LEDs group B / LED 5] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group B . **Latched** | [Device Para / LEDs / LEDs group B / LED 6] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group B . **Ack signal** | [Device Para / LEDs / LEDs group B / LED 6] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group B . **LED active color** | [Device Para / LEDs / LEDs group B / LED 6] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group B . **LED inactive color** | [Device Para / LEDs / LEDs group B / LED 6] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group B . **Assignment 1**<br>**. . .**<br>LEDs group B . **Assignment 5** | [Device Para / LEDs / LEDs group B / LED 6] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group B . **Inverting 1**<br>**. . .**<br>LEDs group B . **Inverting 5** | [Device Para / LEDs / LEDs group B / LED 6] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

| LEDs group B . **Latched** | [Device Para / LEDs / LEDs group B / LED 7] | |
|---|---|---|
| inactive | inactive, active, active, ack. by alarm<br>↳ Mode. | S.3 |
| *Defines whether the LED will be latched when it picks up.* | | |

| LEDs group B . **Ack signal** | [Device Para / LEDs / LEDs group B / LED 7] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.* | | |

| LEDs group B . **LED active color** | [Device Para / LEDs / LEDs group B / LED 7] | |
|---|---|---|
| red | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is true.* | | |

| LEDs group B . **LED inactive color** | [Device Para / LEDs / LEDs group B / LED 7] | |
|---|---|---|
| “-” | green, red, red flash, green flash, “-”<br>↳ LED active color. | S.3 |
| *The LED lights up in this color if the state of the OR-assignment of the signals is untrue.* | | |

| LEDs group B . **Assignment 1**<br>**...**<br>LEDs group B . **Assignment 5** | [Device Para / LEDs / LEDs group B / LED 7] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment* | | |

| LEDs group B . **Inverting 1**<br>**...**<br>LEDs group B . **Inverting 5** | [Device Para / LEDs / LEDs group B / LED 7] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting of the state of the assigned signal.* | | |

## 2.7 HMI – front-panel

| **Password** | [Device Para / Security / Password] |
|---|---|
| | This item represents a special dialog. (See the Technical Manual for details.)<br>*Changing the password* |

| **Access Level** | [Device Para / Security / Access Level] |
|---|---|
| | This item represents a special dialog. (See the Technical Manual for details.)<br>*Access Level* |

### 2.7.1 HMI: Settings

| HMI . **Display Off** | [Device Para / HMI] | |
|---|---|---|
| 180s | 20s ... 3600s | S.3 |
| | *The display back light will be turned off when this timer has expired.* | |

| HMI . **Menu language** | [Device Para / HMI] | |
|---|---|---|
| English | English ... Romanian<br>↳ Selection. | S.3 |
| | *Selection of the language* | |

| HMI . **Display ANSI Device No.** | [Device Para / HMI] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | S.3 |
| | *Display ANSI Device Numbers* | |

| HMI . **t-max Edit/Access** | [Device Para / Security / General Settings] | |
|---|---|---|
| 180s | 20s ... 3600s | S.3 |
| | *If no other key(s) is pressed at the panel, after expiration of this time, all cached (changed) parameters are canceled. The device access will be locked by falling back into Read-only level Lv0.* | |

Released



## 2.7.2 HMI: Direct Controls

| HMI . **Contrast** | [Device Para / HMI] | |
|---|---|---|
| 50% | 0% ... 100% | S.3 |
| ◉ | *Contrast* | |

| HMI . **Config. Device Reset** | [Device Para / Security / General Settings] | |
|---|---|---|
| "Fact.def.", "PW rst" | "Fact.def.", "PW rst", Only “Fact.defaults”, Reset deact.<br>↳ Config. Device Reset. | S.3 |
| ◉ | *If the »C« key is pressed while the device is performing a cold restart a general Reset Dialog appears on the screen. Select which options shall be available with this dialog.* | |

## 2.7.3 HMI: Values

| HMI . **Config. Device Reset** | [Operation / Security / Security States] | |
|---|---|---|
| "Fact.def.", "PW rst" | "Fact.def.", "PW rst", Only “Fact.defaults”, Reset deact.<br>↳ Config. Device Reset. | |
| ⟍ | *If the »C« key is pressed while the device is performing a cold restart a general Reset Dialog appears on the screen. Select which options shall be available with this dialog.* | |

Released



# 3 Security

- Ctrl . Switching Authority: ⮡ Tab.
- HMI . Config. Device Reset: ⮡ Tab.
- HMI . t-max Edit/Access: ⮡ Tab.
- HMI . Config. Device Reset: ⮡ Tab.
- Password: ⮡ Tab.
- Access Level: ⮡ Tab.

| Sys . **Smart view via USB** | [Operation / Security / Security States] | |
|---|---|---|
| active | inactive, active<br>⮡ Mode. | |
| ✎ | *Information whether or not the Smart view access via the USB interface is activated (allowed).* | |

| Sys . **Smart view via Eth** | [Operation / Security / Security States] | |
|---|---|---|
| active<br>*Avail. depends on HW* | inactive, active<br>⮡ Mode. | |
| ✎ | *Information whether or not the Smart view access via the Ethernet interface is activated (allowed).* | |

| Sys . **Passw. for USB conn.** | [Operation / Security / Security States] | |
|---|---|---|
| disabled | disabled, default, def. by user<br>⮡ Type of passw. def.. | |
| ✎ | *Type / Security-level of the connection password that is used for a USB connection.* | |

| Sys . **Passw.remote net.conn.** | [Operation / Security / Security States] | |
|---|---|---|
| disabled<br>*Avail. depends on HW* | disabled, default, def. by user<br>⮡ Type of passw. def.. | |
| ✎ | *Type / Security-level of the connection password that is used for a Smart view connection via some network interface.* | |

| Sys . **TLS Certificate** | [Operation / Security / Security States] | |
|---|---|---|
| Device-specific | Device-specific, Basic, Corrupt<br><br>↳ TLS Certificate. | |
| *Type of certificate that the device uses for the encrypted communication. This value is directly related to the security-level of the communication.* | | |

| **Security Logger** | [Operation / Security / Security Logger] |
|---|---|
| This item represents a special dialog. (See the Technical Manual for details.)<br><br>*Security-related messages* | |

| Sys . **Smart view via USB** | [Device Para / Security / Communication] | |
|---|---|---|
| active | inactive, active<br><br>↳ Mode. | S.3 |
| *Activate (allow) or inactivate (disallow) the Smart view access via the USB interface.* | | |

| Sys . **Smart view via Eth** | [Device Para / Security / Communication] | |
|---|---|---|
| active<br><br>*Avail. depends on HW* | inactive, active<br><br>↳ Mode. | S.3 |
| *Activate (allow) or inactivate (disallow) the Smart view access via the Ethernet interface.* | | |

Released



# 4 Field settings

## 4.1 Field Para: Settings

| Field Para . **Phase Sequence** | [Field Para / General Settings] | |
|---|---|---|
| ABC | ABC, ACB<br>↳ Phase Sequence. | S.3 |
| *Phase Sequence* | | |

| Field Para . **f** | [Field Para / General Settings] | |
|---|---|---|
| 50Hz | 50Hz, 60Hz<br>↳ fN. | S.3 |
| *Nominal frequency* | | |

Released



# 4.2 VT – Voltage Transformer

## 4.2.1 VT: Settings

| VT . **V Cutoff Level** | [Device Para / Measurem Display / Voltage] | |
|---|---|---|
| 0.005Vn | 0.0Vn ... 0.100Vn | S.3 |
| *The Phase Voltage shown in the Display or within the PC Software will be displayed as zero, if the Phase Voltage falls below this Cutoff Level. This parameter has no impact on recorders. This parameter is related to the voltage that is connected to the device (phase-to-phase or phase-to-earth).* | | |

| VT . **VG meas Cutoff Level** | [Device Para / Measurem Display / Voltage] | |
|---|---|---|
| 0.005Vn | 0.0Vn ... 0.100Vn | S.3 |
| *The measured Residual Voltage shown in the Display or within the PC Software will be displayed as zero, if the measured Residual Voltage falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| VT . **VG calc Cutoff Level** | [Device Para / Measurem Display / Voltage] | |
|---|---|---|
| 0.005Vn | 0.0Vn ... 0.100Vn | S.3 |
| *The calculated Residual Voltage shown in the Display or within the PC Software will be displayed as zero, if the calculated Residual Voltage falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| VT . **V012 Comp Cutoff Level** | [Device Para / Measurem Display / Voltage] | |
|---|---|---|
| 0.005Vn | 0.0Vn ... 0.100Vn | S.3 |
| *The Symmetrical Component shown in the Display or within the PC Software will be displayed as zero, if the Symmetrical Component falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| VT . **VT Winding Side** | [Field Para / VT] | |
|---|---|---|
| W1 | W1, W2<br>VT Winding Side. | S.3 |
| *Directional elements are dependant on the location of the VTs (primary or secondary winding) when voltage is used as the polarizing quantity. This parameter also determines the side from which power elements take their measuring quantities.* | | |

| VT . **VT pri** | [Field Para / VT] | |
|---|---|---|
| 10000V | 60V ... 500000V | S.3 |
| *Nominal voltage of the Voltage Transformers at the primary side. Note that always the phase-to-phase voltage must be entered here.* | | |

| VT . **VT sec** | [Field Para / VT] | |
|---|---|---|
| 100V | If: slot 6 = Voltage measuring inputs<br>• 60.00V ... 520.00V<br>If: slot 6 = Voltage measurement \| 8 digital inputs<br>• 60.00V ... 200.00V | S.3 |
| *Nominal voltage of the Voltage Transformers at the secondary side. Note that always the phase-to-phase voltage must be entered here.* | | |

| VT . **VT con** | [Field Para / VT] | |
|---|---|---|
| Phase to Ground | Phase to Phase, Phase to Ground<br>↳ VT con. | S.3 |
| *This parameter has to be set in order to ensure the correct assignment of the voltage measurement channels in the device.* | | |

| VT . **VX Winding Side** | [Field Para / VT] | |
|---|---|---|
| W1 | W1, W2<br>↳ VT Winding Side. | S.3 |
| *Assignment of the voltage of the fourth measuring input to winding side* | | |

| VT . **EVT pri** | [Field Para / VT] | |
|---|---|---|
| 10000V | 60V ... 500000V | S.3 |
| *Primary nominal voltage of the e-n winding of the voltage transformers, which is only taken into account in the direct measurement of the residual voltage (GVT con=measured/broken delta).* | | |

| VT . **EVT sec** | [Field Para / VT] | |
|---|---|---|
| 100V | If: slot 6 = Voltage measuring inputs<br>• 35.00V ... 520.00V<br>If: slot 6 = Voltage measurement \| 8 digital inputs<br>• 35.00V ... 200.00V | S.3 |
| *Secondary nominal voltage of the e-n winding of the voltage transformers, which is only taken into account in the direct measurement of the residual voltage.* | | |

| VT . **V Sync** | [Field Para / VT] | |
|---|---|---|
| L12 | L1, L2, L3, L12, L23, L31<br><br>↳ Voltages to be synchronized. | S.3 |
| | *The fourth measuring input of the voltage measuring card measures the voltage that is to be synchronized.* | |

| VT . **Phase MTA** | [Field Para / Direction / General] | |
|---|---|---|
| 45° | 0° ... 360° | S.3 |
| | *Maximum Torque Angle: Angle between phase current and reference voltage in case of a short circuit. This angle is needed to determine the fault direction in case of short circuits.*<br><br>*Note: If »Phase Sequence« = "ACB" then the device internally adapts the direction angle by adding 180°.* | |

| VT . **3V0 Source** | [Field Para / Direction / General] | |
|---|---|---|
| measured | measured, calculated<br><br>↳ 3V0 Source. | S.3 |
| | *Earth overcurrent protection elements take into account this parameter for direction decisions. You have to ensure, that this parameter is set to "Measured" only if the residual voltage is fed to the fourth measuring input of the voltage measuring card.* | |

| VT . **Ground MTA** | [Field Para / Direction / General] | |
|---|---|---|
| 110° | 0° ... 360° | S.3 |
| | *Ground Maximum Torque Angle: Angle between chosen operating quantity and chosen reference quantity in case of a ground fault. This angle is needed to determine the ground fault direction in case of a short circuit. Depending on the selected ground direction option, different MTA values are used: IGcalc 3V0, IGmeas 3V0 : Ground MTA; IGcalc Neg, IGmeas Neg : 90° + Phase MTA; IGcalc IPol : 0°; IGcalc Dual : 0° (if I2 and V2 available) or Ground MTA; IGmeas Dual : 90° + Phase MTA (if I2 and V2 available) or Ground MTA.* | |

| VT . **ECT Angle Cor** | [Field Para / Direction / General] | |
|---|---|---|
| 0° | -45.0° ... 45.0° | S.3 |
| | *Fine adjustment of the measuring angle of the earth current transformers. By means of the Angle Correction, faults of the earth voltage transformers can be taken into account.* | |

| VT . **IG meas dir control** | [Field Para / Direction / General] | |
|---|---|---|
| IG meas 3V0 | IG meas 3V0, I2,V2, Dual, cos(ϕ) , sin(ϕ)<br><br>↳ IG meas dir control. | S.3 |
| | *Options for direction detection. IGmeas is used as operating quantity.* | |

| VT . **IG calc dir control** | [Field Para / Direction / General] | |
|---|---|---|
| IG calc 3V0 | IG calc 3V0, IG calc IPol (IG meas), Dual, I2,V2, cos(ϕ) , sin(ϕ)<br><br>↳ IG calc dir control. | S.3 |
| *Options for direction detection. IGcalc is used as operating quantity.* | | |

| VT . **3V0 min** | [Field Para / Direction / Wattmetric] | |
|---|---|---|
| 0.2Vn | 0.01Vn ... 2.00Vn | S.3 |
| *Voltage threshold for the direction detection of ground (earth) faults* | | |

| VT . **t(3V0 min)** | [Field Para / Direction / Wattmetric] | |
|---|---|---|
| 0.1s | 0.00s ... 60.00s | S.3 |
| *Release timer for the direction detection of ground (earth) faults: When 3V0 rises above the setting »3V0 min« this timer is started. Direction results are released after this timer has elapsed.* | | |

| VT . **IG meas min** | [Field Para / Direction / Wattmetric] | |
|---|---|---|
| 0.1In<br><br>*Only available if:* | If: Sensitive Ground Current = 0<br>• 0.02In ... 2.00In<br>If: Sensitive Ground Current ≠ 0<br>• 0.002In ... 2.000In | S.3 |
| *Current threshold for the direction detection methods cos(ϕ), sin(ϕ) with measured ground (earth) current* | | |

| VT . **IG meas limit angle λ1** | [Field Para / Direction / Wattmetric] | |
|---|---|---|
| 3°<br><br>*Only available if:* | 1° ... 20° | S.3 |
| *Limit angle 1 for cos or sin method with measured earth current* | | |

| VT . **IG meas limit angle λ2** | [Field Para / Direction / Wattmetric] | |
|---|---|---|
| 3°<br><br>*Only available if:* | 1° ... 20° | S.3 |
| *Limit angle 2 for cos or sin method with measured earth current* | | |

| VT . **IG calc min** | [Field Para / Direction / Wattmetric] | |
|---|---|---|
| 0.1In<br><br>*Only available if:* | 0.02In ... 2.00In | S.3 |
| *Current threshold for the direction detection methods cos(ϕ), sin(ϕ) with measured ground (earth) current* | | |

| VT . **IG calc limit angle λ1** | [Field Para / Direction / Wattmetric] | |
|---|---|---|
| 3°<br><br>*Only available if:* | 1° ... 20° | S.3 |
| *Limit angle 1 for ground fault direction determination with method “cos(ϕ)” or “sin(ϕ)”* | | |

| VT . **IG calc limit angle λ2** | [Field Para / Direction / Wattmetric] | |
|---|---|---|
| 3°<br><br>*Only available if:* | 1° ... 20° | S.3 |
| *Limit angle 2 for ground fault direction determination with method “cos(ϕ)” or “sin(ϕ)”* | | |

| VT . **V Block f** | [Field Para / Frequency] | |
|---|---|---|
| 0.5Vn | 0.15Vn ... 0.90Vn | S.3 |
| *Threshold for the release of the frequency stages* | | |

| VT . **delta phi - Mode** | [Field Para / Frequency] | |
|---|---|---|
| two phases | one phase, two phases, three phases<br><br>⮡ delta phi - Mode. | S.3 |
| *The delta phi element (vector surge) trips, if the permissable voltage angle shift (delta phi) of the three measured voltages (phase-ground or phase-phase) in: one phase, two phases or within all phases is exceeded.* | | |

| VT . **Stab. window f** | [Field Para / Frequency] | |
|---|---|---|
| 4 | 0 ... 10 | S.3 |
| *Stabilizing window, for stabilizing the frequency values against momentary fluctuations. The setting value is in cycles at the rated frequency.* | | |

| VT . **Stab. window f for df/dt** | [Field Para / Frequency] | |
|---|---|---|
| 3 | 2 ... 10 | S.3 |
| *Stabilizing window, for stabilizing the frequency values that are used as input for df/dt calculation against momentary fluctuations. The setting value is in cycles at the rated frequency.* | | |

| VT . **Window df/dt** | [Field Para / Frequency] | |
|---|---|---|
| 4 | 1 ... 10 | S.3 |
| *Window for the determination of df/dt (ROCOF). The setting value is in cycles at the rated frequency.* | | |

| VT . **Stab. window df/dt** | [Field Para / Frequency] | |
|---|---|---|
| 5 | 0 ... 10 | S.3 |
| *Stabilizing window, for stabilizing the df/dt (ROCOF) values against momentary fluctuations. The setting value is in cycles at the rated frequency.* | | |

## 4.2.2 VT: Signals (Output States)

| VT . **Phase seq. wrong** | [Operation / Status Display / Supervision / Phase Sequence] |
|---|---|
| *Signal that the device has detected a phase sequence (L1-L2-L3 / L1-L3-L2) that is different from the one that had been set at [Field settings / General Settings] »Phase Sequence«.* | |

## 4.2.3 VT: Values

| VT . **f** | [Operation / Measured Values / Voltage ] |
|---|---|
| *Measured value: Frequency* | |

| VT . **VL12** | [Operation / Measured Values / Voltage ] |
|---|---|
| *Measured value: Phase-to-phase voltage (fundamental)* | |

| VT . **VL23** | [Operation / Measured Values / Voltage ] |
|---|---|
| *Measured value: Phase-to-phase voltage (fundamental)* | |

| VT . **VL31** | [Operation / Measured Values / Voltage ] |
|---|---|
| *Measured value: Phase-to-phase voltage (fundamental)* | |

| VT . **VL1** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value: Phase-to-neutral voltage (fundamental)* |

| VT . **VL2** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value: Phase-to-neutral voltage (fundamental)* |

| VT . **VL3** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value: Phase-to-neutral voltage (fundamental)* |

| VT . **VX meas** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (measured): VX measured (fundamental)* |

| VT . **VG calc** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): VG (fundamental)* |

| VT . **V0** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Symmetrical components Zero voltage(fundamental)* |

| VT . **V1** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Symmetrical components positive phase sequence voltage(fundamental)* |

| VT . **V2** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Symmetrical components negative phase sequence voltage(fundamental)* |

| VT . **%(V2/V1)** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): V2/V1, phase sequence will be taken into account automatically.* |

| VT . **phi VL12** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor VL12*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi VL23** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor VL23*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi VL31** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor VL31*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi VL1** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor VL1*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi VL2** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor VL2*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi VL3** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor VL3*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi VX meas** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value: Angle of Phasor VX meas*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi VG calc** | [Operation / Measured Values / Voltage ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor VG calc*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi V0** | [Operation / Measured Values / Voltage ] |
|---|---|
| ✎ | *Measured value (calculated): Angle Zero Sequence System*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi V1** | [Operation / Measured Values / Voltage ] |
|---|---|
| ✎ | *Measured value (calculated): Angle of Positive Sequence System*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **phi V2** | [Operation / Measured Values / Voltage ] |
|---|---|
| ✎ | *Measured Value (calculated): Angle of Negative Sequence System*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| VT . **df/dt** | [Operation / Measured Values / Voltage ] |
|---|---|
| ✎ | *Measured value (calculated): Rate-of-frequency-change.* |

| VT . **delta phi** | [Operation / Measured Values / Voltage ] |
|---|---|
| ✎ | *Measured value (calculated): Vector surge* |

| VT . **VL12 RMS** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ✎ | *Measured value: Phase-to-phase voltage (RMS)* |

| VT . **VL23 RMS** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ✎ | *Measured value: Phase-to-phase voltage (RMS)* |

| VT . **VL31 RMS** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ✎ | *Measured value: Phase-to-phase voltage (RMS)* |

| VT . **VL1 RMS** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ✎ | *Measured value: Phase-to-neutral voltage (RMS)* |

| VT . **VL2 RMS** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ✎ | *Measured value: Phase-to-neutral voltage (RMS)* |

| VT . **VL3 RMS** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value: Phase-to-neutral voltage (RMS)* |

| VT . **VX meas RMS** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (measured): VX measured (RMS)* |

| VT . **VG calc RMS** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): VG (RMS)* |

| VT . **V/f** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Ratio Volts/Hertz in relation to nominal values.* |

| VT . **%VL12 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): V12 Total Harmonic Distortion / Ground wave* |

| VT . **%VL23 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): V23 Total Harmonic Distortion / Ground wave* |

| VT . **%VL31 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): V31 Total Harmonic Distortion / Ground wave* |

| VT . **%VL1 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): VL1 Total Harmonic Distortion / Ground wave* |

| VT . **%VL2 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): VL2 Total Harmonic Distortion / Ground wave* |

| VT . **%VL3 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): VL3 Total Harmonic Distortion / Ground wave* |

| VT . **VL12 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): V12 Total Harmonic Distortion* |

| VT . **VL23 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): V23 Total Harmonic Distortion* |

Released



| VT . **VL31 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): V31 Total Harmonic Distortion* |

| VT . **VL1 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): VL1 Total Harmonic Distortion* |

| VT . **VL2 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): VL2 Total Harmonic Distortion* |

| VT . **VL3 THD** | [Operation / Measured Values / Voltage RMS] |
|---|---|
| ⟍ | *Measured value (calculated): VL3 Total Harmonic Distortion* |

## 4.2.4 VT: Statistical Values

| VT . **f max** | [Operation / Statistics / Max / Voltage] |
|---|---|
| 🗠 | *Max. frequency value* |

| VT . **VL12 max RMS** | [Operation / Statistics / Max / Voltage] |
|---|---|
| 🗠 | *VL12 maximum value (RMS)* |

| VT . **VL23 max RMS** | [Operation / Statistics / Max / Voltage] |
|---|---|
| 🗠 | *VL23 maximum value (RMS)* |

| VT . **VL31 max RMS** | [Operation / Statistics / Max / Voltage] |
|---|---|
| 🗠 | *VL31 maximum value (RMS)* |

| VT . **VL1 max RMS** | [Operation / Statistics / Max / Voltage] |
|---|---|
| 🗠 | *VL1 maximum value (RMS)* |

| VT . **VL2 max RMS** | [Operation / Statistics / Max / Voltage] |
|---|---|
| 🗠 | *VL2 maximum value (RMS)* |

| VT . **VL3 max RMS** | [Operation / Statistics / Max / Voltage] |
|---|---|
| 🗠 | *VL3 maximum value (RMS)* |

| VT . **VX meas max RMS** | [Operation / Statistics / Max / Voltage] |
|---|---|
| ☑ | *Measured value: VX maximum value (RMS)* |

| VT . **VG calc max RMS** | [Operation / Statistics / Max / Voltage] |
|---|---|
| ☑ | *Measured value (calculated):VX maximum value (RMS)* |

| VT . **V1 max** | [Operation / Statistics / Max / Voltage] |
|---|---|
| ☑ | *Maximum value: Symmetrical components positive phase sequence voltage(fundamental)* |

| VT . **V2 max** | [Operation / Statistics / Max / Voltage] |
|---|---|
| ☑ | *Maximum value: Symmetrical components negative phase sequence voltage(fundamental)* |

| VT . **%(V2/V1) max** | [Operation / Statistics / Max / Voltage] |
|---|---|
| ☑ | *Measured value (calculated):V2/V1 maximum value, phase sequence will be taken into account automatically* |

| VT . **V/f max** | [Operation / Statistics / Max / Voltage] |
|---|---|
| ☑ | *Maximum value: Ratio Volts/Hertz in relation to nominal values.* |

| VT . **f min** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *Min. frequency value* |

| VT . **VL12 min RMS** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *VL12 minimum value (RMS)* |

| VT . **VL23 min RMS** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *VL23 minimum value (RMS)* |

| VT . **VL31 min RMS** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *VL31 minimum value (RMS)* |

| VT . **VL1 min RMS** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *VL1 minimum value (RMS)* |

| VT . **VL2 min RMS** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *VL2 minimum value (RMS)* |

| VT . **VL3 min RMS** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *VL3 minimum value (RMS)* |

| VT . **VX meas min RMS** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *Measured value: VX minimum value (RMS)* |

| VT . **VG calc min RMS** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *Measured value (calculated):VX minimum value (RMS)* |

| VT . **V1 min** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *Minimum value: Symmetrical components positive phase sequence voltage(fundamental)* |

| VT . **V2 min** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *Minimum value: Symmetrical components negative phase sequence voltage(fundamental)* |

| VT . **%(V2/V1) min** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *Measured value (calculated):V2/V1 minimum value , phase sequence will be taken into account automatically* |

| VT . **V/f min** | [Operation / Statistics / Min / Voltage] |
|---|---|
| ☑ | *Minimum value: Ratio Volts/Hertz in relation to nominal values.* |

| VT . **VL12 avg RMS** | [Operation / Statistics / Vavg] |
|---|---|
| ☑ | *VL12 average value (RMS)* |

| VT . **VL23 avg RMS** | [Operation / Statistics / Vavg] |
|---|---|
| ☑ | *VL23 average value (RMS)* |

| VT . **VL31 avg RMS** | [Operation / Statistics / Vavg] |
|---|---|
| ☑ | *VL31 average value (RMS)* |

| VT . **VL1 avg RMS** | [Operation / Statistics / Vavg] |
|---|---|
| ☑ | *VL1 average value (RMS)* |

| VT . **VL2 avg RMS** | [Operation / Statistics / Vavg] |
|---|---|
| ☑ | *VL2 average value (RMS)* |

Released



| VT . **VL3 avg RMS** | [Operation / Statistics / Vavg] |
|---|---|
| 🗠 | *VL3 average value (RMS)* |

Released



# 4.3 CT W1 – Current Transformer Winding 1

## 4.3.1 CT W1: Settings

| CT W1 . **IL1, IL2, IL3 Cutoff Level** | [Device Para / Measurem Display / CT W1] | |
|---|---|---|
| 0.005In | 0.0In ... 0.100In | S.3 |
| *The Current shown in the Display or within the PC Software will be displayed as zero, if the Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| CT W1 . **IG meas Cutoff Level** | [Device Para / Measurem Display / CT W1] | |
|---|---|---|
| 0.005In | 0.0In ... 0.100In | S.3 |
| *The measured Earth Current shown in the Display or within the PC Software will be displayed as zero, if the measured Earth Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| CT W1 . **IG calc Cutoff Level** | [Device Para / Measurem Display / CT W1] | |
|---|---|---|
| 0.005In | 0.0In ... 0.100In | S.3 |
| *The calculated Earth Current shown in the Display or within the PC Software will be displayed as zero, if the calculated Earth Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| CT W1 . **I012 Cutoff Level** | [Device Para / Measurem Display / CT W1] | |
|---|---|---|
| 0.005In | 0.0In ... 0.100In | S.3 |
| *The Symmetrical Component shown in the Display or within the PC Software will be displayed as zero, if the Symmetrical Component falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| CT W1 . **CT pri** | [Field Para / CT W1] | |
|---|---|---|
| 1000A | 1A ... 50000A | S.3 |
| *Nominal current of the primary side of the current transformers.* | | |

| CT W1 . **CT sec** | [Field Para / CT W1] | |
|---|---|---|
| 1A | 1A, 5A<br>⮡ Ratio prim/sec. | S.3 |
| *Nominal current of the secondary side of the current transformers.* | | |

| CT W1 . **CT dir** | [Field Para / CT W1] | |
|---|---|---|
| 0° | 0°, 180°<br>↳ Polarity. | S.3 |
| *Protection functions with directional feature can only work properly if the connection of the current transformers is free of wiring errors. If all current transformers are connected to the device with an incorrect polarity, the wiring error can be compensated by this parameter. This parameter turns the current vectors by 180 degrees.* | | |

| CT W1 . **ECT pri** | [Field Para / CT W1] | |
|---|---|---|
| 1000A | 1A . . . 50000A | S.3 |
| *This parameter defines the primary nominal current of the connected earth current transformer. If the earth current is measured via the Holmgreen connection, the primary value of the phase current transformer must be entered here.* | | |

| CT W1 . **ECT sec** | [Field Para / CT W1] | |
|---|---|---|
| 1A | 1A, 5A<br>↳ Ratio prim/sec. | S.3 |
| *This parameter defines the secondary nominal current of the connected earth current transformer. If the earth current is done via the Holmgreen connection, the primary value of the phase current transformer must be entered here.* | | |

| CT W1 . **ECT dir** | [Field Para / CT W1] | |
|---|---|---|
| 0° | 0°, 180°<br>↳ Polarity. | S.3 |
| *Earth fault protection with directional feature depends also on the correct wiring of the earth current transformer. An incorrect polarity/wiring can be corrected by means of the settings "0°" or "180°". The operator has the possibility of turning the current vector by 180 degrees (change of sign) without modification of the wiring. This means, that - in terms of figures - the determined current indicator was turned by 180° by the device.* | | |

## 4.3.2 CT W1: Signals (Output States)

| CT W1 . **Phase seq. wrong** | [Operation / Status Display / Supervision / Phase Sequence] |
|---|---|
| *Signal that the device has detected a phase sequence (L1-L2-L3 / L1-L3-L2) that is different from the one that had been set at [Field settings / General Settings] »Phase Sequence«.* | |

## 4.3.3 CT W1: Values

| CT W1 . **IL1** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value: Phase current (fundamental)* |

| CT W1 . **IL2** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value: Phase current (fundamental)* |

| CT W1 . **IL3** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value: Phase current (fundamental)* |

| CT W1 . **IG meas** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (measured): IG (fundamental)* |

| CT W1 . **IG calc** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): IG (fundamental)* |

| CT W1 . **I0** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Zero current (fundamental)* |

| CT W1 . **I1** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Positive phase sequence current (fundamental)* |

| CT W1 . **I2** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Unbalanced load current (fundamental)* |

| CT W1 . **IL1 H2** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value: 2nd harmonic/1st harmonic of IL1* |

| CT W1 . **IL2 H2** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value: 2nd harmonic/1st harmonic of IL2* |

| CT W1 . **IL3 H2** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value: 2nd harmonic/1st harmonic of IL3* |

| CT W1 . **IG H2 meas** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value: 2nd harmonic/1st harmonic of IG (measured)* |

| CT W1 . **IG H2 calc** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): 2nd harmonic/1st harmonic of IG (calculated)* |

| CT W1 . **%(I2/I1)** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.* |

| CT W1 . **phi IL1** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IL1*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W1 . **phi IL2** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IL2*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W1 . **phi IL3** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IL3*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W1 . **phi IG meas** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IG meas*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W1 . **phi IG calc** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IG calc*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W1 . **phi I0** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle Zero Sequence System*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W1 . **phi I1** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Positive Sequence System*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W1 . **phi I2** | [Operation / Measured Values / CT W1 / Current ] |
|---|---|
| ⟍ | *Measured Value (calculated): Angle of Negative Sequence System*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W1 . **IL1 RMS** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value: Phase current (RMS)* |

| CT W1 . **IL2 RMS** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value: Phase current (RMS)* |

| CT W1 . **IL3 RMS** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value: Phase current (RMS)* |

| CT W1 . **IG meas RMS** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value (measured): IG (RMS)* |

| CT W1 . **IG calc RMS** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IG (RMS)* |

| CT W1 . **%IL1 THD** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL1 Total Harmonic Distortion* |

| CT W1 . **%IL2 THD** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL2 Total Harmonic Distortion* |

| CT W1 . **%IL3 THD** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL3 Total Harmonic Distortion* |

| CT W1 . **IL1 THD** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL1 Total Harmonic Current* |

| CT W1 . **IL2 THD** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL2 Total Harmonic Current* |

| CT W1 . **IL3 THD** | [Operation / Measured Values / CT W1 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL3 Total Harmonic Current* |

## 4.3.4 CT W1: Statistical Values

| CT W1 . **IL1 avg RMS** | [Operation / Statistics / Demand / CT W1] |
|---|---|
| 🗠 | *IL1 average value (RMS)* |

| CT W1 . **IL2 avg RMS** | [Operation / Statistics / Demand / CT W1] |
|---|---|
| 🗠 | *IL2 average value (RMS)* |

| CT W1 . **IL3 avg RMS** | [Operation / Statistics / Demand / CT W1] |
|---|---|
| 🗠 | *IL3 average value (RMS)* |

| CT W1 . **IL1 Peak (Demand)** | [Operation / Statistics / Demand / CT W1] |
|---|---|
| 🗠 | *IL1 Peak value, RMS value* |

| CT W1 . **IL2 Peak (Demand)** | [Operation / Statistics / Demand / CT W1] |
|---|---|
| 🗠 | *IL2 Peak value, RMS value* |

| CT W1 . **IL3 Peak (Demand)** | [Operation / Statistics / Demand / CT W1] |
|---|---|
| 🗠 | *IL3 Peak value, RMS value* |

| CT W1 . **IL1 max RMS** | [Operation / Statistics / Max / CT W1] |
|---|---|
| 🗠 | *IL1 maximum value (RMS)* |

| CT W1 . **IL2 max RMS** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *IL2 maximum value (RMS)* |

| CT W1 . **IL3 max RMS** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *IL3 maximum value (RMS)* |

| CT W1 . **IG meas max RMS** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Measured value: IG maximum value (RMS)* |

| CT W1 . **IG calc max RMS** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Measured value (calculated):IG maximum value (RMS)* |

| CT W1 . **I1 max** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Maximum value positive phase sequence current (fundamental)* |

| CT W1 . **I2 max** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Maximum value negative sequence current (fundamental)* |

| CT W1 . **%(I2/I1) max** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Measured value (calculated): I2/I1 maximum value, phase sequence will be taken into account automatically* |

| CT W1 . **IL1 H2 max** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Maximum ratio of 2nd harmonic over fundamental of IL1* |

| CT W1 . **IL2 H2 max** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Maximum ratio of 2nd harmonic over fundamental of IL2* |

| CT W1 . **IL3 H2 max** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Maximum ratio of 2nd harmonic over fundamental of IL3* |

| CT W1 . **IG H2 meas max** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Measured value: Maximum ratio of 2nd harmonic over fundamental of IG (measured)* |

| CT W1 . **IG H2 calc max** | [Operation / Statistics / Max / CT W1] |
|---|---|
| ☑ | *Measured value (calculated): Maximum ratio of 2nd harmonic over fundamental of IG (calculated)* |

| CT W1 . **IL1 min RMS** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *IL1 minimum value (RMS)* |

| CT W1 . **IL2 min RMS** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *IL2 minimum value (RMS)* |

| CT W1 . **IL3 min RMS** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *IL3 minimum value (RMS)* |

| CT W1 . **IG meas min RMS** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *Measured value: IG minimum value (RMS)* |

| CT W1 . **IG calc min RMS** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *Measured value (calculated):IG minimum value (RMS)* |

| CT W1 . **I1 min** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *Minimum value positive phase sequence current (fundamental)* |

| CT W1 . **I2 min** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *Minimum value unbalanced load current (fundamental)* |

| CT W1 . **%(I2/I1) min** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *Measured value (calculated): I2/I1 minimum value, phase sequence will be taken into account automatically* |

| CT W1 . **IL1 H2 min** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *Minimum ratio of 2nd harmonic over fundamental of IL1* |

| CT W1 . **IL2 H2 min** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *Minimum ratio of 2nd harmonic over fundamental of IL2* |

| CT W1 . **IL3 H2 min** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *Minimum ratio of 2nd harmonic/1st harmonic minimum value of IL3* |

| CT W1 . **IG H2 meas min** | [Operation / Statistics / Min / CT W1] |
|---|---|
| ☑ | *Measured value: Minimum ratio of 2nd harmonic over fundamental of IG (measured)* |

Released



| CT W1 . **IG H2 calc min** | [Operation / Statistics / Min / CT W1] |
|---|---|
| 🗠 | *IG H2 calc min* |

Released



# 4.4 CT W2 – Current Transformer Winding 2

## 4.4.1 CT W2: Settings

| CT W2 . **IL1, IL2, IL3 Cutoff Level** | [Device Para / Measurem Display / CT W2] | |
|---|---|---|
| 0.005In | 0.0In ... 0.100In | S.3 |
| *The Current shown in the Display or within the PC Software will be displayed as zero, if the Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| CT W2 . **IG meas Cutoff Level** | [Device Para / Measurem Display / CT W2] | |
|---|---|---|
| 0.005In | 0.0In ... 0.100In | S.3 |
| *The measured Earth Current shown in the Display or within the PC Software will be displayed as zero, if the measured Earth Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| CT W2 . **IG calc Cutoff Level** | [Device Para / Measurem Display / CT W2] | |
|---|---|---|
| 0.005In | 0.0In ... 0.100In | S.3 |
| *The calculated Earth Current shown in the Display or within the PC Software will be displayed as zero, if the calculated Earth Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| CT W2 . **I012 Cutoff Level** | [Device Para / Measurem Display / CT W2] | |
|---|---|---|
| 0.005In | 0.0In ... 0.100In | S.3 |
| *The Symmetrical Component shown in the Display or within the PC Software will be displayed as zero, if the Symmetrical Component falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| CT W2 . **CT pri** | [Field Para / CT W2] | |
|---|---|---|
| 1000A | 1A ... 50000A | S.3 |
| *Nominal current of the primary side of the current transformers.* | | |

| CT W2 . **CT sec** | [Field Para / CT W2] | |
|---|---|---|
| 1A | 1A, 5A<br>Ratio prim/sec. | S.3 |
| *Nominal current of the secondary side of the current transformers.* | | |

| CT W2 . **CT dir** | [Field Para / CT W2] | |
|---|---|---|
| 0° | 0°, 180°<br>↳ Polarity. | S.3 |
| *Protection functions with directional feature can only work properly if the connection of the current transformers is free of wiring errors. If all current transformers are connected to the device with an incorrect polarity, the wiring error can be compensated by this parameter. This parameter turns the current vectors by 180 degrees.* | | |

| CT W2 . **ECT pri** | [Field Para / CT W2] | |
|---|---|---|
| 1000A | 1A . . . 50000A | S.3 |
| *This parameter defines the primary nominal current of the connected earth current transformer. If the earth current is measured via the Holmgreen connection, the primary value of the phase current transformer must be entered here.* | | |

| CT W2 . **ECT sec** | [Field Para / CT W2] | |
|---|---|---|
| 1A | 1A, 5A<br>↳ Ratio prim/sec. | S.3 |
| *This parameter defines the secondary nominal current of the connected earth current transformer. If the earth current is done via the Holmgreen connection, the primary value of the phase current transformer must be entered here.* | | |

| CT W2 . **ECT dir** | [Field Para / CT W2] | |
|---|---|---|
| 0° | 0°, 180°<br>↳ Polarity. | S.3 |
| *Earth fault protection with directional feature depends also on the correct wiring of the earth current transformer. An incorrect polarity/wiring can be corrected by means of the settings "0°" or "180°". The operator has the possibility of turning the current vector by 180 degrees (change of sign) without modification of the wiring. This means, that - in terms of figures - the determined current indicator was turned by 180° by the device.* | | |

## 4.4.2 CT W2: Signals (Output States)

| CT W2 . **Phase seq. wrong** | [Operation / Status Display / Supervision / Phase Sequence] |
|---|---|
| *Signal that the device has detected a phase sequence (L1-L2-L3 / L1-L3-L2) that is different from the one that had been set at [Field settings / General Settings] »Phase Sequence«.* | |

## 4.4.3 CT W2: Values

| CT W2 . **IL1** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value: Phase current (fundamental)* |

| CT W2 . **IL2** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value: Phase current (fundamental)* |

| CT W2 . **IL3** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value: Phase current (fundamental)* |

| CT W2 . **IG meas** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value (measured): IG (fundamental)* |

| CT W2 . **IG calc** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value (calculated): IG (fundamental)* |

| CT W2 . **I0** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value (calculated): Zero current (fundamental)* |

| CT W2 . **I1** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value (calculated): Positive phase sequence current (fundamental)* |

| CT W2 . **I2** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value (calculated): Unbalanced load current (fundamental)* |

| CT W2 . **IL1 H2** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value: 2nd harmonic/1st harmonic of IL1* |

| CT W2 . **IL2 H2** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value: 2nd harmonic/1st harmonic of IL2* |

| CT W2 . **IL3 H2** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⬊ | *Measured value: 2nd harmonic/1st harmonic of IL3* |

| CT W2 . **IG H2 meas** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value: 2nd harmonic/1st harmonic of IG (measured)* |

| CT W2 . **IG H2 calc** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): 2nd harmonic/1st harmonic of IG (calculated)* |

| CT W2 . **%(I2/I1)** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.* |

| CT W2 . **phi IL1** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IL1*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W2 . **phi IL2** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IL2*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W2 . **phi IL3** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IL3*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W2 . **phi IG meas** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IG meas*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W2 . **phi IG calc** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Phasor IG calc*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W2 . **phi I0** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle Zero Sequence System*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W2 . **phi I1** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured value (calculated): Angle of Positive Sequence System*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W2 . **phi I2** | [Operation / Measured Values / CT W2 / Current ] |
|---|---|
| ⟍ | *Measured Value (calculated): Angle of Negative Sequence System*<br><br>*Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.* |

| CT W2 . **IL1 RMS** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value: Phase current (RMS)* |

| CT W2 . **IL2 RMS** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value: Phase current (RMS)* |

| CT W2 . **IL3 RMS** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value: Phase current (RMS)* |

| CT W2 . **IG meas RMS** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value (measured): IG (RMS)* |

| CT W2 . **IG calc RMS** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IG (RMS)* |

| CT W2 . **%IL1 THD** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL1 Total Harmonic Distortion* |

| CT W2 . **%IL2 THD** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL2 Total Harmonic Distortion* |

Released



| CT W2 . **%IL3 THD** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL3 Total Harmonic Distortion* |

| CT W2 . **IL1 THD** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL1 Total Harmonic Current* |

| CT W2 . **IL2 THD** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL2 Total Harmonic Current* |

| CT W2 . **IL3 THD** | [Operation / Measured Values / CT W2 / Current RMS] |
|---|---|
| ⟍ | *Measured value (calculated): IL3 Total Harmonic Current* |

### 4.4.4 CT W2: Statistical Values

| CT W2 . **IL1 avg RMS** | [Operation / Statistics / Demand / CT W2] |
|---|---|
| 🗠 | *IL1 average value (RMS)* |

| CT W2 . **IL2 avg RMS** | [Operation / Statistics / Demand / CT W2] |
|---|---|
| 🗠 | *IL2 average value (RMS)* |

| CT W2 . **IL3 avg RMS** | [Operation / Statistics / Demand / CT W2] |
|---|---|
| 🗠 | *IL3 average value (RMS)* |

| CT W2 . **IL1 Peak (Demand)** | [Operation / Statistics / Demand / CT W2] |
|---|---|
| 🗠 | *IL1 Peak value, RMS value* |

| CT W2 . **IL2 Peak (Demand)** | [Operation / Statistics / Demand / CT W2] |
|---|---|
| 🗠 | *IL2 Peak value, RMS value* |

| CT W2 . **IL3 Peak (Demand)** | [Operation / Statistics / Demand / CT W2] |
|---|---|
| 🗠 | *IL3 Peak value, RMS value* |

| CT W2 . **IL1 max RMS** | [Operation / Statistics / Max / CT W2] |
|---|---|
| 🗠 | *IL1 maximum value (RMS)* |

| CT W2 . **IL2 max RMS** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *IL2 maximum value (RMS)* |

| CT W2 . **IL3 max RMS** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *IL3 maximum value (RMS)* |

| CT W2 . **IG meas max RMS** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Measured value: IG maximum value (RMS)* |

| CT W2 . **IG calc max RMS** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Measured value (calculated):IG maximum value (RMS)* |

| CT W2 . **I1 max** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Maximum value positive phase sequence current (fundamental)* |

| CT W2 . **I2 max** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Maximum value negative sequence current (fundamental)* |

| CT W2 . **%(I2/I1) max** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Measured value (calculated): I2/I1 maximum value, phase sequence will be taken into account automatically* |

| CT W2 . **IL1 H2 max** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Maximum ratio of 2nd harmonic over fundamental of IL1* |

| CT W2 . **IL2 H2 max** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Maximum ratio of 2nd harmonic over fundamental of IL2* |

| CT W2 . **IL3 H2 max** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Maximum ratio of 2nd harmonic over fundamental of IL3* |

| CT W2 . **IG H2 meas max** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Measured value: Maximum ratio of 2nd harmonic over fundamental of IG (measured)* |

| CT W2 . **IG H2 calc max** | [Operation / Statistics / Max / CT W2] |
|---|---|
| ☑ | *Measured value (calculated): Maximum ratio of 2nd harmonic over fundamental of IG (calculated)* |

| CT W2 . **IL1 min RMS** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *IL1 minimum value (RMS)* |

| CT W2 . **IL2 min RMS** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *IL2 minimum value (RMS)* |

| CT W2 . **IL3 min RMS** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *IL3 minimum value (RMS)* |

| CT W2 . **IG meas min RMS** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *Measured value: IG minimum value (RMS)* |

| CT W2 . **IG calc min RMS** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *Measured value (calculated):IG minimum value (RMS)* |

| CT W2 . **I1 min** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *Minimum value positive phase sequence current (fundamental)* |

| CT W2 . **I2 min** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *Minimum value unbalanced load current (fundamental)* |

| CT W2 . **%(I2/I1) min** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *Measured value (calculated): I2/I1 minimum value, phase sequence will be taken into account automatically* |

| CT W2 . **IL1 H2 min** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *Minimum ratio of 2nd harmonic over fundamental of IL1* |

| CT W2 . **IL2 H2 min** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *Minimum ratio of 2nd harmonic over fundamental of IL2* |

| CT W2 . **IL3 H2 min** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *Minimum ratio of 2nd harmonic/1st harmonic minimum value of IL3* |

| CT W2 . **IG H2 meas min** | [Operation / Statistics / Min / CT W2] |
|---|---|
| ☑ | *Measured value: Minimum ratio of 2nd harmonic over fundamental of IG (measured)* |

Released



| CT W2 . **IG H2 calc min** | [Operation / Statistics / Min / CT W2] |
| --- | --- |
| 🗠 | *IG H2 calc min* |

Released



# 4.5 Transformer

## 4.5.1 Transformer: Settings

| Transformer . **SN** | [Field Para / Transformer] | |
|---|---|---|
| 11MVA | 0.001MVA ... 2000.000MVA | P.2 |
| *Rated Power of the Transformer in MVA* | | |

| Transformer . **Rated W1 (HV)** | [Field Para / Transformer] | |
|---|---|---|
| 10500V | 60V ... 500000V | P.2 |
| *Transformer rated voltage (phase to phase) of the HV side. At the protective device, this is connected to the current measuring input W1 (slot X3).* | | |

| Transformer . **Rated W2 (LV)** | [Field Para / Transformer] | |
|---|---|---|
| 10000V | 60V ... 500000V | P.2 |
| *Transformer rated voltage (phase to phase) of the LV side. At the protective device, this is connected to the current measuring input W2 (slot X4).* | | |

| Transformer . **W1 Connection/ Grounding** | [Field Para / Transformer] | |
|---|---|---|
| D | Y, D, Z, YN, ZN<br>↳ W1 Connection/Grounding. | P.2 |
| *Note: The zero current will be removed in order to prevent faulty tripping of the differential protection. If a star point is connected to ground according to the winding connection, the zero current (symmetrical components) will be removed.* | | |

| Transformer . **W2 Connection/ Grounding** | [Field Para / Transformer] | |
|---|---|---|
| yn | y, d, z, yn, zn<br>↳ W2 Connection/Grounding. | P.2 |
| *Note: The zero current will be removed in order to prevent faulty tripping of the differential protection. If a star point is connected to ground according to the winding connection, the zero current (symmetrical components) will be removed.* | | |

| Transformer . **Phase Shift** | [Field Para / Transformer] | |
|---|---|---|
| 1 | 0 ... 11 | P.2 |
| *Phase Shift between W1 side and W2 side. The phase shift angle is a factor (1, 2, 3,..., 11) multiplied with 30 degrees.* | | |

Released



| Transformer . **Tap changer** | [Field Para / Transformer] | |
|---|---|---|
| 0% | -15% ... 15% | P.2 |
| | *Tap changer (referring to the W1 side)* | |

Released



# 5 System

## 5.1 Sys: Settings

| Sys . **Scaling** | [Device Para / Measurem Display / General Settings] | |
|---|---|---|
| Per unit values | Per unit values, Primary values, Secondary values<br><br>↳ Scaling. | S.3 |
| *Display of the measured values as primary, secondary or per unit values* | | |

| Sys . **Ack via »C« key** | [Device Para / Acknowledge] | |
|---|---|---|
| Ack LEDs w/o passw. | Nothing, Ack LEDs w/o passw., Ack LEDs, Ack LEDs and relays, Ack Everything<br><br>↳ Ack via »C« key. | P.2 |
| *Select which acknowledgeable elements can be reset via pressing the »C« key.* | | |

| Sys . **Remote Reset** | [Device Para / Acknowledge] | |
|---|---|---|
| active | inactive, active<br><br>↳ Mode. | P.2 |
| *Enables or disables the option to acknowledge from external/remote via signals (assignments) and SCADA.* | | |

| Sys . **Ack LED** | [Device Para / Acknowledge] | |
|---|---|---|
| “-”<br><br>*Only available if:* | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *All acknowledgeable LEDs will be acknowledged if the state of the assigned signal becomes true.* | | |

| Sys . **Ack BO** | [Device Para / Acknowledge] | |
|---|---|---|
| “-”<br><br>*Only available if:* | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *All acknowledgeable binary output relays will be acknowledged if the state of the assigned signal becomes true.* | | |

| Sys . **Ack Scada** | [Device Para / Acknowledge] | |
|---|---|---|
| "-"<br><br>*Only available if:* | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Latched SCADA signals are acknowledged if the state of the assigned signal becomes true.* | | |

| Sys . **Setting Lock** | [Field Para / General Settings] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *No parameters can be changed as long as this input is true. The parameter settings are locked.* | | |

| Sys . **PSet-Switch** | [Protection Para / PSet-Switch] | |
|---|---|---|
| PS1 | PS1, PS2, PS3, PS4, PSS via Inp fct, PSS via Scada<br><br>↳ PSet-Switch. | P.2 |
| *Switching Parameter Set* | | |

| Sys . **PS1: activated by**<br><br>**. . .**<br><br>Sys . **PS4: activated by** | [Protection Para / PSet-Switch] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br><br>↳ 1..n, PSS. | P.2 |
| *This Setting Group will be the active one if: The Parameter Setting Group Switch is set to "Switch via Input" and the other three input functions are inactive at the same time. In case that there is more than one input function active, no Parameter Setting Group Switch will be executed. In case all input functions are inactive, the device will keep working with the Setting Group that was activated lastly.* | | |

## 5.2 Sys: Direct Controls

| Sys . **Ack BO LED Scd Trips** | [Operation / Acknowledge] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.1 |
| *Acknowledge (reset) latched binary output relays, LEDs, SCADA and Trips.* | | |

| Sys . **Ack LED** | [Operation / Acknowledge] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| ◉ | *All acknowledgeable LEDs will be acknowledged.* | |

| Sys . **Ack BO** | [Operation / Acknowledge] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| ◉ | *All acknowledgeable binary output relays are acknowledged.* | |

| Sys . **Ack Scada** | [Operation / Acknowledge] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| ◉ | *Latched SCADA signals are acknowledged.* | |

| Sys . **Setting Lock Bypass** | [Field Para / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| ◉ | *Short-period unlock of the Setting Lock* | |

| Sys . **Reboot** | [Service / General] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | S.3 |
| ◉ | *Rebooting the device.* | |

## 5.3 Sys: Input States

| Sys . **Ack LED-I** | [Operation / Status Display / Sys] |
|---|---|
| ⇩ | *Module input state: LEDs acknowledgement by digital input* |

| Sys . **Ack BO-I** | [Operation / Status Display / Sys] |
|---|---|
| ⇩ | *Module input state: Acknowledgement of the binary Output Relays* |

| Sys . **Ack Scada-I** | [Operation / Status Display / Sys] |
|---|---|
| ⇩ | *Module input state: Acknowledge latched SCADA signals.* |

| Sys . **PS1-I**<br>**. . .**<br>Sys . **PS4-I** | [Operation / Status Display / Sys] |
|---|---|
| ⇩ | *State of the module input respectively of the signal, that should activate this Parameter Setting Group.* |

| Sys . **Setting Lock-I** | [Operation / Status Display / Sys] |
|---|---|
| ⇩ | *State of the module input: No parameters can be changed as long as this input is true. The parameter settings are locked.* |

## 5.4 Sys: Signals (Output States)

| Sys . **Reboot** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Rebooting the device.*<br><br>*Device Start-up Codes: 1=Normal Start-up; 2=Reboot by the Operator; 3=Reboot by means of Super Reset; 4=outdated; 5=outdated; 6=Unknown Error Source; 7=Forced Reboot (initiated by the main processor); 8=Exceeded Time Limit of the Protection Cycle; 9= Forced Reboot (initiated by the digital signal processor); 10=Exceeded Time Limit of the Measured Value Processing; 11=Sags of the Supply Voltage; 12=Illegal Memory Access.* |

| Sys . **Act Set** | [Operation / Status Display / Sys]<br><br>[Protection Para / PSet-Switch] |
|---|---|
| ⇧ | *Signal: Active Parameter Set* |

| Sys . **PS 1** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: The currently active Parameter Set is PS 1* |

| Sys . **PS 2** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: The currently active Parameter Set is PS 2* |

| Sys . **PS 3** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: The currently active Parameter Set is PS 3* |

Released



| Sys . **PS 4** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: The currently active Parameter Set is PS 4* |

| Sys . **PSS manual** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Manual Switch over of a Parameter Set* |

| Sys . **PSS via Scada** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Parameter Set Switch via Scada. Write into this output byte the integer of the parameter set that should become active (e.g. 4 => Switch onto parameter set 4).* |

| Sys . **PSS via Inp fct** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Parameter Set Switch via input function* |

| Sys . **min 1 param changed** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: At least one parameter has been changed* |

| Sys . **Setting Lock Bypass** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Short-period unlock of the Setting Lock* |

| Sys . **Ack LED** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: LEDs acknowledgement* |

| Sys . **Ack BO** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Acknowledgement of the Binary Outputs* |

| Sys . **Ack Scada** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Acknowledge latched SCADA signals* |

| Sys . **Ack TripCmd** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Reset Trip Command* |

| Sys . **Ack LED-HMI** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: LEDs acknowledgement, triggered at the HMI* |

| Sys . **Ack BO-HMI** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Acknowledgement of the Binary Outputs, triggered at the HMI* |

| Sys . **Ack Scada-HMI** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Acknowledge latched SCADA signals, triggered at the HMI* |

| Sys . **Ack TripCmd-HMI** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Reset Trip Command, triggered at the HMI* |

| Sys . **Ack LED-Sca** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: LEDs acknowledgement, triggered via SCADA* |

| Sys . **Ack BO-Sca** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Acknowledgement of the Binary Outputs, triggered via SCADA* |

| Sys . **Ack Counter-Sca** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Reset of all Counters, triggered via SCADA* |

| Sys . **Ack Scada-Sca** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Acknowledge latched SCADA signals, triggered via SCADA* |

| Sys . **Ack TripCmd-Sca** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal: Reset Trip Command, triggered via SCADA* |

| Sys . **Res OperationsCr** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal:: Res OperationsCr* |

| Sys . **Res AlarmCr** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal:: Res AlarmCr* |

| Sys . **Res TripCmdCr** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal:: Res TripCmdCr* |

| Sys . **Res TotalCr** | [Operation / Status Display / Sys] |
|---|---|
| ⇧ | *Signal:: Res TotalCr* |

Released



## 5.5 Sys: Values

| Sys . **Operating hours Cr** | [Operation / Count and RevData / Sys] |
|---|---|
| ✎ | *Operating hours counter of the protective device* |

| Sys . **DM version** | [Device Para / Version] | |
|---|---|---|
| 3.7.b | 3.7.b<br>↳ . | |
| ✎ | *Version of the device model* | |

| Sys . **SW version** | [Device Para / Version] |
|---|---|
| ✎ | *Version of the device firmware* |

| Sys . **Build** | [Device Para / Version] |
|---|---|
| ✎ | *Build Number* |

| Sys . **CAT No** | [Device Para / Version] |
|---|---|
| ✎ | *»CAT No.«, Order Code as printed on the nameplate of the device.* |

| Sys . **REV.** | [Device Para / Version] |
|---|---|
| ✎ | *Revision (as printed on the nameplate of the device).* |

| Sys . **S/N** | [Device Para / Version] |
|---|---|
| ✎ | *The serial number of the device.* |

| Sys . **Bootloader Build** | [Device Para / Version] |
|---|---|
| ✎ | *Build number of the bootloader* |

Released



# 6 Measured Values

- AnIn[1] . . . AnIn[4] – Analog Input: “2.3.1.4 AnIn[1]: Values”
- HMI – front-panel: “2.7.3 HMI: Values”
- VT – Voltage Transformer: “4.2.3 VT: Values”
- CT W1 – Current Transformer Winding 1: “4.3.3 CT W1: Values”
- CT W2 – Current Transformer Winding 2: “4.4.3 CT W2: Values”
- System: “5.5 Sys: Values”
- Id – Motor Differential Protection Module: “6.1.2 Id: Values”
- IdG – Restricted Ground Fault Differential Protection Module: “6.2.2 IdG: Values”
- PQSCr – Power and Energy: “6.3.4 PQSCr: Values”
- Modbus: “8.5.5 Modbus: Values”
- IEC 61850 – IEC 61850 communication: “8.6.4 IEC 61850: Values”
- IEC103 – IEC 60870-5-103 communication: “8.7.4 IEC103: Values”
- IEC104 – IEC 60870-5-104 communication: “8.8.4 IEC104: Values”
- Profibus – Profibus Module: “8.9.5 Profibus: Values”
- SNTP – SNTP-Module: “8.11.5 SNTP: Values”
- Protection Parameter: “9.5 Prot: Values”
- Id – Differential Protection Module: “9.6.6 Id: Values”
- ThR – Thermal replica module: “9.13.7 ThR: Values”
- Sync – Synchrocheck: “9.30.6 Sync: Values”
- URTD – Universal Resistance Temperature Detector: “9.38.4 URTD: Values”
- RTD – Temperature Protection Module: “9.39.6 RTD: Values And Counters”
- Control: “10.6 Ctrl: Values”
- Breaker Wear: “10.7.5.4 SG[1]: Values”
- Disturb rec – After a trigger event has become true, the disturbance recorder writes analogue and digital tracks: “12.2.5 Disturb rec: Values”
- Sgen – Sine wave generator: “15.1.6 Sgen: Values”

Released



# 6.1 Id – Motor Differential Protection Module

## 6.1.1 Id: Settings

| Id . **Id Cutoff Level** | [Device Para / Measurem Display / Diff] | |
|---|---|---|
| 0.005In | 0.0In . . . 0.100In | S.3 |
| *The Differential Current shown in the Display or within the PC Software will be displayed as zero, if the Differential Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| Id . **IS Cutoff Level** | [Device Para / Measurem Display / Diff] | |
|---|---|---|
| 0.005In | 0.0In . . . 0.100In | S.3 |
| *The Restraint Current shown in the Display or within the PC Software will be displayed as zero, if the Restraint Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

## 6.1.2 Id: Values

| Id . **Is L1** | [Operation / Measured Values / Id] |
|---|---|
| *Measured value (calculated): Restraint Current Phase L1* | |

| Id . **Is L2** | [Operation / Measured Values / Id] |
|---|---|
| *Measured value (calculated): Restraint Current Phase L2* | |

| Id . **Is L3** | [Operation / Measured Values / Id] |
|---|---|
| *Measured value (calculated): Restraint Current Phase L3* | |

| Id . **Id L1** | [Operation / Measured Values / Id] |
|---|---|
| *Measured value (calculated): Differential Current Phase L1* | |

| Id . **Id L2** | [Operation / Measured Values / Id] |
|---|---|
| *Measured value (calculated): Differential Current Phase L2* | |

| Id . **Id L3** | [Operation / Measured Values / Id] |
|---|---|
| *Measured value (calculated): Differential Current Phase L3* | |

## 6.1.3 Id: Statistical Values

| Id . **Is L1 max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Measured value (calculated): Restraint Current Phase L1 Maximum Value* |

| Id . **Is L2 max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Measured value (calculated): Restraint Current Phase L2 Maximum Value* |

| Id . **Is L3 max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Measured value (calculated): Restraint Current Phase L3 Maximum Value* |

| Id . **Id L1 max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Measured value (calculated): Differential Current Phase L1 Maximum Value* |

| Id . **Id L2 max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Measured value (calculated): Differential Current Phase L2 Maximum Value* |

| Id . **Id L3 max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Measured value (calculated): Differential Current Phase L3 Maximum Value* |

Released



# 6.2 IdG – Restricted Ground Fault Differential Protection Module

## 6.2.1 IdG: Settings

| IdG . **IdG Cutoff Level** | [Device Para / Measurem Display / Diff] | |
|---|---|---|
| 0.005In | 0.0In . . . 0.100In | S.3 |
| *The Ground Differential Current shown in the Display or within the PC Software will be displayed as zero, if the Ground Differential Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

| IdG . **ISG Cutoff Level** | [Device Para / Measurem Display / Diff] | |
|---|---|---|
| 0.005In | 0.0In . . . 0.100In | S.3 |
| *The GroundRestraint Current shown in the Display or within the PC Software will be displayed as zero, if the Ground Restraint Current falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

## 6.2.2 IdG: Values

| IdG . **IsG W1** | [Operation / Measured Values / IdG W1] |
|---|---|
| *Measured value (calculated): Ground Stabilizing Current Winding 1* | |

| IdG . **IdG W1** | [Operation / Measured Values / IdG W1] |
|---|---|
| *Measured value (calculated): Ground Differential Current IdG Winding 1* | |

| IdG . **IsG W2** | [Operation / Measured Values / IdG W2] |
|---|---|
| *Measured value (calculated): Ground Stabilizing Current Winding 2* | |

| IdG . **IdG W2** | [Operation / Measured Values / IdG W2] |
|---|---|
| *Measured value (calculated): Ground Differential Current IdG Winding 2* | |

## 6.2.3 IdG: Statistical Values

| IdG . **IsG W1 max** | [Operation / Statistics / Max / IdG W1] |
|---|---|
| *Measured value (calculated): Ground Stabilizing Current Winding 1 Maximum Value* | |

| IdG . **IdG W1 max** | [Operation / Statistics / Max / IdG W1] |
|---|---|
| *Measured value (calculated): Ground Differential Current IdG Winding 1 Maximum Value* | |

| IdG . **IsG W2 max** | [Operation / Statistics / Max / IdG W2] |
|---|---|
| 🗠 | *Measured value (calculated): Ground Stabilizing Current Winding 2 Maximum Value* |

| IdG . **IdG W2 max** | [Operation / Statistics / Max / IdG W2] |
|---|---|
| 🗠 | *Measured value (calculated): Ground Differential Current IdG Winding 2 Maximum Value* |

# 6.3 PQSCr – Power and Energy

## 6.3.1 PQSCr: Settings

| PQSCr . **Power Units** | [Device Para / Measurem Display / General Settings] | |
|---|---|---|
| Power Auto Scaling | Power Auto Scaling, kW/kVAr/kVA, MW/MVAr/MVA, GW/GVAr/GVA<br>↳ 1..n Power Scaling. | S.3 |
| *Power Units* | | |

| PQSCr . **Energy Units** | [Device Para / Measurem Display / General Settings] | |
|---|---|---|
| MWh/MVArh/MVAh | Energy Auto Scaling, kWh/kVArh/kVAh, MWh/MVArh/MVAh, GWh/GVArh/GVAh<br>↳ 1..n Energy Scaling. | S.3 |
| *Energy Units* | | |

| PQSCr . **S, P, Q Cutoff Level** | [Device Para / Measurem Display / Power] | |
|---|---|---|
| 0.005Sn | 0.0Sn ... 0.100Sn | S.3 |
| *The Active/Reactive/Apparent Power shown in the Display or within the PC Software will be displayed as zero, if the absolute value of the corresponding Power falls below this Cutoff Level. This parameter has no impact on recorders.* | | |

## 6.3.2 PQSCr: Direct Controls

| PQSCr . **Res all Energy Cr** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Reset of all Energy Counters* | | |

## 6.3.3 PQSCr: Signals (Output States)

| PQSCr . **Cr OflwW Ws Net** | [Operation / Status Display / PQSCr] |
|---|---|
| *Signal: Counter Ws Net will overflow soon* | |

| PQSCr . **Cr OflwW Wp Net** | [Operation / Status Display / PQSCr] |
|---|---|
| *Signal: Counter Wp Net will overflow soon* | |

| PQSCr . **Cr OflwW Wp+** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Wp+ will overflow soon* |

| PQSCr . **Cr OflwW Wp-** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Wp- will overflow soon* |

| PQSCr . **Cr OflwW Wq Net** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Wq Net will overflow soon* |

| PQSCr . **Cr OflwW Wq+** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Wq+ will overflow soon* |

| PQSCr . **Cr OflwW Wq-** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Wq- will overflow soon* |

| PQSCr . **Cr Oflw Ws Net** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Overflow Ws Net* |

| PQSCr . **Cr Oflw Wp Net** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Overflow Wp Net* |

| PQSCr . **Cr Oflw Wp+** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Overflow Wp+* |

| PQSCr . **Cr Oflw Wp-** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Overflow Wp-* |

| PQSCr . **Cr Oflw Wq Net** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Overflow Wq Net* |

| PQSCr . **Cr Oflw Wq+** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Overflow Wq+* |

| PQSCr . **Cr Oflw Wq-** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Counter Overflow Wq-* |

| PQSCr . **Res all Energy Cr** | [Operation / Status Display / PQSCr] |
|---|---|
| ⇧ | *Signal: Reset of all Energy Counters* |

## 6.3.4 PQSCr: Values

| PQSCr . **S** | [Operation / Measured Values / Power] |
|---|---|
| ⟍ | *Measured Value (Calculated): Apparent power (fundamental)* |

| PQSCr . **P** | [Operation / Measured Values / Power] |
|---|---|
| ⟍ | *Measured value (calculated): Active power (P- = Fed Active Power, P+ = Consumpted Active Power) (fundamental)* |

| PQSCr . **Q** | [Operation / Measured Values / Power] |
|---|---|
| ⟍ | *Measured value (calculated): Reactive power (Q- = Fed Reactive Power, Q+ = Consumpted Reactive Power) (fundamental)* |

| PQSCr . **cos phi** | [Operation / Measured Values / Power] |
|---|---|
| ⟍ | *Measured value (calculated): Power factor: Sign Convention: sign(PF) = sign(P )* |

| PQSCr . **P 1** | [Operation / Measured Values / Power] |
|---|---|
| ⟍ | *Measured value (calculated): Active power in positive sequence system (P- = Fed Active Power, P+ = Consumpted Active Power)* |

| PQSCr . **Q 1** | [Operation / Measured Values / Power] |
|---|---|
| ⟍ | *Measured value (calculated): Reactive power in positive sequence system (Q- = Fed Reactive Power, Q+ = Consumpted Reactive Power)* |

| PQSCr . **S RMS** | [Operation / Measured Values / Power RMS] |
|---|---|
| ⟍ | *Measured Value (Calculated): Apparent power (RMS)* |

| PQSCr . **P RMS** | [Operation / Measured Values / Power RMS] |
|---|---|
| ⟍ | *Measured value (calculated): Active power (P- = Fed Active Power, P+ = Consumpted Active Power) (RMS)* |

| PQSCr . **cos phi RMS** | [Operation / Measured Values / Power RMS] |
|---|---|
| ⟍ | *Measured value (calculated): Power factor: Sign Convention: sign(PF) = sign(P )* |

| PQSCr . **Wp+** | [Operation / Measured Values / Energy] |
|---|---|
| ⟍ | *Positive Active Power is consumed active energy* |

| PQSCr . **Wp-** | [Operation / Measured Values / Energy] |
|---|---|
| ⟍ | *Negative Active Power (Fed Energy)* |

| PQSCr . **Wq+** | [Operation / Measured Values / Energy] |
|---|---|
| ⟍ | *Positive Reactive Power is consumed Reactive Energy* |

| PQSCr . **Wq-** | [Operation / Measured Values / Energy] |
|---|---|
| ⟍ | *Negative Reactive Power (Fed Energy)* |

| PQSCr . **Ws Net** | [Operation / Measured Values / Energy] |
|---|---|
| ⟍ | *Absolute Apparent Power Hours* |

| PQSCr . **Wp Net** | [Operation / Measured Values / Energy] |
|---|---|
| ⟍ | *Absolute Active Power Hours* |

| PQSCr . **Wq Net** | [Operation / Measured Values / Energy] |
|---|---|
| ⟍ | *Absolute Reactive Power Hours* |

| PQSCr . **Start Date/Time** | [Operation / Measured Values / Energy] |
|---|---|
| ⟍ | *Energy counters run since... (Date and time of last reset)* |

### 6.3.5 PQSCr: Statistical Values

| PQSCr . **S avg (Demand)** | [Operation / Statistics / Demand / Power Demand] |
|---|---|
| ☑ | *Average of the apparent power* |

| PQSCr . **P avg** | [Operation / Statistics / Demand / Power Demand] |
|---|---|
| ☑ | *Average of the active power* |

| PQSCr . **Q avg (Demand)** | [Operation / Statistics / Demand / Power Demand] |
|---|---|
| ☑ | *Average of the reactive power* |

| PQSCr . **VA Peak (Demand)** | [Operation / Statistics / Demand / Power Demand] |
|---|---|
| ☑ | *VA Peak value, RMS value* |

| PQSCr . **Watt Peak (Demand)** | [Operation / Statistics / Demand / Power Demand] |
|---|---|
| ☑ | *WATTS Peak value, RMS value* |

| PQSCr . **VAr Peak (Demand)** | [Operation / Statistics / Demand / Power Demand] |
|---|---|
| ☑ | *VARs Peak value, RMS value* |

| PQSCr . **S max** | [Operation / Statistics / Max / Power] |
|---|---|
| ☑ | *Maximum value of the apparent power* |

| PQSCr . **P max** | [Operation / Statistics / Max / Power] |
|---|---|
| ☑ | *Maximum value of the active power* |

| PQSCr . **Q max** | [Operation / Statistics / Max / Power] |
|---|---|
| ☑ | *Maximum value of the reactive power* |

| PQSCr . **cos phi max RMS** | [Operation / Statistics / Max / Power] |
|---|---|
| ☑ | *Maximum value of the power factor: Sign Convention: sign(PF) = sign(P )* |

| PQSCr . **cos phi max** | [Operation / Statistics / Max / Power] |
|---|---|
| ☑ | *Maximum value of the power factor: Sign Convention: sign(PF) = sign(P )* |

| PQSCr . **S min** | [Operation / Statistics / Min / Power] |
|---|---|
| ☑ | *Minimum value of the apparent power* |

| PQSCr . **P min** | [Operation / Statistics / Min / Power] |
|---|---|
| ☑ | *Minimum value of the active power* |

| PQSCr . **Q min** | [Operation / Statistics / Min / Power] |
|---|---|
| ☑ | *Minimum value of the reactive power* |

| PQSCr . **cos phi min RMS** | [Operation / Statistics / Min / Power] |
|---|---|
| ☑ | *Minimum value of the power factor: Sign Convention: sign(PF) = sign(P )* |

| PQSCr . **cos phi min** | [Operation / Statistics / Min / Power] |
|---|---|
| 🗠 | *Minimum value of the power factor: Sign Convention: sign(PF) = sign(P )* |

# 7 Statistics

- VT – Voltage Transformer: ↳ “4.2.4 VT: Statistical Values”
- CT W1 – Current Transformer Winding 1: ↳ “4.3.4 CT W1: Statistical Values”
- CT W2 – Current Transformer Winding 2: ↳ “4.4.4 CT W2: Statistical Values”
- Id – Motor Differential Protection Module: ↳ “6.1.3 Id: Statistical Values”
- IdG – Restricted Ground Fault Differential Protection Module: ↳ “6.2.3 IdG: Statistical Values”
- PQSCr – Power and Energy: ↳ “6.3.5 PQSCr: Statistical Values”
- Id – Differential Protection Module: ↳ “9.6.7 Id: Statistical Values”
- ThR – Thermal replica module: ↳ “9.13.8 ThR: Statistical Values”
- URTD – Universal Resistance Temperature Detector: ↳ “9.38.5 URTD: Statistical Values”

## 7.1 Statistics: Settings

| Statistics . **Start I Demand via:** | [Device Para / Statistics / Demand / Current Demand] | |
|---|---|---|
| Duration | Duration, StartFct<br>↳ Duration. | S.3 |
| *Statistics/Demand Management: Start Current demand by the set trigger.* | | |

| Statistics . **Start I Demand Fc** | [Device Para / Statistics / Demand / Current Demand] | |
|---|---|---|
| “-”<br>*Only available if:* | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *If the trigger for Current Demand has been set to “StartFct”: Start of the calculation as soon as the assigned signal becomes true.* | | |

| Statistics . **ResFc I Demand** | [Device Para / Statistics / Demand / Current Demand] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Resetting of Statistics - Current Demand (avg, peak avg)* | | |

| Statistics . **Duration I Demand** | [Device Para / Statistics / Demand / Current Demand] | |
|---|---|---|
| 15 s<br><br>*Only available if:* | 2 s . . . 30 d<br><br>↳ Duration. | S.3 |
| *Recording time* | | |

| Statistics . **Window I Demand** | [Device Para / Statistics / Demand / Current Demand] | |
|---|---|---|
| sliding | sliding, fixed<br><br>↳ Window configuration. | S.3 |
| *Window configuration* | | |

| Statistics . **Start P Demand via:** | [Device Para / Statistics / Demand / Power Demand] | |
|---|---|---|
| Duration | Duration, StartFct<br><br>↳ Duration. | S.3 |
| *Statistics/Demand Management: Start Active Power demand by the set trigger.* | | |

| Statistics . **Start P Demand Fc** | [Device Para / Statistics / Demand / Power Demand] | |
|---|---|---|
| “-”<br><br>*Only available if:* | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *If the trigger for Active Power Demand has been set to “StartFct”: Start of the calculation as soon as the assigned signal becomes true.* | | |

| Statistics . **ResFc P Demand** | [Device Para / Statistics / Demand / Power Demand] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Resetting of Statistics - Power Demand (avg, peak avg)* | | |

| Statistics . **Duration P Demand** | [Device Para / Statistics / Demand / Power Demand] | |
|---|---|---|
| 15 s<br><br>*Only available if:* | 2 s . . . 30 d<br><br>↳ Duration. | S.3 |
| *Recording time* | | |

| Statistics . **Window P Demand** | [Device Para / Statistics / Demand / Power Demand] | |
|---|---|---|
| sliding | sliding, fixed<br>↳ Window configuration. | S.3 |
| *Window configuration* | | |

| Statistics . **ResFc Max** | [Device Para / Statistics / Min / Max] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Resetting of all Maximum values* | | |

| Statistics . **ResFc Min** | [Device Para / Statistics / Min / Max] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Resetting of all Minimum values* | | |

| Statistics . **Start Vavg via:** | [Device Para / Statistics / Vavg] | |
|---|---|---|
| Duration | Duration, StartFct<br>↳ Duration. | S.3 |
| *Statistics: Start sliding supervision of the average voltage by the set trigger.* | | |

| Statistics . **Start Vavg Fc** | [Device Para / Statistics / Vavg] | |
|---|---|---|
| "-"<br>*Only available if:* | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Start of the calculation, if the assigned signal becomes true.* | | |

| Statistics . **ResFc Vavg** | [Device Para / Statistics / Vavg] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Resetting of the sliding average calculation.* | | |

| Statistics . **Duration Vavg** | [Device Para / Statistics / Vavg] | |
|---|---|---|
| 10 min<br>*Only available if:* | 2 s . . . 30 d<br>↳ Duration. | S.3 |
| *Recording time* | | |

| Statistics . **Window Vavg** | [Device Para / Statistics / Vavg] | |
|---|---|---|
| sliding | sliding, fixed<br>↳ Window configuration. | S.3 |
| *Window configuration* | | |

## 7.2 Statistics: Direct Controls

| Statistics . **ResFc all** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Resetting of all Statistic values (Current Demand, Power Demand, Min, Max)* | | |

| Statistics . **ResFc Max** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Resetting of all Maximum values* | | |

| Statistics . **ResFc Min** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Resetting of all Minimum values* | | |

| Statistics . **ResFc I Demand** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Resetting of Statistics - Current Demand (avg, peak avg)* | | |

| Statistics . **ResFc P Demand** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.1 |
| *Resetting of Statistics - Power Demand (avg, peak avg)* | | |

| Statistics . **ResFc Vavg** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.1 |
| *Resetting of the sliding average calculation.* | | |

## 7.3 Statistics: Input States

| Statistics . **StartFc Vavg-I** | [Operation / Status Display / Statistics] |
|---|---|
| *State of the module input: Start of Statistics Average Voltage* | |

| Statistics . **StartFc I Demand-I** | [Operation / Status Display / Statistics] |
|---|---|
| *State of the module input: Start of the Statistics of the Current Demand* | |

| Statistics . **StartFc P Demand-I** | [Operation / Status Display / Statistics] |
|---|---|
| *State of the module input: Start of the Statistics of the Active Power Demand* | |

## 7.4 Statistics: Signals (Output States)

| Statistics . **ResFc all** | [Operation / Status Display / Statistics] |
|---|---|
| *Signal: Resetting of all Statistic values (Current Demand, Power Demand, Min, Max)* | |

| Statistics . **ResFc Vavg** | [Operation / Status Display / Statistics] |
|---|---|
| *Signal: Resetting of the sliding average calculation.* | |

| Statistics . **ResFc I Demand** | [Operation / Status Display / Statistics] |
|---|---|
| *Signal: Resetting of Statistics - Current Demand (avg, peak avg)* | |

| Statistics . **ResFc P Demand** | [Operation / Status Display / Statistics] |
|---|---|
| *Signal: Resetting of Statistics - Power Demand (avg, peak avg)* | |

| Statistics . **ResFc Max** | [Operation / Status Display / Statistics] |
|---|---|
| ⇧ | *Signal: Resetting of all Maximum values* |

| Statistics . **ResFc Min** | [Operation / Status Display / Statistics] |
|---|---|
| ⇧ | *Signal: Resetting of all Minimum values* |

## 7.5 Statistics: Counters

| Statistics . **Res Cr I Demand** | [Operation / Statistics / Demand / CT W1]<br>[Operation / Statistics / Demand / CT W2] |
|---|---|
| # | *Number of resets since the last device restart. The timestamp shows date and time of the last reset.* |

| Statistics . **Res Cr P Demand** | [Operation / Statistics / Demand / Power Demand] |
|---|---|
| # | *Number of resets since the last device restart. The timestamp shows date and time of the last reset.* |

| Statistics . **Res Cr Max values** | [Operation / Statistics / Max / Voltage]<br>**...**<br>[Operation / Statistics / Max / URTD] |
|---|---|
| # | *Number of resets since the last device restart. The timestamp shows date and time of the last reset.* |

| Statistics . **Res Cr Min values** | [Operation / Statistics / Min / Voltage]<br>**...**<br>[Operation / Statistics / Min / Power] |
|---|---|
| # | *Number of resets since the last device restart. The timestamp shows date and time of the last reset.* |

| Statistics . **Res Cr V avg** | [Operation / Statistics / Vavg] |
|---|---|
| # | *Number of resets since the last device restart. The timestamp shows date and time of the last reset.* |

Released



# 8 Communication

## 8.1 Scada: Device Planning Parameters

| Scada . **Protocol** | [Device planning] | |
|---|---|---|
| “-” | “-” . . . Profibus<br>↳ Used Protocol. | S.3 |
| *Select the SCADA protocol to be used.* | | |

## 8.2 Scada: Signals (Output States)

| Scada . **SCADA connected** | [Operation / Status Display / Scada] |
|---|---|
| *At least one SCADA System is connected to the device.* | |

| Scada . **SCADA not connected** | [Operation / Status Display / Scada] |
|---|---|
| *No SCADA System is connected to the device* | |

# 8.3 TcpIp

| **TCP/IP config** | [Device Para / TCP/IP / TCP/IP config] |
|---|---|
| | This item represents a special dialog. (See the Technical Manual for details.)<br><br>*configuration of the TCP/IP protocol* |

## 8.3.1 TcpIp: Settings

| TcpIp . **Keep Alive Time** | [Device Para / TCP/IP / Advanced Settings] | |
|---|---|---|
| 720s | 1s ... 7200s | S.3 |
| | *Keep Alive Time is the duration between two keep alive transmissions in idle condition* | |

| TcpIp . **Keep Alive Interval** | [Device Para / TCP/IP / Advanced Settings] | |
|---|---|---|
| 15s | 1s ... 60s | S.3 |
| | *Keep Alive Interval is the duration between two successive keep alive retransmissions, if the acknowledgement to the previous keepalive transmission was not received.* | |

| TcpIp . **Keep Alive Retry** | [Device Para / TCP/IP / Advanced Settings] | |
|---|---|---|
| 3 | 3 ... 3 | S.3 |
| | *Keep alive retry is the number of retransmissions to be carried out before declaring that the remote end is not available.* | |

# 8.4 DNP3 – Distributed Network Protocol

## 8.4.1 DNP3: Settings

| DNP3 . **Function** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Permanent activation or deactivation of module/stage.* | | |

| DNP3 . **IP Port Number** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 20000 | 0 ... 65535 | S.3 |
| *IP Port Number.*<br><br>*In general it is recommended to keep the default value. If this is not possible then select a number out of the private range 49152-52151 or 52164-65535 that is not yet in use within your network.* | | |

| DNP3 . **Baud rate** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 19200 | 1200 ... 115200<br>↳ Baud rate. | S.3 |
| *Baud rate for communication* | | |

| DNP3 . **Frame Layout** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 8E1 | 8E1, 8O1, 8N1, 8N2<br>↳ Byte Frame. | S.3 |
| *Frame Layout* | | |

| DNP3 . **Optical rest position** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| Light on<br><br>*Avail. depends on HW* | Light off, Light on<br>↳ Optical rest position. | S.3 |
| *Optical rest position* | | |

| DNP3 . **SelfAddress** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Support of self (automatic) addresses* | | |

| DNP3 . **DataLink confirm** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| Never | Never, Always, On_Large<br>↳ Communication Start Variants. | S.3 |
| *Enables or disables the data layer confirmation (ack).* | | |

| DNP3 . **t-DataLink confirm** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 1s | 0.1s ... 10.0s | S.3 |
| *Data layer confirmation timeout* | | |

| DNP3 . **DataLink num retries** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 3 | 0 ... 255 | S.3 |
| *Number of repetition of data link packet sending after failing* | | |

| DNP3 . **Direction Bit** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Enables Direction Bit functionality. The Direction Bit is 0 for SlaveStation and 1 for MasterStation* | | |

| DNP3 . **Max Frame Size** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 255 | 64 ... 255 | S.3 |
| *This value is used to limit the net Frame Size* | | |

| DNP3 . **Test Link Period** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 0s | 0.0s ... 120.0s | S.3 |
| *This value specifies the time period when to send a Test Link-Frame* | | |

| DNP3 . **AppLink confirm** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| Always | Never, Always, Event<br>↳ _AL_ResponseType_k. | S.3 |
| *Determines if the device will request that the Application Layer response be confirmed or not* | | |

| DNP3 . **t-AppLink confirm** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 5s | 0.1s ... 10.0s | S.3 |
| *Application layer response timeout* | | |

| DNP3 . **AppLink num retries** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 0 | 0 ... 255 | S.3 |
| *The number of times the device will retransmit an Application Layer fragment* | | |

| DNP3 . **Unsol Reporting** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Enables unsolicited reporting. This is available only for DNP3 TCP connections, and for DNP3 RTU in case of a peer-to-peer connection.* | | |

| DNP3 . **Unsol Reporting Timeout** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 10s | 1.0s ... 60.0s | S.3 |
| *Set the amount of time that the outstation will wait for an Application Layer confirmation back from the master indicating that the master received the unsolicited response message.* | | |

| DNP3 . **Unsol Reporting Retry** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 2 | 0 ... 255 | S.3 |
| *Set the number of retries that an outstation transmits in each unsolicited response series if it does not receive confirmation back from the master.* | | |

| DNP3 . **TestSeqNo** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Test if sequence number of request is incremented. If it is not correctly incremented the request will be ignored. It is recommended to have it inactive but some older DNP implementations need it activated.* | | |

| DNP3 . **TestSBO** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | S.3 |
| *It enables a stricter comparing of SBO and operate command. For older DNP versions it is recommanded to deactivated it.* | | |

| DNP3 . **Timeout SBO** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 30s | 1.0s . . . 60.0s | S.3 |
| *DNP Outputs can be controlled in a two stage procedure (SBO: Select Before Operate). These outputs are to be selected first by a Select command. After this the bit is reserved for this Operate request. This setting defines the timer for this reservation: After the timer has elapsed the bit is released.* | | |

| DNP3 . **ColdRestart** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Enables support for Cold Restart function.* | | |

| DNP3 . **Deadb integr time** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 1 | 0 . . . 300 | S.3 |
| *Deadband integration time.* | | |

| DNP3 . **BinaryInput 0**<br>**. . .**<br>DNP3 . **BinaryInput 63** | [Device Para / DNP3 / Point map / Binary Inputs] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* | | |

| DNP3 . **DoubleBitInput 0**<br>**...**<br>DNP3 . **DoubleBitInput 5** | [Device Para / DNP3 / Point map / Double Bit Inputs] | |
|---|---|---|
| "-" | "-", SG[1] . Pos, SG[2] . Pos, SG[3] . Pos, SG[4] . Pos, SG[5] . Pos, SG[6] . Pos<br>↳ 1..n, Assignment List. | S.3 |
| *Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device.* | | |

| DNP3 . **BinaryCounter 0**<br>**...**<br>DNP3 . **BinaryCounter 7** | [Device Para / DNP3 / Point map / BinaryCounter] | |
|---|---|---|
| "-" | "-" ... Sys . Operating hours Cr<br>↳ 1..n, Assignment List. | S.3 |
| *Counter can be used to report counter values to the DNP master.* | | |

| DNP3 . **Analog value 0**<br>**...**<br>DNP3 . **Analog value 31** | [Device Para / DNP3 / Point map / Analog Input] | |
|---|---|---|
| "-" | "-" ... PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Analog value can be used to report values to the master (DNP)* | | |

| DNP3 . **Scale Factor 0**<br>**...**<br>DNP3 . **Scale Factor 31** | [Device Para / DNP3 / Point map / Analog Input] | |
|---|---|---|
| 1 | 0.001 ... 1000000<br>↳ Scale Factor. | S.3 |
| *The scale factor is used to convert the measured value in an integer format* | | |

| DNP3 . **Dead Band 0**<br>**...**<br>DNP3 . **Dead Band 31** | [Device Para / DNP3 / Point map / Analog Input] | |
|---|---|---|
| 1% | 0.01% ... 100.00% | S.3 |
| *If a change of measured value is greater than the deadband value it will be reported to the master.* | | |

## 8.4.2 DNP3: Direct Controls

| DNP3 . **Res all Diag Cr** | [Operation / Count and RevData / DNP3]<br>[Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | S.3 |
| *Reset all diagnosis counters* | | |

| DNP3 . **Slave Id** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 1 | 0 ... 65519 | S.3 |
| *SlaveId defines the DNP3 address of this device (Outstation)* | | |

| DNP3 . **Master Id** | [Device Para / DNP3 / Communication] | |
|---|---|---|
| 65500 | 0 ... 65519 | S.3 |
| *MasterId defines the DNP3 address of master (SCADA)* | | |

## 8.4.3 DNP3: Input States

| DNP3 . **BinaryInput0-I**<br>**...**<br>DNP3 . **BinaryInput63-I** | [Operation / Status Display / DNP3 / Binary Inputs] |
|---|---|
| *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* | |

| DNP3 . **DoubleBitInput0-I**<br>**...**<br>DNP3 . **DoubleBitInput5-I** | [Operation / Status Display / DNP3 / Double Bit Inputs] |
|---|---|
| ⇩ | *Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device.* |

## 8.4.4 DNP3: Signals (Output States)

| DNP3 . **busy** | [Operation / Status Display / DNP3 / State] |
|---|---|
| ⇧ | *This message is set if the protocol is started. It will be reset if the protocol is shut down.* |

| DNP3 . **ready** | [Operation / Status Display / DNP3 / State] |
|---|---|
| ⇧ | *The message will be set if the protocol is successfully started and ready for data exchange.* |

| DNP3 . **active** | [Operation / Status Display / DNP3 / State] |
|---|---|
| ⇧ | *The communication with the Master (SCADA) is active.*<br><br>*Note that for TCP/UDP, this state is permanently “Low” unless »DataLink confirm« is set to “Always”.* |

## 8.4.5 DNP3: Counters

| DNP3 . **NReceived** | [Operation / Count and RevData / DNP3] |
|---|---|
| # | *Diagnostic counter: Number of received characters* |

| DNP3 . **NSent** | [Operation / Count and RevData / DNP3] |
|---|---|
| # | *Diagnostic counter: Number of sent characters* |

| DNP3 . **NBadFramings** | [Operation / Count and RevData / DNP3] |
|---|---|
| # | *Diagnostic counter: Number of bad framings. A large number indicates a disturbed serial connection.* |

| DNP3 . **NBadParities** | [Operation / Count and RevData / DNP3] |
|---|---|
| # | *Diagnostic counter: Number of parity errrors. A large number indicates a disturbed serial connection.* |

Released



| DNP3 . **NBreakSignals** | [Operation / Count and RevData / DNP3] |
|---|---|
| # | *Diagnostic counter: Number of break signals. A large number indicates a disturbed serial connection.* |

| DNP3 . **NBadChecksum** | [Operation / Count and RevData / DNP3] |
|---|---|
| # | *Diagnostic counter: Number of frames received with bad checksum.* |

# 8.5 Modbus

## 8.5.1 Modbus: Settings

| Modbus . **t-call** | [Device Para / Modbus / Communication / General Settings] | |
|---|---|---|
| 10s | 1s ... 3600s | S.3 |
| *If there is no request telegram sent from Scada to the device after expiry of this time - the device concludes a communication failure within the Scada system.* | | |

| Modbus . **Scada CmdBlo** | [Device Para / Modbus / Communication / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Activating (allowing)/ Deactivating (disallowing) the blocking of the Scada Commands* | | |

| Modbus . **Disable Latching** | [Device Para / Modbus / Communication / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Disable Latching: If this parameter is active (true), none of the Modbus states will be latched. That means that trip signals wont be latched by Modbus.* | | |

| Modbus . **AllowGap** | [Device Para / Modbus / Communication / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *If this parameter is active (True), the user can request a set of modbus register without getting an exception, because of invalid address in the requested array. The invalid addresses have a special value 0xFAFA, but the user is responsible for ignoring invalid addresses. Attention: This special value can be valid, if address is valid.* | | |

| Modbus . **Optical rest position** | [Device Para / Modbus / Communication / General Settings] | |
|---|---|---|
| Light on<br>*Avail. depends on HW* | Light off, Light on<br>↳ Optical rest position. | S.3 |
| *Optical rest position* | | |

| Modbus . **TCP Port Config** | [Device Para / Modbus / Communication / TCP] | |
|---|---|---|
| Default | Default, Private<br><br>↳ Port selection. | S.3 |
| *TCP Port Configuration. This parameter needs to be set to “Private” only if another TCP Port than the default one shall be used.* | | |

| Modbus . **Port** | [Device Para / Modbus / Communication / TCP] | |
|---|---|---|
| 502 | If: Modbus . TCP Port Config = Default<br>• 502 ... 502<br>If: Modbus . TCP Port Config = Private<br>• 49152 ... 65535 | S.3 |
| *IP Port Number.*<br><br>*In general it is recommended to keep the default value. if this is not possible then select a number out of the private range 49152-52151 or 52164-65535 that is not yet in use within your network.* | | |

| Modbus . **t-timeout** | [Device Para / Modbus / Communication / RTU] | |
|---|---|---|
| 1s | 0.01s ... 10.00s | S.3 |
| *Within this time the answer has to be received by the SCADA system, otherwise the request will be disregarded. In that case the Scada system detects a communication failure and the Scada System has to send a new request.* | | |

| Modbus . **Baud rate** | [Device Para / Modbus / Communication / RTU] | |
|---|---|---|
| 19200 | 1200, 2400, 4800, 9600, 19200, 38400<br><br>↳ Baud rate. | S.3 |
| *Baud rate* | | |

| Modbus . **Physical Settings** | [Device Para / Modbus / Communication / RTU] | |
|---|---|---|
| 8E1 | 8E1, 8O1, 8N1, 8N2<br><br>↳ Byte Frame. | S.3 |
| *Digit 1: Number of bits. Digit 2: E=even parity, O=odd parity, N=no parity. Digit 3: Number of stop bits. More information on the parity: It is possible that the last data bit is followed by a parity bit which is used for recognition of communication errors. The parity bit ensures that with even parity ("EVEN") always an even number of bits with valence "1" or with odd parity ("ODD") an odd number of "1" valence bits are transmitted. But it is also possible to transmit no parity bits (here the setting is "Parity = None"). More information on the stop-bits: The end of a data byte is terminated by the stop-bits.* | | |

| Modbus . **Config Bin Inp1**<br>**...**<br>Modbus . **Config Bin Inp32** | [Device Para / Modbus / Configb Registers / States] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Virtual Digital Input. This corresponds to a virtual binary output of the protective device.* | | |

| Modbus . **Latched Config Bin Inp1**<br>**...**<br>Modbus . **Latched Config Bin Inp32** | [Device Para / Modbus / Configb Registers / States] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Latched Configurable Binary Input* | | |

| Modbus . **Mapped Meas 1**<br>**...**<br>Modbus . **Mapped Meas 16** | [Device Para / Modbus / Configb Registers / Measured Values] | |
|---|---|---|
| "-" | "-" ... AnIn[4] . Value<br>↳ 1..n, TrendRecList. | S.3 |
| *Mapped Measured Values. They can be used to provide measured values to the Modbus Master.* | | |

| Modbus . **Type of SCADA mapping** | [Device Para / Modbus / Config. Data Obj.] | |
|---|---|---|
| Standard | Standard, User-defined<br>↳ Type of SCADA mapping. | S.3 |
| *This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.* | | |

## 8.5.2 Modbus: Direct Controls

| Modbus . **Res Diagn Cr** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| ◉ | *All Modbus Diagnosis Counters will be reset.* | |

| Modbus . **Unit ID** | [Device Para / Modbus / Communication / TCP] | |
|---|---|---|
| 255 | 1 ... 255 | P.1 |
| ◉ | *The Unit Identifier is used for routing. This parameter is to be set, if a Modbus RTU and a Modbus TCP network should be coupled.* | |

| Modbus . **Slave ID** | [Device Para / Modbus / Communication / RTU] | |
|---|---|---|
| 1 | 1 ... 247 | P.1 |
| ◉ | *Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system.* | |

## 8.5.3 Modbus: Input States

| Modbus . **Config Bin Inp1-I**<br>**...**<br>Modbus . **Config Bin Inp32-I** | [Operation / Status Display / Modbus / Configb Registers] |
|---|---|
| ⇩ | *State of the module input: Config Bin Inp* |

## 8.5.4 Modbus: Signals (Output States)

| Modbus . **Transmission RTU** | [Operation / Status Display / Modbus / State] |
|---|---|
| ⇧ | *Signal: SCADA active* |

| Modbus . **Transmission TCP** | [Operation / Status Display / Modbus / State] |
|---|---|
| ⇧ | *Signal: SCADA active* |

Released



| Modbus . **Device Type** | [Operation / Status Display / Modbus / State] |
|---|---|
| ⇧ | *Device Type: Device type code for relationship between device name and its Modbus code.*<br>*Woodward:*<br>*MRI4 - 1000*<br>*MRU4 - 1001*<br>*MRA4 - 1002*<br>*MCA4 - 1003*<br>*MRDT4 - 1005*<br>*MCDTV4 - 1006*<br>*MCDGV4 - 1007*<br>*MRM4 - 1009*<br>*MRMV4 - 1010*<br>*MCDLV4 - 1011* |

| Modbus . **Comm Version** | [Operation / Status Display / Modbus / State] |
|---|---|
| ⇧ | *Modbus Communication version. This version number changes if something becomes incompatible between different Modbus releases.* |

| Modbus . **Scada Cmd 1**<br>**. . .**<br>Modbus . **Scada Cmd 16** | [Operation / Status Display / Modbus / Commands] |
|---|---|
| ⇧ | *Scada Command* |

## 8.5.5 Modbus: Values

| Modbus . **Mapped Meas 1**<br>**. . .**<br>Modbus . **Mapped Meas 16** | [Operation / Count and RevData / Modbus / Measured Values] |
|---|---|
| ⇘ | *Mapped Measured Values. They can be used to provide measured values to the Modbus Master.* |

| Modbus . **Config info** | [Device Para / Modbus / Config. Data Obj.] |
|---|---|
| ⇘ | *Configuration comment (entered by the user during SCADA configuration)* |

| Modbus . **Config version** | [Device Para / Modbus / Config. Data Obj.] |
|---|---|
| ✎ | *Version of the user-defined SCADA configuration* |

| Modbus . **Config status** | [Device Para / Modbus / Config. Data Obj.] | |
|---|---|---|
| Changing | Changing, OK, Config. not avail., Error<br>↳ Config status. | |
| ✎ | *Status of the user-defined SCADA configuration.*<br>*Possible values:*<br>*- New SCADA configuration is being loaded, but not active yet.*<br>*- The SCADA configuration is active.*<br>*- The user-defined SCADA configuration is not available (e.g. has not been loaded into the device).*<br>*- Unexpected error. Please contact our service-team.* | |

## 8.5.6 Modbus: Counters

| Modbus . **NoOfRequestsTotal** | [Operation / Count and RevData / Modbus / TCP]<br>[Operation / Count and RevData / Modbus / RTU] |
|---|---|
| # | *Total number of requests. Includes requests for other slaves.* |

| Modbus . **NoOfRequestsForMe** | [Operation / Count and RevData / Modbus / TCP]<br>[Operation / Count and RevData / Modbus / RTU] |
|---|---|
| # | *Total Number of requests for this slave.* |

| Modbus . **NoOfResponse** | [Operation / Count and RevData / Modbus / TCP]<br>[Operation / Count and RevData / Modbus / RTU] |
|---|---|
| # | *Total number of requests having been responded.* |

| Modbus . **NoOfQueryInvalid** | [Operation / Count and RevData / Modbus / TCP] |
|---|---|
| # | *Total number of Request errors. Request could not be interpreted* |

| Modbus . **NoOfInternalError** | [Operation / Count and RevData / Modbus / TCP] |
|---|---|
| # | *Total Number of Internal errors while interpreting the request.* |

Released



| Modbus . **NoOfFrameErrors** | [Operation / Count and RevData / Modbus / RTU] |
|---|---|
| # | *Total Number of Frame Errors. Physically corrupted Frame.* |

| Modbus . **NoOfParityErrors** | [Operation / Count and RevData / Modbus / RTU] |
|---|---|
| # | *Total number of parity errors. Physically corrupted Frame.* |

| Modbus . **NoOfResponsTimeOverruns** | [Operation / Count and RevData / Modbus / RTU] |
|---|---|
| # | *Total number of requests with exceeded response time. Physically corrupted Frame.* |

| Modbus . **NoOfOverrunErros** | [Operation / Count and RevData / Modbus / RTU] |
|---|---|
| # | *Total Number of Overrun Failures. Physically corrupted Frame.* |

| Modbus . **NoOfBreaks** | [Operation / Count and RevData / Modbus / RTU] |
|---|---|
| # | *Number of detected communication aborts* |

# 8.6 IEC 61850 – IEC 61850 communication

## 8.6.1 IEC 61850: Settings

| IEC 61850 . **Function** | [Device Para / IEC 61850 / Communication] | |
|---|---|---|
| inactive | inactive, active<br>↳ 1..n, OnOffList. | S.3 |
| *Permanent activation or deactivation of module/stage.* | | |

| IEC 61850 . **Deadb integr time** | [Device Para / IEC 61850 / Communication] | |
|---|---|---|
| 0 | 0 . . . 300 | S.3 |
| *Deadband integration time.* | | |

## 8.6.2 IEC 61850: Direct Controls

| IEC 61850 . **ResetStatistic** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Reset of all IEC61850 diagnostic counters* | | |

## 8.6.3 IEC 61850: Signals (Output States)

| IEC 61850 . **MMS Client connected** | [Operation / Status Display / IEC 61850 / State] |
|---|---|
| *At least one MMS client is connected to the device* | |

| IEC 61850 . **All Goose Subscriber active** | [Operation / Status Display / IEC 61850 / State] |
|---|---|
| *All Goose subscriber in the device are working* | |

| IEC 61850 . **SPCSO1**<br>**. . .**<br>IEC 61850 . **SPCSO32** | [Operation / Status Display / IEC 61850 / ControlInputs] |
|---|---|
| *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* | |

| | |
|---|---|
| IEC 61850 . **GOSINGGIO1.Ind1.stVal**<br>**...**<br>IEC 61850 . **GOSINGGIO2.Ind32.stVal** | [Operation / Status Display / IEC 61850 / Virtual Inputs 1]<br>[Operation / Status Display / IEC 61850 / Virtual Inputs 2] |
| ⇧ | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |

| | |
|---|---|
| IEC 61850 . **GOSINGGIO1.Ind1.q**<br>**...**<br>IEC 61850 . **GOSINGGIO2.Ind32.q** | [Operation / Status Display / IEC 61850 / Virtual Inputs 1]<br>[Operation / Status Display / IEC 61850 / Virtual Inputs 2] |
| ⇧ | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |

## 8.6.4 IEC 61850: Values

| | | |
|---|---|---|
| IEC 61850 . **GoosePublisherState** | [Operation / Status Display / IEC 61850 / State] | |
| Off | Off, On, Error<br>⮡ State. | |
| ⟍ | *State of the GOOSE Publisher (on or off)* | |

| | | |
|---|---|---|
| IEC 61850 . **GooseSubscriberState** | [Operation / Status Display / IEC 61850 / State] | |
| Off | Off, On, Error<br>⮡ State. | |
| ⟍ | *State of the GOOSE Subscriber (on or off)* | |

| | | |
|---|---|---|
| IEC 61850 . **MmsServerState** | [Operation / Status Display / IEC 61850 / State] | |
| Off | Off, On, Error<br>⮡ State. | |
| ⟍ | *State of MMS Server (on or off)* | |

## 8.6.5 IEC 61850: Counters

| IEC 61850 . **NoOfGooseRxAll** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total number of received GOOSE messages including messages for other devices (subscribed and not subscribed messages).* |

| IEC 61850 . **NoOfGooseRxSubscribed** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total Number of subscribed GOOSE messages including messages with incorrect content.* |

| IEC 61850 . **NoOfGooseRxCorrect** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total Number of subscribed and correctly received GOOSE messages.* |

| IEC 61850 . **NoOfGooseRxNew** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Number of subscribed and correctly received GOOSE messages with new content.* |

| IEC 61850 . **NoOfGooseTxAll** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total Number of GOOSE messages that have been published by this device.* |

| IEC 61850 . **NoOfGooseTxNew** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total Number of new GOOSE messages (modified content) that have been published by this device.* |

| IEC 61850 . **NoOfServerRequestsAll** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total number of MMS Server requests including incorrect requests.* |

| IEC 61850 . **NoOfDataReadAll** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total Number of values read from this device including incorrect requests.* |

| IEC 61850 . **NoOfDataReadCorrect** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total Number of correctly read values from this device.* |

| IEC 61850 . **NoOfDataWrittenAll** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total Number of values written by this device including incorrect ones.* |

| IEC 61850 . **NoOfDataWrittenCorrect** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Total Number of correctly written values by this device.* |

| IEC 61850 . **NoOfDataChangeNotification** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Number of detected changes within the datasets that are published with GOOSE messages.* |

| IEC 61850 . **No of Client Connections** | [Operation / Count and RevData / IEC 61850] |
|---|---|
| # | *Number of active MMS client connections* |

Released



## 8.6.6 IEC 61850 – Virt.Outp.

### 8.6.6.1 IEC 61850: Settings

| | | |
|---|---|---|
| IEC 61850 .<br>**COUTGGIO1.Ind1.stVal**<br><br>**. . .**<br><br>IEC 61850 .<br>**COUTGGIO1.Ind32.stVal** | [Device Para / IEC 61850 / Virtual Outputs 1] | |
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Virtual Output. This signal can be assigned or visualized via the SCD file to other devices within the IEC61850 substation.* | | |

### 8.6.6.2 IEC 61850: Input States

| | |
|---|---|
| IEC 61850 .<br>**COUTGGIO1.Ind1.stVal-I**<br><br>**. . .**<br><br>IEC 61850 .<br>**COUTGGIO1.Ind32.stVal-I** | [Operation / Status Display / IEC 61850 / Virtual Outputs 1] |
| *Module input state: Binary state of the Virtual Output (GGIO)* | |

# 8.7 IEC103 – IEC 60870-5-103 communication

## 8.7.1 IEC103: Settings

| IEC103 . **Function** | [Device Para / IEC103 / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Activation or deactivation of the IEC103 communication.* | | |

| IEC103 . **Baud rate** | [Device Para / IEC103 / General Settings] | |
|---|---|---|
| 19200 | 1200, 2400, 4800, 9600, 19200, 38400, 57600<br>↳ Baud rate. | S.3 |
| *Baud rate* | | |

| IEC103 . **Physical Settings** | [Device Para / IEC103 / General Settings] | |
|---|---|---|
| 8E1 | 8E1, 8O1, 8N1, 8N2<br>↳ Byte Frame. | S.3 |
| *Digit 1: Number of bits. Digit 2: E=even parity, O=odd parity, N=no parity. Digit 3: Number of stop bits. More information on the parity: It is possible that the last data bit is followed by a parity bit which is used for recognition of communication errors. The parity bit ensures that with even parity ("EVEN") always an even number of bits with valence "1" or with odd parity ("ODD") an odd number of "1" valence bits are transmitted. But it is also possible to transmit no parity bits (here the setting is "Parity = None"). More information on the stop-bits: The end of a data byte is terminated by the stop-bits.* | | |

| IEC103 . **Timezone** | [Device Para / IEC103 / General Settings] | |
|---|---|---|
| UTC | UTC, Local Time<br>↳ Timezone. | S.3 |
| *Selection whether the timestamps in IEC103 messages shall be given as UTC or local time. (“Local time” always includes the actual daylight saving settings.)* | | |

| IEC103 . **Transfer Disturb Rec** | [Device Para / IEC103 / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Activates the transmission of disturbance records* | | |

| IEC103 . **Energy Pulse Rate** | [Device Para / IEC103 / General Settings] | |
|---|---|---|
| 0 | 0 ... 100 | S.3 |
| *The energy values are always transmitted as counter values (i.e. as integer numbers). This setting defines the unit: If “1” is set then each counter increment is 1 kWh, if “2” is set then each counter increment is 2 kWh,etc. The setting “0” has the effect that no energy values are transmitted.* | | |

| IEC103 . **t-call** | [Device Para / IEC103 / General Settings] | |
|---|---|---|
| 60s | 1s ... 3600s | S.3 |
| *If there is no request telegram sent from Scada to the device after expiry of this time - the device concludes a communication failure within the Scada system.* | | |

| IEC103 . **DFC-Compat.** | [Device Para / IEC103 / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *This setting is only required for certain substation implementations. If there should be communication problems related to the Command Response Queue this setting switches the device over to a different behavior.* | | |

| IEC103 . **Type of SCADA mapping** | [Device Para / IEC103 / Config. Data Obj.] | |
|---|---|---|
| Standard | Standard, User-defined<br>↳ Type of SCADA mapping. | S.3 |
| *This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.* | | |

| IEC103 . **Ex activate test mode** | [Service / Test (Prot inhibit) / Scada / IEC103] | |
|---|---|---|
| Sgen . Running | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *The signal assigned to this parameter switches the IEC103 communication into Test Mode.* | | |

| IEC103 . **Ex activate Block MD** | [Service / Test (Prot inhibit) / Scada / IEC103] | |
|---|---|---|
| “-” | “-” ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *The signal assigned to this parameter activates the blocking of IEC103 transmission in monitor direction.* | | |

Released



## 8.7.2 IEC103: Direct Controls

| IEC103 . **Res all Diag Cr** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| ◉ | *Reset all diagnosis counters* | |

| IEC103 . **Slave ID** | [Device Para / IEC103 / General Settings] | |
|---|---|---|
| 1 | 1 . . . 247 | S.3 |
| ◉ | *Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system.* | |

| IEC103 . **Activate test mode** | [Service / Test (Prot inhibit) / Scada / IEC103] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| ◉ | *This Direct Control parameter switches the IEC103 communication into Test Mode (or back to nomal mode).* | |

| IEC103 . **Activate Block MD** | [Service / Test (Prot inhibit) / Scada / IEC103] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| ◉ | *This Direct Control parameter activates (or deactivates) the blocking of IEC103 transmission in monitor direction.* | |

## 8.7.3 IEC103: Signals (Output States)

| IEC103 . **Scada Cmd 1**<br>**. . .**<br>IEC103 . **Scada Cmd 10** | [Operation / Status Display / IEC103] |
|---|---|
| ⇧ | *Scada Command* |

| IEC103 . **Transmission** | [Operation / Status Display / IEC103] |
|---|---|
| ⇧ | *Signal: SCADA active* |

| IEC103 . **Failure Event lost** | [Operation / Status Display / IEC103] |
|---|---|
| ⇧ | *Failure event lost* |

| IEC103 . **Test mode active** | [Operation / Status Display / IEC103] |
|---|---|
| ⇧ | *Signal: IEC103 communication has been switched over into Test Mode.* |

| IEC103 . **Block MD active** | [Operation / Status Display / IEC103] |
|---|---|
| ⇧ | *Signal: The blocking of IEC103 transmission in monitor direction has been activated.* |

## 8.7.4 IEC103: Values

| IEC103 . **Config info** | [Device Para / IEC103 / Config. Data Obj.] |
|---|---|
| ✎ | *Configuration comment (entered by the user during SCADA configuration)* |

| IEC103 . **Config version** | [Device Para / IEC103 / Config. Data Obj.] |
|---|---|
| ✎ | *Version of the user-defined SCADA configuration* |

| IEC103 . **Config status** | [Device Para / IEC103 / Config. Data Obj.] | |
|---|---|---|
| Changing | Changing, OK, Config. not avail., Error<br>⮡ Config status. | |
| ✎ | *Status of the user-defined SCADA configuration.*<br>*Possible values:*<br>*- Changing: New SCADA configuration is being loaded, but not active yet.*<br>*- OK: The SCADA configuration is active.*<br>*- Config. not avail.: The user-defined SCADA configuration is not available (e.g. has not been loaded into the device).*<br>*- Error: Unexpected error. Please contact our service-team.* | |

## 8.7.5 IEC103: Counters

| IEC103 . **NReceived** | [Operation / Count and RevData / IEC103] |
|---|---|
| # | *Total Number of received Messages* |

Released



| IEC103 . **NSent** | [Operation / Count and RevData / IEC103] |
|---|---|
| # | *Total Number of sent Messages* |

| IEC103 . **NBadFramings** | [Operation / Count and RevData / IEC103] |
|---|---|
| # | *Number of bad Messages* |

| IEC103 . **NBadParities** | [Operation / Count and RevData / IEC103] |
|---|---|
| # | *Number of Parity Errors* |

| IEC103 . **NBreakSignals** | [Operation / Count and RevData / IEC103] |
|---|---|
| # | *Number of Communication Interrupts* |

| IEC103 . **NInternalError** | [Operation / Count and RevData / IEC103] |
|---|---|
| # | *Number of Internal Errors* |

| IEC103 . **NBadCharChecksum** | [Operation / Count and RevData / IEC103] |
|---|---|
| # | *Number of Checksum Errors* |

# 8.8 IEC104 – IEC 60870-5-104 communication

## 8.8.1 IEC104: Settings

| IEC104 . **Function** | [Device Para / IEC104 / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Activation or deactivation of the IEC104 communication.* | | |

| IEC104 . **TCP Port Config** | [Device Para / IEC104 / General Settings] | |
|---|---|---|
| Default | Default, Private<br>↳ Port selection. | S.3 |
| *TCP Port Configuration. This parameter needs to be set to “Private” only if another TCP Port than the default one shall be used.* | | |

| IEC104 . **Port** | [Device Para / IEC104 / General Settings] | |
|---|---|---|
| 2404 | If: IEC104 . TCP Port Config = Default<br>• 2404 . . . 2404<br>If: IEC104 . TCP Port Config = Private<br>• 49152 . . . 65535 | S.3 |
| *IP Port Number.*<br>*In general it is recommended to keep the default value. if this is not possible then select a number out of the private range 49152-52151 or 52164-65535 that is not yet in use within your network.* | | |

| IEC104 . **Timezone** | [Device Para / IEC104 / General Settings] | |
|---|---|---|
| UTC | UTC, Local Time<br>↳ Timezone. | S.3 |
| *Selection whether the timestamps in the transmitted communication telegrams shall be given as UTC or local time. (“Local time” always includes the actual daylight saving settings.)* | | |

| IEC104 . **Deadb integr time** | [Device Para / IEC104 / General Settings] | |
|---|---|---|
| 1s | 0s . . . 1000s | S.3 |
| *Deadband integration time.* | | |

| IEC104 . **Timeout SBE** | [Device Para / IEC104 / General Settings] | |
|---|---|---|
| 30s | 1s ... 60s | S.3 |
| *The communication outputs can be controlled in a two-stage procedure (SBE: Select Before Execute). These outputs have to be selected first by a Select command. After this the bit is reserved for this Execute request. This setting defines the timer for this reservation: After the timer has elapsed the bit is released.* | | |

| IEC104 . **Timeout t0** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 30s | 30s ... 30s | S.3 |
| *Timeout of connection establishment* | | |

| IEC104 . **Timeout t1** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 15s | 15s ... 15s | S.3 |
| *Timeout of send or test APDUs* | | |

| IEC104 . **Timeout t2** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 10s | 10s ... 10s | S.3 |
| *Timeout for acknowledges in case of no data messages* | | |

| IEC104 . **Timeout t3** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 20s | 20s ... 20s | S.3 |
| *Timeout for sending test frames in case of a long idle state* | | |

| IEC104 . **Param k** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 12 | 12 ... 12 | S.3 |
| *Protocol parameter k* | | |

| IEC104 . **Param w** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 8 | 8 ... 8 | S.3 |
| *Protocol parameter w* | | |

| IEC104 . **Length of address** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 2 | 2 ... 2 | S.3 |
| *Number of bytes of the Common Address of the ASDU* | | |

| IEC104 . **Length of CoT** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 2 | 2 ... 2 | S.3 |
| *Number of bytes of the Cause of Transmission* | | |

| IEC104 . **Length of Inf Obj addr** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 3 | 3 ... 3 | S.3 |
| *Number of bytes of the address of the Information Object* | | |

| IEC104 . **Update time** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| 1s | 1s ... 60s | S.3 |
| *This setting specifies the time after which measurement values are refreshed. If cyclic transmission is selected new values are reported after this time has elapsed.* | | |

| IEC104 . **Transmit Int. State** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | S.3 |
| *If this parameter is set to “active” (default) then the intermediate position of a switchgear, too, is transmitted. This needs to be changed to “inactive” only in the rare case that the substation communication does not support the reporting of intermediate positions.* | | |

| IEC104 . **Trans. Cmd. State** | [Device Para / IEC104 / Advanced] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | S.3 |
| *_ If false it suppress change events for command states (Same address as cmd)* | | |

| IEC104 . **Type of SCADA mapping** | [Device Para / IEC104 / Config. Data Obj.] | |
|---|---|---|
| Standard | Standard, User-defined<br>↳ Type of SCADA mapping. | S.3 |
| *This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.* | | |

## 8.8.2 IEC104: Direct Controls

| IEC104 . **Res all Diag Cr** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| ◉ | *Reset all diagnosis counters* | |

| IEC104 . **Common address** | [Device Para / IEC104 / General Settings] | |
|---|---|---|
| 1 | 1 . . . 65535 | S.3 |
| ◉ | *Common Address of the ASDU* | |

## 8.8.3 IEC104: Signals (Output States)

| IEC104 . **Scada Cmd 1**<br>**. . .**<br>IEC104 . **Scada Cmd 16** | [Operation / Status Display / IEC104] |
|---|---|
| ⇧ | *Scada Command* |

| IEC104 . **busy** | [Operation / Status Display / IEC104] |
|---|---|
| ⇧ | *This message is set if the protocol is started. It will be reset if the protocol is shut down.* |

| IEC104 . **ready** | [Operation / Status Display / IEC104] |
|---|---|
| ⇧ | *The message will be set if the protocol is successfully started and ready for data exchange.* |

| IEC104 . **Transmission** | [Operation / Status Display / IEC104] |
|---|---|
| ⇧ | *Signal: SCADA active* |

| IEC104 . **Failure Event lost** | [Operation / Status Display / IEC104] |
|---|---|
| ⇧ | *Failure event lost* |

## 8.8.4 IEC104: Values

| IEC104 . **Config info** | [Device Para / IEC104 / Config. Data Obj.] |
|---|---|
| ⇘ | *Configuration comment (entered by the user during SCADA configuration)* |

| IEC104 . **Config version** | [Device Para / IEC104 / Config. Data Obj.] |
|---|---|
| ✎ | *Version of the user-defined SCADA configuration* |

| IEC104 . **Config status** | [Device Para / IEC104 / Config. Data Obj.] | |
|---|---|---|
| Changing | Changing, OK, Config. not avail., Error<br><br>↳ Config status. | |
| ✎ | *Status of the user-defined SCADA configuration.*<br><br>*Possible values:*<br><br>*- Changing: New SCADA configuration is being loaded, but not active yet.*<br><br>*- OK: The SCADA configuration is active.*<br><br>*- Config. not avail.: The user-defined SCADA configuration is not available (e.g. has not been loaded into the device).*<br><br>*- Error: Unexpected error. Please contact our service-team.* | |

## 8.8.5 IEC104: Counters

| IEC104 . **NReceived** | [Operation / Count and RevData / IEC104] |
|---|---|
| # | *Diagnostic counter: Number of received characters* |

| IEC104 . **NSent** | [Operation / Count and RevData / IEC104] |
|---|---|
| # | *Diagnostic counter: Number of sent characters* |

| IEC104 . **Num. of lost conn.** | [Operation / Count and RevData / IEC104] |
|---|---|
| # | *Diagnostic counter: Number of lost connections* |

| IEC104 . **NBadChecksum** | [Operation / Count and RevData / IEC104] |
|---|---|
| # | *Diagnostic counter: Number of frames received with bad checksum.* |

Released



# 8.9 Profibus – Profibus Module

## 8.9.1 Profibus: Settings

| Profibus . **Little Endian** | [Device Para / Profibus / Bus parameters] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | S.3 |
| *If this setting is “active” all numbers are transmitted with the byte order Little Endian, otherwise the byte order Big Endian is used. (If all numbers received by your SCADA system should be completely wrong, changing this setting might help.)* | | |

| Profibus . **Config Bin Inp 1**<br>**. . .**<br>Profibus . **Config Bin Inp 32** | [Device Para / Profibus / Config Bin Inp 1-16]<br>[Device Para / Profibus / Config Bin Inp 17-32] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Virtual Digital Input. This corresponds to a virtual binary output of the protective device.* | | |

| Profibus . **Latched 1**<br>**. . .**<br>Profibus . **Latched 32** | [Device Para / Profibus / Config Bin Inp 1-16]<br>[Device Para / Profibus / Config Bin Inp 17-32] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Defines whether the Input is latched.* | | |

| Profibus . **Type of SCADA mapping** | [Device Para / Profibus / Config. Data Obj.] | |
|---|---|---|
| Standard | Standard, User-defined<br>↳ Type of SCADA mapping. | S.3 |
| *This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.* | | |

## 8.9.2 Profibus: Direct Controls

| Profibus . **Slave ID** | [Operation / Status Display / Profibus / State]<br>[Device Para / Profibus / Bus parameters] | |
|---|---|---|
| 2 | 2 ... 125 | P.1 |
| ◉ | *Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system.* | |

| Profibus . **Reset Comds** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| ◉ | *All Profibus Commands will be reset.* | |

## 8.9.3 Profibus: Input States

| Profibus . **Assignment 1-I**<br>**...**<br>Profibus . **Assignment 32-I** | [Operation / Status Display / Profibus / Config Bin Inp 1-16]<br>[Operation / Status Display / Profibus / Config Bin Inp 17-32] |
|---|---|
| ⇩ | *Module input state: Scada Assignment* |

## 8.9.4 Profibus: Signals (Output States)

| Profibus . **Data OK** | [Operation / Status Display / Profibus / State] |
|---|---|
| ⇧ | *Data within the Input field are OK (Yes=1)* |

| Profibus . **SubModul Err** | [Operation / Status Display / Profibus / State] |
|---|---|
| ⇧ | *Assignable Signal, Failure in Sub-Module, Communication Failure.* |

| Profibus . **Connection active** | [Operation / Status Display / Profibus / State] |
|---|---|
| ⇧ | *Connection active* |

| Profibus . **Scada Cmd 1**<br>**...**<br>Profibus . **Scada Cmd 16** | [Operation / Status Display / Profibus / Commands] |
|---|---|
| ⇧ | *Scada Command* |

## 8.9.5 Profibus: Values

| Profibus . **Slave State** | [Operation / Status Display / Profibus / State] | |
|---|---|---|
| Baud Search | Baud Search ... Data exchange<br>↳ State. | |
| ✎ | *Communication State between Slave and Master.* | |

| Profibus . **Baud rate** | [Operation / Status Display / Profibus / State] | |
|---|---|---|
| -.- | 12 Mb/s ... -.-<br>↳ Baud rate. | |
| ✎ | *The baud rate that has been detected lastly, will still be shown after a connection issue.* | |

| Profibus . **PNO Id** | [Operation / Status Display / Profibus / State] | |
|---|---|---|
| 0C50h | 0C50h<br>↳ PNO Id. | |
| ✎ | *PNO Identification Number. GSD Identification Number.* | |

| Profibus . **Config info** | [Operation / Status Display / Profibus / State]<br>[Device Para / Profibus / Config. Data Obj.] |
|---|---|
| ✎ | *Configuration comment (entered by the user during SCADA configuration)* |

| Profibus . **Config version** | [Operation / Status Display / Profibus / State]<br>[Device Para / Profibus / Config. Data Obj.] |
|---|---|
| ✎ | *Version of the user-defined SCADA configuration* |

| Profibus . **Config status** | [Operation / Status Display / Profibus / State]<br><br>[Device Para / Profibus / Config. Data Obj.] |
|---|---|
| Changing | Changing, OK, Config. not avail., Error<br><br>Config status. |

*Status of the user-defined SCADA configuration.*

*Possible values:*

## 8.9.6 Profibus: Counters

| Profibus . **Master ID** | [Operation / Status Display / Profibus / State] |
|---|---|

*Device address (Master ID) within the bus system. Each device address has to be unique within a bus system.*

| Profibus . **HO Id PSub** | [Operation / Status Display / Profibus / State] |
|---|---|

*Handoff Id of PbSub*

| Profibus . **t-WatchDog** | [Operation / Status Display / Profibus / State] |
|---|---|

*The Profibus Chip detects a communication issue if this timer is expired without any communication (Parameterising telegram).*

| Profibus . **Fr Sync Err** | [Operation / Count and RevData / Profibus] |
|---|---|

*Frames, that were sent from the Master to the Slave are faulty.*

| Profibus . **Num. CRC err.** | [Operation / Count and RevData / Profibus] |
|---|---|

*Number of CRC errors that the subsystem manager has recognized in the received response frames from the subsystem. (Each error caused a subsystem reset.)*

| Profibus . **Num. frame loss err.** | [Operation / Count and RevData / Profibus] |
|---|---|

*Number of frame loss errors that the subsystem manager has recognized in the received response frames from the subsystem. (Each error caused a subsystem reset.)*

| Profibus . **Num. trig. CRC err.** | [Operation / Count and RevData / Profibus] |
|---|---|

*Number of CRC errors that the subsystem has recognized in the received trigger frames from the host.*

Released



| Profibus . **Num. subsys. res.** | [Operation / Count and RevData / Profibus] |
|---|---|
| # | *Number of subsystem restarts or resets that the subsystem manager has caused.* |

Released



# 8.10 IRIG-B – IRIG-B-Module

## 8.10.1 IRIG-B: Device Planning Parameters

| IRIG-B . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Mode. | S.3 |
| *IRIG-B-Module, general operation mode* | | |

## 8.10.2 IRIG-B: Settings

| IRIG-B . **Function** | [Device Para / Time / TimeSync / IRIG-B] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Permanent activation or deactivation of module/stage.* | | |

| IRIG-B . **IRIG-B00X** | [Device Para / Time / TimeSync / IRIG-B] | |
|---|---|---|
| IRIGB-000 | IRIGB-000 . . . IRIGB-007<br>↳ IRIG-B00X. | S.3 |
| *Determination of the Type: IRIG-B00X. IRIG-B types differ in types of included “Coded Expressions” (year, control-functions, straight-binary-seconds).* | | |

## 8.10.3 IRIG-B: Direct Controls

| IRIG-B . **Res IRIG-B Cr** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Resetting of the Diagnosis Counters: IRIG-B* | | |

## 8.10.4 IRIG-B: Signals (Output States)

| IRIG-B . **IRIG-B active** | [Operation / Status Display / TimeSync / IRIG-B] |
|---|---|
| *Signal: If there is no valid IRIG-B signal for 60 sec, IRIG-B is regarded as inactive.* | |

Released



| IRIG-B . **High-Low Invert** | [Operation / Status Display / TimeSync / IRIG-B] |
|---|---|
| ⇧ | *Signal: The High and Low signals of the IRIG-B are inverted. This does NOT mean that the wiring is faulty. If the wiring is faulty no IRIG-B signal will be detected.* |

| IRIG-B . **Control Signal1**<br>**...**<br>IRIG-B . **Control Signal18** | [Operation / Status Display / TimeSync / IRIG-B] |
|---|---|
| ⇧ | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |

## 8.10.5 IRIG-B: Counters

| IRIG-B . **NoOfFramesOK** | [Operation / Count and RevData / TimeSync / IRIG-B] |
|---|---|
| # | *Total Number valid Frames.* |

| IRIG-B . **NoOfFrameErrors** | [Operation / Count and RevData / TimeSync / IRIG-B] |
|---|---|
| # | *Total Number of Frame Errors. Physically corrupted Frame.* |

| IRIG-B . **Edges** | [Operation / Count and RevData / TimeSync / IRIG-B] |
|---|---|
| # | *Edges: Total number of rising and falling edges. This signal indicates if a signal is available at the IRIG-B input.* |

Released



# 8.11 SNTP – SNTP-Module

## 8.11.1 SNTP: Device Planning Parameters

| SNTP . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Mode. | S.3 |
| *SNTP-Module, general operation mode* | | |

## 8.11.2 SNTP: Settings

| SNTP . **Server1** | [Device Para / Time / TimeSync / SNTP] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Server 1* | | |

| SNTP . **IP Byte1**<br>**...**<br>SNTP . **IP Byte4** | [Device Para / Time / TimeSync / SNTP] | |
|---|---|---|
| 0 | 0 ... 255 | S.3 |
| *IP1.IP2.IP3.IP4* | | |

| SNTP . **Server2** | [Device Para / Time / TimeSync / SNTP] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Server 2* | | |

### 8.11.3 SNTP: Direct Controls

| SNTP . **Res Counter** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| ◉ | *Reset all Counters.* | |

### 8.11.4 SNTP: Signals (Output States)

| SNTP . **SNTP active** | [Operation / Status Display / TimeSync / SNTP] |
|---|---|
| ⇪ | *Signal: If there is no valid SNTP signal for 120 sec, SNTP is regarded as inactive.* |

### 8.11.5 SNTP: Values

| SNTP . **Used Server** | [Operation / Status Display / TimeSync / SNTP] | |
|---|---|---|
| None | Server1, Server2, None<br>↳ Server State. | |
| ⟍ | *Which Server is used for SNTP synchronization.* | |

| SNTP . **PrecServer1** | [Operation / Status Display / TimeSync / SNTP] |
|---|---|
| ⟍ | *Precision of Server 1* |

| SNTP . **PrecServer2** | [Operation / Status Display / TimeSync / SNTP] |
|---|---|
| ⟍ | *Precision of Server 2* |

| SNTP . **ServerQlty** | [Operation / Status Display / TimeSync / SNTP] | |
|---|---|---|
| “-” | GOOD, SUFFICIENT, BAD, “-”<br>↳ State. | |
| ⟍ | *Quality of Server used for Synchronization (GOOD, SUFFICIENT, BAD)* | |

| SNTP . **NetConn** | [Operation / Status Display / TimeSync / SNTP] | |
|---|---|---|
| “-” | GOOD, SUFFICIENT, BAD, “-”<br>State. | |
| *Quality of Network Connection (GOOD, SUFFICIENT, BAD).* | | |

## 8.11.6 SNTP: Counters

| SNTP . **StratumServer1** | [Operation / Status Display / TimeSync / SNTP] |
|---|---|
| *Stratum of Server 1* | |

| SNTP . **StratumServer2** | [Operation / Status Display / TimeSync / SNTP] |
|---|---|
| *Stratum of Server 2* | |

| SNTP . **NoOfSyncs** | [Operation / Count and RevData / TimeSync / SNTP] |
|---|---|
| *Total Number of Synchronizations.* | |

| SNTP . **NoOfConnectLost** | [Operation / Count and RevData / TimeSync / SNTP] |
|---|---|
| *Total Number of lost SNTP Connections (no sync for 120 sec).* | |

| SNTP . **NoOfSmallSyncs** | [Operation / Count and RevData / TimeSync / SNTP] |
|---|---|
| *Service counter: Total Number of very small Time Corrections.* | |

| SNTP . **NoOfNormSyncs** | [Operation / Count and RevData / TimeSync / SNTP] |
|---|---|
| *Service counter: Total Number of normal Time Corrections* | |

| SNTP . **NoOfBigSyncs** | [Operation / Count and RevData / TimeSync / SNTP] |
|---|---|
| *Service counter: Total Number of big Time Corrections* | |

| SNTP . **NoOfFiltSyncs** | [Operation / Count and RevData / TimeSync / SNTP] |
|---|---|
| *Service counter: Total Number of filtered Time Corrections* | |

| SNTP . **NoOfSlowTrans** | [Operation / Count and RevData / TimeSync / SNTP] |
|---|---|
| *Service counter: Total Number of slow Transfers.* | |

| SNTP . **NoOfHighOffs** | [Operation / Count and RevData / TimeSync / SNTP] |
|---|---|
| # | *Service counter: Total Number of high Offsets.* |

| SNTP . **NoOfIntTimeouts** | [Operation / Count and RevData / TimeSync / SNTP] |
|---|---|
| # | *Service counter: Total Number of internal timeouts.* |

## 8.12 TimeSync – Time synchronisation

| **Date and Time** | [Device Para / Time / Date and Time] |
|---|---|
| This item represents a special dialog. (See the Technical Manual for details.)<br>*(Re-)setting Date and Time* | |

### 8.12.1 TimeSync: Settings

| TimeSync . **Time Zones** | [Device Para / Time / Timezone] | |
|---|---|---|
| UTC+0 London | UTC+14 Kiritimati ... UTC-11 Midway Islands<br>↳ Time Zones. | S.3 |
| *Time Zones* | | |

| TimeSync . **DST offset** | [Device Para / Time / Timezone] | |
|---|---|---|
| 60min | -180min ... 180min | S.3 |
| *Difference to wintertime* | | |

| TimeSync . **DST manual** | [Device Para / Time / Timezone] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | S.3 |
| *Manual setting of the Daylight Saving Time* | | |

| TimeSync . **Summertime** | [Device Para / Time / Timezone] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Daylight Saving Time* | | |

| TimeSync . **Summertime m** | [Device Para / Time / Timezone] | |
|---|---|---|
| March | January ... December<br>↳ Month of clock change. | S.3 |
| *Month of clock change summertime* | | |

| TimeSync . **Summertime d** | [Device Para / Time / Timezone] | |
|---|---|---|
| Sunday | Sunday ... General day<br>↳ Date. | S.3 |
| *Day of clock change summertime* | | |

| TimeSync . **Summertime w** | [Device Para / Time / Timezone] | |
|---|---|---|
| Last | First, Second, Third, Fourth, Last<br>↳ Day of clock change. | S.3 |
| *Place of selected day in month (for clock change summertime)* | | |

| TimeSync . **Summertime h** | [Device Para / Time / Timezone] | |
|---|---|---|
| 2h | 0h ... 23h | S.3 |
| *Hour of clock change summertime* | | |

| TimeSync . **Summertime min** | [Device Para / Time / Timezone] | |
|---|---|---|
| 0min | 0min ... 59min | S.3 |
| *Minute of clock change summertime* | | |

| TimeSync . **Wintertime m** | [Device Para / Time / Timezone] | |
|---|---|---|
| October | January ... December<br>↳ Month of clock change. | S.3 |
| *Month of clock change wintertime* | | |

| TimeSync . **Wintertime d** | [Device Para / Time / Timezone] | |
|---|---|---|
| Sunday | Sunday ... General day<br>↳ Date. | S.3 |
| *Day of clock change wintertime* | | |

| TimeSync . **Wintertime w** | [Device Para / Time / Timezone] | |
|---|---|---|
| Last | First, Second, Third, Fourth, Last<br>↳ Day of clock change. | S.3 |
| *Place of selected day in month (for clock change wintertime)* | | |

| TimeSync . **Wintertime h** | [Device Para / Time / Timezone] | |
|---|---|---|
| 3h | 0h . . . 23h | S.3 |
| *Hour of clock change wintertime* | | |

| TimeSync . **Wintertime min** | [Device Para / Time / Timezone] | |
|---|---|---|
| 0min | 0min . . . 59min | S.3 |
| *Minute of clock change wintertime* | | |

| TimeSync . **TimeSync** | [Device Para / Time / TimeSync / TimeSync] | |
|---|---|---|
| “-” | “-”, IRIG-B . IRIG-B, SNTP . SNTP, Modbus . Modbus, IEC103 . IEC 60870-5-103, IEC104 . IEC104, DNP3 . DNP3<br><br>↳ Used Protocol. | S.3 |
| *Time synchronisation* | | |

## 8.12.2 TimeSync: Signals (Output States)

| TimeSync . **synchronized** | [Operation / Status Display / TimeSync / TimeSync] |
|---|---|
| *Clock is synchronized.* | |

Released



# 9 Protection Parameter

## 9.1 Prot: Settings

| Prot . **Function** | [Protection Para / Global Prot Para / Prot] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| Prot . **ExBlo Fc** | [Protection Para / Global Prot Para / Prot] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) the external blocking of the global protection functionality of the device.* | | |

| Prot . **ExBlo1**<br>Prot . **ExBlo2** | [Protection Para / Global Prot Para / Prot] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *If external blocking of this module is activated (allowed), the global protection functionality of the device will be blocked if the state of the assigned signal becomes true.* | | |

| Prot . **Blo TripCmd** | [Protection Para / Global Prot Para / Prot] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the entire Protection.* | | |

| Prot . **ExBlo TripCmd Fc** | [Protection Para / Global Prot Para / Prot] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) the external blocking of the trip command of the entire device.* | | |

| Prot . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Prot] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *If external blocking of the tripping command is activated (allowed), the tripping command of the entire device will be blocked if the state of the assigned signal becomes true.* | | |

## 9.2 Prot: Direct Controls

| Prot . **Res FaultNo a GridFaultNo** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Resetting of fault number and grid fault number.* | | |

## 9.3 Prot: Input States

| Prot . **ExBlo1-I** | [Operation / Status Display / Prot] |
|---|---|
| *Module input state: External blocking1* | |

| Prot . **ExBlo2-I** | [Operation / Status Display / Prot] |
|---|---|
| *Module input state: External blocking2* | |

| Prot . **ExBlo TripCmd-I** | [Operation / Status Display / Prot] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

## 9.4 Prot: Signals (Output States)

| Prot . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Prot] |
|---|---|
| *Signal: active* | |

| Prot . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Prot] |
|---|---|
| *Signal: General Alarm* | |

| Prot . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: General Trip* |

| Prot . **available** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: Protection is available* |

| Prot . **ExBlo** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: External Blocking* |

| Prot . **Blo TripCmd** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: Trip Command blocked* |

| Prot . **ExBlo TripCmd** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: External Blocking of the Trip Command* |

| Prot . **Alarm L1** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: General-Alarm L1* |

| Prot . **Alarm L2** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: General-Alarm L2* |

| Prot . **Alarm L3** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: General-Alarm L3* |

| Prot . **Alarm G** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: General-Alarm - Earth fault* |

| Prot . **Trip L1** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: General Trip L1* |

| Prot . **Trip L2** | [Operation / Status Display / Prot] |
|---|---|
| ⇫ | *Signal: General Trip L2* |

| Prot . **Trip L3** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: General Trip L3* |

| Prot . **Trip G** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: General Trip Ground fault* |

| Prot . **Res FaultNo a GridFaultNo** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Resetting of fault number and grid fault number.* |

| Prot . **I dir fwd** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Phase current failure forward direction* |

| Prot . **I dir rev** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Phase current failure reverse direction* |

| Prot . **I dir n poss** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Phase fault - missing reference voltage* |

| Prot . **IG calc dir fwd** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Ground fault (calculated) forward* |

| Prot . **IG calc dir rev** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Ground fault (calculated) reverse direction* |

| Prot . **IG calc dir n poss** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Ground fault (calculated) direction detection not possible* |

| Prot . **IG meas dir fwd** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Ground fault (measured) forward* |

| Prot . **IG meas dir rev** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Ground fault (measured) reverse direction* |

| Prot . **IG meas dir n poss** | [Operation / Status Display / Prot] |
|---|---|
| ⇧ | *Signal: Ground fault (measured) direction detection not possible* |

Released



| Prot . **Fault No.** | [Operation / Count and RevData / Prot] |
|---|---|
| ⇧ | *Fault number* |

## 9.5 Prot: Values

| Prot . **Dir. I** | [Operation / Measured Values / Direction] | |
|---|---|---|
| not possible | reverse, forward, not possible<br>⇨ Direction. | |
| ⇘ | *The detected direction of the phase current flow.* | |

| Prot . **Dir. IG meas.** | [Operation / Measured Values / Direction] | |
|---|---|---|
| not possible | reverse, forward, not possible<br>⇨ Direction. | |
| ⇘ | *The detected direction of the current flow of the measured residual current.* | |

| Prot . **Dir. IG calc.** | [Operation / Measured Values / Direction] | |
|---|---|---|
| not possible | reverse, forward, not possible<br>⇨ Direction. | |
| ⇘ | *The detected direction of the current flow of the calculated residual current.* | |

# 9.6 Id – Differential Protection Module

## 9.6.1 Id: Device Planning Parameters

| Id . **Mode** | [Device planning] | |
|---|---|---|
| use | “-”, use<br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 9.6.2 Id: Global Parameters

| Id . **ExBlo1**<br>Id . **ExBlo2** | [Protection Para / Global Prot Para / Diff-Prot / Id] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Id . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Diff-Prot / Id] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.6.3 Id: Setting Group Parameters

| Id . **Function** | [Protection Para / Set 1…4 / Diff-Prot / Id] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| Id . **ExBlo Fc** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| Id . **Blo TripCmd** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| Id . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| Id . **Id min** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 0.2Ib | 0.05Ib ... 1.00Ib | P.2 |
| *Constant minimum pickup current (differential current). Pickup value of the differential current based on the rated current Ib of the protection object.* | | |

| Id . **Id(Is0)** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 0.0Ib | 0.0Ib ... 1.00Ib | P.2 |
| *Starting point of the static tripping characteristic at Is0* | | |

| Id . **Id(Is1)** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 0.6Ib | 0.2Ib ... 2.00Ib | P.2 |
| *Breaking point of the static tripping characteristic at Is1* | | |

| Id . **Id(Is2)** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 6.2Ib | 1.0Ib ... 8.0Ib | P.2 |
| *Value of the static tripping characteristic at Is2* | | |

| Id . **Is1** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 2.0Ib | 0.5Ib ... 4.0Ib | P.2 |
| *Breaking point of the static tripping characteristic when Is1* | | |

| Id . **Is2** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 10.0Ib | 5.0Ib ... 10.0Ib | P.2 |
| *Value of the static tripping characteristic at Is2* | | |

| Id . **Char Reset%** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 95% | 90% ... 98% | P.2 |
| *Drop Out (in percent of the setting). Settable Drop Out works only on the gradients. Id min uses a fix Drop Out.* | | |

| Id . **d(H,m)** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 8Ib | 0.0Ib ... 30.0Ib | P.2 |
| *Restraining factor for rising the static tripping characteristic in case of stationary or transient harmonic components, which are ascertained by Fourier analysis (H) or transients monitor (m).* | | |

| Id . **Stab H2** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Restraining of differential protection function against stationary or transient components of the 2nd harmonic at the phase current (e.g. rush-effect).* | | |

| Id . **H2 Sta** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 25% | 10% ... 60% | P.2 |
| *Threshold (2nd harmonic - basic wave ratio) for restraining the differential protection function against stationary 2nd harmonic.* | | |

| Id . **H2 Tra** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 10% | 10% ... 60% | P.2 |
| *Threshold (2nd harmonic - basic wave ratio) for temporary stabilisation of the differential protection function against transient 2nd harmonic.* | | |

| Id . **Stab H4** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.2 |
| *Restraining of differential protection function against stationary components of the 4th harmonic at the phase current.* | | |

| Id . **H4 Sta** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 20% | 10% ... 60% | P.2 |
| *Threshold (4th harmonic - basic wave ratio) for restraining the differential protection function against stationary 4th harmonic.* | | |

| Id . **Stab H5** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.2 |
| *Stabilisation of differential protection function against stationary or transient components of the 5th harmonic at the phase current (e.g. transformer overexcitation).* | | |

| Id . **H5 Sta** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 30% | 10% ... 60% | P.2 |
| *Threshold (5thd harmonic - basic wave ratio) for stabilising the differential protection function against stationary 5th harmonic.* | | |

| Id . **H5 Tra** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 15% | 10% ... 60% | P.2 |
| *Threshold (5th harmonic - basic wave ratio) for temporary restraining of the differential protection function against transient 5th harmonic.* | | |

| Id . **t-Trans** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 2s | 0.05s ... 100.00s | P.2 |
| *Time of temporary stabilisation of the differential protection function when thresholds for „H2 Tra“ and „H5 Tra“ (transient harmonic) are exceeded.* | | |

| Id . **Crossbl** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.2 |
| *Active = Phase overlapping stabilisation of the differential protection function. Inactive = Phase selective stabilisation of the differential protection function.* | | |

| Id . **CT Satur. Stab.** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Enable (or disable) temporary restraining of the differential protection triggered by the detection of an external fault in case of CT saturation.* | | |

| Id . **CT Sat. Stab. tBlock** | [Protection Para / Set 1...4 / Diff-Prot / Id] | |
|---|---|---|
| 0.30s | 0.01s ... 10.00s | P.2 |
| *Maximum stabilization duration time for temporary restraining via CT saturation stabilization. The setting value should be (among other dependencies) coordinated with the maximum fault clearing time for an external fault.* | | |

## 9.6.4 Id: Input States

| Id . **ExBlo1-I** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| *Module input state: External blocking1* | |

| Id . **ExBlo2-I** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| *Module input state: External blocking2* | |

| Id . **ExBlo TripCmd-I** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

## 9.6.5 Id: Signals (Output States)

| Id . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Diff-Prot / Id] |
|---|---|
| *Signal: active* | |

| Id . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Diff-Prot / Id] |
|---|---|
| *Signal: Alarm* | |

| Id . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: Trip* |

| Id . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: Trip Command* |

| Id . **ExBlo** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: External Blocking* |

| Id . **Blo TripCmd** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: Trip Command blocked* |

| Id . **ExBlo TripCmd** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: External Blocking of the Trip Command* |

| Id . **Alarm L1** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: Alarm System Phase L1* |

| Id . **Alarm L2** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: Alarm System Phase L2* |

| Id . **Alarm L3** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: Alarm System L3* |

| Id . **Trip L1** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: Trip System Phase L1* |

| Id . **Trip L2** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: Trip System Phase L2* |

| Id . **Trip L3** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇫ | *Signal: Trip System Phase L3* |

| Id . **Blo H2** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Blocked by Harmonic:2* |

| Id . **Blo H4** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Blocked by Harmonic:4* |

| Id . **Blo H5** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Blocked by Harmonic:5* |

| Id . **H2,H4,H5 Blo** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Blocked by Harmonics (Inhibit)* |

| Id . **CT Satur.Stab. triggered** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Temporary restraining of the Phase Differential Protection, triggered by the detection of an external fault in case of CT saturation.* |

| Id . **Transient** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Temporary stabilization of the differential protection afterwards the transformer is being engergized.* |

| Id . **Restraining** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Restraining of the differential protection by means of rising the tripping curve.* |

| Id . **CT Satur.Stab. L1 trig.** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Temporary restraining of the Phase Differential Protection in phase L1, triggered by the detection of an external phase L1 fault in case of CT saturation.* |

| Id . **CT Satur.Stab. L2 trig.** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Temporary restraining of the Phase Differential Protection in phase L2, triggered by the detection of an external phase L2 fault in case of CT saturation.* |

| Id . **CT Satur.Stab. L3 trig.** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal: Temporary restraining of the Phase Differential Protection in phase L3, triggered by the detection of an external phase L3 fault in case of CT saturation.* |

| Id . **Restraining: L1** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Restraining: L1* |

| Id . **Restraining: L2** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Restraining: L2* |

| Id . **Restraining: L3** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Restraining: L3* |

| Id . **IH2 Blo L1** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal:Phase L1: Blocking of the Phase Differential Protection because of second Harmonic.* |

| Id . **IH2 Blo L2** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal:Phase L2: Blocking of the Phase Differential Protection because of second Harmonic.* |

| Id . **IH2 Blo L3** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal:Phase L3: Blocking of the Phase Differential Protection because of second Harmonic.* |

| Id . **IH4 Blo L1** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal:Phase L1: Blocking of the Phase Differential Protection because of fourth Harmonic.* |

| Id . **IH4 Blo L2** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal:Phase L2: Blocking of the Phase Differential Protection because of fourth Harmonic.* |

| Id . **IH4 Blo L3** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal:Phase L3: Blocking of the Phase Differential Protection because of fourth Harmonic.* |

| Id . **IH5 Blo L1** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal:Phase L1: Blocking of the Phase Differential Protection because of fifth Harmonic.* |

| Id . **IH5 Blo L2** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal:Phase L2: Blocking of the Phase Differential Protection because of fifth Harmonic.* |

| Id . **IH5 Blo L3** | [Operation / Status Display / Diff-Prot / Id] |
|---|---|
| ⇧ | *Signal:Phase L3: Blocking of the Phase Differential Protection because of fifth Harmonic.* |

## 9.6.6 Id: Values

| Id . **Id L1 H2** | [Operation / Measured Values / Id] |
|---|---|
| ⟍ | *Measured value (calculated): Differential Current Phase L1 Harmonic:2* |

| Id . **Id L2 H2** | [Operation / Measured Values / Id] |
|---|---|
| ⟍ | *Measured value (calculated): Differential Current Phase L2 Harmonic:2* |

| Id . **Id L3 H2** | [Operation / Measured Values / Id] |
|---|---|
| ⟍ | *Measured value (calculated): Differential Current Phase L3 Harmonic:2* |

| Id . **Id L1 H4** | [Operation / Measured Values / Id] |
|---|---|
| ⟍ | *Measured value (calculated): Differential Current Phase L1 Harmonic:4* |

| Id . **Id L2 H4** | [Operation / Measured Values / Id] |
|---|---|
| ⟍ | *Measured value (calculated): Differential Current Phase L2 Harmonic:4* |

| Id . **Id L3 H4** | [Operation / Measured Values / Id] |
|---|---|
| ⟍ | *Measured value (calculated): Differential Current Phase L3 Harmonic:4* |

| Id . **Id L1 H5** | [Operation / Measured Values / Id] |
|---|---|
| ⟍ | *Measured value (calculated): Differential Current Phase L1 Harmonic:5* |

| Id . **Id L2 H5** | [Operation / Measured Values / Id] |
|---|---|
| ⟍ | *Measured value (calculated): Differential Current Phase L2 Harmonic:5* |

| Id . **Id L3 H5** | [Operation / Measured Values / Id] |
|---|---|
| ⟍ | *Measured value (calculated): Differential Current Phase L3 Harmonic:5* |

## 9.6.7 Id: Statistical Values

| Id . **Id L1H2max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Maximum Value Id L1H2* |

| Id . **Id L2H2max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Maximum Value Id L2H2* |

| Id . **Id L3H2max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Maximum Value Id L3H2* |

| Id . **Id L1H4max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Maximum Value Id L1H4* |

| Id . **Id L2H4max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Maximum Value Id L2H4* |

| Id . **Id L3H4max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Maximum Value Id L3H4* |

| Id . **Id L1H5max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Maximum Value Id L1H5* |

| Id . **Id L2H5max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Maximum Value Id L2H5* |

| Id . **Id L3H5max** | [Operation / Statistics / Max / Id] |
|---|---|
| ☑ | *Maximum Value Id L3H5* |

# 9.7 IdH – High-Set Differential Protection Module

## 9.7.1 IdH: Device Planning Parameters

| IdH . **Mode** | [Device planning] | |
|---|---|---|
| use | “-”, use<br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 9.7.2 IdH: Global Parameters

| IdH . **ExBlo1**<br>IdH . **ExBlo2** | [Protection Para / Global Prot Para / Diff-Prot / IdH] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| IdH . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Diff-Prot / IdH] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.7.3 IdH: Setting Group Parameters

| IdH . **Function** | [Protection Para / Set 1…4 / Diff-Prot / IdH] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| IdH . **ExBlo Fc** | [Protection Para / Set 1...4 / Diff-Prot / IdH] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| IdH . **Blo TripCmd** | [Protection Para / Set 1...4 / Diff-Prot / IdH] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| IdH . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Diff-Prot / IdH] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| IdH . **Id>>** | [Protection Para / Set 1...4 / Diff-Prot / IdH] | |
|---|---|---|
| 10.0Ib | 0.5Ib ... 30.0Ib | P.2 |
| *Highset Differential Current Protection/Unstabilized high-phase fault: Pickup value of the differential current based on the rated current Ib of the protection object.* | | |

## 9.7.4 IdH: Input States

| IdH . **ExBlo1-I** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| *Module input state: External blocking1* | |

| IdH . **ExBlo2-I** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| *Module input state: External blocking2* | |

| IdH . **ExBlo TripCmd-I** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

## 9.7.5 IdH: Signals (Output States)

| IdH . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: active* |

| IdH . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Alarm* |

| IdH . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Trip* |

| IdH . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| IdH . **ExBlo** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| IdH . **Blo TripCmd** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| IdH . **ExBlo TripCmd** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

| IdH . **Alarm L1** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Alarm System Phase L1* |

| IdH . **Alarm L2** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Alarm System Phase L2* |

| IdH . **Alarm L3** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Alarm System L3* |

| IdH . **Trip L1** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Trip System Phase L1* |

| IdH . **Trip L2** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Trip System Phase L2* |

| IdH . **Trip L3** | [Operation / Status Display / Diff-Prot / IdH] |
|---|---|
| ⇧ | *Signal: Trip System Phase L3* |

# 9.8 IdG[1] . . . IdG[2] – Restricted Ground Fault Differential Protection Module

## 9.8.1 IdG[1]: Device Planning Parameters

| IdG[1] . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", use<br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 9.8.2 IdG[1]: Global Parameters

| IdG[1] . **CT Winding Side** | [Protection Para / Global Prot Para / Diff-Prot / IdG[1]] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| IdG[1] . **ExBlo1**<br>IdG[1] . **ExBlo2** | [Protection Para / Global Prot Para / Diff-Prot / IdG[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| IdG[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Diff-Prot / IdG[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.8.3 IdG[1]: Setting Group Parameters

| IdG[1] . **Function** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| IdG[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| IdG[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| IdG[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| IdG[1] . **IdG min** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| 0.05Ib | 0.05Ib ... 1.00Ib | P.2 |
| *Constant minimum pickup current (earth differential current). Pickup value of the differential current based on the rated current Ib of the related protection object.* | | |

| IdG[1] . **IdG(Is0)** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| 0.1Ib | 0.00Ib ... 1.00Ib | P.2 |
| *Starting point of the static tripping characteristic at Is0* | | |

| IdG[1] . **IdG(Is1)** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| 0.2Ib | 0.2Ib . . . 2.00Ib | P.2 |
| *Breaking point of the static tripping characteristic at Is1* | | |

| IdG[1] . **IdG(Is2)** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| 2.0Ib | 1.0Ib . . . 8.0Ib | P.2 |
| *Value of the static tripping characteristic at Is2* | | |

| IdG[1] . **Is1** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| 2.0Ib | 0.5Ib . . . 5.0Ib | P.2 |
| *Breaking point of the static tripping characteristic when Is1* | | |

| IdG[1] . **Is2** | [Protection Para / Set 1...4 / Diff-Prot / IdG[1]] | |
|---|---|---|
| 10.0Ib | 5.0Ib . . . 10.0Ib | P.2 |
| *Value of the static tripping characteristic at Is2* | | |

## 9.8.4 IdG[1]: Input States

| IdG[1] . **ExBlo1-I** | [Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| *Module input state: External blocking1* | |

| IdG[1] . **ExBlo2-I** | [Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| *Module input state: External blocking2* | |

| IdG[1] . **ExBlo TripCmd-I** | [Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

## 9.8.5 IdG[1]: Signals (Output States)

| IdG[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| *Signal: active* | |

Released



| IdG[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| ⇪ | *Signal: Alarm* |

| IdG[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| ⇪ | *Signal: Trip* |

| IdG[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| ⇪ | *Signal: Trip Command* |

| IdG[1] . **ExBlo** | [Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| ⇪ | *Signal: External Blocking* |

| IdG[1] . **Blo TripCmd** | [Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| ⇪ | *Signal: Trip Command blocked* |

| IdG[1] . **ExBlo TripCmd** | [Operation / Status Display / Diff-Prot / IdG[1]] |
|---|---|
| ⇪ | *Signal: External Blocking of the Trip Command* |

# 9.9 IdGH[1] . . . IdGH[2] – Restricted Ground Fault Highset Protection Module

## 9.9.1 IdGH[1]: Device Planning Parameters

| IdGH[1] . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", use<br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 9.9.2 IdGH[1]: Global Parameters

| IdGH[1] . **CT Winding Side** | [Protection Para / Global Prot Para / Diff-Prot / IdGH[1]] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| IdGH[1] . **ExBlo1**<br>IdGH[1] . **ExBlo2** | [Protection Para / Global Prot Para / Diff-Prot / IdGH[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| IdGH[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Diff-Prot / IdGH[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.9.3 IdGH[1]: Setting Group Parameters

| IdGH[1] . **Function** | [Protection Para / Set 1...4 / Diff-Prot / IdGH[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| IdGH[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / Diff-Prot / IdGH[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| IdGH[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / Diff-Prot / IdGH[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| IdGH[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Diff-Prot / IdGH[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| IdGH[1] . **IdG>>** | [Protection Para / Set 1...4 / Diff-Prot / IdGH[1]] | |
|---|---|---|
| 2.00Ib | 0.50Ib . . . 20.00Ib | P.2 |
| *Highset Ground Differential Current Protection/Unstabilized high-phase restricted earth fault: Pickup value of the earth differential current based on the rated current Ib of the related protection object.* | | |

## 9.9.4 IdGH[1]: Input States

| IdGH[1] . **ExBlo1-I** | [Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇩ | *Module input state: External blocking1* |

| IdGH[1] . **ExBlo2-I** | [Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇩ | *Module input state: External blocking2* |

| IdGH[1] . **ExBlo TripCmd-I** | [Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇩ | *Module input state: External Blocking of the Trip Command* |

## 9.9.5 IdGH[1]: Signals (Output States)

| IdGH[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇧ | *Signal: active* |

| IdGH[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇧ | *Signal: Alarm* |

| IdGH[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇧ | *Signal: Trip* |

| IdGH[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| IdGH[1] . **ExBlo** | [Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| IdGH[1] . **Blo TripCmd** | [Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

Released



| IdGH[1] . **ExBlo TripCmd** | [Operation / Status Display / Diff-Prot / IdGH[1]] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

Released



# 9.10 IH2[1] . . . IH2[2] – Module Inrush

## 9.10.1 IH2[1]: Device Planning Parameters

| IH2[1] . **Mode** | [Device planning] | |
|---|---|---|
| use | "-", use<br>↳ Device planning. | S.3 |
| *Module Inrush, general operation mode* | | |

## 9.10.2 IH2[1]: Global Parameters

| IH2[1] . **CT Winding Side** | [Protection Para / Global Prot Para / I-Prot / IH2[1]] | |
|---|---|---|
| W1 | W1<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| IH2[1] . **ExBlo1**<br>IH2[1] . **ExBlo2** | [Protection Para / Global Prot Para / I-Prot / IH2[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.10.3 IH2[1]: Setting Group Parameters

| IH2[1] . **Function** | [Protection Para / Set 1…4 / I-Prot / IH2[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| IH2[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / I-Prot / IH2[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| IH2[1] . **IH2 / IH1** | [Protection Para / Set 1...4 / I-Prot / IH2[1]] | |
|---|---|---|
| 15% | 10% ... 40% | P.2 |
| *Maximum permissible percentage of the 2nd harmonic of the 1st harmonic.* | | |

| IH2[1] . **block mode** | [Protection Para / Set 1...4 / I-Prot / IH2[1]] | |
|---|---|---|
| 1-ph Blo | 1-ph Blo, 3-ph Blo<br><br>↳ block mode. | P.2 |
| *1-ph Blo: If an inrush is detected in one phase, the corresponding phase of those modules will be blocked, where inrush blocking is set to active./3-ph Blo: If an inrush is detected in at least one phase, all three phases of those modules where inrush blocking is set to active will be blocked (cross blocking).* | | |

## 9.10.4 IH2[1]: Input States

| IH2[1] . **ExBlo1-I** | [Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| *Module input state: External blocking1* | |

| IH2[1] . **ExBlo2-I** | [Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| *Module input state: External blocking2* | |

## 9.10.5 IH2[1]: Signals (Output States)

| IH2[1] . **active** | [Operation / Status Display / All Actives]<br><br>[Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| *Signal: active* | |

| IH2[1] . **ExBlo** | [Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| *Signal: External Blocking* | |

| IH2[1] . **Blo L1** | [Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| ⇧ | *Signal: Blocked L1* |

| IH2[1] . **Blo L2** | [Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| ⇧ | *Signal: Blocked L2* |

| IH2[1] . **Blo L3** | [Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| ⇧ | *Signal: Blocked L3* |

| IH2[1] . **Blo IG meas** | [Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| ⇧ | *Signal: Blocking of the ground (earth) protection module (measured ground current)* |

| IH2[1] . **Blo IG calc** | [Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| ⇧ | *Signal: Blocking of the ground (earth) protection module (calculated ground current)* |

| IH2[1] . **3-ph Blo** | [Operation / Status Display / I-Prot / IH2[1]] |
|---|---|
| ⇧ | *Signal: Inrush was detected in at least one phase - trip command blocked.* |

Released



# 9.11 I[1] . . . I[6] – Phase Overcurrent Stage

## 9.11.1 I[1]: Device Planning Parameters

| I[1] . **Mode** | [Device planning] | |
|---|---|---|
| non directional | “-”, non directional, forward, reverse<br>↳ I>. | S.3 |
| *Phase Overcurrent Stage, general operation mode* | | |

## 9.11.2 I[1]: Global Parameters

| I[1] . **CT Winding Side** | [Protection Para / Global Prot Para / I-Prot / I[1]] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| I[1] . **ExBlo1**<br>I[1] . **ExBlo2** | [Protection Para / Global Prot Para / I-Prot / I[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| I[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / I-Prot / I[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| I[1] . **Ex rev Interl** | [Protection Para / Global Prot Para / I-Prot / I[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module by external reverse interlocking, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| I[1] . **AdaptSet 1** | [Protection Para / Global Prot Para / I-Prot / I[1]] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 1* | | |

| I[1] . **AdaptSet 2** | [Protection Para / Global Prot Para / I-Prot / I[1]] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 2* | | |

| I[1] . **AdaptSet 3** | [Protection Para / Global Prot Para / I-Prot / I[1]] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 3* | | |

| I[1] . **AdaptSet 4** | [Protection Para / Global Prot Para / I-Prot / I[1]] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 4* | | |

## 9.11.3 I[1]: Setting Group Parameters

| I[1] . **Function** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| I[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| I[1] . **Ex rev Interl Fc** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "Ex rev Interl Fc = active".* | | |

| I[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| I[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| I[1] . **Measuring method** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| Fundamental | Fundamental, True RMS, I2<br>↳ Measuring method. | P.2 |
| *Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)* | | |

| I[1] . **I>** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| 1.00In<br>⇻ Adapt. Param. | If: I[1] . VRestraint = active<br>• 0.10In ... 40.00In<br>If: I[1] . VRestraint = inactive<br>• 0.02In ... 40.00In | P.2 |
| *If the pickup value is exceeded, the module/element starts to time out to trip.* | | |

| I[1] . **Char** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| DEFT<br><br>⇻ Adapt. Param. | DEFT . . . I4T<br><br>⮡ Char. | P.2 |
| *Characteristic* | | |

| I[1] . **t** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| 1.00s<br><br>⇻ Adapt. Param. | 0.00s . . . 300.00s | P.2 |
| *Tripping delay* | | |

| I[1] . **tchar** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| 1<br><br>⇻ Adapt. Param. | 0.02 . . . 20.00 | P.2 |
| *Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.* | | |

| I[1] . **Reset Mode** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| instantaneous<br><br>⇻ Adapt. Param. | instantaneous, definite time, inverse time<br><br>⮡ Reset Mode. | P.2 |
| *Reset Mode* | | |

| I[1] . **t-reset delay** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| 0s<br><br>*Only available if:*<br><br>⇻ Adapt. Param. | 0.00s . . . 60.00s | P.2 |
| *Reset delay for intermittent phase failures (INV characteristics only)* | | |

| I[1] . **IH2 Blo** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| Sys . inactive<br><br>⇻ Adapt. Param. | Sys . inactive, Sys . active<br><br>⮡ IH2 Blo. | P.2 |
| *Blocking the trip command, if an inrush is detected.* | | |

| I[1] . **nondir Trip at V=0** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| inactive<br><br>⇹ Adapt. Param. | inactive, active<br><br>⮡ active/inactive. | P.2 |
| *Only relevant for current protection modules/stages with directional feature! The device will trip non directional if this parameter is set to active and no direction could be determined because no reference voltage (V=0) could be measured any more (e.g. if there is a three-phase short circuit close to the device). If this parameter is set to inactive, the protection stage will be blocked in case of V=0.* | | |

| I[1] . **VRestraint** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| inactive<br><br>⇹ Adapt. Param. | inactive, active<br><br>⮡ Mode. | P.2 |
| *Voltage Restraint Protection* | | |

| I[1] . **Measuring Mode** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| Phase to Ground<br><br>*Only available if:*<br><br>⇹ Adapt. Param. | Phase to Ground, Phase to Phase<br><br>⮡ Measuring Mode. | P.2 |
| *Measuring Mode* | | |

| I[1] . **VRestraint max** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| 1.00Vn<br><br>*Only available if:*<br><br>⇹ Adapt. Param. | 0.04Vn . . . 2.00Vn | P.2 |
| *Maximum voltage restraint level. Definition of Vn: Vn is dependent on the System Parameter setting of "VT con". When the System Parameters "VT con" is set to "phase-to-phase" , "Vn = VT sec ". When the System Parameters "VT con" is set to "phase-to-ground", "Vn = VT sec/ SQRT(3)".* | | |

| I[1] . **Meas Circuit Superv** | [Protection Para / Set 1...4 / I-Prot / I[1]] | |
|---|---|---|
| Sys . inactive<br><br>*Only available if:*<br><br>Adapt. Param. | Sys . inactive, LOP . active<br><br>VTS Block. | P.2 |
| *Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).* | | |

## 9.11.4 I[1]: Input States

| I[1] . **ExBlo1-I** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| *Module input state: External blocking1* | |

| I[1] . **ExBlo2-I** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| *Module input state: External blocking2* | |

| I[1] . **ExBlo TripCmd-I** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

| I[1] . **Ex rev Interl-I** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| *Module input state: External reverse interlocking* | |

| I[1] . **AdaptSet1-I** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| *Module input state: Adaptive Parameter1* | |

| I[1] . **AdaptSet2-I** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| *Module input state: Adaptive Parameter2* | |

| I[1] . **AdaptSet3-I** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| *Module input state: Adaptive Parameter3* | |

| I[1] . **AdaptSet4-I** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| *Module input state: Adaptive Parameter4* | |

## 9.11.5 I[1]: Signals (Output States)

| I[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: active* |

| I[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Alarm* |

| I[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Trip* |

| I[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| I[1] . **ExBlo** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| I[1] . **Ex rev Interl** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: External reverse Interlocking* |

| I[1] . **Blo TripCmd** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| I[1] . **ExBlo TripCmd** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

| I[1] . **IH2 Blo** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Blocking the trip command by an inrush* |

| I[1] . **Alarm L1** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Alarm L1* |

| I[1] . **Alarm L2** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Alarm L2* |

| I[1] . **Alarm L3** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Alarm L3* |

| I[1] . **Trip L1** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: General Trip Phase L1* |

| I[1] . **Trip L2** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: General Trip Phase L2* |

| I[1] . **Trip L3** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: General Trip Phase L3* |

| I[1] . **DefaultSet** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Default Parameter Set* |

| I[1] . **AdaptSet 1** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 1* |

| I[1] . **AdaptSet 2** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 2* |

| I[1] . **AdaptSet 3** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 3* |

| I[1] . **AdaptSet 4** | [Operation / Status Display / I-Prot / I[1]] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 4* |

# 9.12 IG[1] . . . IG[4] – Earth current protection - Stage

## 9.12.1 IG[1]: Device Planning Parameters

| IG[1] . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", non directional, forward, reverse<br><br>↳ Earth overcurrent. | S.3 |
| *Earth current protection - Stage, general operation mode* | | |

| IG[1] . **Superv. only** | [Device planning] | |
|---|---|---|
| no | no, yes<br><br>↳ yes/no. | S.3 |
| *Earth current protection - Stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command.* | | |

## 9.12.2 IG[1]: Global Parameters

| IG[1] . **CT Winding Side** | [Protection Para / Global Prot Para / I-Prot / IG[1]] | |
|---|---|---|
| W1 | W1, W2<br><br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| IG[1] . **ExBlo1**<br><br>IG[1] . **ExBlo2** | [Protection Para / Global Prot Para / I-Prot / IG[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| IG[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / I-Prot / IG[1]] | |
|---|---|---|
| "-"<br><br>*Only available if:* | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| IG[1] . **Ex rev Interl** | [Protection Para / Global Prot Para / I-Prot / IG[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module by external reverse interlocking, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| IG[1] . **AdaptSet 1** | [Protection Para / Global Prot Para / I-Prot / IG[1]] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 1* | | |

| IG[1] . **AdaptSet 2** | [Protection Para / Global Prot Para / I-Prot / IG[1]] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 2* | | |

| IG[1] . **AdaptSet 3** | [Protection Para / Global Prot Para / I-Prot / IG[1]] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 3* | | |

| IG[1] . **AdaptSet 4** | [Protection Para / Global Prot Para / I-Prot / IG[1]] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 4* | | |

## 9.12.3 IG[1]: Setting Group Parameters

| IG[1] . **Function** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| IG[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| IG[1] . **Ex rev Interl Fc** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "Ex rev Interl Fc = active".* | | |

| IG[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| inactive<br><br>*Only available if:* | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| IG[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| inactive<br><br>*Only available if:* | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| IG[1] . **IG Source** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| CT W1 . calculated | If: IG[1] . CT Winding Side = W1<br>• CT W1 . sensitive measurement, CT W1 . measured, CT W1 . calculated<br>If: IG[1] . CT Winding Side = W2<br>• CT W1 . calculated, CT W2 . measured (X4), CT W2 . sensitive measurement (X4)<br>↳ Measuring Channel. | P.2 |
| *Selection if measured or calculated ground current should be used.* | | |

| IG[1] . **Measuring method** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| Fundamental | Fundamental, True RMS<br>↳ Measuring method. | P.2 |
| *Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)* | | |

| IG[1] . **VX Source** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| measured | measured, calculated<br>↳ VX Source. | P.2 |
| *Selection if VG is measured or calculated (neutral voltage or residual voltage)* | | |

| IG[1] . **Meas Circuit Superv** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| Sys . inactive<br>*Only available if:* | Sys . inactive, LOP . active<br>↳ VTS Block. | P.2 |
| *Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).* | | |

| IG[1] . **IG>** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| 0.02In<br>⇻ Adapt. Param. | 0.02In . . . 20.00In | P.2 |
| *If the pickup value is exceeded, the module/stage will be started.* | | |

| IG[1] . **IGs>** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| 0.02In<br>⇻ Adapt. Param. | 0.002In ... 2.000In | P.2 |
| *If the pickup value is exceeded, the module/stage will be started.* | | |

| IG[1] . **Char** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| DEFT<br>⇻ Adapt. Param. | DEFT ... RXIDG<br>⮡ Char. | P.2 |
| *Characteristic* | | |

| IG[1] . **t** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| 0.00s<br>⇻ Adapt. Param. | 0.00s ... 300.00s | P.2 |
| *Tripping delay* | | |

| IG[1] . **tchar** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| 1<br>⇻ Adapt. Param. | 0.02 ... 20.00 | P.2 |
| *Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.* | | |

| IG[1] . **Reset Mode** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| instantaneous<br>⇻ Adapt. Param. | instantaneous, definite time, inverse time<br>⮡ Reset Mode. | P.2 |
| *Reset Mode* | | |

| IG[1] . **t-reset delay** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| 0.00s<br>*Only available if:*<br>⇻ Adapt. Param. | 0.00s ... 60.00s | P.2 |
| *Reset delay for intermittent phase failures (INV characteristics only)* | | |

| IG[1] . **IH2 Blo** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| Sys . inactive<br>⇼ Adapt. Param. | Sys . inactive, Sys . active<br>⮡ IH2 Blo. | P.2 |
| *Blocking the trip command, if an inrush is detected.* | | |

| IG[1] . **Dir n poss->Nondir Trip** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| inactive<br>⇼ Adapt. Param. | inactive, active<br>⮡ active/inactive. | P.2 |
| *Only relevant for current protection elements with directional feature! The device will trip non directional if this parameter is set to active and no direction could be determined. Direction detection is impossible e.g. if the required quantities for the direction detection cannot be measured or validated. Direction detection is also impossible if the frequency deviates significantly from the nominal frequency. Caution: If this parameter is set to inactive, the protective element will trip only if the direction can be detected.* | | |

| IG[1] . **VX Blo** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| inactive<br>⇼ Adapt. Param. | inactive, active<br>⮡ active/inactive. | P.2 |
| *VX Blo = active means that the IG-stage will only excite if a residual voltage higher than the pickup value is measured at the same time. VX Blo = inactive means that the excitation of the IG stage does not depend on any residual voltage stage.* | | |

| IG[1] . **VG>** | [Protection Para / Set 1...4 / I-Prot / IG[1]] | |
|---|---|---|
| 1.00Vn<br>⇼ Adapt. Param. | 0.01Vn . . . 2.00Vn | P.2 |
| *If the pickup value is exceeded, the module/stage will be started.* | | |

## 9.12.4 IG[1]: Input States

| IG[1] . **ExBlo1-I** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| *Module input state: External blocking1* | |

| IG[1] . **ExBlo2-I** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| *Module input state: External blocking2* | |

| IG[1] . **ExBlo TripCmd-I** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇩ | *Only available if:*<br>*Module input state: External Blocking of the Trip Command* |

| IG[1] . **Ex rev Interl-I** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇩ | *Module input state: External reverse interlocking* |

| IG[1] . **AdaptSet1-I** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇩ | *Module input state: Adaptive Parameter1* |

| IG[1] . **AdaptSet2-I** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇩ | *Module input state: Adaptive Parameter2* |

| IG[1] . **AdaptSet3-I** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇩ | *Module input state: Adaptive Parameter3* |

| IG[1] . **AdaptSet4-I** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇩ | *Module input state: Adaptive Parameter4* |

## 9.12.5 IG[1]: Signals (Output States)

| IG[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇧ | *Signal: active* |

| IG[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇧ | *Signal: The alarm threshold has been exceeded.* |

| IG[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇧ | *Signal: Trip* |

| IG[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Only available if:*<br>*Signal: Trip Command* |

| IG[1] . **ExBlo** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Signal: External Blocking* |

| IG[1] . **Ex rev Interl** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Signal: External reverse Interlocking* |

| IG[1] . **Blo TripCmd** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Only available if:*<br>*Signal: Trip Command blocked* |

| IG[1] . **ExBlo TripCmd** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Only available if:*<br>*Signal: External Blocking of the Trip Command* |

| IG[1] . **IGH2 Blo** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Signal: blocked by an inrush* |

| IG[1] . **DefaultSet** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Signal: Default Parameter Set* |

| IG[1] . **AdaptSet 1** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Signal: Adaptive Parameter 1* |

| IG[1] . **AdaptSet 2** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Signal: Adaptive Parameter 2* |

| IG[1] . **AdaptSet 3** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇫ | *Signal: Adaptive Parameter 3* |

Released



| IG[1] . **AdaptSet 4** | [Operation / Status Display / I-Prot / IG[1]] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 4* |

# 9.13 ThR – Thermal replica module

## 9.13.1 ThR: Device Planning Parameters

| ThR . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Device planning. | S.3 |
| *Thermal replica module, general operation mode* | | |

## 9.13.2 ThR: Global Parameters

| ThR . **CT Winding Side** | [Protection Para / Global Prot Para / I-Prot / ThR] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| ThR . **ExBlo1**<br>ThR . **ExBlo2** | [Protection Para / Global Prot Para / I-Prot / ThR] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| ThR . **ExBlo TripCmd** | [Protection Para / Global Prot Para / I-Prot / ThR] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.13.3 ThR: Setting Group Parameters

| ThR . **Function** | [Protection Para / Set 1...4 / I-Prot / ThR] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| ThR . **ExBlo Fc** | [Protection Para / Set 1...4 / I-Prot / ThR] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| ThR . **Blo TripCmd** | [Protection Para / Set 1...4 / I-Prot / ThR] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| ThR . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / I-Prot / ThR] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| ThR . **Ib** | [Protection Para / Set 1...4 / I-Prot / ThR] | |
|---|---|---|
| 1.00In | 0.01In ... 4.00In | P.2 |
| *Base current: Maximum permissible thermal continuous current.* | | |

| ThR . **K** | [Protection Para / Set 1...4 / I-Prot / ThR] | |
|---|---|---|
| 1.00 | 0.80 ... 1.50 | P.2 |
| *Overload Factor: The maximum thermal limit is defined as k*IB, the product of the overload factor and the base current.* | | |

| ThR . **Alarm Theta** | [Protection Para / Set 1...4 / I-Prot / ThR] | |
|---|---|---|
| 80% | 50% ... 100% | P.2 |
| *Pickup value* | | |

| ThR . **τ-warm** | [Protection Para / Set 1...4 / I-Prot / ThR] | |
|---|---|---|
| 10s | 1s ... 60000s | P.2 |
| *Warming-up time constant* | | |

| ThR . **τ-cool** | [Protection Para / Set 1...4 / I-Prot / ThR] | |
|---|---|---|
| 10s | 1s ... 60000s | P.2 |
| *Cooling time constant* | | |

## 9.13.4 ThR: Direct Controls

| ThR . **Reset** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Reset the Thermal Replica* | | |

## 9.13.5 ThR: Input States

| ThR . **ExBlo1-I** | [Operation / Status Display / I-Prot / ThR] |
|---|---|
| *Module input state: External blocking1* | |

| ThR . **ExBlo2-I** | [Operation / Status Display / I-Prot / ThR] |
|---|---|
| *Module input state: External blocking2* | |

| ThR . **ExBlo TripCmd-I** | [Operation / Status Display / I-Prot / ThR] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

Released



## 9.13.6 ThR: Signals (Output States)

| ThR . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / I-Prot / ThR] |
|---|---|
| ⇧ | *Signal: active* |

| ThR . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / I-Prot / ThR] |
|---|---|
| ⇧ | *Signal: Alarm Thermal Overload* |

| ThR . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / I-Prot / ThR] |
|---|---|
| ⇧ | *Signal: Trip* |

| ThR . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / I-Prot / ThR] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| ThR . **ExBlo** | [Operation / Status Display / I-Prot / ThR] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| ThR . **Blo TripCmd** | [Operation / Status Display / I-Prot / ThR] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| ThR . **ExBlo TripCmd** | [Operation / Status Display / I-Prot / ThR] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

| ThR . **Res Thermal Cap** | [Operation / Status Display / I-Prot / ThR] |
|---|---|
| ⇧ | *Signal: Resetting Thermal Replica* |

## 9.13.7 ThR: Values

| ThR . **Thermal Cap Used** | [Operation / Measured Values / ThR] |
|---|---|
| ⟍ | *Measured value: Thermal Capacity Used* |

Released



| ThR . **Time To Trip** | [Operation / Measured Values / ThR] |
|---|---|
| ⟍ | *Measured value (calculated/measured): Remaining time until the thermal overload module will trip* |

## 9.13.8 ThR: Statistical Values

| ThR . **Thermal Cap max** | [Operation / Statistics / Max / ThR] |
|---|---|
| 🗠 | *Thermal Capacity maximum value* |

Released



# 9.14 I2>[1] ... I2>[2] – Unbalanced Load-Stage

## 9.14.1 I2>[1]: Device Planning Parameters

| I2>[1] . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", use<br>↳ Device planning. | S.3 |
| *Unbalanced Load-Stage, general operation mode* | | |

## 9.14.2 I2>[1]: Global Parameters

| I2>[1] . **CT Winding Side** | [Protection Para / Global Prot Para / I-Prot / I2>[1]] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| I2>[1] . **ExBlo1**<br>I2>[1] . **ExBlo2** | [Protection Para / Global Prot Para / I-Prot / I2>[1]] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| I2>[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / I-Prot / I2>[1]] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| I2>[1] . **CurrentBase** | [Protection Para / Global Prot Para / I-Prot / I2>[1]] | |
|---|---|---|
| Device Rating | Device Rating, Protected Object Rating<br>↳ CurrentBase. | P.2 |
| *Base Current Selection (based on Device Rating (1A/5A)/Protected Object Rating).* | | |

## 9.14.3 I2>[1]: Setting Group Parameters

| I2>[1] . **Function** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| I2>[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| I2>[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| I2>[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| I2>[1] . **I2>** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| 0.01In<br><br>*Only available if:* | 0.01In ... 4.00In | P.2 |
| *The Threshold setting defines a minimum operating current magnitude of I2 for the 46 function to operate, which ensures that the relay has a solid basis for initiating a current unbalance trip. This is a supervisory function and not a trip level.* | | |

| I2>[1] . **I2/FLA** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| 0.08Ib<br><br>*Only available if:* | 0.000Ib ... 1.000Ib | P.2 |
| *Generator/motor unbalance current pickup value based on the full load current(FLA) (Setting from Continuous Unbalance Current Capability)* | | |

| I2>[1] . **%(I2/I1)** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *The %(I2/I1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence current to positive sequence current (% Unbalance=I2/I1). Phase sequence will be taken into account automatically.* | | |

| I2>[1] . **%(I2/I1)** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| 20% | 2% ... 40% | P.2 |
| *The %(I2/I1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence current to positive sequence current (% Unbalance=I2/I1). Phase sequence will be taken into account automatically.* | | |

| I2>[1] . **Char** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| DEFT | DEFT, INV<br><br>↳ Char. | P.2 |
| *Characteristic* | | |

| I2>[1] . **t** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | P.2 |
| *Tripping delay* | | |

| I2>[1] . **K** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| 10.0s | 1.00s ... 200.00s | P.2 |
| *This setting is the negative sequence capability constant. This value is normally provided by the generator manufacturer.* | | |

| I2>[1] . **τ-cool** | [Protection Para / Set 1...4 / I-Prot / I2>[1]] | |
|---|---|---|
| 0.0s | 0.0s ... 60000.0s | P.2 |
| *If the unbalanced load current falls below the pickup value, the cooling-off time is taken into account. If the unbalanced load exceeds the pickup value again, than the saved heat within the electrical equipment will lead to an accelerated trip.* | | |

## 9.14.4 I2>[1]: Input States

| I2>[1] . **ExBlo1-I** | [Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| *Module input state: External blocking1* | |

| I2>[1] . **ExBlo2-I** | [Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| *Module input state: External blocking2* | |

| I2>[1] . **ExBlo TripCmd-I** | [Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

## 9.14.5 I2>[1]: Signals (Output States)

| I2>[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| *Signal: active* | |

| I2>[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| *Signal: Alarm Negative Sequence* | |

| I2>[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| *Signal: Trip* | |

Released



| I2>[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| ⇫ | *Signal: Trip Command* |

| I2>[1] . **ExBlo** | [Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| ⇫ | *Signal: External Blocking* |

| I2>[1] . **Blo TripCmd** | [Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| ⇫ | *Signal: Trip Command blocked* |

| I2>[1] . **ExBlo TripCmd** | [Operation / Status Display / I-Prot / I2>[1]] |
|---|---|
| ⇫ | *Signal: External Blocking of the Trip Command* |

# 9.15 V[1] . . . V[6] – Voltage-stage

## 9.15.1 V[1]: Device Planning Parameters

| V[1] . **Mode** | [Device planning] | |
|---|---|---|
| V> | "-", V>, V<<br>↳ Device planning. | S.3 |
| *Voltage-stage, general operation mode* | | |

## 9.15.2 V[1]: Global Parameters

| V[1] . **ExBlo1**<br>V[1] . **ExBlo2** | [Protection Para / Global Prot Para / V-Prot / V[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| V[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / V-Prot / V[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.15.3 V[1]: Setting Group Parameters

| V[1] . **Function** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| V[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| V[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| V[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| V[1] . **Measuring Mode** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| Phase to Ground | Phase to Ground, Phase to Phase<br>↳ Measuring Mode. | P.2 |
| *Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised* | | |

| V[1] . **Measuring method** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| Fundamental | Fundamental, True RMS, Vavg<br>↳ Measuring method. | P.2 |
| *Measuring method: fundamental or rms or "sliding average supervision"* | | |

| V[1] . **Alarm Mode** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| any one | any one, any two, all<br>↳ Alarm Mode. | P.2 |
| *Alarm criterion for the voltage protection stage.* | | |

| V[1] . **V>** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| 1.1Vn | 0.01Vn ... 2.000Vn | P.2 |
| *If the pickup value is exceeded, the module/element will be started. The definition of Vn is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that Vn=VTsec/SQRT(3), and »Measuring Mode« = "Phase-to-Phase" means that Vn=VTsec. However, if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then the setting of "Measuring Mode" is ignored and internally set to "Phase-to-Phase" instead, so that Vn=VTsec.* | | |

| V[1] . **V> Reset%** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| 98.5% | 80% ... 99.0% | P.2 |
| *Drop Out (is in percent of setting)* | | |

| V[1] . **V<** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| 0.80Vn | 0.01Vn ... 2.000Vn | P.2 |
| *If the pickup value is exceeded, the module/element will be started. The definition of Vn is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that Vn=VTsec/SQRT(3), and »Measuring Mode« = "Phase-to-Phase" means that Vn=VTsec. However, if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then the setting of "Measuring Mode" is ignored and internally set to "Phase-to-Phase" instead, so that Vn=VTsec.* | | |

| V[1] . **V< Reset%** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| 101.5% | 101% ... 110.0% | P.2 |
| *Drop Out (is in percent of setting)* | | |

| V[1] . **t** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| 1s | 0.00s ... 3000.00s | P.2 |
| *Tripping delay* | | |

| V[1] . **Meas Circuit Superv** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br><br>↳ VTS Block. | P.2 |
| *Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).* | | |

Released



| V[1] . **Imin release check** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>Mode. | P.2 |
| *Enable a minimum current check. This monitors the current flow (in the CT on the VT side), to detect whether the circuit breaker is permanently in open state; in this case the undervoltage detection is blocked.* | | |

| V[1] . **Threshold Imin** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| 0.05In<br><br>*Only available if:* | 0.02In ... 10.00In | P.2 |
| *Threshold value that is used for the Imin release (minimum current) check. If the current flow is below this value, it is assumed that the circuit breaker is permanently in open state.* | | |

| V[1] . **t-delay Imin** | [Protection Para / Set 1...4 / V-Prot / V[1]] | |
|---|---|---|
| 0.03s<br><br>*Only available if:* | 0.00s ... 3000.00s | P.2 |
| *Release delay for the undervoltage detection. This delay is effective only after the minimum current check had blocked the undervoltage detection. When the circuit breaker has been closed and the current flow is re-establishing, this delay continues to block the undervoltage detection; during this time the voltage can rise above the pickup value »V<«.* | | |

## 9.15.4 V[1]: Input States

| V[1] . **ExBlo1-I** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| *Module input state: External blocking1* | |

| V[1] . **ExBlo2-I** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| *Module input state: External blocking2* | |

| V[1] . **ExBlo TripCmd-I** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

Released



## 9.15.5 V[1]: Signals (Output States)

| V[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: active* |

| V[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: Alarm voltage stage* |

| V[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: Trip* |

| V[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| V[1] . **ExBlo** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| V[1] . **Blo TripCmd** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| V[1] . **ExBlo TripCmd** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

| V[1] . **Alarm L1** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: Alarm L1* |

| V[1] . **Alarm L2** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: Alarm L2* |

Released



| V[1] . **Alarm L3** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: Alarm L3* |

| V[1] . **Trip L1** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: General Trip Phase L1* |

| V[1] . **Trip L2** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: General Trip Phase L2* |

| V[1] . **Trip L3** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal: General Trip Phase L3* |

| V[1] . **Imin release active** | [Operation / Status Display / V-Prot / V[1]] |
|---|---|
| ⇧ | *Signal that the Imin release (minimum current) check is enabled and does not block the undervoltage detection at the moment.* |

# 9.16 df/dt – Rate-of-frequency-change.

## 9.16.1 df/dt: Device Planning Parameters

| df/dt . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br><br>↳ Device planning. | S.3 |
| *Frequency Protection Module, general operation mode* | | |

## 9.16.2 df/dt: Global Parameters

| df/dt . **ExBlo1**<br><br>df/dt . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| df/dt . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.16.3 df/dt: Setting Group Parameters

| df/dt . **Function** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| df/dt . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| df/dt . **Blo TripCmd** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| df/dt . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| df/dt . **f>** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| 51.00Hz | 40.00Hz ... 69.00Hz | P.2 |
| *Pickup value for overfrequency.* | | |

| df/dt . **f<** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| 49.00Hz | 40.00Hz ... 69.00Hz | P.2 |
| *Pickup value for underfrequency.* | | |

| df/dt . **Freq. drop-off** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| 0.020Hz | 0.010Hz ... 0.100Hz | P.2 |
| *Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection.* | | |

| df/dt . **t** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| 1.00s | 0.00s ... 3600.00s | P.2 |
| *Tripping delay* | | |

| df/dt . **df/dt** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| 1.000Hz/s | 0.100Hz/s ... 10.000Hz/s | P.2 |
| *Measured value (calculated): Rate-of-frequency-change.* | | |

| df/dt . **t-df/dt** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| 1.00s | 0.00s ... 300.00s | P.2 |
| *Trip delay df/dt* | | |

| df/dt . **DF** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| 1.00Hz | 0.0Hz ... 10.0Hz | P.2 |
| *Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0.* | | |

| df/dt . **DT** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| 1.00s | 0.1s ... 10.0s | P.2 |
| *Time interval of the maximum admissible rate-of-frequency-change.* | | |

| df/dt . **df/dt mode** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| absolute df/dt | absolute df/dt, positive df/dt, negative df/dt<br><br>↳ Mode. | P.2 |
| *df/dt mode* | | |

| df/dt . **delta phi** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / df/dt] | |
|---|---|---|
| 10° | 1° ... 30° | P.2 |
| *Measured value (calculated): Vector surge* | | |

Released



## 9.16.4 df/dt: Input States

| | |
|---|---|
| df/dt . **ExBlo1-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
| ⇩ | *Module input state: External blocking1* |

| | |
|---|---|
| df/dt . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
| ⇩ | *Module input state: External blocking2* |

| | |
|---|---|
| df/dt . **ExBlo TripCmd-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
| ⇩ | *Module input state: External Blocking of the Trip Command* |

## 9.16.5 df/dt: Signals (Output States)

| | |
|---|---|
| df/dt . **active** | [Operation / Status Display / All Actives]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
| ⇧ | *Signal: active* |

| | |
|---|---|
| df/dt . **Alarm** | [Operation / Status Display / Alarms]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
| ⇧ | *Signal: Alarm Frequency Protection (collective signal)* |

| | |
|---|---|
| df/dt . **Trip** | [Operation / Status Display / Trips]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
| ⇧ | *Signal: Trip Frequency Protection (collective signal)* |

| | |
|---|---|
| df/dt . **TripCmd** | [Operation / Status Display / TripCmds]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
| ⇧ | *Signal: Trip Command* |

| df/dt . **ExBlo** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| df/dt . **Blo by V<** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
|---|---|
| ⇧ | *Signal: Module is blocked by undervoltage.* |

| df/dt . **Blo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| df/dt . **ExBlo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

# 9.17 delta phi – Vector surge

## 9.17.1 delta phi: Device Planning Parameters

| delta phi . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", use<br><br>↳ Device planning. | S.3 |
| *Frequency Protection Module, general operation mode* | | |

## 9.17.2 delta phi: Global Parameters

| delta phi . **ExBlo1**<br><br>delta phi . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| delta phi . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.17.3 delta phi: Setting Group Parameters

| delta phi . **Function** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| delta phi . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| delta phi . **Blo TripCmd** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| delta phi . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| delta phi . **f>** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| 51.00Hz | 40.00Hz ... 69.00Hz | P.2 |
| *Pickup value for overfrequency.* | | |

| delta phi . **f<** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| 49.00Hz | 40.00Hz ... 69.00Hz | P.2 |
| *Pickup value for underfrequency.* | | |

| delta phi . **Freq. drop-off** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| 0.020Hz | 0.010Hz ... 0.100Hz | P.2 |
| *Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection.* | | |

| delta phi . **t** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| 1.00s | 0.00s ... 3600.00s | P.2 |
| *Tripping delay* | | |

| delta phi . **df/dt** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| 1.000Hz/s | 0.100Hz/s ... 10.000Hz/s | P.2 |
| *Measured value (calculated): Rate-of-frequency-change.* | | |

| delta phi . **t-df/dt** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| 1.00s | 0.00s ... 300.00s | P.2 |
| *Trip delay df/dt* | | |

| delta phi . **DF** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| 1.00Hz | 0.0Hz ... 10.0Hz | P.2 |
| *Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0.* | | |

| delta phi . **DT** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| 1.00s | 0.1s ... 10.0s | P.2 |
| *Time interval of the maximum admissible rate-of-frequency-change.* | | |

| delta phi . **df/dt mode** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| absolute df/dt | absolute df/dt, positive df/dt, negative df/dt<br><br>Mode. | P.2 |
| *df/dt mode* | | |

| delta phi . **delta phi** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / delta phi] | |
|---|---|---|
| 10° | 1° ... 30° | P.2 |
| *Measured value (calculated): Vector surge* | | |

Released



## 9.17.4 delta phi: Input States

| | |
|---|---|
| delta phi . **ExBlo1-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
| ⇩ | *Module input state: External blocking1* |

| | |
|---|---|
| delta phi . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
| ⇩ | *Module input state: External blocking2* |

| | |
|---|---|
| delta phi . **ExBlo TripCmd-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
| ⇩ | *Module input state: External Blocking of the Trip Command* |

## 9.17.5 delta phi: Signals (Output States)

| | |
|---|---|
| delta phi . **active** | [Operation / Status Display / All Actives]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
| ⇧ | *Signal: active* |

| | |
|---|---|
| delta phi . **Alarm** | [Operation / Status Display / Alarms]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
| ⇧ | *Signal: Alarm Frequency Protection (collective signal)* |

| | |
|---|---|
| delta phi . **Trip** | [Operation / Status Display / Trips]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
| ⇧ | *Signal: Trip Frequency Protection (collective signal)* |

| | |
|---|---|
| delta phi . **TripCmd** | [Operation / Status Display / TripCmds]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
| ⇧ | *Signal: Trip Command* |

| delta phi . **ExBlo** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| delta phi . **Blo by V<** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
|---|---|
| ⇧ | *Signal: Module is blocked by undervoltage.* |

| delta phi . **Blo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| delta phi . **ExBlo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

# 9.18 Intertripping

## 9.18.1 Intertripping: Device Planning Parameters

| Intertripping . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br><br>↳ Device planning. | S.3 |
| *External Protection - Module, general operation mode* | | |

## 9.18.2 Intertripping: Global Parameters

| Intertripping . **ExBlo1**<br><br>Intertripping . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Intertripping . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Intertripping . **Alarm** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *Assignment for External Alarm* | | |

Released



| Intertripping . **Trip** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External trip of the CB if the state of the assigned signal is true.* | | |

## 9.18.3 Intertripping: Setting Group Parameters

| Intertripping . **Function** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Intertripping] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| Intertripping . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Intertripping] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| Intertripping . **Blo TripCmd** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Intertripping] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| Intertripping . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Intertripping] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

## 9.18.4 Intertripping: Input States

| Intertripping . **ExBlo1-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| *Module input state: External blocking1* | |

| Intertripping . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| *Module input state: External blocking2* | |

| Intertripping . **ExBlo TripCmd-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

| Intertripping . **Alarm-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| *Module input state: Alarm* | |

| Intertripping . **Trip-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| *Module input state: Trip* | |

## 9.18.5 Intertripping: Signals (Output States)

| Intertripping . **active** | [Operation / Status Display / All Actives]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| *Signal: active* | |

Released



| Intertripping . **Alarm** | [Operation / Status Display / Alarms]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| ⇧ | *Signal: Alarm* |

| Intertripping . **Trip** | [Operation / Status Display / Trips]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| ⇧ | *Signal: Trip* |

| Intertripping . **TripCmd** | [Operation / Status Display / TripCmds]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| Intertripping . **ExBlo** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| Intertripping . **Blo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| Intertripping . **ExBlo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

# 9.19 P – Reverse Active Power

## 9.19.1 P: Device Planning Parameters

| P . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, P>, Pr><br><br>↳ Mode. | S.3 |
| *Power Protection - Module, general operation mode* | | |

## 9.19.2 P: Global Parameters

| P . **ExBlo1**<br><br>P . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| P . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.19.3 P: Setting Group Parameters

| P . **Function** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| P . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| | *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | |

| P . **Blo TripCmd** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| | *Permanent blocking of the Trip Command of the module/stage.* | |

| P . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| | *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | |

| P . **MeasCircSv Volt** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br><br>↳ VTS Block. | P.2 |
| | *Measuring Circuit Supervision Voltage* | |

| P . **MeasCircSv Curr** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| Sys . inactive | Sys . inactive, Sys . active<br><br>↳ VTS Block. | P.2 |
| | *Measuring Circuit Supervision Curent* | |

| P . **P>** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| 1.20Sn | 0.003Sn ... 10.000Sn | P.2 |
| *Over(load) Active Power Pickup Value. Can be used for monitoring the maximum allowed forward power limits of transformers or overhead lines. Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| P . **Pr>** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| 0.5Sn | 0.003Sn ... 10.000Sn | P.2 |
| *Overload Reverse Active Power Pickup Value. Protection against reverse feeding into the power supply network. Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| P . **S>** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| 1.20Sn | 0.02Sn ... 10.00Sn | P.2 |
| *Over(load) Apparent Power Pickup Value Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| P . **S<** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| 0.80Sn | 0.02Sn ... 10.00Sn | P.2 |
| *Under(load) Apparent Power Pickup Value Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| P . **t** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| 0.01s | 0.00s ... 1100.00s | P.2 |
| *Tripping delay* | | |

| P . **PowMeasMethod** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / P] | |
|---|---|---|
| True RMS | Fundamental, True RMS<br><br>↳ PowMeasMethod. | P.2 |
| *Determines if the active power, reactive power and apparent power are calculated on the basis of RMS or DFT.* | | |

## 9.19.4 P: Input States

| | |
|---|---|
| P . **ExBlo1-I**<br><br>P . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / P] |
| ⇩ | *Module input state: External blocking* |

| | |
|---|---|
| P . **ExBlo TripCmd-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / P] |
| ⇩ | *Module input state: External Blocking of the Trip Command* |

## 9.19.5 P: Signals (Output States)

| | |
|---|---|
| P . **active** | [Operation / Status Display / All Actives]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / P] |
| ⇧ | *Signal: active* |

| | |
|---|---|
| P . **Alarm** | [Operation / Status Display / Alarms]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / P] |
| ⇧ | *Signal: Alarm Power Protection* |

| | |
|---|---|
| P . **Trip** | [Operation / Status Display / Trips]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / P] |
| ⇧ | *Signal: Trip Power Protection* |

| | |
|---|---|
| P . **TripCmd** | [Operation / Status Display / TripCmds]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / P] |
| ⇧ | *Signal: Trip Command* |

| | |
|---|---|
| P . **ExBlo** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / P] |
| ⇧ | *Signal: External Blocking* |

| P . **Blo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / P] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| P . **ExBlo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / P] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

# 9.20 Q

## 9.20.1 Q: Device Planning Parameters

| Q . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, Q>, Qr><br><br>↳ Mode. | S.3 |
| *Power Protection - Module, general operation mode* | | |

## 9.20.2 Q: Global Parameters

| Q . **ExBlo1**<br><br>Q . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Q . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.20.3 Q: Setting Group Parameters

| Q . **Function** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| Q . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| Q . **Blo TripCmd** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| Q . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| Q . **MeasCircSv Volt** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br><br>↳ VTS Block. | P.2 |
| *Measuring Circuit Supervision Voltage* | | |

| Q . **MeasCircSv Curr** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| Sys . inactive | Sys . inactive, Sys . active<br><br>↳ VTS Block. | P.2 |
| *Measuring Circuit Supervision Curent* | | |

Released



| Q . **Q>** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| 1.20Sn | 0.003Sn ... 10.000Sn | P.2 |
| *Over(load) Reactive Power Pickup Value. Monitoring the maximum allowed reactive power of the electrical equipment like transformers or overhead lines). If the maximum value is exceeded a condensator bank could be switched off. Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| Q . **Qr>** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| 0.5Sn | 0.003Sn ... 10.000Sn | P.2 |
| *Overload Reverse Reactive Power Pickup Value Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| Q . **S>** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| 1.20Sn | 0.02Sn ... 10.00Sn | P.2 |
| *Over(load) Apparent Power Pickup Value Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| Q . **S<** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| 0.80Sn | 0.02Sn ... 10.00Sn | P.2 |
| *Under(load) Apparent Power Pickup Value Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| Q . **t** | [Protection Para / Set 1...4 / Intercon-Prot / Mains Decouplg / Q] | |
|---|---|---|
| 0.01s | 0.00s ... 1100.00s | P.2 |
| *Tripping delay* | | |

## 9.20.4 Q: Input States

| Q . **ExBlo1-I**<br>Q . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Q] |
|---|---|
| *Module input state: External blocking* | |

| | |
|---|---|
| Q . **ExBlo TripCmd-I** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Q] |
| ⇩ | *Module input state: External Blocking of the Trip Command* |

## 9.20.5 Q: Signals (Output States)

| | |
|---|---|
| Q . **active** | [Operation / Status Display / All Actives]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / Q] |
| ⇧ | *Signal: active* |

| | |
|---|---|
| Q . **Alarm** | [Operation / Status Display / Alarms]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / Q] |
| ⇧ | *Signal: Alarm Power Protection* |

| | |
|---|---|
| Q . **Trip** | [Operation / Status Display / Trips]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / Q] |
| ⇧ | *Signal: Trip Power Protection* |

| | |
|---|---|
| Q . **TripCmd** | [Operation / Status Display / TripCmds]<br><br>[Operation / Status Display / Intercon-Prot / Mains Decouplg / Q] |
| ⇧ | *Signal: Trip Command* |

| | |
|---|---|
| Q . **ExBlo** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Q] |
| ⇧ | *Signal: External Blocking* |

| | |
|---|---|
| Q . **Blo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Q] |
| ⇧ | *Signal: Trip Command blocked* |

Released



| Q . **ExBlo TripCmd** | [Operation / Status Display / Intercon-Prot / Mains Decouplg / Q] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

# 9.21 LVRT[1] . . . LVRT[2] – Low Voltage Ride Through

## 9.21.1 LVRT[1]: Device Planning Parameters

| LVRT[1] . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", use<br>↳ Device planning. | S.3 |
| *general operation mode* | | |

## 9.21.2 LVRT[1]: Global Parameters

| LVRT[1] . **ExBlo1**<br>LVRT[1] . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / LVRT[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| LVRT[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Intercon-Prot / LVRT[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.21.3 LVRT[1]: Setting Group Parameters

| LVRT[1] . **Function** | [Protection Para / Set 1…4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| LVRT[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| LVRT[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| LVRT[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| LVRT[1] . **Measuring Mode** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| Phase to Ground | Phase to Ground, Phase to Phase<br><br>↳ Measuring Mode. | P.2 |
| *Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised* | | |

| LVRT[1] . **Measuring method** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| Fundamental | Fundamental, True RMS<br><br>↳ Measuring method. | P.2 |
| *Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)* | | |

| LVRT[1] . **Alarm Mode** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| any one | any one, any two, all, only 2<br><br>↳ Alarm Mode. | P.2 |
| *Alarm criterion for the voltage protection stage.* | | |

| LVRT[1] . **Meas Circuit Superv** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br><br>↳ VTS Block. | P.2 |
| *Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).* | | |

| LVRT[1] . **AR controlled LVRT** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activates the supervision of the number of voltage dips during a defined time (t-LVRT).* | | |

| LVRT[1] . **Number of V dips to trip** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| 1<br><br>*Only available if:* | 1 ... 6 | P.2 |
| *Number of voltage dips until the disconnection signal (trip) will be issued.* | | |

| LVRT[1] . **t-LVRT** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / General Settings] | |
|---|---|---|
| 30.00s<br><br>*Only available if:* | 0.00s ... 3000.00s | P.2 |
| *This timer defines the supervision interval (window/period) for counting the number of voltage dips to trip ("No of V dips to trip"). The first voltage dip will start the timer. The counted number of voltage dips will be reset if the timer is expired. The timer will also be reset if the maximum "No of V dips to trip" is reached.* | | |

| LVRT[1] . **Vstart<** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 0.90Vn | 0.00Vn ... 2.00Vn | P.2 |
| *A voltage dip is detected if the measured voltage falls below this threshold.* | | |

| LVRT[1] . **Vrecover>** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 0.93Vn | 0.10Vn ... 2.00Vn | P.2 |
| *The voltage is recovered if the measured voltage raises above this threshold.* | | |

| LVRT[1] . **V(t1)**<br>LVRT[1] . **V(t2)** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 0.00Vn | 0.00Vn ... 2.00Vn | P.2 |
| *Voltage value of a point V(t(n)). These points define the LVRT profile.* | | |

| LVRT[1] . **t1** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 0.00s | 0.00s ... 20.00s | P.2 |
| *Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile.* | | |

| LVRT[1] . **t2**<br>LVRT[1] . **t3** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 0.15s | 0.00s ... 20.00s | P.2 |
| *Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile.* | | |

| LVRT[1] . **V(t3)**<br>LVRT[1] . **V(t4)** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 0.70Vn | 0.00Vn ... 2.00Vn | P.2 |
| *Voltage value of a point V(t(n)). These points define the LVRT profile.* | | |

| LVRT[1] . **t4** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 0.70s | 0.00s ... 20.00s | P.2 |
| *Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile.* | | |

| LVRT[1] . **V(t5)**<br>**...**<br>LVRT[1] . **V(t10)** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 0.90Vn | 0.00Vn ... 2.00Vn | P.2 |
| *Voltage value of a point V(t(n)). These points define the LVRT profile.* | | |

| LVRT[1] . **t5** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 1.50s | 0.00s ... 20.00s | P.2 |
| *Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile.* | | |

| LVRT[1] . **t6**<br>**...**<br>LVRT[1] . **t10** | [Protection Para / Set 1...4 / Intercon-Prot / LVRT[1] / LVRT Profile] | |
|---|---|---|
| 3.00s | 0.00s ... 20.00s | P.2 |
| *Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile.* | | |

## 9.21.4 LVRT[1]: Direct Controls

| LVRT[1] . **Res LVRT Cr** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.1 |
| *Reset of the counter for the total number of voltage dips and reset of the counter of the total number of voltage dips that caused a trip.* | | |

## 9.21.5 LVRT[1]: Input States

| LVRT[1] . **ExBlo1-I** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| *Module input state: External blocking1* | |

| LVRT[1] . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| *Module input state: External blocking2* | |

| LVRT[1] . **ExBlo TripCmd-I** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇩ | *Module input state: External Blocking of the Trip Command* |

## 9.21.6 LVRT[1]: Signals (Output States)

| LVRT[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: active* |

| LVRT[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: Alarm voltage stage* |

| LVRT[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: Trip* |

| LVRT[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| LVRT[1] . **ExBlo** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| LVRT[1] . **Blo TripCmd** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| LVRT[1] . **ExBlo TripCmd** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

| LVRT[1] . **Alarm L1** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: Alarm L1* |

| LVRT[1] . **Alarm L2** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: Alarm L2* |

| LVRT[1] . **Alarm L3** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: Alarm L3* |

| LVRT[1] . **Trip L1** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: General Trip Phase L1* |

| LVRT[1] . **Trip L2** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: General Trip Phase L2* |

| LVRT[1] . **Trip L3** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: General Trip Phase L3* |

| LVRT[1] . **t-LVRT is running** | [Operation / Status Display / Intercon-Prot / LVRT[1]] |
|---|---|
| ⇧ | *Signal: t-LVRT is running* |

## 9.21.7 LVRT[1]: Counters

| LVRT[1] . **NumOf Vdips in t-LVRT** | [Operation / Count and RevData / LVRT[1]] |
|---|---|
| # | *Number of Voltage dips during t-LVRT* |

| LVRT[1] . **Cr Tot Numb of Vdips** | [Operation / Count and RevData / LVRT[1]] |
|---|---|
| # | *Counter Total number of voltage dips.* |

| LVRT[1] . **Cr Tot Numb of Vdips to Trip** | [Operation / Count and RevData / LVRT[1]] |
|---|---|
| # | *Counter Total number of voltage dips that caused a Trip.* |

Released



# 9.22 VG[1] ... VG[2] – Residual voltage-Stage

## 9.22.1 VG[1]: Device Planning Parameters

| VG[1] . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", V>, V<<br>↳ Device planning. | S.3 |
| *Residual voltage-Stage, general operation mode* | | |

| VG[1] . **Superv. only** | [Device planning] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | S.3 |
| *Residual voltage-Stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command.* | | |

## 9.22.2 VG[1]: Global Parameters

| VG[1] . **ExBlo1**<br>VG[1] . **ExBlo2** | [Protection Para / Global Prot Para / V-Prot / VG[1]] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| VG[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / V-Prot / VG[1]] | |
|---|---|---|
| "-"<br>*Only available if:* | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.22.3 VG[1]: Setting Group Parameters

| VG[1] . **Function** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| VG[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| VG[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| inactive<br>*Only available if:* | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| VG[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| inactive<br>*Only available if:* | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| VG[1] . **VX Source** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| measured | measured, calculated<br>↳ VX Source. | P.2 |
| *Selection if VG is measured or calculated (neutral voltage or residual voltage)* | | |

| VG[1] . **Measuring method** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| Fundamental | Fundamental, True RMS<br>↳ Measuring method. | P.2 |
| *Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)* | | |

| VG[1] . **VG>** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| 1Vn | 0.01Vn ... 2.00Vn | P.2 |
| *If the pickup value is exceeded, the module/stage will be started.* | | |

| VG[1] . **VG<** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| 0.8Vn | 0.01Vn ... 2.00Vn | P.2 |
| *Undervoltage Threshold* | | |

| VG[1] . **t** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | P.2 |
| *Tripping delay* | | |

| VG[1] . **Meas Circuit Superv** | [Protection Para / Set 1...4 / V-Prot / VG[1]] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br>↳ VTS Block. | P.2 |
| *Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).* | | |

## 9.22.4 VG[1]: Input States

| VG[1] . **ExBlo1-I** | [Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| *Module input state: External blocking1* | |

| VG[1] . **ExBlo2-I** | [Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| *Module input state: External blocking2* | |

| VG[1] . **ExBlo TripCmd-I** | [Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| ⇩ | *Only available if:*<br>*Module input state: External Blocking of the Trip Command* |

## 9.22.5 VG[1]: Signals (Output States)

| VG[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| ⇧ | *Signal: active* |

| VG[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| ⇧ | *Signal: Alarm Residual Voltage Supervision-stage* |

| VG[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| ⇧ | *Signal: Trip* |

| VG[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| ⇧ | *Only available if:*<br>*Signal: Trip Command* |

| VG[1] . **ExBlo** | [Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| VG[1] . **Blo TripCmd** | [Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| ⇧ | *Only available if:*<br>*Signal: Trip Command blocked* |

Released



| VG[1] . **ExBlo TripCmd** | [Operation / Status Display / V-Prot / VG[1]] |
|---|---|
| | *Only available if:*<br>*Signal: External Blocking of the Trip Command* |

# 9.23 V012[1] . . . V012[6] – Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence

## 9.23.1 V012[1]: Device Planning Parameters

| V012[1] . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", V1>, V1<, V2><br>↳ Device planning. | S.3 |
| *Unbalance Protection: Supervision of the Voltage System* | | |

## 9.23.2 V012[1]: Global Parameters

| V012[1] . **ExBlo1** | [Protection Para / Global Prot Para / V-Prot / V012[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1* | | |

| V012[1] . **ExBlo2** | [Protection Para / Global Prot Para / V-Prot / V012[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2* | | |

| V012[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / V-Prot / V012[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.23.3 V012[1]: Setting Group Parameters

| V012[1] . **Function** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| V012[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| V012[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| V012[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| V012[1] . **V1>** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| 1.00Vn | 0.01Vn ... 2.00Vn | P.2 |
| *Positive Phase Sequence Overvoltage* | | |

| V012[1] . **V1<** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| 1.00Vn | 0.01Vn ... 2.00Vn | P.2 |
| *Positive Phase Sequence Undervoltage* | | |

| V012[1] . **V2>** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| 1.00Vn | 0.01Vn ... 2.00Vn | P.2 |
| *Negative Phase Sequence Overvoltage* | | |

| V012[1] . **%(V2/V1)** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically.* | | |

| V012[1] . **%(V2/V1)** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| 20% | 2% ... 40% | P.2 |
| *The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically.* | | |

| V012[1] . **t** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | P.2 |
| *Tripping delay* | | |

| V012[1] . **Meas Circuit Superv** | [Protection Para / Set 1...4 / V-Prot / V012[1]] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br>↳ VTS Block. | P.2 |
| *Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).* | | |

## 9.23.4 V012[1]: Input States

| V012[1] . **ExBlo1-I** | [Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| *Module input state: External blocking1* | |

| V012[1] . **ExBlo2-I** | [Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| *Module input state: External blocking2* | |

| V012[1] . **ExBlo TripCmd-I** | [Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| ⇩ | *Module input state: External Blocking of the Trip Command* |

## 9.23.5 V012[1]: Signals (Output States)

| V012[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| ⇧ | *Signal: active* |

| V012[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| ⇧ | *Signal: Alarm voltage asymmetry* |

| V012[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| ⇧ | *Signal: Trip* |

| V012[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| V012[1] . **ExBlo** | [Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| V012[1] . **Blo TripCmd** | [Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| V012[1] . **ExBlo TripCmd** | [Operation / Status Display / V-Prot / V012[1]] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

# 9.24 f[1] . . . f[6] – Frequency Protection Module

## 9.24.1 f[1]: Device Planning Parameters

| f[1] . **Mode** | [Device planning] | |
|---|---|---|
| f< | “-” . . . delta phi<br><br>↳ Device planning. | S.3 |
| *Frequency Protection Module, general operation mode* | | |

## 9.24.2 f[1]: Global Parameters

| f[1] . **ExBlo1**<br><br>f[1] . **ExBlo2** | [Protection Para / Global Prot Para / f-Prot / f[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| f[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / f-Prot / f[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.24.3 f[1]: Setting Group Parameters

| f[1] . **Function** | [Protection Para / Set 1…4 / f-Prot / f[1]] | |
|---|---|---|
| active | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| f[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| f[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| f[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| f[1] . **f>** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| 51.00Hz | 40.00Hz ... 69.00Hz | P.2 |
| *Pickup value for overfrequency.* | | |

| f[1] . **f<** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| 49.00Hz | 40.00Hz ... 69.00Hz | P.2 |
| *Pickup value for underfrequency.* | | |

| f[1] . **Freq. drop-off** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| 0.020Hz | 0.010Hz ... 0.100Hz | P.2 |
| *Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection.* | | |

| f[1] . **t** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| 1.00s | 0.00s ... 3600.00s | P.2 |
| *Tripping delay* | | |

| f[1] . **df/dt** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| 1.000Hz/s | 0.100Hz/s ... 10.000Hz/s | P.2 |
| *Measured value (calculated): Rate-of-frequency-change.* | | |

| f[1] . **t-df/dt** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| 1.00s | 0.00s ... 300.00s | P.2 |
| *Trip delay df/dt* | | |

| f[1] . **DF** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| 1.00Hz | 0.0Hz ... 10.0Hz | P.2 |
| *Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0.* | | |

| f[1] . **DT** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| 1.00s | 0.1s ... 10.0s | P.2 |
| *Time interval of the maximum admissible rate-of-frequency-change.* | | |

| f[1] . **df/dt mode** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| absolute df/dt | absolute df/dt, positive df/dt, negative df/dt<br>↳ Mode. | P.2 |
| *df/dt mode* | | |

| f[1] . **delta phi** | [Protection Para / Set 1...4 / f-Prot / f[1]] | |
|---|---|---|
| 10° | 1° ... 30° | P.2 |
| *Measured value (calculated): Vector surge* | | |

## 9.24.4 f[1]: Input States

| f[1] . **ExBlo1-I** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| *Module input state: External blocking1* | |

| f[1] . **ExBlo2-I** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| *Module input state: External blocking2* | |

| f[1] . **ExBlo TripCmd-I** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇩ | *Module input state: External Blocking of the Trip Command* |

## 9.24.5 f[1]: Signals (Output States)

| f[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: active* |

| f[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Alarm Frequency Protection (collective signal)* |

| f[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Trip Frequency Protection (collective signal)* |

| f[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| f[1] . **ExBlo** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| f[1] . **Blo by V<** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Module is blocked by undervoltage.* |

| f[1] . **Blo TripCmd** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| f[1] . **ExBlo TripCmd** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

| f[1] . **Alarm f** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Alarm Frequency Protection* |

| f[1] . **Alarm df/dt \| DF/DT** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Alarm instantaneous or average value of the rate-of-frequency-change* |

| f[1] . **Alarm delta phi** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Alarm Vector Surge* |

| f[1] . **Trip f** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Frequency has exceeded the limit.* |

| f[1] . **Trip df/dt \| DF/DT** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Trip df/dt or DF/DT* |

| f[1] . **Trip delta phi** | [Operation / Status Display / f-Prot / f[1]] |
|---|---|
| ⇧ | *Signal: Trip Vector Surge* |

# 9.25 PQS[1] ... PQS[6] – Power Protection - Module

## 9.25.1 PQS[1]: Device Planning Parameters

| PQS[1] . **Mode** | [Device planning] | |
|---|---|---|
| P> | "-" ... S<<br>↳ Mode. | S.3 |
| *Power Protection - Module, general operation mode* | | |

## 9.25.2 PQS[1]: Global Parameters

| PQS[1] . **ExBlo1**<br>PQS[1] . **ExBlo2** | [Protection Para / Global Prot Para / P-Prot / PQS[1]] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| PQS[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / P-Prot / PQS[1]] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.25.3 PQS[1]: Setting Group Parameters

| PQS[1] . **Function** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| PQS[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| PQS[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| PQS[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| PQS[1] . **MeasCircSv Volt** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br>↳ VTS Block. | P.2 |
| *Measuring Circuit Supervision Voltage* | | |

| PQS[1] . **MeasCircSv Curr** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| Sys . inactive | Sys . inactive, Sys . active<br>↳ VTS Block. | P.2 |
| *Measuring Circuit Supervision Curent* | | |

| PQS[1] . **P>** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 1.0Sn | 0.003Sn . . . 10.000Sn | P.2 |
| *Over(load) Active Power Pickup Value. Can be used for monitoring the maximum allowed forward power limits of transformers or overhead lines. Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **P<** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 0.80Sn | 0.003Sn . . . 10.000Sn | P.2 |
| *Under(load) Active Power Pickup Value (e.g. caused by idling motors). Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **Pr>** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 0.020Sn | 0.003Sn . . . 10.000Sn | P.2 |
| *Overload Reverse Active Power Pickup Value. Protection against reverse feeding into the power supply network. Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **Pr<** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 0.80Sn | 0.003Sn . . . 10.000Sn | P.2 |
| *Under Reverse Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **Q>** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 1.20Sn | 0.003Sn . . . 10.000Sn | P.2 |
| *Over(load) Reactive Power Pickup Value. Monitoring the maximum allowed reactive power of the electrical equipment like transformers or overhead lines). If the maximum value is exceeded a condensator bank could be switched off. Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **Q<** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 0.80Sn | 0.003Sn . . . 10.000Sn | P.2 |
| *Under(load) Reactive Power Pickup Value. Monitoring the minimum value of the reactive power. If it falls below the set value a condensator bank could be switched on. Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **Qr>** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 0.020Sn | 0.003Sn . . . 10.000Sn | P.2 |
| *Overload Reverse Reactive Power Pickup Value Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **Qr<** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 0.80Sn | 0.003Sn . . . 10.000Sn | P.2 |
| *Under Reverse Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **S>** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 1.20Sn | 0.02Sn ... 10.00Sn | P.2 |
| *Over(load) Apparent Power Pickup Value Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **S<** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 0.80Sn | 0.02Sn ... 10.00Sn | P.2 |
| *Under(load) Apparent Power Pickup Value Definition for Sn is as follows: Sn = 1.7321 * VT rating * CT rating. The voltage is the line-to-line voltage.* | | |

| PQS[1] . **t** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| 1.00s | 0.00s ... 1100.00s | P.2 |
| *Tripping delay* | | |

| PQS[1] . **PowMeasMethod** | [Protection Para / Set 1...4 / P-Prot / PQS[1]] | |
|---|---|---|
| Fundamental | Fundamental, True RMS<br>PowMeasMethod. | P.2 |
| *Determines if the active power, reactive power and apparent power are calculated on the basis of RMS or DFT.* | | |

## 9.25.4 PQS[1]: Input States

| PQS[1] . **ExBlo1-I**<br>PQS[1] . **ExBlo2-I** | [Operation / Status Display / P-Prot / PQS[1]] |
|---|---|
| *Module input state: External blocking* | |

| PQS[1] . **ExBlo TripCmd-I** | [Operation / Status Display / P-Prot / PQS[1]] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

## 9.25.5 PQS[1]: Signals (Output States)

| PQS[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / P-Prot / PQS[1]] |
|---|---|
| *Signal: active* | |

Released



| PQS[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / P-Prot / PQS[1]] |
|---|---|
| ⇫ | *Signal: Alarm Power Protection* |

| PQS[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / P-Prot / PQS[1]] |
|---|---|
| ⇫ | *Signal: Trip Power Protection* |

| PQS[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / P-Prot / PQS[1]] |
|---|---|
| ⇫ | *Signal: Trip Command* |

| PQS[1] . **ExBlo** | [Operation / Status Display / P-Prot / PQS[1]] |
|---|---|
| ⇫ | *Signal: External Blocking* |

| PQS[1] . **Blo TripCmd** | [Operation / Status Display / P-Prot / PQS[1]] |
|---|---|
| ⇫ | *Signal: Trip Command blocked* |

| PQS[1] . **ExBlo TripCmd** | [Operation / Status Display / P-Prot / PQS[1]] |
|---|---|
| ⇫ | *Signal: External Blocking of the Trip Command* |

# 9.26 PF[1] . . . PF[2] – Power Factor - Module

## 9.26.1 PF[1]: Device Planning Parameters

| PF[1] . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Mode. | S.3 |
| *Power Factor - Module, general operation mode* | | |

## 9.26.2 PF[1]: Global Parameters

| PF[1] . **ExBlo1**<br>PF[1] . **ExBlo2** | [Protection Para / Global Prot Para / PF-Prot / PF[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| PF[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / PF-Prot / PF[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.26.3 PF[1]: Setting Group Parameters

| PF[1] . **Function** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| PF[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| PF[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| PF[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| PF[1] . **Measuring method** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| Fundamental | Fundamental, True RMS<br>↳ Measuring method. | P.2 |
| *Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)* | | |

| PF[1] . **Trig Mode** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| I lags V | I leads V, I lags V<br>↳ Mode. | P.2 |
| *Trigger Mode. Should the Module be triggered if the Current Phasor is leading to the Voltage Phasor = Lead? Or should the Module be triggered if the Current Phasor is lagging to the Voltage Phasor = Lag?* | | |

| PF[1] . **Trigger-PF** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| 0.8 | 0.5 . . . 0.99 | P.2 |
| *This is the power factor where the relay will pick-up.* | | |

| PF[1] . **Res Mode** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| I leads V | I leads V, I lags V<br><br>↳ Mode. | P.2 |
| *Trigger Mode. Should the Module be triggered if the Current Phasor is leading to the Voltage Phasor = Lead? Or should the Module be triggered if the Current Phasor is lagging to the Voltage Phasor = Lag?* | | |

| PF[1] . **Reset-PF** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| 0.99 | 0.5 ... 0.99 | P.2 |
| *This setting is the power factor, at which the relay will reset the power factor trip. It is like setting a hysteresis for the Trigger setting.* | | |

| PF[1] . **t** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| 0.00s | 0.00s ... 300.00s | P.2 |
| *Tripping delay* | | |

| PF[1] . **Pre-trig Comp** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| 5.00s | 0.00s ... 300.00s | P.2 |
| *Pickup (Pre-trigger) time for the Compensation Signal. When this timer is elapsed the compensation signal will be activated.* | | |

| PF[1] . **Post-trig Comp** | [Protection Para / Set 1...4 / PF-Prot / PF[1]] | |
|---|---|---|
| 5.00s | 0.00s ... 300.00s | P.2 |
| *Post-trigger time of the Compensation Signal. When this timer is elapsed the compensation signal will be deactivated.* | | |

## 9.26.4 PF[1]: Input States

| PF[1] . **ExBlo1-I**<br><br>PF[1] . **ExBlo2-I** | [Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| *Module input state: External blocking* | |

| PF[1] . **ExBlo TripCmd-I** | [Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

## 9.26.5 PF[1]: Signals (Output States)

| PF[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| ⇧ | *Signal: active* |

| PF[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| ⇧ | *Signal: Alarm Power Factor* |

| PF[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| ⇧ | *Signal: Trip Power Factor* |

| PF[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| PF[1] . **ExBlo** | [Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| PF[1] . **Blo TripCmd** | [Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| PF[1] . **ExBlo TripCmd** | [Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

| PF[1] . **Compensator** | [Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| ⇧ | *Signal: Compensation Signal* |

| PF[1] . **Impossible** | [Operation / Status Display / PF-Prot / PF[1]] |
|---|---|
| ⇧ | *Signal: Alarm Power Factor Impossible* |

# 9.27 Q->&V<

## 9.27.1 Q->&V<: Device Planning Parameters

| Q->&V< . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br><br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 9.27.2 Q->&V<: Global Parameters

| Q->&V< . **ExBlo1**<br><br>Q->&V< . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / Q->&V<] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Q->&V< . **Power Trip dir** | [Protection Para / Global Prot Para / Intercon-Prot / Q->&V<] | |
|---|---|---|
| positive | positive, negative<br><br>↳ Power Trip dir. | P.2 |
| *By means of this parameter the trip direction of active and reactive power can be inverted within the QV-Module (sign reversal).* | | |

## 9.27.3 Q->&V<: Setting Group Parameters

| Q->&V< . **Function** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| Q->&V< . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| Q->&V< . **Meas Circuit Superv** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / General Settings] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br><br>↳ VTS Block. | P.2 |
| *Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).* | | |

| Q->&V< . **QV-Method** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / Decoupling] | |
|---|---|---|
| Power Angle Supervision | Power Angle Supervision, Pure Reactive Power Superv<br><br>↳ Selection of the Q(V)-Method: Power Angle or Reactive Power Threshold. | P.2 |
| *Selection of the Q(V)-Method: Power Angle or Reactive Power Threshold* | | |

| Q->&V< . **I1 Release** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / Decoupling] | |
|---|---|---|
| active | If: Q->&V< . QV-Method = Power Angle Supervision<br>• active<br>If: Q->&V< . QV-Method = Pure Reactive Power Superv<br>• inactive, active<br>↳ I1 Release. | P.2 |
| *Activation of the "I1 Minimum Current"-Criterion.* | | |

| Q->&V< . **I1 min QV** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / Decoupling] | |
|---|---|---|
| 0.10In<br><br>*Only available if:* | 0.01In ... 0.20In | P.2 |
| *Activation of an "I1 Minimum Current" of the rated current of the (distributed) energy resource can prevent faulty tripping.* | | |

| Q->&V< . **VLL< QV** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / Decoupling] | |
|---|---|---|
| 0.85Vn | 0.70Vn ... 1.00Vn | P.2 |
| *Undervoltage threshold (line-to-line voltage!)* | | |

| Q->&V< . **Phi-Power** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / Decoupling] | |
|---|---|---|
| 3°<br><br>*Only available if:* | 0° ... 10° | P.2 |
| *Trigger Phi-Power (Positive Phase Sequence System)* | | |

| Q->&V< . **Q min QV** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / Decoupling] | |
|---|---|---|
| 0.05Sn<br><br>*Only available if:* | 0.01Sn ... 0.20Sn | P.2 |
| *Trigger for the Reactive Power (Positive Phase Sequence System)* | | |

| Q->&V< . **t-Gen** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / Decoupling] | |
|---|---|---|
| 0.5s | 0.00s ... 2.00s | P.2 |
| *First timer. If this timer has elapsed, a trip signal will be issued to the (local) energy resource.* | | |

| Q->&V< . **t-PCC** | [Protection Para / Set 1...4 / Intercon-Prot / Q->&V< / Decoupling] | |
|---|---|---|
| 0.5s | 0.00s ... 4.00s | P.2 |
| *Second timer. If this timer is elapsed, the an trip signal will be issued to the PCC (Point of Common Coupling)* | | |

## 9.27.4 Q->&V<: Input States

| Q->&V< . **ExBlo1-I** | [Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇩ | *Module input state: External blocking1* |

| Q->&V< . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇩ | *Module input state: External blocking2* |

## 9.27.5 Q->&V<: Signals (Output States)

| Q->&V< . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇧ | *Signal: active* |

| Q->&V< . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇧ | *Signal: Alarm Reactive Power Undervoltage Protection* |

| Q->&V< . **Decoupling Distr. Generator** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇧ | *Signal: Decoupling of the (local) Energy Generator/Resource* |

| Q->&V< . **Decoupling PCC** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇧ | *Signal: Decoupling at the Point of Common Coupling* |

| Q->&V< . **ExBlo** | [Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| Q->&V< . **Fuse Fail VT Blo** | [Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇧ | *Signal: Blocked by Fuse Failure (VT)* |

| Q->&V< . **Power Angle** | [Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇧ | *Signal: Admissible power angle exceeded* |

| Q->&V< . **Reactive Power Thres** | [Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇫ | *Signal: Admissible Reactive Power Threshold exceeded* |

| Q->&V< . **VLL too low** | [Operation / Status Display / Intercon-Prot / Q->&V<] |
|---|---|
| ⇫ | *Signal: Line-to-Line voltage too low* |

# 9.28 ReCon[1] . . . ReCon[2] – Reconnection

## 9.28.1 ReCon[1]: Device Planning Parameters

| ReCon[1] . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br><br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 9.28.2 ReCon[1]: Global Parameters

| ReCon[1] . **ExBlo1**<br><br>ReCon[1] . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / General Settings] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| ReCon[1] . **V Ext Release PCC** | [Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / General Settings] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *Release Signal by the Point of Common Coupling. The line-to-line voltage is greater than 95% of VN.* | | |

| ReCon[1] . **PCC Fuse Fail VT** | [Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / General Settings] | |
|---|---|---|
| “-” | “-” . . . DI Slot X6 . DI 8<br><br>↳ 1..n, Dig Inputs. | P.2 |
| *Blocking if the fuse of a voltage transformer has tripped at the PCC.* | | |

| ReCon[1] . **reconnected** | [Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / General Settings] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *This signal indicates the state "reconnected" (mains parallel).* | | |

| ReCon[1] . **Decoupling1**<br><br>**. . .**<br><br>ReCon[1] . **Decoupling6** | [Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / Decoupling] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br><br>↳ Decoupling Functions. | P.2 |
| *Decoupling function, that blocks the reconnection.* | | |

## 9.28.3 ReCon[1]: Setting Group Parameters

| ReCon[1] . **Function** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| ReCon[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| ReCon[1] . **Meas Circuit Superv** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / General Settings] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br><br>↳ VTS Block. | P.2 |
| *Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).* | | |

| ReCon[1] . **V Ext Release PCC Fc** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Activate the release signal of the Point of Common Coupling. The line-to-line voltage is greater than 95% of VN.* | | |

| ReCon[1] . **Reconnect. Release Cond** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / Release Para] | |
|---|---|---|
| Both | V Internal Release, V Ext Release PCC, Both<br><br>↳ Reconnect. Release Cond. | P.2 |
| *This parameter ensures that the mains voltage is recovered.* | | |

| ReCon[1] . **PCC Fuse Fail VT Fk** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / Release Para] | |
|---|---|---|
| inactive<br><br>*Only available if:* | inactive, active<br><br>↳ Mode. | P.2 |
| *Blocking if the fuse of a voltage transformer has tripped at the PCC.* | | |

| ReCon[1] . **Measuring method** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / Release Para] | |
|---|---|---|
| Fundamental | Fundamental, True RMS, Vavg<br><br>↳ Measuring method. | P.2 |
| *Measuring method: fundamental or rms or "sliding average supervision"* | | |

| ReCon[1] . **VLL< Release** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / Release Para] | |
|---|---|---|
| 1.10Vn<br><br>*Only available if:* | 1.00Vn ... 1.50Vn | P.2 |
| *Maximum voltage (line-to-line) for reclosure (Restoration Voltage)* | | |

| ReCon[1] . **VLL> Release** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / Release Para] | |
|---|---|---|
| 0.95Vn<br><br>*Only available if:* | 0.70Vn ... 1.00Vn | P.2 |
| *Minimum voltage (line-to-line) for reclosure (Restoration Voltage)* | | |

| ReCon[1] . **f>** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / Release Para] | |
|---|---|---|
| 50.05Hz | 40.00Hz ... 69.90Hz | P.2 |
| *Upper frequency limit for the reclosure* | | |

| ReCon[1] . **f<** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / Release Para] | |
|---|---|---|
| 47.5Hz | 40.00Hz ... 69.90Hz | P.2 |
| *Lower frequency limit for the reclosure (Restoration Voltage)* | | |

| ReCon[1] . **t-Release Blo** | [Protection Para / Set 1...4 / Intercon-Prot / ReCon[1] / Release Para] | |
|---|---|---|
| 600s | 0.00s ... 3600.00s | P.2 |
| *Time stage (delay) for the reclosure of the energy resources. The Mains seddle time takes based on exirience approx. 10 - 15 minutes.* | | |

## 9.28.4 ReCon[1]: Input States

| ReCon[1] . **ExBlo1-I** | [Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| *Module input state: External blocking1* | |

| ReCon[1] . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| *Module input state: External blocking2* | |

| ReCon[1] . **V Ext Release PCC-I** | [Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| ⇩ | *Module input state: Release signal is being generated by the PCC (External Release)* |

| ReCon[1] . **PCC Fuse Fail VT-I** | [Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| ⇩ | *State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC.* |

| ReCon[1] . **reconnected-I** | [Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| ⇩ | *This signal indicates the state "reconnected" (mains parallel).* |

| ReCon[1] . **Decoupling1-I**<br>**...**<br>ReCon[1] . **Decoupling6-I** | [Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| ⇩ | *Decoupling function, that blocks the reconnection.* |

## 9.28.5 ReCon[1]: Signals (Output States)

| ReCon[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| ⇧ | *Signal: active* |

| ReCon[1] . **ExBlo** | [Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| ReCon[1] . **Blo by Meas Ciruit Superv** | [Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| ⇧ | *Signal: Module blocked by measuring cirucuit supervision* |

| ReCon[1] . **Release Energy Resource** | [Operation / Status Display / Intercon-Prot / ReCon[1]] |
|---|---|
| ⇧ | *Signal: Release Energy Resource.* |

# 9.29 UFLS – Under-Frequency Load Shedding based on Active Power Flow Direction

## 9.29.1 UFLS: Device Planning Parameters

| UFLS . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", use<br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 9.29.2 UFLS: Global Parameters

| UFLS . **ExBlo1**<br>UFLS . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / UFLS] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| UFLS . **Ex Pdir** | [Protection Para / Global Prot Para / Intercon-Prot / UFLS] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *Ignore (block) the evaluation of the power flow direction. This results in classical frequency based load shedding functionallity. When this feature is set and active, the functionallity of the module turns into conventional, only frequency based load shedding.* | | |

| UFLS . **P Block dir** | [Protection Para / Global Prot Para / Intercon-Prot / UFLS] | |
|---|---|---|
| negative | positive, negative<br>↳ P Block dir. | P.2 |
| *By means of this parameter the block direction of active power can be inverted within this (sign reversal).* | | |

| UFLS . **AdaptSet 1** | [Protection Para / Global Prot Para / Intercon-Prot / UFLS] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 1* | | |

| UFLS . **AdaptSet 2** | [Protection Para / Global Prot Para / Intercon-Prot / UFLS] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 2* | | |

| UFLS . **AdaptSet 3** | [Protection Para / Global Prot Para / Intercon-Prot / UFLS] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 3* | | |

| UFLS . **AdaptSet 4** | [Protection Para / Global Prot Para / Intercon-Prot / UFLS] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 4* | | |

| UFLS . **AdaptSet 5** | [Protection Para / Global Prot Para / Intercon-Prot / UFLS] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ AdaptSet. | P.2 |
| *Assignment Adaptive Parameter 5* | | |

## 9.29.3 UFLS: Setting Group Parameters

| UFLS . **Function** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| UFLS . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| UFLS . **Meas Circuit Superv** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / General Settings] | |
|---|---|---|
| Sys . inactive | Sys . inactive, LOP . active<br><br>↳ VTS Block. | P.2 |
| *Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).* | | |

| UFLS . **UFLS-Method** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / LoadShedding] | |
|---|---|---|
| No Pdir / Ex Pdir | No Pdir / Ex Pdir, Power Angle Supervision, Pure Active Power Superv<br><br>↳ UFLS-Method. | P.2 |
| *How should the active power be taken into account.* | | |

| UFLS . **I1 Release** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / LoadShedding] | |
|---|---|---|
| inactive | If: UFLS . UFLS-Method = No Pdir / Ex Pdir<br>• inactive<br>If: UFLS . UFLS-Method = Power Angle Supervision<br>• active<br>If: UFLS . UFLS-Method = Pure Active Power Superv<br>• inactive, active<br><br>↳ I1 Release. | P.2 |
| *"I Minimum Current" in order to prevent faulty tripping. Module will be released if the current exceeds this value.* | | |

| UFLS . **I1 min** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / LoadShedding] | |
|---|---|---|
| 0.05In<br><br>*Only available if:* | 0.02In ... 0.20In | P.2 |
| *Minimum current* | | |

| UFLS . **VLL min** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / LoadShedding] | |
|---|---|---|
| 0.70Vn | 0.50Vn ... 1.00Vn | P.2 |
| *Minimum Voltage* | | |

| UFLS . **Power Angle** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / LoadShedding] | |
|---|---|---|
| 5°<br><br>*Only available if:*<br><br>Adapt. Param. | 0° ... 10° | P.2 |
| *Trigger Phi-Power (Positive Phase Sequence System)* | | |

| UFLS . **P min** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / LoadShedding] | |
|---|---|---|
| 0.05Sn<br><br>*Only available if:*<br><br>Adapt. Param. | 0.01Sn ... 0.10Sn | P.2 |
| *Minimum Value (threshold) for the Active Power* | | |

| UFLS . **f<** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / LoadShedding] | |
|---|---|---|
| 49.00Hz<br><br>Adapt. Param. | 45.00Hz ... 65.00Hz | P.2 |
| *Underfrequency threshold* | | |

| UFLS . **t-UFLS** | [Protection Para / Set 1...4 / Intercon-Prot / UFLS / LoadShedding] | |
|---|---|---|
| 0.1s<br><br>Adapt. Param. | 0.00s ... 300.00s | P.2 |
| *Tripping delay time* | | |

## 9.29.4 UFLS: Input States

| UFLS . **AdaptSet1-I** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| *Module input state: Adaptive Parameter1* | |

| UFLS . **AdaptSet2-I** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| *Module input state: Adaptive Parameter2* | |

| UFLS . **AdaptSet3-I** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| *Module input state: Adaptive Parameter3* | |

| UFLS . **AdaptSet4-I** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| *Module input state: Adaptive Parameter4* | |

| UFLS . **AdaptSet5-I** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| *Module input state: Adaptive Parameter5* | |

| UFLS . **ExBlo1-I** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| *Module input state: External blocking1* | |

| UFLS . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| *Module input state: External blocking2* | |

| UFLS . **Ex Pdir-I** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| *Ignore (block) the evaluation of the power flow direction. This results in classical frequency based load shedding functionallity. When this feature is set and active, the functionallity of the module turns into conventional, only frequency based load shedding.* | |

## 9.29.5 UFLS: Signals (Output States)

| UFLS . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: active* |

| UFLS . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Alarm P->&f<* |

| UFLS . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Signal: Trip* |

| UFLS . **ExBlo** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| UFLS . **Fuse Fail VT Blo** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Blocked by Fuse Failure (VT)* |

| UFLS . **I1 Release** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: "I Minimum Current" in order to prevent faulty tripping. Module will be released if the current exceeds this value.* |

| UFLS . **VLL min** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Minimum Voltage* |

| UFLS . **Power Angle** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Trigger Phi-Power (Positive Phase Sequence System)* |

| UFLS . **P min** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Minimum Value (threshold) for the Active Power* |

| UFLS . **P Blo Loadshedding** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Load shedding blocked based on evaluation of active power* |

| UFLS . **f<** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Underfrequency threshold* |

| UFLS . **DefaultSet** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Default Parameter Set* |

| UFLS . **AdaptSet 1** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 1* |

| UFLS . **AdaptSet 2** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 2* |

| UFLS . **AdaptSet 3** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 3* |

| UFLS . **AdaptSet 4** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 4* |

| UFLS . **AdaptSet 5** | [Operation / Status Display / Intercon-Prot / UFLS] |
|---|---|
| ⇧ | *Signal: Adaptive Parameter 5* |

# 9.30 Sync – Synchrocheck

## 9.30.1 Sync: Device Planning Parameters

| Sync . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Mode. | S.3 |
| *Synchrocheck, general operation mode* | | |

## 9.30.2 Sync: Global Parameters

| Sync . **ExBlo1**<br>Sync . **ExBlo2** | [Protection Para / Global Prot Para / Intercon-Prot / Sync] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | C.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Sync . **Bypass** | [Protection Para / Global Prot Para / Intercon-Prot / Sync] | |
|---|---|---|
| “-” | “-” . . . Logics . LE80.Out inverted<br>↳ 1..n, DI-LogicList. | C.2 |
| *The Synchrocheck will be bypassed if the state of the assigned signal (logic input) becomes true.* | | |

| Sync . **CB Pos Detect** | [Protection Para / Global Prot Para / Intercon-Prot / Sync] | |
|---|---|---|
| SG[1] . Pos | “-”, SG[1] . Pos, SG[2] . Pos, SG[3] . Pos, SG[4] . Pos, SG[5] . Pos, SG[6] . Pos<br>↳ CB Manager. | C.2 |
| *Criterion by which the Circuit Breaker Switch Position is to be detected.* | | |

| Sync . **CBCloseInitiate** | [Protection Para / Global Prot Para / Intercon-Prot / Sync] | |
|---|---|---|
| "-" | "-" ... Logics . LE80.Out inverted<br><br>↳ 1..n, SyncRequestList. | C.2 |
| *Breaker Close Initiate with synchronism check from any control sources (e.g. HMI / SCADA). If the state of the assigned signal becomes true, a Breaker Close will be initiated (Trigger Source).* | | |

## 9.30.3 Sync: Setting Group Parameters

| Sync . **Function** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| Sync . **ExBlo Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| Sync . **Bypass Fc** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Allowing to bypass the Synchrocheck, if the state signal that is assigned to the parameter with the same name within the Global Parameters (logic input) becomes true.* | | |

| Sync . **SyncMode** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / Mode / Times] | |
|---|---|---|
| System2System | System2System, Generator2System<br><br>↳ SyncMode. | P.2 |
| *Synchrocheck mode: GENERATOR2SYSTEM = Synchronizing generator to system (breaker close initiate needed). SYSTEM2SYSTEM = SynchronCheck between two systems (Stand-Alone, no breaker info needed)* | | |

| Sync . **t-MaxCBCloseDelay** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / Mode / Times] | |
|---|---|---|
| 0.05s<br><br>*Only available if:* | 0.00s ... 300.00s | P.2 |
| *Maximum circuit breaker close time delay (Only used for GENERATOR-SYSTEM working mode and is critical for a correct synchronized switching)* | | |

| Sync . **t-MaxSyncSuperv** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / Mode / Times] | |
|---|---|---|
| 30.00s<br><br>*Only available if:* | 0.00s ... 3000.00s | P.2 |
| *Synchron-Run timer: Max. time allowed for synchronizing process after a close initiate. Only used for GENERATOR2SYSTEM working mode.* | | |

| Sync . **MinLiveBusVoltage** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / DeadLiveVLevels] | |
|---|---|---|
| 0.65Vn | 0.10Vn ... 2.00Vn | P.2 |
| *Minimum Live Bus voltage (Live bus detected, when all three phase bus voltages are above this limit).* | | |

| Sync . **MaxDeadBusVoltage** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / DeadLiveVLevels] | |
|---|---|---|
| 0.03Vn | 0.01Vn ... 1.00Vn | P.2 |
| *Maximum Dead Bus voltage (Dead bus detected, when all three phase bus voltages are below this limit).* | | |

| Sync . **MinLiveLineVoltage** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / DeadLiveVLevels] | |
|---|---|---|
| 0.65Vn | 0.10Vn ... 2.00Vn | P.2 |
| *Minimum Live Line voltage (Live line detected, when line voltage above this limit).* | | |

| Sync . **MaxDeadLineVoltage** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / DeadLiveVLevels] | |
|---|---|---|
| 0.03Vn | 0.01Vn ... 1.00Vn | P.2 |
| *Maximum Dead Line voltage (Dead Line detected, when line voltage below this limit).* | | |

| Sync . **t-VoltDead** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / DeadLiveVLevels] | |
|---|---|---|
| 0.167s | 0.000s ... 300.000s | P.2 |
| *Voltage dead time (A Dead Bus/Line condition will be accepted only if the voltage falls below the set dead voltage levels longer than this time setting).* | | |

| Sync . **MaxVoltageDiff** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / Conditions] | |
|---|---|---|
| 0.24Vn | 0.01Vn ... 1.00Vn | P.2 |
| *Maximum voltage difference between bus and line voltage phasors (Delta V)for synchronism (Related to bus voltage secondary rating)* | | |

| Sync . **MaxSlipFrequency** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / Conditions] | |
|---|---|---|
| 0.20Hz | 0.01Hz ... 2.00Hz | P.2 |
| *Maximum frequency difference (Slip: Delta f) between bus and line voltage allowed for synchronism* | | |

| Sync . **MaxAngleDiff** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / Conditions] | |
|---|---|---|
| 20° | 1° ... 60° | P.2 |
| *Maximum phase angle difference (Delta-Phi in degree) between bus and line voltages allowed for synchronism* | | |

| Sync . **DBDL** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / Override] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Enable/disable Dead-Bus AND Dead-Line synchronism overriding* | | |

| Sync . **DBLL** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / Override] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Enable/disable Dead-Bus AND Live-Line synchronism overriding* | | |

| Sync . **LBDL** | [Protection Para / Set 1...4 / Intercon-Prot / Sync / Override] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Enable/disable Live-Bus AND Dead-Line synchronism overriding* | | |

## 9.30.4 Sync: Input States

| Sync . **ExBlo1-I** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| *Module input state: External blocking1* | |

| Sync . **ExBlo2-I** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| *Module input state: External blocking2* | |

| Sync . **Bypass-I** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| *State of the module input: The Synchrocheck will be bypassed if the state of the assigned signal (logic input) becomes true.* | |

| Sync . **CBCloseInitiate-I** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| *State of the module input: Breaker Close Initiate with synchronism check from any control sources (e.g. HMI / SCADA). If the state of the assigned signal becomes true, a Breaker Close will be initiated (Trigger Source).* | |

## 9.30.5 Sync: Signals (Output States)

| Sync . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| *Signal: active* | |

| Sync . **ExBlo** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| *Signal: External Blocking* | |

| Sync . **LiveBus** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| *Signal: Live-Bus flag: 1=Live-Bus, 0=Voltage is below the LiveBus threshold* | |

| Sync . **LiveLine** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| ⇧ | *Signal: Live Line flag: 1=Live-Line, 0=Voltage is below the LiveLine threshold* |

| Sync . **SynchronRunTiming** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| ⇧ | *Signal: Synchron-Run-timer is timing (This timer starts when Close-Initiate is coming and stops if breaker is closed. Timeout means synchronizing failed.)* |

| Sync . **SynchronFailed** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| ⇧ | *Signal: This signal indicates a failed synchronization. It is set for 5s when the circuit breaker is still open after the Synchron-Run-timer has timed out.* |

| Sync . **SyncOverridden** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| ⇧ | *Signal:Synchronism Check is overridden because one of the Synchronism overriding conditions (DB/DL or ExtBypass) is met.* |

| Sync . **VDiffTooHigh** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| ⇧ | *Signal: Voltage difference between bus and line too high.* |

| Sync . **SlipTooHigh** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| ⇧ | *Signal: Frequency difference (slip frequency) between bus and line voltages too high.* |

| Sync . **AngleDiffTooHigh** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| ⇧ | *Signal: Phase Angle difference between bus and line voltages too high.* |

| Sync . **Sys-in-Sync** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| ⇧ | *Signal: Bus and line voltages are in synchronism according to the system synchronism criteria.* |

| Sync . **Ready to Close** | [Operation / Status Display / Intercon-Prot / Sync] |
|---|---|
| ⇧ | *Signal: Ready to Close* |

## 9.30.6 Sync: Values

| Sync . **Slip Freq** | [Operation / Measured Values / Synchronism] |
|---|---|
| ⇘ | *Slip frequency* |

| Sync . **Volt Diff** | [Operation / Measured Values / Synchronism] |
|---|---|
| ⟍ | *Voltage difference between bus and line.* |

| Sync . **Angle Diff** | [Operation / Measured Values / Synchronism] |
|---|---|
| ⟍ | *Angle difference between bus and line voltages.* |

| Sync . **f Bus** | [Operation / Measured Values / Synchronism] |
|---|---|
| ⟍ | *Bus frequency* |

| Sync . **f Line** | [Operation / Measured Values / Synchronism] |
|---|---|
| ⟍ | *Line frequency* |

| Sync . **V Bus** | [Operation / Measured Values / Synchronism] |
|---|---|
| ⟍ | *Bus Voltage* |

| Sync . **V Line** | [Operation / Measured Values / Synchronism] |
|---|---|
| ⟍ | *Line Voltage* |

| Sync . **Angle Bus** | [Operation / Measured Values / Synchronism] |
|---|---|
| ⟍ | *Bus Angle (Reference)* |

| Sync . **Angle Line** | [Operation / Measured Values / Synchronism] |
|---|---|
| ⟍ | *Line Angle* |

# 9.31 V/f>[1] . . . V/f>[2] – Overexcitation

## 9.31.1 V/f>[1]: Device Planning Parameters

| V/f>[1] . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Mode. | S.3 |
| *Overexcitation, general operation mode* | | |

## 9.31.2 V/f>[1]: Global Parameters

| V/f>[1] . **ExBlo1**<br>V/f>[1] . **ExBlo2** | [Protection Para / Global Prot Para / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| V/f>[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

## 9.31.3 V/f>[1]: Setting Group Parameters

| V/f>[1] . **Function** | [Protection Para / Set 1...4 / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| V/f>[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| V/f>[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| V/f>[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| V/f>[1] . **V/f>** | [Protection Para / Set 1...4 / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| 100.0% | 80.0% ... 400.0% | P.2 |
| *If the value is exceeded, the element will be started.* | | |

| V/f>[1] . **Curve Shape** | [Protection Para / Set 1...4 / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| DEFT | DEFT, Inv A, Inv B, Inv C<br>↳ Tripping characteristics of V/f Over-Excitation protection.. | P.2 |
| *Tripping characteristics of V/f Over-Excitation protection.* | | |

| V/f>[1] . **t** | [Protection Para / Set 1...4 / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| 1.00s | 0.00s ... 600.00s | P.2 |
| *Tripping delay* | | |

| V/f>[1] . **t-multiplier** | [Protection Para / Set 1...4 / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| 1.00 | 0.05 ... 600.00 | P.2 |
| *Time Multiplier for inverse characteristics.* | | |

| V/f>[1] . **t-reset** | [Protection Para / Set 1...4 / V/f>-Prot / V/f>[1]] | |
|---|---|---|
| 1.0s | 0.0s ... 1000.0s | P.2 |
| *Reset time for inverse characteristics.* | | |

## 9.31.4 V/f>[1]: Input States

| V/f>[1] . **ExBlo1-I** | [Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| *Module input state: External blocking1* | |

| V/f>[1] . **ExBlo2-I** | [Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| *Module input state: External blocking2* | |

| V/f>[1] . **ExBlo TripCmd-I** | [Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

## 9.31.5 V/f>[1]: Signals (Output States)

| V/f>[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| *Signal: active* | |

| V/f>[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| *Signal: Alarm Overexcitation* | |

| V/f>[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| *Signal: Trip* | |

Released



| V/f>[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| ⇫ | *Signal: Trip Command* |

| V/f>[1] . **ExBlo** | [Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| ⇫ | *Signal: External Blocking* |

| V/f>[1] . **Blo TripCmd** | [Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| ⇫ | *Signal: Trip Command blocked* |

| V/f>[1] . **ExBlo TripCmd** | [Operation / Status Display / V/f>-Prot / V/f>[1]] |
|---|---|
| ⇫ | *Signal: External Blocking of the Trip Command* |

# 9.32 SOTF – Switch Onto Fault - Module

## 9.32.1 SOTF: Device Planning Parameters

| SOTF . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 9.32.2 SOTF: Global Parameters

| SOTF . **CT Winding Side** | [Protection Para / Global Prot Para / SOTF] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| SOTF . **Mode** | [Protection Para / Global Prot Para / SOTF] | |
|---|---|---|
| CB Pos | CB Pos, I<, CB Pos And I<, CB manual ON, Ext SOTF<br>↳ Mode. | P.2 |
| *general operation mode* | | |

| SOTF . **ExBlo1**<br>SOTF . **ExBlo2** | [Protection Para / Global Prot Para / SOTF] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| SOTF . **Ex rev Interl** | [Protection Para / Global Prot Para / SOTF] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module by external reverse interlocking, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| SOTF . **Assigned SG** | [Protection Para / Global Prot Para / SOTF] | |
|---|---|---|
| . SG[1] | “-”, . SG[1], . SG[2], . SG[3], . SG[4], . SG[5], . SG[6]<br>↳ CB List. | P.2 |
| *Assigned Switchgear* | | |

| SOTF . **Ext SOTF** | [Protection Para / Global Prot Para / SOTF] | |
|---|---|---|
| “-” | “-” . . . Logics . LE80.Out inverted<br>↳ 1..n, DI-LogicList. | P.2 |
| *External Switch Onto Fault* | | |

## 9.32.3 SOTF: Setting Group Parameters

| SOTF . **Function** | [Protection Para / Set 1...4 / SOTF] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| SOTF . **ExBlo Fc** | [Protection Para / Set 1...4 / SOTF] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| SOTF . **Ex rev Interl Fc** | [Protection Para / Set 1...4 / SOTF] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "Ex rev Interl Fc = active".* | | |

| SOTF . **I<** | [Protection Para / Set 1...4 / SOTF] | |
|---|---|---|
| 0.01In | 0.01In ... 1.00In | P.2 |
| *The CB is in the OFF Position, if the measured current is less than this parameter.* | | |

| SOTF . **t-enable** | [Protection Para / Set 1...4 / SOTF] | |
|---|---|---|
| 2s | 0.10s ... 10.00s | P.2 |
| *While this timer is running, and while the module is not blocked, the Switch Onto Fault Module is effective (SOTF is armed).* | | |

## 9.32.4 SOTF: Input States

| SOTF . **ExBlo1-I**<br>SOTF . **ExBlo2-I** | [Operation / Status Display / SOTF] |
|---|---|
| *Module input state: External blocking* | |

| SOTF . **Ex rev Interl-I** | [Operation / Status Display / SOTF] |
|---|---|
| *Module input state: External reverse interlocking* | |

| SOTF . **Ext SOTF-I** | [Operation / Status Display / SOTF] |
|---|---|
| *Module input state: External Switch Onto Fault Alarm* | |

## 9.32.5 SOTF: Signals (Output States)

| SOTF . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / SOTF] |
|---|---|
| *Signal: active* | |

| SOTF . **ExBlo** | [Operation / Status Display / SOTF] |
|---|---|
| *Signal: External Blocking* | |

| SOTF . **Ex rev Interl** | [Operation / Status Display / SOTF] |
|---|---|
| *Signal: External reverse Interlocking* | |

Released



| SOTF . **enabled** | [Operation / Status Display / SOTF] |
|---|---|
| ⇧ | *Signal: Switch Onto Fault enabled. This Signal can be used to modify Overcurrent Protection Settings.* |

| SOTF . **I<** | [Operation / Status Display / SOTF] |
|---|---|
| ⇧ | *Signal: No Load Current.* |

# 9.33 CLPU – Cold Load Pickup Module

## 9.33.1 CLPU: Device Planning Parameters

| CLPU . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", use<br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 9.33.2 CLPU: Global Parameters

| CLPU . **CT Winding Side** | [Protection Para / Global Prot Para / CLPU] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| CLPU . **Mode** | [Protection Para / Global Prot Para / CLPU] | |
|---|---|---|
| CB Pos | CB Pos, I<, CB Pos Or I<, CB Pos And I<<br>↳ Mode. | P.2 |
| *general operation mode* | | |

| CLPU . **ExBlo1**<br>CLPU . **ExBlo2** | [Protection Para / Global Prot Para / CLPU] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| CLPU . **Ex rev Interl** | [Protection Para / Global Prot Para / CLPU] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module by external reverse interlocking, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| CLPU . **CB Pos Detect** | [Protection Para / Global Prot Para / CLPU] | |
|---|---|---|
| SG[1] . Pos | "-", SG[1] . Pos, SG[2] . Pos, SG[3] . Pos, SG[4] . Pos, SG[5] . Pos, SG[6] . Pos<br>↳ CB Manager. | P.2 |
| *Criterion by which the Circuit Breaker Switch Position is to be detected.* | | |

## 9.33.3 CLPU: Setting Group Parameters

| CLPU . **Function** | [Protection Para / Set 1...4 / CLPU] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| CLPU . **ExBlo Fc** | [Protection Para / Set 1...4 / CLPU] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| CLPU . **Ex rev Interl Fc** | [Protection Para / Set 1...4 / CLPU] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "Ex rev Interl Fc = active".* | | |

| CLPU . **t-Load Off** | [Protection Para / Set 1...4 / CLPU] | |
|---|---|---|
| 1.00s | 0.00s ... 7200.00s | P.2 |
| *Select the outage time required for a load to be considered cold. If the Pickup Timer (Delay) has run out, a Cold Load Signal will be issued.* | | |

| CLPU . **t-Max Block** | [Protection Para / Set 1...4 / CLPU] | |
|---|---|---|
| 1.00s | 0.00s ... 300.00s | P.2 |
| *Select the amount of time for the cold load inrush. If the Release Time (Delay) has run out, a Warm Load Signal will be issued.* | | |

| CLPU . **I<** | [Protection Para / Set 1...4 / CLPU] | |
|---|---|---|
| 0.01In | 0.01In ... 1.00In | P.2 |
| *The CB is in the OFF Position, if the measured current is less than this parameter.* | | |

| CLPU . **Threshold** | [Protection Para / Set 1...4 / CLPU] | |
|---|---|---|
| 1.2In | 0.10In ... 4.00In | P.2 |
| *Set the load current inrush threshold.* | | |

| CLPU . **Settle Time** | [Protection Para / Set 1...4 / CLPU] | |
|---|---|---|
| 1.00s | 0.00s ... 300.00s | P.2 |
| *Select the time for the cold load inrush* | | |

## 9.33.4 CLPU: Input States

| CLPU . **ExBlo1-I**<br>CLPU . **ExBlo2-I** | [Operation / Status Display / CLPU] |
|---|---|
| *Module input state: External blocking* | |

| CLPU . **Ex rev Interl-I** | [Operation / Status Display / CLPU] |
|---|---|
| *Module input state: External reverse interlocking* | |

## 9.33.5 CLPU: Signals (Output States)

| CLPU . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / CLPU] |
|---|---|
| *Signal: active* | |

| CLPU . **ExBlo** | [Operation / Status Display / CLPU] |
|---|---|
| *Signal: External Blocking* | |

Released



| CLPU . **Ex rev Interl** | [Operation / Status Display / CLPU] |
|---|---|
| ⇧ | *Signal: External reverse Interlocking* |

| CLPU . **enabled** | [Operation / Status Display / CLPU] |
|---|---|
| ⇧ | *Signal: Cold Load enabled* |

| CLPU . **detected** | [Operation / Status Display / CLPU] |
|---|---|
| ⇧ | *Signal: Cold Load detected* |

| CLPU . **I<** | [Operation / Status Display / CLPU] |
|---|---|
| ⇧ | *Signal: No Load Current.* |

| CLPU . **Load Inrush** | [Operation / Status Display / CLPU] |
|---|---|
| ⇧ | *Signal: Load Inrush* |

| CLPU . **Settle Time** | [Operation / Status Display / CLPU] |
|---|---|
| ⇧ | *Signal: Settle Time* |

# 9.34 ExP[1] . . . ExP[4] – External Protection - Module

## 9.34.1 ExP[1]: Device Planning Parameters

| ExP[1] . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Device planning. | S.3 |
| *External Protection - Module, general operation mode* | | |

## 9.34.2 ExP[1]: Global Parameters

| ExP[1] . **ExBlo1**<br>ExP[1] . **ExBlo2** | [Protection Para / Global Prot Para / ExP / ExP[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| ExP[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / ExP / ExP[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| ExP[1] . **Alarm** | [Protection Para / Global Prot Para / ExP / ExP[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *Assignment for External Alarm* | | |

| ExP[1] . **Trip** | [Protection Para / Global Prot Para / ExP / ExP[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External trip of the CB if the state of the assigned signal is true.* | | |

## 9.34.3 ExP[1]: Setting Group Parameters

| ExP[1] . **Function** | [Protection Para / Set 1...4 / ExP / ExP[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| ExP[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / ExP / ExP[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| ExP[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / ExP / ExP[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| ExP[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / ExP / ExP[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

## 9.34.4 ExP[1]: Input States

| ExP[1] . **ExBlo1-I** | [Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇩ | *Module input state: External blocking1* |

| ExP[1] . **ExBlo2-I** | [Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇩ | *Module input state: External blocking2* |

| ExP[1] . **ExBlo TripCmd-I** | [Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇩ | *Module input state: External Blocking of the Trip Command* |

| ExP[1] . **Alarm-I** | [Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇩ | *Module input state: Alarm* |

| ExP[1] . **Trip-I** | [Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇩ | *Module input state: Trip* |

## 9.34.5 ExP[1]: Signals (Output States)

| ExP[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇧ | *Signal: active* |

| ExP[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇧ | *Signal: Alarm* |

| ExP[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇧ | *Signal: Trip* |

| ExP[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇧ | *Signal: Trip Command* |

Released



| ExP[1] . **ExBlo** | [Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| ExP[1] . **Blo TripCmd** | [Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| ExP[1] . **ExBlo TripCmd** | [Operation / Status Display / ExP / ExP[1]] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

# 9.35 Ext Sudd Press – Sudden Pressure

## 9.35.1 Ext Sudd Press: Device Planning Parameters

| Ext Sudd Press . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Device planning. | S.3 |
| *External Protection - Module, general operation mode* | | |

## 9.35.2 Ext Sudd Press: Global Parameters

| Ext Sudd Press . **ExBlo1**<br>Ext Sudd Press . **ExBlo2** | [Protection Para / Global Prot Para / Ext Sudd Press] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Ext Sudd Press . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Ext Sudd Press] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Ext Sudd Press . **Alarm** | [Protection Para / Global Prot Para / Ext Sudd Press] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *Assignment for External Alarm* | | |

| Ext Sudd Press . **Trip** | [Protection Para / Global Prot Para / Ext Sudd Press] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External trip of the CB if the state of the assigned signal is true.* | | |

## 9.35.3 Ext Sudd Press: Setting Group Parameters

| Ext Sudd Press . **Function** | [Protection Para / Set 1...4 / Ext Sudd Press] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| Ext Sudd Press . **ExBlo Fc** | [Protection Para / Set 1...4 / Ext Sudd Press] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| Ext Sudd Press . **Blo TripCmd** | [Protection Para / Set 1...4 / Ext Sudd Press] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| Ext Sudd Press . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Ext Sudd Press] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

## 9.35.4 Ext Sudd Press: Input States

| Ext Sudd Press . **ExBlo1-I** | [Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇩ | *Module input state: External blocking1* |

| Ext Sudd Press . **ExBlo2-I** | [Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇩ | *Module input state: External blocking2* |

| Ext Sudd Press . **ExBlo TripCmd-I** | [Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇩ | *Module input state: External Blocking of the Trip Command* |

| Ext Sudd Press . **Alarm-I** | [Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇩ | *Module input state: Alarm* |

| Ext Sudd Press . **Trip-I** | [Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇩ | *Module input state: Trip* |

## 9.35.5 Ext Sudd Press: Signals (Output States)

| Ext Sudd Press . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇧ | *Signal: active* |

| Ext Sudd Press . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇧ | *Signal: Alarm* |

| Ext Sudd Press . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇧ | *Signal: Trip* |

| Ext Sudd Press . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇧ | *Signal: Trip Command* |

Released



| Ext Sudd Press . **ExBlo** | [Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| Ext Sudd Press . **Blo TripCmd** | [Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| Ext Sudd Press . **ExBlo TripCmd** | [Operation / Status Display / Ext Sudd Press] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

# 9.36 Ext Oil Temp – External Oil Temperature

## 9.36.1 Ext Oil Temp: Device Planning Parameters

| Ext Oil Temp . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br><br>↳ Device planning. | S.3 |
| *External Protection - Module, general operation mode* | | |

## 9.36.2 Ext Oil Temp: Global Parameters

| Ext Oil Temp . **ExBlo1**<br><br>Ext Oil Temp . **ExBlo2** | [Protection Para / Global Prot Para / Temp-Prot / Ext Oil Temp] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Ext Oil Temp . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Temp-Prot / Ext Oil Temp] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Ext Oil Temp . **Alarm** | [Protection Para / Global Prot Para / Temp-Prot / Ext Oil Temp] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *Assignment for External Alarm* | | |

| Ext Oil Temp . **Trip** | [Protection Para / Global Prot Para / Temp-Prot / Ext Oil Temp] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External trip of the CB if the state of the assigned signal is true.* | | |

## 9.36.3 Ext Oil Temp: Setting Group Parameters

| Ext Oil Temp . **Function** | [Protection Para / Set 1...4 / Temp-Prot / Ext Oil Temp] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| Ext Oil Temp . **ExBlo Fc** | [Protection Para / Set 1...4 / Temp-Prot / Ext Oil Temp] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| Ext Oil Temp . **Blo TripCmd** | [Protection Para / Set 1...4 / Temp-Prot / Ext Oil Temp] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| Ext Oil Temp . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Temp-Prot / Ext Oil Temp] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

## 9.36.4 Ext Oil Temp: Input States

| Ext Oil Temp . **ExBlo1-I** | [Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇩ | *Module input state: External blocking1* |

| Ext Oil Temp . **ExBlo2-I** | [Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇩ | *Module input state: External blocking2* |

| Ext Oil Temp . **ExBlo TripCmd-I** | [Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇩ | *Module input state: External Blocking of the Trip Command* |

| Ext Oil Temp . **Alarm-I** | [Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇩ | *Module input state: Alarm* |

| Ext Oil Temp . **Trip-I** | [Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇩ | *Module input state: Trip* |

## 9.36.5 Ext Oil Temp: Signals (Output States)

| Ext Oil Temp . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇧ | *Signal: active* |

| Ext Oil Temp . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇧ | *Signal: Alarm* |

| Ext Oil Temp . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇧ | *Signal: Trip* |

| Ext Oil Temp . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇧ | *Signal: Trip Command* |

Released



| Ext Oil Temp . **ExBlo** | [Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| Ext Oil Temp . **Blo TripCmd** | [Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇧ | *Signal: Trip Command blocked* |

| Ext Oil Temp . **ExBlo TripCmd** | [Operation / Status Display / Temp-Prot / Ext Oil Temp] |
|---|---|
| ⇧ | *Signal: External Blocking of the Trip Command* |

# 9.37 Ext Temp Superv[1] . . . Ext Temp Superv[3] – External Temperature Supervision

## 9.37.1 Ext Temp Superv[1]: Device Planning Parameters

| Ext Temp Superv[1] . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br><br>↳ Device planning. | S.3 |
| *External Protection - Module, general operation mode* | | |

## 9.37.2 Ext Temp Superv[1]: Global Parameters

| Ext Temp Superv[1] . **ExBlo1**<br><br>Ext Temp Superv[1] . **ExBlo2** | [Protection Para / Global Prot Para / Temp-Prot / Ext Temp Superv[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Ext Temp Superv[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Temp-Prot / Ext Temp Superv[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| Ext Temp Superv[1] . **Alarm** | [Protection Para / Global Prot Para / Temp-Prot / Ext Temp Superv[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *Assignment for External Alarm* | | |

| Ext Temp Superv[1] . **Trip** | [Protection Para / Global Prot Para / Temp-Prot / Ext Temp Superv[1]] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External trip of the CB if the state of the assigned signal is true.* | | |

## 9.37.3 Ext Temp Superv[1]: Setting Group Parameters

| Ext Temp Superv[1] . **Function** | [Protection Para / Set 1...4 / Temp-Prot / Ext Temp Superv[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| Ext Temp Superv[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / Temp-Prot / Ext Temp Superv[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| Ext Temp Superv[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / Temp-Prot / Ext Temp Superv[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| Ext Temp Superv[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Temp-Prot / Ext Temp Superv[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

## 9.37.4 Ext Temp Superv[1]: Input States

| Ext Temp Superv[1] . **ExBlo1-I** | [Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Module input state: External blocking1* | |

| Ext Temp Superv[1] . **ExBlo2-I** | [Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Module input state: External blocking2* | |

| Ext Temp Superv[1] . **ExBlo TripCmd-I** | [Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

| Ext Temp Superv[1] . **Alarm-I** | [Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Module input state: Alarm* | |

| Ext Temp Superv[1] . **Trip-I** | [Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Module input state: Trip* | |

## 9.37.5 Ext Temp Superv[1]: Signals (Output States)

| Ext Temp Superv[1] . **active** | [Operation / Status Display / All Actives]<br><br>[Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Signal: active* | |

| Ext Temp Superv[1] . **Alarm** | [Operation / Status Display / Alarms]<br><br>[Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Signal: Alarm* | |

| Ext Temp Superv[1] . **Trip** | [Operation / Status Display / Trips]<br><br>[Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Signal: Trip* | |

| Ext Temp Superv[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br><br>[Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Signal: Trip Command* | |

| Ext Temp Superv[1] . **ExBlo** | [Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Signal: External Blocking* | |

| Ext Temp Superv[1] . **Blo TripCmd** | [Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Signal: Trip Command blocked* | |

| Ext Temp Superv[1] . **ExBlo TripCmd** | [Operation / Status Display / Temp-Prot / Ext Temp Superv[1]] |
|---|---|
| *Signal: External Blocking of the Trip Command* | |

Released



# 9.38 URTD – Universal Resistance Temperature Detector

## 9.38.1 URTD: Settings

| URTD . **Temperature Unit** | [Device Para / Measurem Display / General Settings] | |
|---|---|---|
| Celsius | Celsius, Fahrenheit<br>↳ Units. | P.2 |
| *Temperature Unit* | | |

| URTD . **Force Mode** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| permanent | permanent, timeout<br>↳ Mode. | P.2 |
| *By means of this function the normal Output Relay States can be overwritten (forced) in case that the Relay is not in a disarmed state. The relays can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state.* | | |

| URTD . **t-Timeout Force** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0.03s<br>*Only available if:* | 0.00s . . . 300.00s | P.2 |
| *The Output State will be set by force for the duration of this time. That means for the duration of this time the Output Relay does not show the state of the signals that are assigned on it.* | | |

## 9.38.2 URTD: Direct Controls

| URTD . **Function** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.1 |
| *Permanent activation or deactivation of module/stage.* | | |

Released



| URTD . **Force W1 L1** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Winding Temperature* | |

| URTD . **Force W1 L2** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Winding Temperature* | |

| URTD . **Force W1 L3** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Winding Temperature* | |

| URTD . **Force W2 L1** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Winding Temperature* | |

Released



| URTD . **Force W2 L2** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Winding Temperature* | |

| URTD . **Force W2 L3** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Winding Temperature* | |

| URTD . **Force Amb1** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Ambient Temperature* | |

| URTD . **Force Amb2** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Ambient Temperature* | |

Released



| URTD . **Force Aux1** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Auxiliary Temperature* | |

| URTD . **Force Aux2** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Auxiliary Temperature* | |

| URTD . **Force Aux3** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Auxiliary Temperature* | |

| URTD . **Force Aux4** | [Service / Test (Prot inhibit) / URTD] | |
|---|---|---|
| 0 | If: URTD . Temperature Unit = Fahrenheit<br>• 32 . . . 392<br>If: URTD . Temperature Unit = Celsius<br>• 0 . . . 200 | P.1 |
| ◉ | *Force Measured Value: Auxiliary Temperature* | |

## 9.38.3 URTD: Signals (Output States)

| URTD . **W1L1 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Winding1 Phase L1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **W1L2 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Winding1 Phase L2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **W1L3 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Winding1 Phase L3, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **W2L1 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Winding2 Phase L1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **W2L2 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Winding2 Phase L2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **W2L3 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Winding2 Phase L3, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **Amb1 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Ambient1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **Amb2 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Ambient2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **Aux1 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Auxiliary1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **Aux2 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Auxiliary2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **Aux3 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Auxiliary3, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **Aux4 Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: Auxiliary4, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| URTD . **Superv** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: URTD Channel Supervision. The value “1” reports a detected channel failure of at least one channel. (The value “0” means that all RTD channels are healthy.)* |

| URTD . **Connection active** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: There is an active connection between the Temperature Detector (URTD) and the protective relay.* |

| URTD . **Outs forced** | [Operation / Status Display / Temp-Prot / URTD] |
|---|---|
| ⇧ | *Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals.* |

## 9.38.4 URTD: Values

| URTD . **W1 L1** | [Operation / Measured Values / URTD] |
|---|---|
| ⇘ | *Measured Value: Winding Temperature* |

| URTD . **W1 L2** | [Operation / Measured Values / URTD] |
|---|---|
| ⇘ | *Measured Value: Winding Temperature* |

| URTD . **W1 L3** | [Operation / Measured Values / URTD] |
|---|---|
| ⇘ | *Measured Value: Winding Temperature* |

| URTD . **W2 L1** | [Operation / Measured Values / URTD] |
|---|---|
| ⇘ | *Measured Value: Winding Temperature* |

| URTD . **W2 L2** | [Operation / Measured Values / URTD] |
|---|---|
| ⟍ | *Measured Value: Winding Temperature* |

| URTD . **W2 L3** | [Operation / Measured Values / URTD] |
|---|---|
| ⟍ | *Measured Value: Winding Temperature* |

| URTD . **Amb1** | [Operation / Measured Values / URTD] |
|---|---|
| ⟍ | *Measured Value: Ambient Temperature* |

| URTD . **Amb2** | [Operation / Measured Values / URTD] |
|---|---|
| ⟍ | *Measured Value: Ambient Temperature* |

| URTD . **Aux1** | [Operation / Measured Values / URTD] |
|---|---|
| ⟍ | *Measured Value: Auxiliary Temperature* |

| URTD . **Aux2** | [Operation / Measured Values / URTD] |
|---|---|
| ⟍ | *Measured Value: Auxiliary Temperature* |

| URTD . **Aux3** | [Operation / Measured Values / URTD] |
|---|---|
| ⟍ | *Measured Value: Auxiliary Temperature* |

| URTD . **Aux4** | [Operation / Measured Values / URTD] |
|---|---|
| ⟍ | *Measured Value: Auxiliary Temperature* |

| URTD . **RTD Max** | [Operation / Measured Values / URTD] |
|---|---|
| ⟍ | *Maximum temperature of all channels.* |

## 9.38.5 URTD: Statistical Values

| URTD . **W1 L1 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Winding Temperature Maximum Value* |

| URTD . **W1 L2 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Winding Temperature Maximum Value* |

| URTD . **W1 L3 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Winding Temperature Maximum Value* |

| URTD . **W2 L1 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Winding Temperature Maximum Value* |

| URTD . **W2 L2 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Winding Temperature Maximum Value* |

| URTD . **W2 L3 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Winding Temperature Maximum Value* |

| URTD . **Amb1 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Ambient Temperature Maximum Value* |

| URTD . **Amb2 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Ambient Temperature Maximum Value* |

| URTD . **Aux1 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Auxiliary Temperature Maximum Value* |

| URTD . **Aux2 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Auxiliary Temperature Maximum Value* |

| URTD . **Aux3 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Auxiliary Temperature Maximum Value* |

| URTD . **Aux4 max** | [Operation / Statistics / Max / URTD] |
|---|---|
| ☑ | *Measured Value: Auxiliary Temperature Maximum Value* |

# 9.39 RTD – Temperature Protection Module

## 9.39.1 RTD: Device Planning Parameters

| RTD . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Device planning. | S.3 |
| *general operation mode* | | |

## 9.39.2 RTD: Global Parameters

| RTD . **ExBlo1**<br>RTD . **ExBlo2** | [Protection Para / Global Prot Para / Temp-Prot / RTD] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| RTD . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Temp-Prot / RTD] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| RTD . **TripCmd Selection** | [Protection Para / Global Prot Para / Temp-Prot / RTD] | |
|---|---|---|
| Trip | Trip, Voting Trip<br>↳ TripCmd Selection. | P.2 |
| *This parameter determines if the final trip of the RTD module is issued by the default way or by the voting groups.* | | |

## 9.39.3 RTD: Setting Group Parameters

| RTD . **Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / General Settings]<br><br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br><br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| RTD . **ExBlo Fc** | [Protection Para / Set 1...4 / Temp-Prot / RTD / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| RTD . **Blo TripCmd** | [Protection Para / Set 1...4 / Temp-Prot / RTD / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| RTD . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Temp-Prot / RTD / General Settings] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| RTD . **W1L1 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L1] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Winding1 Phase L1 Alarm Function* | | |

| RTD . **W1L1 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L1] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Winding1 Phase L1 Trip Function* | | |

| RTD . **W1L1 Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L1] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Winding1 Phase L1 Threshold for Temperature Alarm* | | |

| RTD . **W1L1 t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L1] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Winding1 Phase L1 After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **W1L1 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L1] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Winding1 Phase L1 Threshold for Temperature Trip* | | |

| RTD . **W1L2 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L2] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Winding1 Phase L2 Alarm Function* | | |

| RTD . **W1L2 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L2] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Winding1 Phase L2 Trip Function* | | |

| RTD . **W1L2 Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L2] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Winding1 Phase L2 Threshold for Temperature Alarm* | | |

| RTD . **W1L2 t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L2] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Winding1 Phase L2 After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **W1L2 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L2] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Winding1 Phase L2 Threshold for Temperature Trip* | | |

| RTD . **W1L3 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L3] | |
|---|---|---|
| active | inactive, active<br>Mode. | P.2 |
| *Winding1 Phase L3 Alarm Function* | | |

| RTD . **W1L3 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L3] | |
|---|---|---|
| active | inactive, active<br>Mode. | P.2 |
| *Winding1 Phase L3 Trip Function* | | |

| RTD . **W1L3 Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L3] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Winding1 Phase L3 Threshold for Temperature Alarm* | | |

| RTD . **W1L3 t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L3] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Winding1 Phase L3 After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **W1L3 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W1L3] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Winding1 Phase L3 Threshold for Temperature Trip* | | |

| RTD . **W2L1 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L1] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Winding2 Phase L1 Alarm Function* | | |

| RTD . **W2L1 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L1] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Winding2 Phase L1 Trip Function* | | |

| RTD . **W2L1 Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L1] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Winding2 Phase L1 Threshold for Temperature Alarm* | | |

| RTD . **W2L1 t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L1] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Winding2 Phase L1 After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **W2L1 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L1] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Winding2 Phase L1 Threshold for Temperature Trip* | | |

| RTD . **W2L2 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L2] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Winding2 Phase L2 Alarm Function* | | |

| RTD . **W2L2 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L2] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Winding2 Phase L2 Trip Function* | | |

| RTD . **W2L2 Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L2] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Winding2 Phase L2 Threshold for Temperature Alarm* | | |

| RTD . **W2L2 t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L2] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Winding2 Phase L2 After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **W2L2 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L2] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Winding2 Phase L2 Threshold for Temperature Trip* | | |

| RTD . **W2L3 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L3] | |
|---|---|---|
| active | inactive, active<br>Mode. | P.2 |
| *Winding2 Phase L3 Alarm Function* | | |

| RTD . **W2L3 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L3] | |
|---|---|---|
| active | inactive, active<br>Mode. | P.2 |
| *Winding2 Phase L3 Trip Function* | | |

| RTD . **W2L3 Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L3] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Winding2 Phase L3 Threshold for Temperature Alarm* | | |

| RTD . **W2L3 t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L3] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Winding2 Phase L3 After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **W2L3 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / W2L3] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Winding2 Phase L3 Threshold for Temperature Trip* | | |

| RTD . **Amb1 Alarm Function**<br>RTD . **Amb2 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 2] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Ambient Alarm Function* | | |

| RTD . **Amb1 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 1] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Ambient Trip Function* | | |

| RTD . **Amb1 Alarm**<br>RTD . **Amb2 Alarm**<br>RTD . **Amb Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 2]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Amb Group] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Ambient Threshold for Temperature Alarm* | | |

| RTD . **Amb1 t-Alarm-Delay**<br>RTD . **Amb2 t-Alarm-Delay**<br>RTD . **Amb t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 2]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Amb Group] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Ambient After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **Amb1 Trip**<br>RTD . **Amb2 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 2] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Ambient Threshold for Temperature Trip* | | |

| RTD . **Amb2 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Amb 2] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Ambient Trip Function* | | |

| RTD . **Aux1Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 1] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Auxiliary Alarm Function* | | |

| RTD . **Aux1Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 1] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Auxiliary Trip Function* | | |

| RTD . **Aux1 Alarm**<br>**...**<br>RTD . **Aux Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 1]<br>**...**<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Aux Group] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Auxiliary Threshold for Temperature Alarm* | | |

| RTD . **Aux1 t-Alarm-Delay**<br>**...**<br>RTD . **Aux t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 1]<br>**...**<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Aux Group] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Auxiliary After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **Aux1 Trip**<br>RTD . **Aux2 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 2] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Auxiliary Threshold for Temperature Trip* | | |

| RTD . **Aux2 Alarm Function**<br>RTD . **Aux3 Alarm Function**<br>RTD . **Aux4 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 2]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 3]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 4] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Auxiliary Alarm Function* | | |

| RTD . **Aux2 Trip Function**<br>RTD . **Aux3 Trip Function**<br>RTD . **Aux4 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 2]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 3]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 4] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | P.2 |
| *Auxiliary Trip Function* | | |

| RTD . **Aux3 Trip**<br>RTD . **Aux4 Trip**<br>RTD . **Aux Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 3]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Aux 4]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Aux Group] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Auxiliary Threshold for Temperature Trip* | | |

| RTD . **Windg W1 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W1 Group] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Winding W1 Alarm Function* | | |

| RTD . **Windg W1 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W1 Group] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Winding W1 Trip Function* | | |

| RTD . **Windg W1 Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W1 Group] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Winding W1 Threshold for Temperature Alarm* | | |

| RTD . **Windg W1 t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W1 Group] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Winding W1 After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **Windg W1 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W1 Group] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Winding W1 Threshold for Temperature Trip* | | |

| RTD . **Windg W2 Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W2 Group] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Winding W2 Alarm Function* | | |

| RTD . **Windg W2 Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W2 Group] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Winding W2 Trip Function* | | |

| RTD . **Windg W2 Alarm** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W2 Group] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Winding W2 Threshold for Temperature Alarm* | | |

| RTD . **Windg W2 t-Alarm-Delay** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W2 Group] | |
|---|---|---|
| 1min | 0min ... 360min | P.2 |
| *Winding W2 After this time has expired a Temperature Alarm is issued.* | | |

| RTD . **Windg W2 Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Windg W2 Group] | |
|---|---|---|
| 100°C | 0°C ... 200°C | P.2 |
| *Winding W2 Threshold for Temperature Trip* | | |

| RTD . **Amb Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Amb Group] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.2 |
| *Ambient Alarm Function* | | |

| RTD . **Amb Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Amb Group] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.2 |
| *Ambient Trip Function* | | |

| RTD . **Amb Trip** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Amb Group] | |
|---|---|---|
| 80°C | 0°C ... 200°C | P.2 |
| *Ambient Threshold for Temperature Trip* | | |

| RTD . **Aux Alarm Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux Group] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.2 |
| *Auxiliary Alarm Function* | | |

| RTD . **Aux Trip Function** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Aux Group] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.2 |
| *Auxiliary Trip Function* | | |

| RTD . **Voting 1**<br>RTD . **Voting 2** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| 1 | 1 . . . 12 | P.2 |
| *Voting: This parameter defines how many of the selected channels must be over its threshold level for getting a voting trip* | | |

| RTD . **W1L1** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Winding1 Phase L1* | | |

| RTD . **W1L2** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Winding1 Phase L2* | | |

| RTD . **W1L3** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Winding1 Phase L3* | | |

| RTD . **W2L1** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Winding2 Phase L1* | | |

| RTD . **W2L2** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Winding2 Phase L2* | | |

| RTD . **W2L3** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Winding2 Phase L3* | | |

| RTD . **Amb 1** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Ambient 1* | | |

| RTD . **Amb 2** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Ambient 2* | | |

| RTD . **Aux 1** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Auxiliary 1* | | |

| RTD . **Aux 2** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Auxiliary 2* | | |

| RTD . **Aux 3** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Auxiliary 3* | | |

| RTD . **Aux 4** | [Protection Para / Set 1...4 / Temp-Prot / RTD / Voting1]<br>[Protection Para / Set 1...4 / Temp-Prot / RTD / Voting2] | |
|---|---|---|
| no | no, yes<br>↳ yes/no. | P.2 |
| *Auxiliary 4* | | |

## 9.39.4 RTD: Input States

| RTD . **ExBlo1-I** | [Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| *Module input state: External blocking1* | |

| RTD . **ExBlo2-I** | [Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| *Module input state: External blocking2* | |

| RTD . **ExBlo TripCmd-I** | [Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| *Module input state: External Blocking of the Trip Command* | |

## 9.39.5 RTD: Signals (Output States)

| RTD . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| ⇧ | *Signal: active* |

| RTD . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| ⇧ | *Alarm RTD Temperature Protection* |

| RTD . **W1L1 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W1L1] |
|---|---|
| ⇧ | *Winding1 Phase L1 Alarm RTD Temperature Protection* |

| RTD . **W1L1 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W1L1] |
|---|---|
| ⇧ | *Winding1 Phase L1 Timeout Alarm* |

| RTD . **W1L2 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W1L2] |
|---|---|
| ⇧ | *Winding1 Phase L2 Alarm RTD Temperature Protection* |

| RTD . **W1L2 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W1L2] |
|---|---|
| ⇧ | *Winding1 Phase L2 Timeout Alarm* |

| RTD . **W1L3 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W1L3] |
|---|---|
| ⇧ | *Winding1 Phase L3 Alarm RTD Temperature Protection* |

| RTD . **W1L3 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W1L3] |
|---|---|
| ⇫ | *Winding1 Phase L3 Timeout Alarm* |

| RTD . **W2L1 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W2L1] |
|---|---|
| ⇫ | *Winding2 Phase L1 Alarm RTD Temperature Protection* |

| RTD . **W2L1 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W2L1] |
|---|---|
| ⇫ | *Winding2 Phase L1 Timeout Alarm* |

| RTD . **W2L2 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W2L2] |
|---|---|
| ⇫ | *Winding2 Phase L2 Alarm RTD Temperature Protection* |

| RTD . **W2L2 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W2L2] |
|---|---|
| ⇫ | *Winding2 Phase L2 Timeout Alarm* |

| RTD . **W2L3 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W2L3] |
|---|---|
| ⇫ | *Winding2 Phase L3 Alarm RTD Temperature Protection* |

| RTD . **W2L3 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / W2L3] |
|---|---|
| ⇫ | *Winding2 Phase L3 Timeout Alarm* |

| RTD . **Amb 1 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Amb 1] |
|---|---|
| ⇫ | *Ambient 1 Alarm RTD Temperature Protection* |

| RTD . **Amb 1 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Amb 1] |
|---|---|
| ⇫ | *Ambient 1 Timeout Alarm* |

| RTD . **Amb 2 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Amb 2] |
|---|---|
| ⇫ | *Ambient 2 Alarm RTD Temperature Protection* |

| RTD . **Amb 2 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Amb 2] |
|---|---|
| ⇫ | *Ambient 2 Timeout Alarm* |

| RTD . **Aux 1 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux 1] |
|---|---|
| ⇫ | *Auxiliary 1 Alarm RTD Temperature Protection* |

| RTD . **Aux 1 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux 1] |
|---|---|
| ⇫ | *Auxiliary 1 Timeout Alarm* |

| RTD . **Aux 2 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux 2] |
|---|---|
| ⇫ | *Auxiliary 2 Alarm RTD Temperature Protection* |

| RTD . **Aux 2 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux 2] |
|---|---|
| ⇫ | *Auxiliary 2 Timeout Alarm* |

| RTD . **Aux 3 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux 3] |
|---|---|
| ⇫ | *Auxiliary 3 Alarm RTD Temperature Protection* |

| | |
|---|---|
| RTD . **Aux 3 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux 3] |
| ⇫ | *Auxiliary 3 Timeout Alarm* |

| | |
|---|---|
| RTD . **Aux4 Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux 4] |
| ⇫ | *Auxiliary 4 Alarm RTD Temperature Protection* |

| | |
|---|---|
| RTD . **Aux4 Timeout Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux 4] |
| ⇫ | *Auxiliary 4 Timeout Alarm* |

| | |
|---|---|
| RTD . **Alarm WD W1 Group** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Windg W1 Group] |
| ⇫ | *Alarm all Windings of group W1* |

| | |
|---|---|
| RTD . **TimeoutAlmWDW1Grp** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Windg W1 Group] |
| ⇫ | *Timeout Alarm of group W1* |

| | |
|---|---|
| RTD . **Alarm WD W2 Group** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Windg W2 Group] |
| ⇫ | *Alarm all Windings of group W2* |

| | |
|---|---|
| RTD . **TimeoutAlmWDW2Grp** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Windg W2 Group] |
| ⇫ | *Timeout Alarm of group W2* |

| RTD . **Alarm Amb Group** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Amb Group] |
|---|---|
| ⇫ | *Alarm all Windings of group Ambient* |

| RTD . **TimeoutAlmAmbGrp** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Amb Group] |
|---|---|
| ⇫ | *Timeout Alarm of group Ambient* |

| RTD . **Alarm Aux Group** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux Group] |
|---|---|
| ⇫ | *Alarm Auxiliary Group* |

| RTD . **TimeoutAlmAuxGrp** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Temp-Prot / RTD / Aux Group] |
|---|---|
| ⇫ | *Timeout Alarm Auxiliary Group* |

| RTD . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| ⇫ | *Signal: Trip* |

| RTD . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| ⇫ | *Signal: Trip Command* |

| RTD . **ExBlo** | [Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| ⇫ | *Signal: External Blocking* |

| RTD . **Blo TripCmd** | [Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| ⇫ | *Signal: Trip Command blocked* |

| RTD . **ExBlo TripCmd** | [Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| ⇫ | *Signal: External Blocking of the Trip Command* |

| RTD . **Timeout Alarm** | [Operation / Status Display / Temp-Prot / RTD / General] |
|---|---|
| ⇧ | *Alarm timeout expired* |

| RTD . **W1L1 Trip** | [Operation / Status Display / Temp-Prot / RTD / W1L1] |
|---|---|
| ⇧ | *Winding1 Phase L1 Signal: Trip* |

| RTD . **W1L1 Invalid** | [Operation / Status Display / Temp-Prot / RTD / W1L1] |
|---|---|
| ⇧ | *Winding1 Phase L1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **W1L2 Trip** | [Operation / Status Display / Temp-Prot / RTD / W1L2] |
|---|---|
| ⇧ | *Winding1 Phase L2 Signal: Trip* |

| RTD . **W1L2 Invalid** | [Operation / Status Display / Temp-Prot / RTD / W1L2] |
|---|---|
| ⇧ | *Winding1 Phase L2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **W1L3 Trip** | [Operation / Status Display / Temp-Prot / RTD / W1L3] |
|---|---|
| ⇧ | *Winding1 Phase L3 Signal: Trip* |

| RTD . **W1L3 Invalid** | [Operation / Status Display / Temp-Prot / RTD / W1L3] |
|---|---|
| ⇧ | *Winding1 Phase L3 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **W2L1 Trip** | [Operation / Status Display / Temp-Prot / RTD / W2L1] |
|---|---|
| ⇧ | *Winding2 Phase L1 Signal: Trip* |

| RTD . **W2L1 Invalid** | [Operation / Status Display / Temp-Prot / RTD / W2L1] |
|---|---|
| ⇧ | *Winding2 Phase L1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **W2L2 Trip** | [Operation / Status Display / Temp-Prot / RTD / W2L2] |
|---|---|
| ⇧ | *Winding2 Phase L2 Signal: Trip* |

| RTD . **W2L2 Invalid** | [Operation / Status Display / Temp-Prot / RTD / W2L2] |
|---|---|
| ⇧ | *Winding2 Phase L2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

Released



| RTD . **W2L3 Trip** | [Operation / Status Display / Temp-Prot / RTD / W2L3] |
|---|---|
| ⇧ | *Winding2 Phase L3 Signal: Trip* |

| RTD . **W2L3 Invalid** | [Operation / Status Display / Temp-Prot / RTD / W2L3] |
|---|---|
| ⇧ | *Winding2 Phase L3 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Amb 1 Trip** | [Operation / Status Display / Temp-Prot / RTD / Amb 1] |
|---|---|
| ⇧ | *Ambient 1 Signal: Trip* |

| RTD . **Amb 1 Invalid** | [Operation / Status Display / Temp-Prot / RTD / Amb 1] |
|---|---|
| ⇧ | *Ambient 1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Amb 2 Trip** | [Operation / Status Display / Temp-Prot / RTD / Amb 2] |
|---|---|
| ⇧ | *Ambient 2 Signal: Trip* |

| RTD . **Amb 2 Invalid** | [Operation / Status Display / Temp-Prot / RTD / Amb 2] |
|---|---|
| ⇧ | *Ambient 2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Aux 1 Trip** | [Operation / Status Display / Temp-Prot / RTD / Aux 1] |
|---|---|
| ⇧ | *Auxiliary 1 Signal: Trip* |

| RTD . **Aux 1 Invalid** | [Operation / Status Display / Temp-Prot / RTD / Aux 1] |
|---|---|
| ⇧ | *Auxiliary 1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Aux 2 Trip** | [Operation / Status Display / Temp-Prot / RTD / Aux 2] |
|---|---|
| ⇧ | *Auxiliary 2 Signal: Trip* |

| RTD . **Aux 2 Invalid** | [Operation / Status Display / Temp-Prot / RTD / Aux 2] |
|---|---|
| ⇧ | *Auxiliary 2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Aux 3 Trip** | [Operation / Status Display / Temp-Prot / RTD / Aux 3] |
|---|---|
| ⇧ | *Auxiliary 3 Signal: Trip* |

| RTD . **Aux 3 Invalid** | [Operation / Status Display / Temp-Prot / RTD / Aux 3] |
|---|---|
| ⇧ | *Auxiliary 4 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Aux4 Trip** | [Operation / Status Display / Temp-Prot / RTD / Aux 4] |
|---|---|
| ⇧ | *Auxiliary 4 Signal: Trip* |

| RTD . **Aux4 Invalid** | [Operation / Status Display / Temp-Prot / RTD / Aux 4] |
|---|---|
| ⇧ | *Auxiliary 4 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Trip WD W1 Group** | [Operation / Status Display / Temp-Prot / RTD / Windg W1 Group] |
|---|---|
| ⇧ | *Trip all Windings of group W1* |

| RTD . **Windg W1 Group Invalid** | [Operation / Status Display / Temp-Prot / RTD / Windg W1 Group] |
|---|---|
| ⇧ | *Winding W1 Group Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Trip WD W2 Group** | [Operation / Status Display / Temp-Prot / RTD / Windg W2 Group] |
|---|---|
| ⇧ | *Trip all Windings of group W2* |

| RTD . **Windg W2 Group Invalid** | [Operation / Status Display / Temp-Prot / RTD / Windg W2 Group] |
|---|---|
| ⇧ | *Winding W2 Group Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Trip Amb Group** | [Operation / Status Display / Temp-Prot / RTD / Amb Group] |
|---|---|
| ⇧ | *Trip all Windings of group Ambient* |

| RTD . **Amb Group Invalid** | [Operation / Status Display / Temp-Prot / RTD / Amb Group] |
|---|---|
| ⇧ | *Ambient Group Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| RTD . **Trip Aux Group** | [Operation / Status Display / Temp-Prot / RTD / Aux Group] |
|---|---|
| ⇧ | *Trip Auxiliary Group* |

| RTD . **AuxGrpInvalid** | [Operation / Status Display / Temp-Prot / RTD / Aux Group] |
|---|---|
| ⇧ | *Invalid Auxiliary Group* |

| RTD . **Trip Any Group** | [Operation / Status Display / Temp-Prot / RTD / Any Group] |
|---|---|
| ⇧ | *Trip Any Group* |

| RTD . **Alarm Any Group** | [Operation / Status Display / Temp-Prot / RTD / Any Group] |
|---|---|
| ⇧ | *Alarm Any Group* |

| RTD . **TimeoutAlmAnyGrp** | [Operation / Status Display / Temp-Prot / RTD / Any Group] |
|---|---|
| ⇧ | *Timeout Alarm Any Group* |

| RTD . **Trip Group 1** | [Operation / Status Display / Temp-Prot / RTD / Voting] |
|---|---|
| ⇧ | *Trip Group 1* |

| RTD . **Trip Group 2** | [Operation / Status Display / Temp-Prot / RTD / Voting] |
|---|---|
| ⇧ | *Trip Group 2* |

## 9.39.6 RTD: Values And Counters

| RTD . **Hottest WD W1** | [Operation / Measured Values / URTD] |
|---|---|
| # | *Hottest winding on side W1* |

| RTD . **Hottest WD W2** | [Operation / Measured Values / URTD] |
|---|---|
| # | *Hottest winding on side W2* |

| RTD . **Hottest Amb** | [Operation / Measured Values / URTD] |
|---|---|
| # | *Hottest Ambient Temperature* |

| RTD . **Hottest Aux Temp** | [Operation / Measured Values / URTD] |
|---|---|
| # | *The actual value for the hottest Auxiliary temperature.* |

Released



# 9.40 AnaP[1] ... AnaP[8] – Analog Input Protection

## 9.40.1 AnaP[1]: Device Planning Parameters

| AnaP[1] . **Mode** | [Device planning] | |
|---|---|---|
| use | "-", use<br><br>↳ Mode. | S.3 |
| *Analog Inputs, general operation mode* | | |

## 9.40.2 AnaP[1]: Global Parameters

| AnaP[1] . **ExBlo1**<br><br>AnaP[1] . **ExBlo2** | [Protection Para / Global Prot Para / Analog Inputs / AnaP[1]] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| AnaP[1] . **ExBlo TripCmd** | [Protection Para / Global Prot Para / Analog Inputs / AnaP[1]] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| AnaP[1] . **Measuring Input** | [Protection Para / Global Prot Para / Analog Inputs / AnaP[1]] | |
|---|---|---|
| "-" | "-", AnIn[1] . Value, AnIn[2] . Value, AnIn[3] . Value, AnIn[4] . Value<br><br>↳ 1..n, AnalogOutputList. | S.3 |
| *Measuring Input* | | |

| AnaP[1] . **Alarm mode** | [Protection Para / Global Prot Para / Analog Inputs / AnaP[1]] | |
|---|---|---|
| Over | Over, Under<br>↳ t-Alarm. | S.3 |
| *Alarm mode* | | |

## 9.40.3 AnaP[1]: Setting Group Parameters

| AnaP[1] . **Function** | [Protection Para / Set 1...4 / Analog Inputs / AnaP[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Permanent activation or deactivation of module/stage.* | | |

| AnaP[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / Analog Inputs / AnaP[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | S.3 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| AnaP[1] . **Blo TripCmd** | [Protection Para / Set 1...4 / Analog Inputs / AnaP[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Permanent blocking of the Trip Command of the module/stage.* | | |

| AnaP[1] . **ExBlo TripCmd Fc** | [Protection Para / Set 1...4 / Analog Inputs / AnaP[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | S.3 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".* | | |

| AnaP[1] . **Threshold** | [Protection Para / Set 1...4 / Analog Inputs / AnaP[1]] | |
|---|---|---|
| 20% | If: AnaP[1] . Alarm mode = Over<br>• 1.0% ... 99.9%<br>If: AnaP[1] . Alarm mode = Under<br>• 0.1% ... 97.0% | S.3 |
| | *Threshold* | |

| AnaP[1] . **t** | [Protection Para / Set 1...4 / Analog Inputs / AnaP[1]] | |
|---|---|---|
| 1s | 0.00s ... 10.00s | S.3 |
| | *Tripping delay* | |

## 9.40.4 AnaP[1]: Input States

| AnaP[1] . **ExBlo1-I** | [Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| | *Module input state: External blocking1* |

| AnaP[1] . **ExBlo2-I** | [Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| | *Module input state: External blocking2* |

| AnaP[1] . **ExBlo TripCmd-I** | [Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| | *Module input state: External Blocking of the Trip Command* |

## 9.40.5 AnaP[1]: Signals (Output States)

| AnaP[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| | *Signal: active* |

| AnaP[1] . **Pickup** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| | *Signal: Alarm Analog Input* |

| AnaP[1] . **Trip** | [Operation / Status Display / Trips]<br>[Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| ⇪ | *Signal: Trip* |

| AnaP[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| ⇪ | *Signal: Trip Command* |

| AnaP[1] . **ExBlo** | [Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| ⇪ | *Signal: External Blocking* |

| AnaP[1] . **Blo TripCmd** | [Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| ⇪ | *Signal: Trip Command blocked* |

| AnaP[1] . **ExBlo TripCmd** | [Operation / Status Display / Analog Inputs / AnaP[1]] |
|---|---|
| ⇪ | *Signal: External Blocking of the Trip Command* |

Released



# 9.41 Supervision

## 9.41.1 CBF[1] . . . CBF[2] – Circuit breaker failure protection module

### 9.41.1.1 CBF[1]: Device Planning Parameters

| CBF[1] . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Device planning. | S.3 |
| *Module Circuit Breaker Failure protection, general operation mode* | | |

### 9.41.1.2 CBF[1]: Global Parameters

| CBF[1] . **Scheme** | [Protection Para / Global Prot Para / Supervision / CBF[1]] | |
|---|---|---|
| 50BF | If: CBF[1] . CB = “-”<br>• 50BF<br>If: CBF[1] . CB ≠ “-”<br>• 50BF, CB Pos, 50BF and CB Pos<br>↳ Scheme. | P.2 |
| *Scheme* | | |

| CBF[1] . **CT Winding Side** | [Protection Para / Global Prot Para / Supervision / CBF[1]] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| CBF[1] . **CB** | [Protection Para / Global Prot Para / Supervision / CBF[1]] | |
|---|---|---|
| SG[1] . | “-”, SG[1] . , SG[2] . , SG[3] . , SG[4] . , SG[5] . , SG[6] .<br>↳ CB List. | P.2 |
| *Selection of the Circuit Breaker to be monitored.* | | |

| CBF[1] . **ExBlo1**<br>CBF[1] . **ExBlo2** | [Protection Para / Global Prot Para / Supervision / CBF[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| CBF[1] . **Trigger** | [Protection Para / Global Prot Para / Supervision / CBF[1]] | |
|---|---|---|
| All Trips<br>*Only available if:* | - . -, All Trips, External Trips, Current Trips<br>↳ Trigger. | P.2 |
| *Determining the trigger mode for the Breaker Failure.* | | |

| CBF[1] . **Trigger1**<br>CBF[1] . **Trigger2**<br>CBF[1] . **Trigger3** | [Protection Para / Global Prot Para / Supervision / CBF[1]] | |
|---|---|---|
| “-” | “-” . . . Logics . LE80.Out inverted<br>↳ Trigger. | P.2 |
| *Trigger that will start the CBF* | | |

### 9.41.1.3 CBF[1]: Setting Group Parameters

| CBF[1] . **Function** | [Protection Para / Set 1...4 / Supervision / CBF[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| CBF[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / Supervision / CBF[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| CBF[1] . **I-CBF >** | [Protection Para / Set 1...4 / Supervision / CBF[1]] | |
|---|---|---|
| 0.02In | 0.02In ... 4.00In | P.2 |
| *Breaker Failure Alarm will be initiated if this threshold is still exceeded after the timer has expired (50 BF).* | | |

| CBF[1] . **t-CBF** | [Protection Para / Set 1...4 / Supervision / CBF[1]] | |
|---|---|---|
| 0.20s | 0.00s ... 10.00s | P.2 |
| *If the delay time is expired, an CBF alarm is given out.* | | |

### 9.41.1.4 CBF[1]: Direct Controls

| CBF[1] . **Res Lockout** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Reset Lockout* | | |

### 9.41.1.5 CBF[1]: Input States

| CBF[1] . **ExBlo1-I** | [Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| *Module input state: External blocking1* | |

| CBF[1] . **ExBlo2-I** | [Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| *Module input state: External blocking2* | |

| CBF[1] . **Trigger1-I**<br>CBF[1] . **Trigger2-I**<br>CBF[1] . **Trigger3-I** | [Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| *Module Input: Trigger that will start the CBF* | |

### 9.41.1.6 CBF[1]: Signals (Output States)

| CBF[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| *Signal: active* | |

| CBF[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| ⇫ | *Signal: Circuit Breaker Failure* |

| CBF[1] . **ExBlo** | [Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| ⇫ | *Signal: External Blocking* |

| CBF[1] . **Waiting for Trigger** | [Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| ⇫ | *Waiting for Trigger* |

| CBF[1] . **running** | [Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| ⇫ | *Signal: CBF-Module started* |

| CBF[1] . **Lockout** | [Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| ⇫ | *Signal: Lockout* |

| CBF[1] . **Res Lockout** | [Operation / Status Display / Supervision / CBF[1]] |
|---|---|
| ⇫ | *Signal: Reset Lockout* |

## 9.41.2 TCS[1] . . . TCS[2] – Trip circuit supervision

### 9.41.2.1 TCS[1]: Device Planning Parameters

| TCS[1] . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br><br>↳ Device planning. | S.3 |
| *Trip circuit supervision, general operation mode* | | |

### 9.41.2.2 TCS[1]: Global Parameters

| TCS[1] . **CB Pos Detect** | [Protection Para / Global Prot Para / Supervision / TCS[1]] | |
|---|---|---|
| SG[1] . Pos | “-”, SG[1] . Pos, SG[2] . Pos, SG[3] . Pos, SG[4] . Pos, SG[5] . Pos, SG[6] . Pos<br><br>↳ CB Manager. | P.2 |
| *Criterion by which the Circuit Breaker Switch Position is to be detected.* | | |

| TCS[1] . **Mode** | [Protection Para / Global Prot Para / Supervision / TCS[1]] | |
|---|---|---|
| Closed<br><br>*Only available if:* | Closed, Either<br><br>↳ Mode. | P.2 |
| *Select if trip circuit is going to be monitored when the breaker is closed or when the breaker is either open or close.* | | |

| TCS[1] . **Input 1** | [Protection Para / Global Prot Para / Supervision / TCS[1]] | |
|---|---|---|
| “-”<br><br>*Only available if:* | “-” . . . DI Slot X6 . DI 8<br><br>↳ 1..n, Dig Inputs. | P.2 |
| *Select the input configured to monitor the trip coil when the breaker is closed.* | | |

| TCS[1] . **Input 2** | [Protection Para / Global Prot Para / Supervision / TCS[1]] | |
|---|---|---|
| “-”<br><br>*Only available if:* | “-” . . . DI Slot X6 . DI 8<br><br>↳ 1..n, Dig Inputs. | P.2 |
| *Select the input configured to monitor the trip coil when the breaker is open. Only available if Mode set to “Either”.* | | |

| TCS[1] . **ExBlo1**<br><br>TCS[1] . **ExBlo2** | [Protection Para / Global Prot Para / Supervision / TCS[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

### 9.41.2.3 TCS[1]: Setting Group Parameters

| TCS[1] . **Function** | [Protection Para / Set 1...4 / Supervision / TCS[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| TCS[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / Supervision / TCS[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| TCS[1] . **t-TCS** | [Protection Para / Set 1...4 / Supervision / TCS[1]] | |
|---|---|---|
| 0.2s | 0.10s . . . 10.00s | P.2 |
| *Delay time of the Trip Circuit Supervision* | | |

### 9.41.2.4 TCS[1]: Input States

| TCS[1] . **Aux ON-I** | [Operation / Status Display / Supervision / TCS[1]] |
|---|---|
| *Module Input State: Position indicator/check-back signal of the CB (52a)* | |

| TCS[1] . **Aux OFF-I** | [Operation / Status Display / Supervision / TCS[1]] |
|---|---|
| *Module input state: Position indicator/check-back signal of the CB (52b)* | |

Released



| TCS[1] . **ExBlo1-I** | [Operation / Status Display / Supervision / TCS[1]] |
|---|---|
| ⇩ | *Module input state: External blocking1* |

| TCS[1] . **ExBlo2-I** | [Operation / Status Display / Supervision / TCS[1]] |
|---|---|
| ⇩ | *Module input state: External blocking2* |

### 9.41.2.5 TCS[1]: Signals (Output States)

| TCS[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Supervision / TCS[1]] |
|---|---|
| ⇧ | *Signal: active* |

| TCS[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Supervision / TCS[1]] |
|---|---|
| ⇧ | *Signal: Alarm Trip Circuit Supervision* |

| TCS[1] . **ExBlo** | [Operation / Status Display / Supervision / TCS[1]] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| TCS[1] . **Not Possible** | [Operation / Status Display / Supervision / TCS[1]] |
|---|---|
| ⇧ | *Not possible because no state indicator assigned to the breaker.* |

## 9.41.3 CTS[1] . . . CTS[2] – CT Supervision

### 9.41.3.1 CTS[1]: Device Planning Parameters

| CTS[1] . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Device planning. | S.3 |
| *CT Supervision, general operation mode* | | |

### 9.41.3.2 CTS[1]: Global Parameters

| CTS[1] . **CT Winding Side** | [Protection Para / Global Prot Para / Supervision / CTS[1]] | |
|---|---|---|
| W1 | W1<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| CTS[1] . **ExBlo1**<br>CTS[1] . **ExBlo2** | [Protection Para / Global Prot Para / Supervision / CTS[1]] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

### 9.41.3.3 CTS[1]: Setting Group Parameters

| CTS[1] . **Function** | [Protection Para / Set 1…4 / Supervision / CTS[1]] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| CTS[1] . **ExBlo Fc** | [Protection Para / Set 1...4 / Supervision / CTS[1]] | |
|---|---|---|
| inactive | inactive, active<br><br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| CTS[1] . **ΔI** | [Protection Para / Set 1...4 / Supervision / CTS[1]] | |
|---|---|---|
| 0.50In | 0.10In ... 1.00In | P.2 |
| *In order to prevent faulty tripping of phase selective protection functions that use the current as tripping criterion. If the difference of the measured earth current and the calculated value I0 is higher than the pick up value ΔI, an alarm event is generated after expiring of the excitation time. In such a case, a fuse failure, a broken wire or a faulty measuring circuit can be assumed.* | | |

| CTS[1] . **Alarm delay** | [Protection Para / Set 1...4 / Supervision / CTS[1]] | |
|---|---|---|
| 1.0s | 0.0s ... 9999.0s | P.2 |
| *Alarm delay* | | |

| CTS[1] . **Kd** | [Protection Para / Set 1...4 / Supervision / CTS[1]] | |
|---|---|---|
| 0.00 | 0.00 ... 0.99 | P.2 |
| *Dynamic correction factor for the evaluation of the difference between calculated and measured earth current. This correction factor allows transformer faults, caused by higher currents, to be compensated.* | | |

### 9.41.3.4 CTS[1]: Input States

| CTS[1] . **ExBlo1-I** | [Operation / Status Display / Supervision / CTS[1]] |
|---|---|
| *Module input state: External blocking1* | |

| CTS[1] . **ExBlo2-I** | [Operation / Status Display / Supervision / CTS[1]] |
|---|---|
| *Module input state: External blocking2* | |

### 9.41.3.5 CTS[1]: Signals (Output States)

| CTS[1] . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Supervision / CTS[1]] |
|---|---|
| ⇪ | *Signal: active* |

| CTS[1] . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Supervision / CTS[1]] |
|---|---|
| ⇪ | *Signal: Alarm Current Transformer Measuring Circuit Supervision* |

| CTS[1] . **ExBlo** | [Operation / Status Display / Supervision / CTS[1]] |
|---|---|
| ⇪ | *Signal: External Blocking* |

## 9.41.4 LOP – Loss of Potential

### 9.41.4.1 LOP: Device Planning Parameters

| LOP . **Mode** | [Device planning] | |
|---|---|---|
| "-" | "-", use<br><br>↳ Device planning. | S.3 |
| *general operation mode* | | |

### 9.41.4.2 LOP: Global Parameters

| LOP . **CB Pos Detect** | [Protection Para / Global Prot Para / Supervision / LOP] | |
|---|---|---|
| "-" | "-", SG[1] . Pos, SG[2] . Pos, SG[3] . Pos, SG[4] . Pos, SG[5] . Pos, SG[6] . Pos<br><br>↳ CB Manager. | P.2 |
| *If there is a circuit breaker assigned, LOP will be inhibited if the circuit breaker is open. The position of the breaker will not be taken into account by LOP if no breaker is assigned.* | | |

| LOP . **ExBlo1**<br><br>LOP . **ExBlo2** | [Protection Para / Global Prot Para / Supervision / LOP] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | P.2 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.* | | |

| LOP . **Blo Trigger1**<br><br>**. . .**<br><br>LOP . **Blo Trigger5** | [Protection Para / Global Prot Para / Supervision / LOP] | |
|---|---|---|
| "-" | "-" . . . IG[4] . Alarm<br><br>↳ Blo Trigger. | P.2 |
| *An Alarm of this protective element will block the Loss of Potential Detection.* | | |

| LOP . **Ex FF VT** | [Protection Para / Global Prot Para / Supervision / LOP] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *Alarm Fuse Failure Voltage Transformers* | | |

| LOP . **Ex FF EVT** | [Protection Para / Global Prot Para / Supervision / LOP] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *Alarm Fuse Failure Earth Voltage Transformers* | | |

### 9.41.4.3 LOP: Setting Group Parameters

| LOP . **Function** | [Protection Para / Set 1...4 / Supervision / LOP] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| LOP . **ExBlo Fc** | [Protection Para / Set 1...4 / Supervision / LOP] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| LOP . **LOPB Enable** | [Protection Para / Set 1...4 / Supervision / LOP] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking by the module LOP.* | | |

| LOP . **I<** | [Protection Para / Set 1...4 / Supervision / LOP] | |
|---|---|---|
| 2.0In | 0.5In ... 4.0In | P.2 |
| *To prevent unintended operation during faults, this threshold should be used to distinguish between load current and overcurrent. A current above this threshold will be seen as overcurrent and LOP will be inhibited. If the current detector identifies load current as overcurrent (threshold to low), a LOP situation will not be detected and if the threshold is too high, a fault situation will be identified as LOP which results in blocking of protection functions.* | | |

| LOP . **t-Alarm** | [Protection Para / Set 1...4 / Supervision / LOP] | |
|---|---|---|
| 0.1s | 0s ... 9999.0s | P.2 |
| *Pickup Delay* | | |

| LOP . **Dead Bus Detection** | [Protection Para / Set 1...4 / Supervision / LOP] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *If this detection is active, LOP will be inhibited if there is no current and voltage applied.* | | |

### 9.41.4.4 LOP: Input States

| LOP . **ExBlo1-I** | [Operation / Status Display / Supervision / LOP] |
|---|---|
| *Module input state: External blocking1* | |

| LOP . **ExBlo2-I** | [Operation / Status Display / Supervision / LOP] |
|---|---|
| *Module input state: External blocking2* | |

| LOP . **Ex FF VT-I** | [Operation / Status Display / Supervision / LOP] |
|---|---|
| *State of the module input: Alarm Fuse Failure Voltage Transformers* | |

| LOP . **Ex FF EVT-I** | [Operation / Status Display / Supervision / LOP] |
|---|---|
| *State of the module input: Alarm Fuse Failure Earth Voltage Transformers* | |

| | |
|---|---|
| LOP . **Blo Trigger1-I**<br>**. . .**<br>LOP . **Blo Trigger5-I** | [Operation / Status Display / Supervision / LOP] |
| ⇩ | *State of the module input: An Alarm of this protective element will block the Loss of Potential Detection.* |

### 9.41.4.5 LOP: Signals (Output States)

| | |
|---|---|
| LOP . **active** | [Operation / Status Display / All Actives]<br>[Operation / Status Display / Supervision / LOP] |
| ⇧ | *Signal: active* |

| | |
|---|---|
| LOP . **Alarm** | [Operation / Status Display / Alarms]<br>[Operation / Status Display / Supervision / LOP] |
| ⇧ | *Signal: Alarm Loss of Potential* |

| | |
|---|---|
| LOP . **ExBlo** | [Operation / Status Display / Supervision / LOP] |
| ⇧ | *Signal: External Blocking* |

| | |
|---|---|
| LOP . **LOP Blo** | [Operation / Status Display / Supervision / LOP] |
| ⇧ | *Signal: Loss of Potential blocks other elements.* |

| | |
|---|---|
| LOP . **Ex FF VT** | [Operation / Status Display / Supervision / LOP] |
| ⇧ | *Signal: Ex FF VT* |

| | |
|---|---|
| LOP . **Ex FF EVT** | [Operation / Status Display / Supervision / LOP] |
| ⇧ | *Signal: Alarm Fuse Failure Earth Voltage Transformers* |

# 10 Control

| **Control Page** | [Control / Control Page] |
|---|---|
| This item represents a special dialog. (See the Technical Manual for details.)<br>*Control Page* | |

## 10.1 Ctrl: Device Planning Parameters

## 10.2 Ctrl: Settings

| Ctrl . **Res NonIL** | [Control / General Settings] | |
|---|---|---|
| single Operation | single Operation, timeout, permanent<br>↳ NonIL ResetMode. | C.2 |
| *Resetmode Non-Interlocking* | | |

| Ctrl . **Timeout NonIL** | [Control / General Settings] | |
|---|---|---|
| 60s | 2s . . . 3600s | C.2 |
| *Timeout Non-Interlocking* | | |

| Ctrl . **NonIL Assign** | [Control / General Settings] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | C.2 |
| *Assignment Non-Interlocking* | | |

## 10.3 Ctrl: Direct Controls

| Ctrl . **Switching Authority** | [Control / General Settings] | |
|---|---|---|
| Local | None, Local, Remote, Local and Remote<br>↳ Switching Authority. | C.2 |
| *Switching Authority* | | |

| Ctrl . **NonInterl** | [Control / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | C.2 |
| ◉ | *DC for Non-Interlocking* | |

## 10.4 Ctrl: Input States

| Ctrl . **NonInterl-I** | [Operation / Status Display / Control / General Control] |
|---|---|
| ⇩ | *Non-Interlocking* |

## 10.5 Ctrl: Signals (Output States)

| Ctrl . **Local** | [Operation / Status Display / Control / General Control] |
|---|---|
| ⇧ | *Switching Authority: Local* |

| Ctrl . **Remote** | [Operation / Status Display / Control / General Control] |
|---|---|
| ⇧ | *Switching Authority: Remote* |

| Ctrl . **NonInterl** | [Operation / Status Display / Control / General Control] |
|---|---|
| ⇧ | *Non-Interlocking is active* |

| Ctrl . **SG Indeterm** | [Operation / Status Display / Control / General Control] |
|---|---|
| ⇧ | *(At least one) Switchgear is moving (Position cannot be determined).* |

| Ctrl . **SG Disturb** | [Operation / Status Display / Control / General Control] |
|---|---|
| ⇧ | *(At least one) Switchgear is disturbed.* |

| Ctrl . **CES SAuthority** | [Operation / Status Display / Control / General Control] |
|---|---|
| ⇧ | *Command Execution Supervision: Number of rejected Commands because of missing switching authority.* |

| Ctrl . **CES DoubleOperating** | [Operation / Status Display / Control / General Control] |
|---|---|
| ⇧ | *Command Execution Supervision: Number of rejected Commands because a second switch command is in conflict with a pending one.* |

Released



## 10.6 Ctrl: Values

| Ctrl . **Switching Authority** | [Operation / Security / Security States] | |
|---|---|---|
| Local | None, Local, Remote, Local and Remote<br>⮡ Switching Authority. | |
| ✎ | *Switching Authority* | |

# 10.7 SG[1] ... SG[6] – Switchgear

## 10.7.1 SG[1]: Settings

| SG[1] . **ON incl Prot ON** | [Control / SG / SG[1] / General Settings] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | C.2 |
| *The ON Command includes the ON Command issued by the Protection module.* | | |

| SG[1] . **OFF incl TripCmd** | [Control / SG / SG[1] / General Settings] | |
|---|---|---|
| active | inactive, active<br>↳ Mode. | C.2 |
| *The OFF Command includes the OFF Command issued by the Protection module.* | | |

| SG[1] . **t-Move ON** | [Control / SG / SG[1] / General Settings] | |
|---|---|---|
| 0.1s | 0.01s ... 100.00s | C.2 |
| *Time to move to the ON Position* | | |

| SG[1] . **t-Move OFF** | [Control / SG / SG[1] / General Settings] | |
|---|---|---|
| 0.1s | 0.01s ... 100.00s | C.2 |
| *Time to move to the OFF Position* | | |

| SG[1] . **t-Dwell** | [Control / SG / SG[1] / General Settings] | |
|---|---|---|
| 0s | 0s ... 100.00s | C.2 |
| *Dwell time* | | |

| SG[1] . **t-TripCmd** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| 0.2s | 0s ... 300.00s | P.2 |
| *Minimum hold time of the OFF-command (circuit breaker, load break switch)* | | |

| SG[1] . **Latched** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Defines whether the Trip Command is latched.* | | |

| SG[1] . **Ack TripCmd** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *Ack TripCmd* | | |

| SG[1] . **Off Cmd1** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| Id . TripCmd | "-" . . . AnaP[8] . TripCmd<br>↳ 1..n, Trip Cmds. | P.2 |
| *Off Command to the Circuit Breaker if the state of the assigned signal becomes true.* | | |

| SG[1] . **Off Cmd2** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| IdH . TripCmd | "-" . . . AnaP[8] . TripCmd<br>↳ 1..n, Trip Cmds. | P.2 |
| *Off Command to the Circuit Breaker if the state of the assigned signal becomes true.* | | |

| SG[1] . **Off Cmd3** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| I[1] . TripCmd | "-" . . . AnaP[8] . TripCmd<br>↳ 1..n, Trip Cmds. | P.2 |
| *Off Command to the Circuit Breaker if the state of the assigned signal becomes true.* | | |

| SG[1] . **Off Cmd4** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| V[1] . TripCmd | "-" . . . AnaP[8] . TripCmd<br>↳ 1..n, Trip Cmds. | P.2 |
| *Off Command to the Circuit Breaker if the state of the assigned signal becomes true.* | | |

| SG[1] . **Off Cmd5** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| V[2] . TripCmd | "-" . . . AnaP[8] . TripCmd<br>↳ 1..n, Trip Cmds. | P.2 |
| *Off Command to the Circuit Breaker if the state of the assigned signal becomes true.* | | |

| SG[1] . **Off Cmd6** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| f[1] . TripCmd | “-” . . . AnaP[8] . TripCmd<br>↳ 1..n, Trip Cmds. | P.2 |
| *Off Command to the Circuit Breaker if the state of the assigned signal becomes true.* | | |

| SG[1] . **Off Cmd7** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| f[2] . TripCmd | “-” . . . AnaP[8] . TripCmd<br>↳ 1..n, Trip Cmds. | P.2 |
| *Off Command to the Circuit Breaker if the state of the assigned signal becomes true.* | | |

| SG[1] . **Off Cmd8** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| PQS[1] . TripCmd | “-” . . . AnaP[8] . TripCmd<br>↳ 1..n, Trip Cmds. | P.2 |
| *Off Command to the Circuit Breaker if the state of the assigned signal becomes true.* | | |

| SG[1] . **Off Cmd9**<br>**. . .**<br>SG[1] . **Off Cmd75** | [Control / SG / SG[1] / Trip Manager] | |
|---|---|---|
| “-” | “-” . . . AnaP[8] . TripCmd<br>↳ 1..n, Trip Cmds. | P.2 |
| *Off Command to the Circuit Breaker if the state of the assigned signal becomes true.* | | |

| SG[1] . **Aux ON** | [Control / SG / SG[1] / Pos Indicatrs Wirng] | |
|---|---|---|
| DI Slot X1 . DI 1 | “-” . . . Logics . LE80.Out inverted<br>↳ 1..n, DI-LogicList. | C.2 |
| *The CB is in ON-position if the state of the assigned signal is true (52a).* | | |

| SG[1] . **Aux OFF** | [Control / SG / SG[1] / Pos Indicatrs Wirng] | |
|---|---|---|
| DI Slot X1 . DI 2 | “-” . . . Logics . LE80.Out inverted<br>↳ 1..n, DI-LogicList. | C.2 |
| *The CB is in OFF-position if the state of the assigned signal is true (52b).* | | |

| SG[1] . **Ready** | [Control / SG / SG[1] / Pos Indicatrs Wirng] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ 1..n, DI-LogicList. | C.2 |
| *Circuit breaker is ready for operation if the state of the assigned signal is true. This digital input can be used by some protective elements (if they are available within the device) like Auto Reclosure (AR), e.g. as a trigger signal.* | | |

| SG[1] . **Removed** | [Control / SG / SG[1] / Pos Indicatrs Wirng] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ 1..n, DI-LogicList. | C.2 |
| *The withdrawable circuit breaker is Removed* | | |

| SG[1] . **SCmd ON** | [Control / SG / SG[1] / Ex ON/OFF Cmd] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ 1..n, DI-LogicList. | C.2 |
| *Switching ON Command, e.g. the state of the Logics or the state of the digital input* | | |

| SG[1] . **SCmd OFF** | [Control / SG / SG[1] / Ex ON/OFF Cmd] | |
|---|---|---|
| "-" | "-" . . . Logics . LE80.Out inverted<br>↳ 1..n, DI-LogicList. | C.2 |
| *Switching OFF Command, e.g. the state of the Logics or the state of the digital input* | | |

| SG[1] . **Interl ON1**<br>SG[1] . **Interl ON2**<br>SG[1] . **Interl ON3** | [Control / SG / SG[1] / Interlockings] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | C.2 |
| *Interlocking of the ON command* | | |

| SG[1] . **Interl OFF1**<br>SG[1] . **Interl OFF2**<br>SG[1] . **Interl OFF3** | [Control / SG / SG[1] / Interlockings] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | C.2 |
| *Interlocking of the OFF command* | | |

| SG[1] . **Synchronism** | [Control / SG / SG[1] / Synchron Switchg] | |
|---|---|---|
| “-” | “-” . . . Logics . LE80.Out inverted<br>↳ 1..n, In-SyncList. | C.2 |
| *Synchronism* | | |

| SG[1] . **t-MaxSyncSuperv** | [Control / SG / SG[1] / Synchron Switchg] | |
|---|---|---|
| 0.2s | 0s . . . 3000.00s | C.2 |
| *Synchron-Run timer: Max. time allowed for synchronizing process after a close initiate. Only used for GENERATOR2SYSTEM working mode.* | | |

## 10.7.2 SG[1]: Direct Controls

| SG[1] . **Ack TripCmd** | [Operation / Acknowledge] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Acknowledge Trip Command* | | |

| SG[1] . **Res SGwear Sl SG** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Resetting the slow Switchgear Alarm* | | |

| SG[1] . **Manipulate Position** | [Control / SG / SG[1] / General Settings] | |
|---|---|---|
| inactive | inactive, Pos OFF, Pos ON<br>Manipulate Position. | C.2 |
| *WARNING! Fake Position - Manual Position Manipulation* | | |

## 10.7.3 SG[1]: Input States

| SG[1] . **Interl ON1-I**<br>SG[1] . **Interl ON2-I**<br>SG[1] . **Interl ON3-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| *State of the module input: Interlocking of the ON command* | |

| SG[1] . **Interl OFF1-I**<br>SG[1] . **Interl OFF2-I**<br>SG[1] . **Interl OFF3-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| *State of the module input: Interlocking of the OFF command* | |

| SG[1] . **SCmd ON-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| *State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input* | |

| SG[1] . **SCmd OFF-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| *State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input* | |

| SG[1] . **Aux ON-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| *Module Input State: Position indicator/check-back signal of the CB (52a)* | |

| SG[1] . **Aux OFF-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| *Module input state: Position indicator/check-back signal of the CB (52b)* | |

| SG[1] . **Ready-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| *Module input state: CB ready* | |

| SG[1] . **Sys-in-Sync-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇩ | *State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful.* |

| SG[1] . **Removed-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇩ | *State of the module input: The withdrawable circuit breaker is Removed* |

| SG[1] . **Ack TripCmd-I** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇩ | *State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal* |

## 10.7.4 SG[1]: Signals (Output States)

| SG[1] . **TripCmd** | [Operation / Status Display / TripCmds]<br>[Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Trip Command* |

| SG[1] . **SI SingleContactInd** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected.* |

| SG[1] . **Pos not ON** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Pos not ON* |

| SG[1] . **Pos ON** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Circuit Breaker is in ON-Position* |

| SG[1] . **Pos OFF** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Circuit Breaker is in OFF-Position* |

| SG[1] . **Pos Indeterm** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Circuit Breaker is in Indeterminate Position* |

| SG[1] . **Pos Disturb** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true.* |

| SG[1] . **Pos** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |

| SG[1] . **Ready** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Circuit breaker is ready for operation.* |

| SG[1] . **t-Dwell** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Dwell time* |

| SG[1] . **Removed** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: The withdrawable circuit breaker is Removed* |

| SG[1] . **Interl ON** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: One or more IL_On inputs are active.* |

| SG[1] . **Interl OFF** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: One or more IL_Off inputs are active.* |

| SG[1] . **CES succesf** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Command Execution Supervision: Switching command executed successfully.* |

| SG[1] . **CES Disturbed** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position.* |

| SG[1] . **CES Fail TripCmd** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Command Execution Supervision: Command execution failed because trip command is pending.* |

| SG[1] . **CES SwitchDir** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands.* |

| SG[1] . **CES ON d OFF** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Command Execution Supervision: On Command during a pending OFF Command.* |

| SG[1] . **CES SG not ready** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Command Execution Supervision: Switchgear not ready* |

| SG[1] . **CES Fiel Interl** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Command Execution Supervision: Switching Command not executed because of field interlocking.* |

| SG[1] . **CES SyncTimeout** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running.* |

| SG[1] . **CES SG removed** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.* |

| SG[1] . **Prot ON** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: ON Command issued by the Prot module* |

| SG[1] . **Ack TripCmd** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Acknowledge Trip Command* |

| SG[1] . **ON incl Prot ON** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: The ON Command includes the ON Command issued by the Protection module.* |

| SG[1] . **OFF incl TripCmd** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: The OFF Command includes the OFF Command issued by the Protection module.* |

| SG[1] . **Position Ind manipul** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Position Indicators faked* |

| SG[1] . **SGwear Slow SG** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Alarm, the circuit breaker (load-break switch) becomes slower* |

| SG[1] . **Res SGwear Sl SG** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Resetting the slow Switchgear Alarm* |

Released



| SG[1] . **ON Cmd** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.* |

| SG[1] . **OFF Cmd** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.* |

| SG[1] . **ON Cmd manual** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: ON Cmd manual* |

| SG[1] . **OFF Cmd manual** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: OFF Cmd manual* |

| SG[1] . **Sync ON request** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Synchronous ON request* |

## 10.7.5 Breaker Wear

### 10.7.5.1 SG[1]: Settings

| SG[1] . **CT Winding Side** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | C.2 |
| *Measuring values will be used from this winding side* | | |

| SG[1] . **Operations Alarm** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 9999 | 1 ... 100000 | C.2 |
| *Maximum number of operations. If the operations counter »TripCmd Cr« exceeds this limit then the signal »Operations Alarm« is set.* | | |

| SG[1] . **Isum Intr Alarm** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 100.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Alarm, the Sum (Limit) of interrupting currents has been exceeded.* | | |

| SG[1] . **Isum Intr ph Alm** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 100.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Alarm, the per hour Sum (Limit) of interrupting currents has been exceeded.* | | |

| SG[1] . **SGwear Curve Fc** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | C.2 |
| *The Circuit Breaker (load-break switch) Wear Curve defines the maximum allowed CLOSE/ OPEN cycles depending on the brake currents. If the circuit breaker maintenance curve is exceeded, an alarm will be issued. The breaker maintenance curve is to be taken from the technical data sheet of the breaker manufactor. By means of the available points this curve is to be replicated.* | | |

| SG[1] . **WearLevel Alarm** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 80.00% | 0.00% ... 100.00% | C.2 |
| *Threshold for the Alarm* | | |

| SG[1] . **WearLevel Lockout** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 95.00% | 0.00% ... 100.00% | C.2 |
| *Threshold for the Lockout Level* | | |

| SG[1] . **Current1** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 0.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #1* | | |

| SG[1] . **Count1** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 10000 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #1* | | |

| SG[1] . **Current2** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 1.20kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #2* | | |

| SG[1] . **Count2** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 10000 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #2* | | |

| SG[1] . **Current3** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 8.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #3* | | |

| SG[1] . **Count3** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 150 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #3* | | |

| SG[1] . **Current4** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 20.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #4* | | |

| SG[1] . **Count4** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 12 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #4* | | |

| SG[1] . **Current5** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 20.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #5* | | |

| SG[1] . **Count5** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 1 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #5* | | |

| SG[1] . **Current6** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 20.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #6* | | |

| SG[1] . **Count6** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 1 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #6* | | |

| SG[1] . **Current7** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 20.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #7* | | |

| SG[1] . **Count7** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 1 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #7* | | |

| SG[1] . **Current8** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 20.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #8* | | |

| SG[1] . **Count8** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 1 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #8* | | |

| SG[1] . **Current9** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 20.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #9* | | |

| SG[1] . **Count9** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 1 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #9* | | |

| SG[1] . **Current10** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 20.00kA | 0.00kA ... 2000.00kA | C.2 |
| *Interrupted Current Level #10* | | |

| SG[1] . **Count10** | [Control / SG / SG[1] / SG Wear] | |
|---|---|---|
| 1 | 1 ... 32000 | C.2 |
| *Open Counts Allowed #10* | | |

### 10.7.5.2 SG[1]: Direct Controls

| SG[1] . **Res TripCmd Cr** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.1 |
| *Resetting of the Counter: Total number of trips of the switchgear* | | |

| SG[1] . **Res Sum trip** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.1 |
| *Reset summation of the tripping currents* | | |

| SG[1] . **Res CB OPEN capacity** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.1 |
| *Reset the CB OPEN capacity.*<br>*(Remark: A »CB OPEN capacity« value of 100% means that the circuit breaker has to be maintained.)* | | |

| SG[1] . **Res Isum Intr per hour** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| ◉ | *Reset of the Sum per hour of interrupting currents.* | |

### 10.7.5.3 SG[1]: Signals (Output States)

| SG[1] . **Operations Alarm** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)* |

| SG[1] . **Isum Intr trip: IL1** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL1* |

| SG[1] . **Isum Intr trip: IL2** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL2* |

| SG[1] . **Isum Intr trip: IL3** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL3* |

| SG[1] . **Isum Intr trip** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase.* |

| SG[1] . **Res TripCmd Cr** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Resetting of the Counter: Total number of trips of the switchgear* |

| SG[1] . **Res Sum trip** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Reset summation of the tripping currents* |

| SG[1] . **WearLevel Alarm** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Threshold for the Alarm* |

| SG[1] . **WearLevel Lockout** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Threshold for the Lockout Level* |

Released



| SG[1] . **Res CB OPEN capacity** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Reset of the wear maintenance curve (i. e. of the counter for the Circuit Breaker OPEN capacity.* |

| SG[1] . **Isum Intr ph Alm** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Alarm, the per hour Sum (Limit) of interrupting currents has been exceeded.* |

| SG[1] . **Res Isum Intr ph Alm** | [Operation / Status Display / Control / SG[1]] |
|---|---|
| ⇧ | *Signal: Reset of the Alarm, "the per hour Sum (Limit) of interrupting currents has been exceeded".* |

### 10.7.5.4 SG[1]: Values

| SG[1] . **Sum trip IL1**<br>SG[1] . **Sum trip IL2**<br>SG[1] . **Sum trip IL3** | [Operation / Count and RevData / Control / SG[1]] |
|---|---|
| ⟍ | *Summation of the tripping currents phase* |

| SG[1] . **Isum Intr per hour** | [Operation / Count and RevData / Control / SG[1]] |
|---|---|
| ⟍ | *Sum per hour of interrupting currents.* |

| SG[1] . **CB OPEN capacity** | [Operation / Count and RevData / Control / SG[1]] |
|---|---|
| ⟍ | *Used capacity of the circuit breaker. (100% means that the circuit breaker has to be maintained.)* |

### 10.7.5.5 SG[1]: Counters

| SG[1] . **TripCmd Cr** | [Operation / Count and RevData / Control / SG[1]] |
|---|---|
| # | *Counter: Total number of trips of the switchgear.* |

Released



# 11 System Alarms

## 11.1 SysA: Device Planning Parameters

| SysA . **Mode** | [Device planning] | |
|---|---|---|
| “-” | “-”, use<br>↳ Mode. | S.3 |
| *general operation mode* | | |

## 11.2 SysA: Settings

| SysA . **Function** | [SysA / General Settings] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.2 |
| *Permanent activation or deactivation of module/stage.* | | |

| SysA . **ExBlo Fc** | [SysA / General Settings] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | P.2 |
| *Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".* | | |

| SysA . **CT Winding Side** | [SysA / General Settings] | |
|---|---|---|
| W1 | W1, W2<br>↳ CT Winding Side. | P.2 |
| *Measuring values will be used from this winding side* | | |

| SysA . **Alarm** | [SysA / Power / Watt]<br>...<br>[SysA / THD / I THD] | |
|---|---|---|
| inactive | inactive, active<br>↳ active/inactive. | P.2 |
| *Alarm* | | |

| SysA . **Threshold** | [SysA / Power / Watt]<br>...<br>[SysA / THD / V THD] | |
|---|---|---|
| 10000kW | 1kW ... 40000000kW | P.2 |
| *Threshold (to be entered as primary value)* | | |

| SysA . **t-Delay** | [SysA / Power / Watt]<br>...<br>[SysA / THD / I THD] | |
|---|---|---|
| 0min | 0min ... 60min | P.2 |
| *Tripping Delay* | | |

| SysA . **Threshold** | [SysA / Demand / Current Demand]<br>[SysA / THD / I THD] | |
|---|---|---|
| 500A | 10A ... 500000A | P.2 |
| *Threshold (to be entered as primary value)* | | |

| SysA . **Threshold** | [SysA / Demand / Power Demand / VAr Demand]<br>[SysA / Demand / Power Demand / VA Demand] | |
|---|---|---|
| 20000kVAr | 1kVAr ... 40000000kVAr | P.2 |
| *Threshold (to be entered as primary value)* | | |

## 11.3 SysA: Input States

| SysA . **ExBlo-I** | [Operation / Status Display / SysA] |
|---|---|
| ⇩ | *Module input state: External blocking* |

## 11.4 SysA: Signals (Output States)

| SysA . **active** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: active* |

| SysA . **ExBlo** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: External Blocking* |

| SysA . **Alarm Watt Power max** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Alarm: Permitted Active Power exceeded* |

| SysA . **Alarm VAr Power max** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Alarm: Permitted Reactive Power exceeded* |

| SysA . **Alarm VA Power max** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Alarm: Permitted Apparent Power exceeded* |

| SysA . **Alarm Watt avg (Demand)** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Alarm: Averaged Active Power exceeded* |

| SysA . **Alarm VAr avg (Demand)** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Alarm: Averaged Reactive Power exceeded* |

| SysA . **Alarm VA avg (Demand)** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Alarm: Averaged Apparent Power exceeded* |

| SysA . **Alm Current avg (Demd)** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Alarm: Averaged demand current exceeded* |

| SysA . **Alarm I THD** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Alarm Total Harmonic Distortion Current* |

Released



| SysA . **Alarm V THD** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Alarm Total Harmonic Distortion Voltage* |

| SysA . **Trip Watt Power max** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Trip maximum permitted Active Power exceeded* |

| SysA . **Trip VAr Power max** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Trip maximum permitted Reactive Power exceeded* |

| SysA . **Trip VA Power max** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Trip maximum permitted Apparent Power exceeded* |

| SysA . **Trip Watt avg (Demand)** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Trip: Averaged Active Power exceeded* |

| SysA . **Trip VAr avg (Demand)** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Trip: Averaged Reactive Power exceeded* |

| SysA . **Trip VA avg (Demand)** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Trip: Averaged Apparent Power exceeded* |

| SysA . **Trip Current avg (Demd)** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Trip: Averaged demand current exceeded* |

| SysA . **Trip I THD** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Trip Total Harmonic Distortion Current* |

| SysA . **Trip V THD** | [Operation / Status Display / SysA] |
|---|---|
| ⇧ | *Signal: Trip Total Harmonic Distortion Voltage* |

# 12 Records

## 12.1 Event rec – The event recorder logs all events like switching operations, change of parameters, alarms, trips, operating mode selections, blockings and state transitions of inputs and outputs.

| **Event rec** | [Operation / Recorders / Event rec] |
|---|---|
| | This item represents a special dialog. (See the Technical Manual for details.)<br><br>*The event recorder logs all events like switching operations, change of parameters, alarms, trips, operating mode selections, blockings and state transitions of inputs and outputs.* |

### 12.1.1 Event rec: Direct Controls

| Event rec . **Res all rec** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br><br>Mode. | P.1 |
| | *Reset all records* | |

### 12.1.2 Event rec: Signals (Output States)

| Event rec . **Res all records** | [Operation / Status Display / Recorders / Event rec] |
|---|---|
| | *Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.)* |

## 12.2 Disturb rec – After a trigger event has become true, the disturbance recorder writes analogue and digital tracks

| **Disturb rec** | [Operation / Recorders / Disturb rec] |
|---|---|
| This item represents a special dialog. (See the Technical Manual for details.)<br><br>*After a trigger event has become true, the disturbance recorder writes analogue and digital tracks* | |

### 12.2.1 Disturb rec: Settings

| Disturb rec . **Start: 1** | [Device Para / Recorders / Disturb rec] | |
|---|---|---|
| Prot . Trip | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Start recording if the assigned signal is true.* | | |

| Disturb rec . **Start: 2**<br>**. . .**<br>Disturb rec . **Start: 8** | [Device Para / Recorders / Disturb rec] | |
|---|---|---|
| "-" | "-" . . . Sys . Internal test state<br><br>↳ 1..n, Assignment List. | S.3 |
| *Start recording if the assigned signal is true.* | | |

| Disturb rec . **Auto overwriting** | [Device Para / Recorders / Disturb rec] | |
|---|---|---|
| active | inactive, active<br><br>↳ Mode. | S.3 |
| *If there is no more free memory capacity left, the oldest file will be overwritten.* | | |

| Disturb rec . **Pre-trigger time** | [Device Para / Recorders / Disturb rec] | |
|---|---|---|
| 20% | 0% . . . 99% | S.3 |
| *The pre trigger time is set in percent of the »Max file size« value. It corresponds to the part of recording before the onset of the trigger event.* | | |

| Disturb rec . **Post-trigger time** | [Device Para / Recorders / Disturb rec] | |
|---|---|---|
| 20% | 0% ... 99% | S.3 |
| *The post trigger time is set in percent of the »Max file size« value. It is the remaining time of the »Max file size«, depending on the »Pre-trigger time« setting and the duration of the trigger event, but at maximum the »Post-trigger time« set here.* | | |

| Disturb rec . **Max file size** | [Device Para / Recorders / Disturb rec] | |
|---|---|---|
| 2s | 0.1s ... 15.0s | S.3 |
| *The maximum storage capacity per record, including pre-trigger and post-trigger time. The amount of records depends on the size of each record, on the max. file size (set here), and on the total storage capacity.* | | |

## 12.2.2 Disturb rec: Direct Controls

| Disturb rec . **Man Trigger** | [Operation / Recorders / Man Trigger] | |
|---|---|---|
| False | False, True<br>↳ true or not true. | P.1 |
| *Manual Trigger* | | |

| Disturb rec . **Res all rec** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| *Reset all records* | | |

## 12.2.3 Disturb rec: Input States

| Disturb rec . **Start1-I**<br>...<br>Disturb rec . **Start8-I** | [Operation / Status Display / Recorders / Disturb rec] |
|---|---|
| *State of the module input:: Trigger event / start recording* | |

## 12.2.4 Disturb rec: Signals (Output States)

| Disturb rec . **recording** | [Operation / Status Display / Recorders / Disturb rec] |
|---|---|
| *Signal: Recording* | |

Released



| Disturb rec . **memory full** | [Operation / Status Display / Recorders / Disturb rec] |
|---|---|
| ⇧ | *Signal: Memory full* |

| Disturb rec . **Clear fail** | [Operation / Status Display / Recorders / Disturb rec] |
|---|---|
| ⇧ | *Signal: Clear failure in memory* |

| Disturb rec . **Res all records** | [Operation / Status Display / Recorders / Disturb rec] |
|---|---|
| ⇧ | *Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.)* |

| Disturb rec . **Res record** | [Operation / Status Display / Recorders / Disturb rec] |
|---|---|
| ⇧ | *Signal: Delete record* |

| Disturb rec . **Man Trigger** | [Operation / Status Display / Recorders / Disturb rec] |
|---|---|
| ⇧ | *Signal: Manual Trigger* |

## 12.2.5 Disturb rec: Values

| Disturb rec . **Rec state** | [Operation / Status Display / Recorders / Disturb rec] | |
|---|---|---|
| Ready | Ready, Recording, Writing file, Trigger Blo<br><br>↳ Rec state. | |
| ⇘ | *Recording state* | |

| Disturb rec . **Error code** | [Operation / Status Display / Recorders / Disturb rec] | |
|---|---|---|
| OK | OK, Write err, Clear fail, Calculation err, File not found, Auto overwriting off<br><br>↳ Fault. | |
| ⇘ | *Error code* | |

# 12.3 Fault rec – The values measured at the time of tripping are saved by the Fault Recorder.

| **Fault rec** | [Operation / Recorders / Fault rec] |
|---|---|
| | This item represents a special dialog. (See the Technical Manual for details.)<br>*The values measured at the time of tripping are saved by the Fault Recorder.* |

## 12.3.1 Fault rec: Settings

| Fault rec . **Record-Mode** | [Device Para / Recorders / Fault rec] | |
|---|---|---|
| Trips only | Alarms and Trips, Trips only<br>↳ Record-Mode. | S.3 |
| | *Recorder Mode (Set the behaviour of the recorder)* | |

| Fault rec . **t-meas-delay** | [Device Para / Recorders / Fault rec] | |
|---|---|---|
| 0ms | 0ms . . . 60ms | S.3 |
| | *After the Trip, the measurement will be delayed for this time.* | |

## 12.3.2 Fault rec: Direct Controls

| Fault rec . **Res all rec** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | P.1 |
| | *Reset all records* | |

## 12.3.3 Fault rec: Signals (Output States)

| Fault rec . **Res record** | [Operation / Status Display / Recorders / Fault rec] |
|---|---|
| | *Signal: Delete record* |

## 12.4 Trend rec – Trend Recorder

| **Trend rec** | [Operation / Recorders / Trend rec] |
|---|---|
| This item represents a special dialog. (See the Technical Manual for details.)<br>*Trend Recorder* | |

### 12.4.1 Trend rec: Settings

| Trend rec . **Resolution** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| 15 min | 60 min, 30 min, 15 min, 10 min, 5 min<br>↳ Resolution. | S.3 |
| *Resolution (recording frequency)* | | |

| Trend rec . **Trend1** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| CT W1 . IL1 RMS | "-" . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value1* | | |

| Trend rec . **Trend2** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| CT W1 . IL2 RMS | "-" . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value2* | | |

| Trend rec . **Trend3** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| CT W1 . IL3 RMS | "-" . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value3* | | |

| Trend rec . **Trend4** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| CT W1 . IG meas RMS | "-" . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value4* | | |

| Trend rec . **Trend5** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| VT . VL1 RMS | “-” . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value5* | | |

| Trend rec . **Trend6** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| VT . VL2 RMS | “-” . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value6* | | |

| Trend rec . **Trend7** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| VT . VL3 RMS | “-” . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value7* | | |

| Trend rec . **Trend8** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| VT . VX meas RMS | “-” . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value8* | | |

| Trend rec . **Trend9** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| “-” | “-” . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value9* | | |

| Trend rec . **Trend10** | [Device Para / Recorders / Trend rec] | |
|---|---|---|
| “-” | “-” . . . PQSCr . cos phi RMS<br>↳ 1..n, TrendRecList. | S.3 |
| *Observed Value10* | | |

Released



## 12.4.2 Trend rec: Direct Controls

| Trend rec . **Res all rec** | [Operation / Reset] | |
|---|---|---|
| inactive | inactive, active<br>Mode. | P.1 |
| ◉ | *Reset all records* | |

## 12.4.3 Trend rec: Signals (Output States)

| Trend rec . **Res all records** | [Operation / Status Display / Recorders / Trend rec] |
|---|---|
| ⇧ | *Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.)* |

## 12.4.4 Trend rec: Counters

| Trend rec . **Max avail Entries** | [Operation / Count and RevData / Trend rec] |
|---|---|
| # | *Maximum available entries in the current configuration* |

# 13 Logic

## 13.1 Logics – Logic

### 13.1.1 Logics: Device Planning Parameters

| Logics . **No of Equations:** | [Device planning] | |
|---|---|---|
| 20 | 0, 5, 10, 20, 40, 80<br>↳ No of Equations:. | S.3 |
| | *Number of required Logic Equations:* | |

## 13.1.2 Logics ... Logics – Logic

### 13.1.2.1 Logics: Settings

| Logics . **LE1.Gate** | [Logics / LE 1] | |
|---|---|---|
| AND | AND, OR, NAND, NOR<br>↳ LE1.Gate. | S.3 |
| *Logic gate* | | |

| Logics . **LE1.Input1**<br>**...**<br>Logics . **LE1.Input4** | [Logics / LE 1] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Assignment of the Input Signal* | | |

| Logics . **LE1.Inverting1**<br>**...**<br>Logics . **LE1.Inverting4** | [Logics / LE 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting the input signals.* | | |

| Logics . **LE1.t-On Delay** | [Logics / LE 1] | |
|---|---|---|
| 0.00s | 0.00s ... 36000.00s | S.3 |
| *Switch On Delay* | | |

| Logics . **LE1.t-Off Delay** | [Logics / LE 1] | |
|---|---|---|
| 0.00s | 0.00s ... 36000.00s | S.3 |
| *Switch Off Delay* | | |

| Logics . **LE1.Reset Latched** | [Logics / LE 1] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Reset Signal for the Latching* | | |

| Logics . **LE1.Inverting Reset** | [Logics / LE 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting Reset Signal for the Latching* | | |

| Logics . **LE1.Inverting Set** | [Logics / LE 1] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Inverting the Setting Signal for the Latching* | | |

### 13.1.2.2 Logics: Input States

| Logics . **LE1.Gate In1-I**<br>**. . .**<br>Logics . **LE1.Gate In4-I** | [Operation / Status Display / Logics] |
|---|---|
| *State of the module input: Assignment of the Input Signal* | |

| Logics . **LE1.Reset Latch-I** | [Operation / Status Display / Logics] |
|---|---|
| *State of the module input: Reset Signal for the Latching* | |

### 13.1.2.3 Logics: Signals (Output States)

| Logics . **LE1.Gate Out** | [Operation / Status Display / Logics] |
|---|---|
| *Signal: Output of the logic gate* | |

| Logics . **LE1.Timer Out** | [Operation / Status Display / Logics] |
|---|---|
| *Signal: Timer Output* | |

Released



| Logics . **LE1.Out** | [Operation / Status Display / Logics] |
|---|---|
| ⇫ | *Signal: Latched Output (Q)* |

| Logics . **LE1.Out inverted** | [Operation / Status Display / Logics] |
|---|---|
| ⇫ | *Signal: Negated Latched Output (Q NOT)* |

Released



# 14 Self-Supervision

| **Messages** | [Operation / Self-Supervision / Messages] |
|---|---|
| | This item represents a special dialog. (See the Technical Manual for details.)<br>*Internal messages* |

## 14.1 SSV: Direct Controls

| SSV . **Ack System LED** | [Operation / Acknowledge] | |
|---|---|---|
| False | False, True<br>⮡ true or not true. | P.1 |
| | *Acknowledge System LED (red/green flashing LED)* | |

## 14.2 SSV: Signals (Output States)

| SSV . **System Error** | [Operation / Self-Supervision / System State] |
|---|---|
| | *Signal: Device Failure* |

| SSV . **SelfSuperVision Contact** | [Operation / Self-Supervision / System State] |
|---|---|
| | *Signal: SelfSuperVision Contact* |

| SSV . **New error** | [Operation / Self-Supervision / System State] |
|---|---|
| | *Signal: A new error message has been issued.* |

| SSV . **New warning** | [Operation / Self-Supervision / System State] |
|---|---|
| | *Signal: A new warning message has been issued.* |

## 14.3 SSV: Counters

| SSV . **Cr No of free sockets** | [Operation / Self-Supervision / System State] |
|---|---|
| | *Counter for network diagnosis. Number of free sockets.* |

Released



# 15 Service

- Sys . Reboot: ⮡ Tab.

# 15.1 Sgen – Sine wave generator

## 15.1.1 Sgen: Device Planning Parameters

| Sgen . **Mode** | [Device planning] | |
|---|---|---|
| use | “-”, use<br>↳ Mode. | S.3 |
| *Sine wave generator, general operation mode* | | |

## 15.1.2 Sgen: Settings

| Sgen . **TripCmd Mode** | [Service / Test (Prot inhibit) / Sgen / Process] | |
|---|---|---|
| No TripCmd | No TripCmd, With TripCmd<br>↳ TripCmd Mode. | S.3 |
| *Trip Command Mode: Select between two operating modes for the Fault Simulator: "cold simulation” (without tripping the circuit breaker), or "hot simulation” (i.e. the simulation is authorized to trip the circuit breaker)* | | |

| Sgen . **Ex Start Simulation** | [Service / Test (Prot inhibit) / Sgen / Process] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *External Start of Fault Simulation (Using the test parameters)* | | |

| Sgen . **ExBlo1** | [Service / Test (Prot inhibit) / Sgen / Process] | |
|---|---|---|
| SG[1] . Pos ON | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1* | | |

| Sgen . **ExBlo2** | [Service / Test (Prot inhibit) / Sgen / Process] | |
|---|---|---|
| “-” | “-” . . . Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2* | | |

| Sgen . **Ex ForcePost** | [Service / Test (Prot inhibit) / Sgen / Process] | |
|---|---|---|
| "-" | "-" ... Sys . Internal test state<br>↳ 1..n, Assignment List. | S.3 |
| *Force Post state. Abort simulation.* | | |

| Sgen . **PreFault** | [Service / Test (Prot inhibit) / Sgen / Configuration / Times] | |
|---|---|---|
| 0.0s | 0.00s ... 300.00s | S.3 |
| *Pre Fault Duration* | | |

| Sgen . **FaultSimulation** | [Service / Test (Prot inhibit) / Sgen / Configuration / Times] | |
|---|---|---|
| 0.0s | 0.00s ... 10800.00s | S.3 |
| *Duration of Fault Simulation* | | |

| Sgen . **PostFault** | [Service / Test (Prot inhibit) / Sgen / Configuration / Times] | |
|---|---|---|
| 0.0s | 0.00s ... 300.00s | S.3 |
| *Post Fault Duration* | | |

## 15.1.3 Sgen: Direct Controls

| Sgen . **Start Simulation** | [Service / Test (Prot inhibit) / Sgen / Process] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Start Fault Simulation (Using the test parameters)* | | |

| Sgen . **Stop Simulation** | [Service / Test (Prot inhibit) / Sgen / Process] | |
|---|---|---|
| inactive | inactive, active<br>↳ Mode. | S.3 |
| *Stopp Fault Simulation (Using the test parameters)* | | |

## 15.1.4 Sgen: Input States

| Sgen . **Ex Start Simulation-I** | [Operation / Status Display / Sgen] |
|---|---|
| *State of the module input:External Start of Fault Simulation (Using the test parameters)* | |

| Sgen . **ExBlo1-I** | [Operation / Status Display / Sgen]<br>[Service / Test (Prot inhibit) / Sgen / State] |
|---|---|
| ⇩ | *Module input state: External blocking1* |

| Sgen . **ExBlo2-I** | [Operation / Status Display / Sgen]<br>[Service / Test (Prot inhibit) / Sgen / State] |
|---|---|
| ⇩ | *Module input state: External blocking2* |

| Sgen . **Ex ForcePost-I** | [Operation / Status Display / Sgen]<br>[Service / Test (Prot inhibit) / Sgen / State] |
|---|---|
| ⇩ | *State of the module input:Force Post state. Abort simulation.* |

## 15.1.5 Sgen: Signals (Output States)

| Sgen . **Manual Start** | [Operation / Status Display / Sgen] |
|---|---|
| ⇧ | *Fault Simulation has been started manually.* |

| Sgen . **Manual Stop** | [Operation / Status Display / Sgen] |
|---|---|
| ⇧ | *Fault Simulation has been stopped manually.* |

| Sgen . **Running** | [Operation / Status Display / Sgen]<br>[Service / Test (Prot inhibit) / Sgen / State] |
|---|---|
| ⇧ | *Signal; Measuring value simulation is running* |

| Sgen . **Started** | [Operation / Status Display / Sgen] |
|---|---|
| ⇧ | *Fault Simulation has been started* |

| Sgen . **Stopped** | [Operation / Status Display / Sgen] |
|---|---|
| ⇧ | *Fault Simulation has been stopped* |

| Sgen . **State** | [Operation / Status Display / Sgen] |
|---|---|
| ⇧ | *Signal: Wave generation states: 0=Off, 1=PreFault, 2=Fault, 3=PostFault, 4=InitReset* |

Released



## 15.1.6 Sgen: Values

| Sgen . **State** | [Service / Test (Prot inhibit) / Sgen / State] | |
|---|---|---|
| Off | Off, PreFault, FaultSimulation, PostFault, Init Res<br>↳ State. | |
| ⟍ | *Wave generation states: 0=Off, 1=PreFault, 2=Fault, 3=PostFault, 4=InitReset* | |

Released



## 15.1.7 Sgen – Sine wave generator

### 15.1.7.1 Sgen: Settings

| Sgen . **VL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / VT] | |
|---|---|---|
| 0.57Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude in Pre State: phase L1* | | |

| Sgen . **VL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / VT] | |
|---|---|---|
| 0.57Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude in Pre State: phase L2* | | |

| Sgen . **VL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / VT] | |
|---|---|---|
| 0.57Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude in Pre State: phase L3* | | |

| Sgen . **VX** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / VT] | |
|---|---|---|
| 0.0Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude in Pre State: VX* | | |

| Sgen . **phi VL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / VT] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase:phase L1* | | |

| Sgen . **phi VL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / VT] | |
|---|---|---|
| 240° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase:phase L2* | | |

| Sgen . **phi VL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / VT] | |
|---|---|---|
| 120° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase:phase L3* | | |

| Sgen . **phi VX meas** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / VT] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase: VX* | | |

| Sgen . **VL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / VT] | |
|---|---|---|
| 0.29Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude in Fault State: phase L1* | | |

| Sgen . **VL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / VT] | |
|---|---|---|
| 0.29Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude in Fault State: phase L2* | | |

| Sgen . **VL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / VT] | |
|---|---|---|
| 0.29Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude in Fault State: phase L3* | | |

| Sgen . **VX** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / VT] | |
|---|---|---|
| 0.29Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude in Fault State: phase VX* | | |

| Sgen . **phi VL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / VT] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase:phase L1* | | |

| Sgen . **phi VL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / VT] | |
|---|---|---|
| 240° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase:phase L2* | | |

| Sgen . **phi VL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / VT] | |
|---|---|---|
| 120° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase:phase L3* | | |

| Sgen . **phi VX meas** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / VT] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase: VX* | | |

| Sgen . **VL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / VT] | |
|---|---|---|
| 0.57Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude during Post phase: phase L1* | | |

| Sgen . **VL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / VT] | |
|---|---|---|
| 0.57Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude during Post phase: phase L2* | | |

| Sgen . **VL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / VT] | |
|---|---|---|
| 0.57Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude during Post phase: phase L3* | | |

| Sgen . **VX** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / VT] | |
|---|---|---|
| 0.0Vn | 0.00Vn ... 2.00Vn | S.3 |
| *Voltage Fundamental Magnitude during Post phase: phase VX* | | |

| Sgen . **phi VL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / VT] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase L1* | | |

Released



| Sgen . **phi VL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / VT] | |
|---|---|---|
| 240° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase L2* | | |

| Sgen . **phi VL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / VT] | |
|---|---|---|
| 120° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase L3* | | |

| Sgen . **phi VX meas** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / VT] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase VX* | | |

Released



## 15.1.8 Sgen ... Sgen – Sine wave generator

### 15.1.8.1 Sgen: Settings

| Sgen . **CT W1.IL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / CT W1] | |
|---|---|---|
| 0.0In | 0.00In ... 40.00In | S.3 |
| *Current Fundamental Magnitude in Pre State: phase L1* | | |

| Sgen . **CT W1.IL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / CT W1] | |
|---|---|---|
| 0.0In | 0.00In ... 40.00In | S.3 |
| *Current Fundamental Magnitude in Pre State: phase L2* | | |

| Sgen . **CT W1.IL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / CT W1] | |
|---|---|---|
| 0.0In | 0.00In ... 40.00In | S.3 |
| *Current Fundamental Magnitude in Pre State: phase L3* | | |

| Sgen . **CT W1.IG meas** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / CT W1] | |
|---|---|---|
| 0.0In | If: slot 3 = Current measuring inputs2<br>• 0.00In ... 2.500In<br>If: slot 3 ≠ Current measuring inputs2<br>• 0.00In ... 25.00In | S.3 |
| *Current Fundamental Magnitude in Pre State: IG* | | |

| Sgen . **CT W1.phi IL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / CT W1] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Pre-Phase:phase L1* | | |

| Sgen . **CT W1.phi IL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / CT W1] | |
|---|---|---|
| 240° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Pre-Phase:phase L2* | | |

| Sgen . **CT W1.phi IL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / CT W1] | |
|---|---|---|
| 120° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Pre-Phase:phase L3* | | |

| Sgen . **CT W1.phi IG meas** | [Service / Test (Prot inhibit) / Sgen / Configuration / PreFault / CT W1] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Pre-Phase: IG* | | |

| Sgen . **CT W1.IL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / CT W1] | |
|---|---|---|
| 0.0In | 0.00In ... 40.00In | S.3 |
| *Current Fundamental Magnitude in Fault State: phase L1* | | |

| Sgen . **CT W1.IL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / CT W1] | |
|---|---|---|
| 0.0In | 0.00In ... 40.00In | S.3 |
| *Current Fundamental Magnitude in Fault State: phase L2* | | |

| Sgen . **CT W1.IL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / CT W1] | |
|---|---|---|
| 0.0In | 0.00In ... 40.00In | S.3 |
| *Current Fundamental Magnitude in Fault State: phase L3* | | |

| Sgen . **CT W1.IG meas** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / CT W1] | |
|---|---|---|
| 0.0In | If: slot 3 = Current measuring inputs2<br>• 0.00In ... 2.500In<br>If: slot 3 ≠ Current measuring inputs2<br>• 0.00In ... 25.00In | S.3 |
| *Current Fundamental Magnitude in Fault State: IG* | | |

| Sgen . **CT W1.phi IL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / CT W1] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Fault-Phase:phase L1* | | |

| Sgen . **CT W1.phi IL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / CT W1] | |
|---|---|---|
| 240° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Fault-Phase:phase L2* | | |

| Sgen . **CT W1.phi IL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / CT W1] | |
|---|---|---|
| 120° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Fault-Phase:phase L3* | | |

| Sgen . **CT W1.phi IG meas** | [Service / Test (Prot inhibit) / Sgen / Configuration / FaultSimulation / CT W1] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Fault-Phase: IG* | | |

| Sgen . **CT W1.IL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / CT W1] | |
|---|---|---|
| 0.0In | 0.00In ... 40.00In | S.3 |
| *Current Fundamental Magnitude during Post phase: phase L1* | | |

| Sgen . **CT W1.IL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / CT W1] | |
|---|---|---|
| 0.0In | 0.00In ... 40.00In | S.3 |
| *Current Fundamental Magnitude during Post phase: phase L2* | | |

| Sgen . **CT W1.IL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / CT W1] | |
|---|---|---|
| 0.0In | 0.00In ... 40.00In | S.3 |
| *Current Fundamental Magnitude during Post phase: phase L3* | | |

| Sgen . **CT W1.IG meas** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / CT W1] | |
|---|---|---|
| 0.0In | If: slot 3 = Current measuring inputs2<br>• 0.00In ... 2.500In<br>If: slot 3 ≠ Current measuring inputs2<br>• 0.00In ... 25.00In | S.3 |
| *Current Fundamental Magnitude during Post phase: IG* | | |

Released



| Sgen . **CT W1.phi IL1** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / CT W1] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Post phase: phase L1* | | |

| Sgen . **CT W1.phi IL2** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / CT W1] | |
|---|---|---|
| 240° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Post phase: phase L2* | | |

| Sgen . **CT W1.phi IL3** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / CT W1] | |
|---|---|---|
| 120° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Post phase: phase L3* | | |

| Sgen . **CT W1.phi IG meas** | [Service / Test (Prot inhibit) / Sgen / Configuration / PostFault / CT W1] | |
|---|---|---|
| 0° | -360° ... 360° | S.3 |
| *Start Position respectively Start Angle of the Current Phasor during Post phase: IG* | | |

Released



# 16 Selection Lists

### *Direction*

Direction detection

Selection list referenced by the following parameters:

- ⮡ Prot . Dir. I
- ⮡ Prot . Dir. IG meas.
- ⮡ Prot . Dir. IG calc.

| Direction | Description |
|---|---|
| **reverse** | *reverse* |
| **forward** | *forward* |
| **not possible** | *not possible* |

### *Rec state*

Recording state

Selection list referenced by the following parameters:

- ⮡ Disturb rec . Rec state

| Rec state | Description |
|---|---|
| **Ready** | *Ready* |
| **Recording** | *Recording* |
| **Writing file** | *Signal: Writing file* |
| **Trigger Blo** | *Trigger signal is still active - wait for fallback. A new record can only be started if and only the trigger signal that started the previous record has fallen back once. Therewith endless records are prevented.* |

### *Fault*

Selection list referenced by the following parameters:

- ⮡ Disturb rec . Error code

| Fault | Description |
|---|---|
| **OK** | *OK* |
| **Write err** | *Signal: Writing error in memory* |
| **Clear fail** | *Signal: Clear failure in memory* |
| **Calculation err** | *Calculation error* |
| **File not found** | *File not found* |
| **Auto overwriting off** | *If there is no more memory available the record is being stopped.* |

***State***

Selection list referenced by the following parameters:

- ⮡ IEC 61850 . GoosePublisherState
- ⮡ IEC 61850 . GooseSubscriberState
- ⮡ IEC 61850 . MmsServerState

| State | Description |
|---|---|
| **Off** | *Off* |
| **On** | *On* |
| **Error** | *Error* |

***State***

Selection list referenced by the following parameters:

- ⮡ Profibus . Slave State

| State | Description |
|---|---|
| **Baud Search** | *No connection to the PROFIBUS-DP Master* |
| **Baud Found** | *The PROFIBUS DP Slave is connected to the bus. The Slave has not yet been addressed by the Master Device (and it was not yet addressed since the last break of the connection).* |
| **PRM OK** | *The slave was addressed by the master, the parameter setting message was received and is OK, a configuration message is expected from the master.* |

| State | Description |
|---|---|
| **PRM REQ** | *The slave is no longer addressed by the master (modified parameters within the master without having the connection stopped, master software is tuned off but lower PROFIBUS layer is still active)* |
| **PRM Fault** | *An Error in the parameter setting message (e.g. wrong PNO identification number)* |
| **CFG Fault** | *Configuration error the number of input/output bytes parameterised in the master does not match the number parametrised in the device (slave).* |
| **Clear Data** | *Master sends a General Control command to clear the data.* |
| **Data exchange** | *Master and slave exchange data.* |

***Baud rate***

Selection list referenced by the following parameters:

- ⮡ Profibus . Baud rate

| Baud rate | Description |
|---|---|
| **12 Mb/s** | *12 Mb/s* |
| **6 Mb/s** | *6 Mb/s* |
| **3 Mb/s** | *3 Mb/s* |
| **1.5 Mb/s** | *1.5 Mb/s* |
| **0.5 Mb/s** | *0.5 Mb/s* |
| **187500 baud** | *187500 baud* |
| **93750 baud** | *93750 baud* |
| **45450 baud** | *45450 baud* |
| **19200 baud** | *19200 baud* |
| **9600 baud** | *9600 baud* |
| **-.-** | *-.-* |

***PNO Id***

PNO Identification Number. GSD Identification Number.

Selection list referenced by the following parameters:

- ⮡ Profibus . PNO Id

| PNO Id | Description |
|---|---|
| **0C50h** | *PnodID for the Config file.* |

***Config status***

Status of the user-defined SCADA configuration.\nPossible values:

Selection list referenced by the following parameters:

- ⮡ Profibus . Config status

| Config status | Description |
|---|---|
| **Changing** | *New SCADA configuration is being loaded, but not active yet.* |
| **OK** | *The SCADA configuration is active.* |
| **Config. not avail.** | *The user-defined SCADA configuration is not available (e.g. has not been loaded into the device).* |
| **Error** | *Unexpected error. Please contact our service-team.* |

***Server State***

Server State.

Selection list referenced by the following parameters:

- ⮡ SNTP . Used Server

| Server State | Description |
|---|---|
| **Server1** | *Server1 used.* |
| **Server2** | *Server2 used.* |
| **None** | *No Server used.* |

***State***

Selection list referenced by the following parameters:

- ⮡ SNTP . ServerQlty

- ↳ SNTP . NetConn

| State | Description |
|---|---|
| **GOOD** | *GOOD* |
| **SUFFICIENT** | *SUFFICIENT* |
| **BAD** | *BAD* |
| **“-”** | *NO CONNECTION* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ↳ DI Slot X1 . Inverting 1
- ↳ DI Slot X5 . Inverting 1
- ↳ DI Slot X6 . Inverting 1
- ↳ BO Slot X2 . Latched
- ↳ BO Slot X2 . Inverting
- ↳ BO Slot X2 . Inverting 1
- *[ . . . ]*

| Mode | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

***true or not true***

Selection list referenced by the following parameters:

- ↳ Disturb rec . Man Trigger
- ↳ SSV . Ack System LED

| true or not true | Description |
|---|---|
| **False** | *False* |
| **True** | *True* |

### *Type of passw. def.*

Type of the password definition. This value is directly related to the security-level of the access to the device.

Selection list referenced by the following parameters:

- ⮡ Sys . Passw. for USB conn.
- ⮡ Sys . Passw.remote net.conn.

| Type of passw. def. | Description |
|---|---|
| **disabled** | *The password disabled.* |
| **default** | *The password is the same as the factory default, i.e. it has not been altered by the user. (However, for devices with a disabled default password the password type is displayed as “disabled”, not as “default”.)* |
| **def. by user** | *The password has been defined by the user. This corresponds to the highest security-level of the access to the device.* |

### *TLS Certificate*

Type of certificate that the device uses for the encrypted communication. This value is directly related to the security-level of the communication.

Selection list referenced by the following parameters:

- ⮡ Sys . TLS Certificate

| TLS Certificate | Description |
|---|---|
| **Device-specific** | *The device uses a device-specific certificate for the encrypted communication. This corresponds to the highest security-level of the communication.* |
| **Basic** | *The device uses a basic certificate for the encrypted communication. Compared with a device-specific certificate, this means a slightly reduced security level.* |
| **Corrupt** | *The certificate for the encrypted communication is corrupt and therefore unusable.* |

### *Switching Authority*

Selection list referenced by the following parameters:

- ⮡ Ctrl . Switching Authority
- ⮡ Ctrl . Switching Authority
- ⮡ Ctrl . Switching Authority

| Switching Authority | Description |
|---|---|
| **None** | *None* |
| **Local** | *Local* |
| **Remote** | *Remote* |
| **Local and Remote** | *Local and Remote* |

### *Config. Device Reset*

If the »C« key is pressed while the device is performing a cold restart a general Reset Dialog appears on the screen. Select which options shall be available with this dialog.

Selection list referenced by the following parameters:

- ⮡ HMI . Config. Device Reset
- ⮡ HMI . Config. Device Reset
- ⮡ HMI . Config. Device Reset
- ⮡ HMI . Config. Device Reset

| Config. Device Reset | Description |
|---|---|
| **"Fact.def.", "PW rst"** | *Two Reset Options shall be available:*<br>*- "Reset to factory defaults",*<br>*- "Reset passwords".* |
| **Only “Fact.defaults”** | *Only one Reset Option shall be available:*<br>*- "Reset to factory defaults".*<br>*CAUTION: If this option has been chosen and the password should ever get lost then the only chance to recover control is to reset the protection device to factory defaults.* |
| **Reset deact.** | *The Reset Options shall be deactivated.* |

| Config. Device Reset | Description |
|---|---|
| | *CAUTION: If this option has been chosen and the password should ever get lost, then the protection device has to be sent to the manufacturer as a service request.* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ Id . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ IdH . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ IdG[1] . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |

| Mode | Description |
|---|---|
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ IdGH[1] . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ IH2[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***I>***

If the pickup value is exceeded, the module/element starts to time out to trip.

Selection list referenced by the following parameters:

- ⮡ I[1] . Mode

| I> | Description |
|---|---|
| **“-”** | *do not use* |
| **non directional** | *non directional* |
| **forward** | *forward* |

| I> | Description |
|---|---|
| **reverse** | *reverse* |

***Earth overcurrent***

Selection list referenced by the following parameters:

- ⮡ IG[1] . Mode

| Earth overcurrent | Description |
|---|---|
| **“-”** | *do not use* |
| **non directional** | *non directional* |
| **forward** | *forward* |
| **reverse** | *reverse* |

***yes/no***

Selection list referenced by the following parameters:

- ⮡ Sys . Reboot
- ⮡ IG[1] . Superv. only
- ⮡ VG[1] . Superv. only
- ⮡ RTD . W1L1
- ⮡ RTD . W1L2
- ⮡ RTD . W1L3
- *[ . . . ]*

| yes/no | Description |
|---|---|
| **no** | *no* |
| **yes** | *yes* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ ThR . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ I2>[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ V[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **V>** | *V>* |
| **V<** | *Pickup value* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ df/dt . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ delta phi . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ Intertripping . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ P . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **P>** | *Over Forward* |
| **Pr>** | *Over Reverse* |

### *Mode*

general operation mode

Selection list referenced by the following parameters:

- ⮡ Q . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **Q>** | *Over Forward* |
| **Qr>** | *Over Reverse* |

### *Device planning*

Selection list referenced by the following parameters:

- ⮡ LVRT[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

### *Device planning*

Selection list referenced by the following parameters:

- ⮡ VG[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **V>** | *V>* |
| **V<** | *Pickup value* |

### *Device planning*

Selection list referenced by the following parameters:

- ⮡ V012[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **V1>** | *Positive Phase Sequence Overvoltage* |
| **V1<** | *Positive Phase Sequence Undervoltage* |
| **V2>** | *Negative Phase Sequence Overvoltage* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ f[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **f<** | *Underfrequency* |
| **f>** | *Overfrequency* |
| **f< and df/dt** | *Underfrequency and (instantaneous) rate of frequency change* |
| **f> and df/dt** | *Overfrequency and (instantaneous) rate of frequency change* |
| **f< and DF/DT** | *Underfrequency and (averaged) rate of frequency change* |
| **f> and DF/DT** | *Overfrequency and (averaged) rate of frequency change* |
| **df/dt** | *Measured value (calculated): Rate-of-frequency-change.* |
| **delta phi** | *Measured value (calculated): Vector surge* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ PQS[1] . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **P>** | *Over(load) Active Power Pickup Value. Can be used for monitoring the maximum allowed forward power limits of transformers or overhead lines.* |

| Mode | Description |
|---|---|
| **P<** | *Under(load) Active Power Pickup Value (e.g. caused by idling motors).* |
| **Pr<** | *Under Reverse* |
| **Pr>** | *Overload Reverse Active Power Pickup Value. Protection against reverse feeding into the power supply network.* |
| **Q>** | *Over(load) Reactive Power Pickup Value. Monitoring the maximum allowed reactive power of the electrical equipment like transformers or overhead lines). If the maximum value is exceeded a condensator bank could be switched off.* |
| **Q<** | *Under(load) Reactive Power Pickup Value. Monitoring the minimum value of the reactive power. If it falls below the set value a condensator bank could be switched on.* |
| **Qr<** | *Under Reverse* |
| **Qr>** | *Overload Reverse Reactive Power Pickup Value* |
| **S>** | *Over(load) Apparent Power Pickup Value* |
| **S<** | *Under(load) Apparent Power Pickup Value* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ PF[1] . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ Q->&V< . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |

| Mode | Description |
|---|---|
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ↳ ReCon[1] . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ↳ UFLS . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ↳ Sync . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ V/f>[1] . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ SOTF . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ CLPU . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ ExP[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ Ext Sudd Press . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ Ext Oil Temp . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ Ext Temp Superv[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |

| Device planning | Description |
|---|---|
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ RTD . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ CBF[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ TCS[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ CTS[1] . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Device planning***

Selection list referenced by the following parameters:

- ⮡ LOP . Mode

| Device planning | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ SysA . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ AnaP[1] . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Used Protocol***

Used SCADA Protocol

Selection list referenced by the following parameters:

- ⮡ Scada . Protocol

| Used Protocol | Description |
|---|---|
| **“-”** | *do not use* |
| **Modbus RTU** | *Modbus Protocol RTU* |
| **Modbus TCP** | *Modbus Protocol TCP* |
| **Modbus TCP/RTU** | *Modbus Protocol TCP/RTU* |
| **DNP3 RTU** | *Distributed Network Protocol RTU* |
| **DNP3 TCP** | *Distributed Network Protocol TCP* |
| **DNP3 UDP** | *Distributed Network Protocol UDP* |
| **IEC 60870-5-103** | *IEC 60870-5-103 Protocol* |
| **IEC 60870-5-104** | *IEC 60870-5-104 Protocol* |
| **IEC 61850** | *IEC 61850 communication* |
| **Profibus** | *Profibus Module* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ IRIG-B . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ SNTP . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |
| **use** | *use* |

***No of Equations:***

Number of required Logic Equations:

Selection list referenced by the following parameters:

- ⮡ Logics . No of Equations:

| No of Equations: | Description |
|---|---|
| **0** | *0* |
| **5** | *5* |
| **10** | *10* |
| **20** | *20* |
| **40** | *40* |
| **80** | *80* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ Sgen . Mode

| Mode | Description |
|---|---|
| **“-”** | *do not use* |

| Mode | Description |
|---|---|
| **use** | *use* |

***Scaling***

Display of the measured values as primary, secondary or per unit values

Selection list referenced by the following parameters:

- ⮡ Sys . Scaling

| Scaling | Description |
|---|---|
| **Per unit values** | *Per unit values* |
| **Primary values** | *Primary values* |
| **Secondary values** | *Secondary values* |

***Units***

Units for the measurement

Selection list referenced by the following parameters:

- ⮡ URTD . Temperature Unit

| Units | Description |
|---|---|
| **Celsius** | *Celsius* |
| **Fahrenheit** | *Fahrenheit* |

***1..n Power Scaling***

Selection list referenced by the following parameters:

- ⮡ PQSCr . Power Units

| 1..n Power Scaling | Description |
|---|---|
| **Power Auto Scaling** | *Selects unit prefix (k, M, G) and decimal places for power values to best fit, depending on VT and CT primary settings.* |
| **kW/kVAr/kVA** | *Set unit prefix to k (kW, kVAr or kVA)* |

| 1..n Power Scaling | Description |
|---|---|
| **MW/MVAr/MVA** | *Set unit prefix to M (MW, MVAr or MVA)* |
| **GW/GVAr/GVA** | *Set unit prefix to G (GW, GVAr or GVA)* |

### *1..n Energy Scaling*

Selection list referenced by the following parameters:

- ⮡ PQSCr . Energy Units

| 1..n Energy Scaling | Description |
|---|---|
| **Energy Auto Scaling** | *Selects unit prefix (k, M, G) and decimal places for power values to best fit, depending on VT and CT primary settings.* |
| **kWh/kVArh/kVAh** | *Set unit prefix to k (kWh, kVArh or kVAh)* |
| **MWh/MVArh/MVAh** | *Set unit prefix to M (MWh, MVArh or MVAh)* |
| **GWh/GVArh/GVAh** | *Set unit prefix to G (GWh, GVArh or GVAh)* |

### *Nom voltage*

Nominal voltage of the digital inputs

Selection list referenced by the following parameters:

- ⮡ DI Slot X1 . Nom voltage

| Nom voltage | Description |
|---|---|
| **24 VDC** | *24 VDC* |
| **48 VDC** | *48 VDC* |
| **60 VDC** | *60 VDC* |
| **110 VDC** | *110 VDC* |
| **230 VDC** | *230 VDC* |
| **110 VAC** | *110 VAC* |
| **230 VAC** | *230 VAC* |

### *Debouncing time*

A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.

Selection list referenced by the following parameters:

- ⮡ DI Slot X1 . Debouncing time 1

| Debouncing time | Description |
|---|---|
| **no debouncing time** | *no debouncing time* |
| **20 ms** | *20 ms* |
| **50 ms** | *50 ms* |
| **100 ms** | *100 ms* |

### *Nom voltage*

Nominal voltage of the digital inputs

Selection list referenced by the following parameters:

- ⮡ DI Slot X5 . Nom voltage

| Nom voltage | Description |
|---|---|
| **24 VDC** | *24 VDC* |
| **48 VDC** | *48 VDC* |
| **60 VDC** | *60 VDC* |
| **110 VDC** | *110 VDC* |
| **230 VDC** | *230 VDC* |
| **110 VAC** | *110 VAC* |
| **230 VAC** | *230 VAC* |

### *Debouncing time*

A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.

Selection list referenced by the following parameters:

- ⮡ DI Slot X5 . Debouncing time 1

| Debouncing time | Description |
|---|---|
| **no debouncing time** | *no debouncing time* |
| **20 ms** | *20 ms* |
| **50 ms** | *50 ms* |
| **100 ms** | *100 ms* |

***Nom voltage***

Nominal voltage of the digital inputs

Selection list referenced by the following parameters:

- ⮡ DI Slot X6 . Nom voltage

| Nom voltage | Description |
|---|---|
| **24 VDC** | *24 VDC* |
| **48 VDC** | *48 VDC* |
| **60 VDC** | *60 VDC* |
| **110 VDC** | *110 VDC* |
| **230 VDC** | *230 VDC* |
| **110 VAC** | *110 VAC* |
| **230 VAC** | *230 VAC* |

***Debouncing time***

A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.

Selection list referenced by the following parameters:

- ⮡ DI Slot X6 . Debouncing time 1

| Debouncing time | Description |
|---|---|
| **no debouncing time** | *no debouncing time* |
| **20 ms** | *20 ms* |
| **50 ms** | *50 ms* |
| **100 ms** | *100 ms* |

### *1...n Operating Modes*

Selection list referenced by the following parameters:

- ⮡ BO Slot X2 . Operating Mode
- ⮡ BO Slot X2 . Operating Mode
- ⮡ BO Slot X2 . Operating Mode
- ⮡ BO Slot X2 . Operating Mode
- ⮡ BO Slot X2 . Operating Mode
- ⮡ BO Slot X2 . Operating Mode

| 1...n Operating Modes | Description |
|---|---|
| **Normally open (NO)** | *The working principle of the relay corresponds to a normally open contact.* |
| **Normally closed (NC)** | *The working principle of the relay corresponds to a normally closed contact.* |

### *1..n, Assignment List*

Assignment List

Selection list referenced by the following parameters:

- ⮡ BO Slot X2 . Acknowledgement
- ⮡ BO Slot X2 . Assignment 1
- ⮡ BO Slot X2 . Assignment 2
- ⮡ BO Slot X2 . Acknowledgement
- ⮡ BO Slot X2 . Assignment 1
- ⮡ BO Slot X2 . Assignment 2
- *[ . . . ]*

| 1..n, Assignment List | Description |
|---|---|
| **“-”** | *No assignment* |
| Prot . **available** | *Signal: Protection is available* |
| Prot . **active** | *Signal: active* |

| 1..n, Assignment List | Description |
|---|---|
| Prot . **ExBlo** | *Signal: External Blocking* |
| Prot . **Blo TripCmd** | *Signal: Trip Command blocked* |
| Prot . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| Prot . **Alarm L1** | *Signal: General-Alarm L1* |
| Prot . **Alarm L2** | *Signal: General-Alarm L2* |
| Prot . **Alarm L3** | *Signal: General-Alarm L3* |
| Prot . **Alarm G** | *Signal: General-Alarm - Earth fault* |
| Prot . **Alarm** | *Signal: General Alarm* |
| Prot . **Trip L1** | *Signal: General Trip L1* |
| Prot . **Trip L2** | *Signal: General Trip L2* |
| Prot . **Trip L3** | *Signal: General Trip L3* |
| Prot . **Trip G** | *Signal: General Trip Ground fault* |
| Prot . **Trip** | *Signal: General Trip* |
| Prot . **Res FaultNo a GridFaultNo** | *Signal: Resetting of fault number and grid fault number.* |
| Prot . **I dir fwd** | *Signal: Phase current failure forward direction* |
| Prot . **I dir rev** | *Signal: Phase current failure reverse direction* |
| Prot . **I dir n poss** | *Signal: Phase fault - missing reference voltage* |
| Prot . **IG calc dir fwd** | *Signal: Ground fault (calculated) forward* |
| Prot . **IG calc dir rev** | *Signal: Ground fault (calculated) reverse direction* |
| Prot . **IG calc dir n poss** | *Signal: Ground fault (calculated) direction detection not possible* |
| Prot . **IG meas dir fwd** | *Signal: Ground fault (measured) forward* |
| Prot . **IG meas dir rev** | *Signal: Ground fault (measured) reverse direction* |
| Prot . **IG meas dir n poss** | *Signal: Ground fault (measured) direction detection not possible* |
| Prot . **ExBlo1-I** | *Module input state: External blocking1* |
| Prot . **ExBlo2-I** | *Module input state: External blocking2* |
| Prot . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| VT . **Phase seq. wrong** | *Signal that the device has detected a phase sequence (L1-L2-L3 / L1-L3-L2) that is different from the one that had been set at [Field settings / General Settings] »Phase Sequence«.* |
| CT W1 . **Phase seq. wrong** | *Signal that the device has detected a phase sequence (L1-L2-L3 / L1-L3-L2) that is different from the one that had been set at [Field settings / General Settings] »Phase Sequence«.* |

Released



| 1..n, Assignment List | Description |
|---|---|
| CT W2 . **Phase seq. wrong** | *Signal that the device has detected a phase sequence (L1-L2-L3 / L1-L3-L2) that is different from the one that had been set at [Field settings / General Settings] »Phase Sequence«.* |
| Ctrl . **Local** | *Switching Authority: Local* |
| Ctrl . **Remote** | *Switching Authority: Remote* |
| Ctrl . **NonInterl** | *Non-Interlocking is active* |
| Ctrl . **SG Indeterm** | *(At least one) Switchgear is moving (Position cannot be determined).* |
| Ctrl . **SG Disturb** | *(At least one) Switchgear is disturbed.* |
| Ctrl . **NonInterl-I** | *Non-Interlocking* |
| SG[1] . **SI SingleContactInd** | *Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected.* |
| SG[1] . **Pos not ON** | *Signal: Pos not ON* |
| SG[1] . **Pos ON** | *Signal: Circuit Breaker is in ON-Position* |
| SG[1] . **Pos OFF** | *Signal: Circuit Breaker is in OFF-Position* |
| SG[1] . **Pos Indeterm** | *Signal: Circuit Breaker is in Indeterminate Position* |
| SG[1] . **Pos Disturb** | *Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true.* |
| SG[1] . **Ready** | *Signal: Circuit breaker is ready for operation.* |
| SG[1] . **t-Dwell** | *Signal: Dwell time* |
| SG[1] . **Removed** | *Signal: The withdrawable circuit breaker is Removed* |
| SG[1] . **Interl ON** | *Signal: One or more IL_On inputs are active.* |
| SG[1] . **Interl OFF** | *Signal: One or more IL_Off inputs are active.* |
| SG[1] . **CES succesf** | *Signal: Command Execution Supervision: Switching command executed successfully.* |
| SG[1] . **CES Disturbed** | *Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position.* |
| SG[1] . **CES Fail TripCmd** | *Signal: Command Execution Supervision: Command execution failed because trip command is pending.* |
| SG[1] . **CES SwitchDir** | *Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands.* |
| SG[1] . **CES ON d OFF** | *Signal: Command Execution Supervision: On Command during a pending OFF Command.* |

Released



| 1..n, Assignment List | Description |
|---|---|
| SG[1] . **CES SG not ready** | *Signal: Command Execution Supervision: Switchgear not ready* |
| SG[1] . **CES Fiel Interl** | *Signal: Command Execution Supervision: Switching Command not executed because of field interlocking.* |
| SG[1] . **CES SyncTimeout** | *Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running.* |
| SG[1] . **CES SG removed** | *Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.* |
| SG[1] . **Prot ON** | *Signal: ON Command issued by the Prot module* |
| SG[1] . **TripCmd** | *Signal: Trip Command* |
| SG[1] . **Ack TripCmd** | *Signal: Acknowledge Trip Command* |
| SG[1] . **ON incl Prot ON** | *Signal: The ON Command includes the ON Command issued by the Protection module.* |
| SG[1] . **OFF incl TripCmd** | *Signal: The OFF Command includes the OFF Command issued by the Protection module.* |
| SG[1] . **Position Ind manipul** | *Signal: Position Indicators faked* |
| SG[1] . **SGwear Slow SG** | *Signal: Alarm, the circuit breaker (load-break switch) becomes slower* |
| SG[1] . **Res SGwear Sl SG** | *Signal: Resetting the slow Switchgear Alarm* |
| SG[1] . **ON Cmd** | *Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.* |
| SG[1] . **OFF Cmd** | *Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.* |
| SG[1] . **ON Cmd manual** | *Signal: ON Cmd manual* |
| SG[1] . **OFF Cmd manual** | *Signal: OFF Cmd manual* |
| SG[1] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[1] . **Aux ON-I** | *Module Input State: Position indicator/check-back signal of the CB (52a)* |
| SG[1] . **Aux OFF-I** | *Module input state: Position indicator/check-back signal of the CB (52b)* |
| SG[1] . **Ready-I** | *Module input state: CB ready* |
| SG[1] . **Sys-in-Sync-I** | *State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful.* |
| SG[1] . **Removed-I** | *State of the module input: The withdrawable circuit breaker is Removed* |

| 1..n, Assignment List | Description |
|---|---|
| SG[1] . **Ack TripCmd-I** | *State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal* |
| SG[1] . **Interl ON1-I** | *State of the module input: Interlocking of the ON command* |
| SG[1] . **Interl ON2-I** | *State of the module input: Interlocking of the ON command* |
| SG[1] . **Interl ON3-I** | *State of the module input: Interlocking of the ON command* |
| SG[1] . **Interl OFF1-I** | *State of the module input: Interlocking of the OFF command* |
| SG[1] . **Interl OFF2-I** | *State of the module input: Interlocking of the OFF command* |
| SG[1] . **Interl OFF3-I** | *State of the module input: Interlocking of the OFF command* |
| SG[1] . **SCmd ON-I** | *State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input* |
| SG[1] . **SCmd OFF-I** | *State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input* |
| SG[1] . **Operations Alarm** | *Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)* |
| SG[1] . **Isum Intr trip: IL1** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL1* |
| SG[1] . **Isum Intr trip: IL2** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL2* |
| SG[1] . **Isum Intr trip: IL3** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL3* |
| SG[1] . **Isum Intr trip** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase.* |
| SG[1] . **Res TripCmd Cr** | *Signal: Resetting of the Counter: Total number of trips of the switchgear* |
| SG[1] . **Res Sum trip** | *Signal: Reset summation of the tripping currents* |
| SG[1] . **WearLevel Alarm** | *Signal: Threshold for the Alarm* |
| SG[1] . **WearLevel Lockout** | *Signal: Threshold for the Lockout Level* |
| SG[1] . **Res CB OPEN capacity** | *Signal: Reset of the wear maintenance curve (i. e. of the counter for the Circuit Breaker OPEN capacity.* |
| SG[1] . **Isum Intr ph Alm** | *Signal: Alarm, the per hour Sum (Limit) of interrupting currents has been exceeded.* |
| SG[1] . **Res Isum Intr ph Alm** | *Signal: Reset of the Alarm, "the per hour Sum (Limit) of interrupting currents has been exceeded".* |
| SG[2] . **SI SingleContactInd** | *Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected.* |
| SG[2] . **Pos not ON** | *Signal: Pos not ON* |

Released



| 1..n, Assignment List | Description |
|---|---|
| SG[2] . **Pos ON** | *Signal: Circuit Breaker is in ON-Position* |
| SG[2] . **Pos OFF** | *Signal: Circuit Breaker is in OFF-Position* |
| SG[2] . **Pos Indeterm** | *Signal: Circuit Breaker is in Indeterminate Position* |
| SG[2] . **Pos Disturb** | *Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true.* |
| SG[2] . **Ready** | *Signal: Circuit breaker is ready for operation.* |
| SG[2] . **t-Dwell** | *Signal: Dwell time* |
| SG[2] . **Removed** | *Signal: The withdrawable circuit breaker is Removed* |
| SG[2] . **Interl ON** | *Signal: One or more IL_On inputs are active.* |
| SG[2] . **Interl OFF** | *Signal: One or more IL_Off inputs are active.* |
| SG[2] . **CES succesf** | *Signal: Command Execution Supervision: Switching command executed successfully.* |
| SG[2] . **CES Disturbed** | *Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position.* |
| SG[2] . **CES Fail TripCmd** | *Signal: Command Execution Supervision: Command execution failed because trip command is pending.* |
| SG[2] . **CES SwitchDir** | *Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands.* |
| SG[2] . **CES ON d OFF** | *Signal: Command Execution Supervision: On Command during a pending OFF Command.* |
| SG[2] . **CES SG not ready** | *Signal: Command Execution Supervision: Switchgear not ready* |
| SG[2] . **CES Fiel Interl** | *Signal: Command Execution Supervision: Switching Command not executed because of field interlocking.* |
| SG[2] . **CES SyncTimeout** | *Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running.* |
| SG[2] . **CES SG removed** | *Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.* |
| SG[2] . **Prot ON** | *Signal: ON Command issued by the Prot module* |
| SG[2] . **TripCmd** | *Signal: Trip Command* |
| SG[2] . **Ack TripCmd** | *Signal: Acknowledge Trip Command* |
| SG[2] . **ON incl Prot ON** | *Signal: The ON Command includes the ON Command issued by the Protection module.* |
| SG[2] . **OFF incl TripCmd** | *Signal: The OFF Command includes the OFF Command issued by the Protection module.* |

Released



| 1..n, Assignment List | Description |
|---|---|
| SG[2] . **Position Ind manipul** | *Signal: Position Indicators faked* |
| SG[2] . **SGwear Slow SG** | *Signal: Alarm, the circuit breaker (load-break switch) becomes slower* |
| SG[2] . **Res SGwear Sl SG** | *Signal: Resetting the slow Switchgear Alarm* |
| SG[2] . **ON Cmd** | *Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.* |
| SG[2] . **OFF Cmd** | *Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.* |
| SG[2] . **ON Cmd manual** | *Signal: ON Cmd manual* |
| SG[2] . **OFF Cmd manual** | *Signal: OFF Cmd manual* |
| SG[2] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[2] . **Aux ON-I** | *Module Input State: Position indicator/check-back signal of the CB (52a)* |
| SG[2] . **Aux OFF-I** | *Module input state: Position indicator/check-back signal of the CB (52b)* |
| SG[2] . **Ready-I** | *Module input state: CB ready* |
| SG[2] . **Sys-in-Sync-I** | *State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful.* |
| SG[2] . **Removed-I** | *State of the module input: The withdrawable circuit breaker is Removed* |
| SG[2] . **Ack TripCmd-I** | *State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal* |
| SG[2] . **Interl ON1-I** | *State of the module input: Interlocking of the ON command* |
| SG[2] . **Interl ON2-I** | *State of the module input: Interlocking of the ON command* |
| SG[2] . **Interl ON3-I** | *State of the module input: Interlocking of the ON command* |
| SG[2] . **Interl OFF1-I** | *State of the module input: Interlocking of the OFF command* |
| SG[2] . **Interl OFF2-I** | *State of the module input: Interlocking of the OFF command* |
| SG[2] . **Interl OFF3-I** | *State of the module input: Interlocking of the OFF command* |
| SG[2] . **SCmd ON-I** | *State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input* |
| SG[2] . **SCmd OFF-I** | *State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input* |
| SG[2] . **Operations Alarm** | *Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)* |

Released



| 1..n, Assignment List | Description |
|---|---|
| SG[2] . **Isum Intr trip: IL1** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL1* |
| SG[2] . **Isum Intr trip: IL2** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL2* |
| SG[2] . **Isum Intr trip: IL3** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL3* |
| SG[2] . **Isum Intr trip** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase.* |
| SG[2] . **Res TripCmd Cr** | *Signal: Resetting of the Counter: Total number of trips of the switchgear* |
| SG[2] . **Res Sum trip** | *Signal: Reset summation of the tripping currents* |
| SG[2] . **WearLevel Alarm** | *Signal: Threshold for the Alarm* |
| SG[2] . **WearLevel Lockout** | *Signal: Threshold for the Lockout Level* |
| SG[2] . **Res CB OPEN capacity** | *Signal: Reset of the wear maintenance curve (i. e. of the counter for the Circuit Breaker OPEN capacity.* |
| SG[2] . **Isum Intr ph Alm** | *Signal: Alarm, the per hour Sum (Limit) of interrupting currents has been exceeded.* |
| SG[2] . **Res Isum Intr ph Alm** | *Signal: Reset of the Alarm, "the per hour Sum (Limit) of interrupting currents has been exceeded".* |
| SG[3] . **SI SingleContactInd** | *Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected.* |
| SG[3] . **Pos not ON** | *Signal: Pos not ON* |
| SG[3] . **Pos ON** | *Signal: Circuit Breaker is in ON-Position* |
| SG[3] . **Pos OFF** | *Signal: Circuit Breaker is in OFF-Position* |
| SG[3] . **Pos Indeterm** | *Signal: Circuit Breaker is in Indeterminate Position* |
| SG[3] . **Pos Disturb** | *Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true.* |
| SG[3] . **Ready** | *Signal: Circuit breaker is ready for operation.* |
| SG[3] . **t-Dwell** | *Signal: Dwell time* |
| SG[3] . **Removed** | *Signal: The withdrawable circuit breaker is Removed* |
| SG[3] . **Interl ON** | *Signal: One or more IL_On inputs are active.* |
| SG[3] . **Interl OFF** | *Signal: One or more IL_Off inputs are active.* |
| SG[3] . **CES succesf** | *Signal: Command Execution Supervision: Switching command executed successfully.* |

| 1..n, Assignment List | Description |
|---|---|
| SG[3] . **CES Disturbed** | *Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position.* |
| SG[3] . **CES Fail TripCmd** | *Signal: Command Execution Supervision: Command execution failed because trip command is pending.* |
| SG[3] . **CES SwitchDir** | *Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands.* |
| SG[3] . **CES ON d OFF** | *Signal: Command Execution Supervision: On Command during a pending OFF Command.* |
| SG[3] . **CES SG not ready** | *Signal: Command Execution Supervision: Switchgear not ready* |
| SG[3] . **CES Fiel Interl** | *Signal: Command Execution Supervision: Switching Command not executed because of field interlocking.* |
| SG[3] . **CES SyncTimeout** | *Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running.* |
| SG[3] . **CES SG removed** | *Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.* |
| SG[3] . **Prot ON** | *Signal: ON Command issued by the Prot module* |
| SG[3] . **TripCmd** | *Signal: Trip Command* |
| SG[3] . **Ack TripCmd** | *Signal: Acknowledge Trip Command* |
| SG[3] . **ON incl Prot ON** | *Signal: The ON Command includes the ON Command issued by the Protection module.* |
| SG[3] . **OFF incl TripCmd** | *Signal: The OFF Command includes the OFF Command issued by the Protection module.* |
| SG[3] . **Position Ind manipul** | *Signal: Position Indicators faked* |
| SG[3] . **SGwear Slow SG** | *Signal: Alarm, the circuit breaker (load-break switch) becomes slower* |
| SG[3] . **Res SGwear Sl SG** | *Signal: Resetting the slow Switchgear Alarm* |
| SG[3] . **ON Cmd** | *Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.* |
| SG[3] . **OFF Cmd** | *Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.* |
| SG[3] . **ON Cmd manual** | *Signal: ON Cmd manual* |
| SG[3] . **OFF Cmd manual** | *Signal: OFF Cmd manual* |

Released



| 1..n, Assignment List | Description |
|---|---|
| SG[3] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[3] . **Aux ON-I** | *Module Input State: Position indicator/check-back signal of the CB (52a)* |
| SG[3] . **Aux OFF-I** | *Module input state: Position indicator/check-back signal of the CB (52b)* |
| SG[3] . **Ready-I** | *Module input state: CB ready* |
| SG[3] . **Sys-in-Sync-I** | *State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful.* |
| SG[3] . **Removed-I** | *State of the module input: The withdrawable circuit breaker is Removed* |
| SG[3] . **Ack TripCmd-I** | *State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal* |
| SG[3] . **Interl ON1-I** | *State of the module input: Interlocking of the ON command* |
| SG[3] . **Interl ON2-I** | *State of the module input: Interlocking of the ON command* |
| SG[3] . **Interl ON3-I** | *State of the module input: Interlocking of the ON command* |
| SG[3] . **Interl OFF1-I** | *State of the module input: Interlocking of the OFF command* |
| SG[3] . **Interl OFF2-I** | *State of the module input: Interlocking of the OFF command* |
| SG[3] . **Interl OFF3-I** | *State of the module input: Interlocking of the OFF command* |
| SG[3] . **SCmd ON-I** | *State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input* |
| SG[3] . **SCmd OFF-I** | *State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input* |
| SG[3] . **Operations Alarm** | *Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)* |
| SG[3] . **Isum Intr trip: IL1** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL1* |
| SG[3] . **Isum Intr trip: IL2** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL2* |
| SG[3] . **Isum Intr trip: IL3** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL3* |
| SG[3] . **Isum Intr trip** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase.* |
| SG[3] . **Res TripCmd Cr** | *Signal: Resetting of the Counter: Total number of trips of the switchgear* |
| SG[3] . **Res Sum trip** | *Signal: Reset summation of the tripping currents* |
| SG[3] . **WearLevel Alarm** | *Signal: Threshold for the Alarm* |

Released



| 1..n, Assignment List | Description |
|---|---|
| SG[3] . **WearLevel Lockout** | *Signal: Threshold for the Lockout Level* |
| SG[3] . **Res CB OPEN capacity** | *Signal: Reset of the wear maintenance curve (i. e. of the counter for the Circuit Breaker OPEN capacity.* |
| SG[3] . **Isum Intr ph Alm** | *Signal: Alarm, the per hour Sum (Limit) of interrupting currents has been exceeded.* |
| SG[3] . **Res Isum Intr ph Alm** | *Signal: Reset of the Alarm, "the per hour Sum (Limit) of interrupting currents has been exceeded".* |
| SG[4] . **SI SingleContactInd** | *Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected.* |
| SG[4] . **Pos not ON** | *Signal: Pos not ON* |
| SG[4] . **Pos ON** | *Signal: Circuit Breaker is in ON-Position* |
| SG[4] . **Pos OFF** | *Signal: Circuit Breaker is in OFF-Position* |
| SG[4] . **Pos Indeterm** | *Signal: Circuit Breaker is in Indeterminate Position* |
| SG[4] . **Pos Disturb** | *Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true.* |
| SG[4] . **Ready** | *Signal: Circuit breaker is ready for operation.* |
| SG[4] . **t-Dwell** | *Signal: Dwell time* |
| SG[4] . **Removed** | *Signal: The withdrawable circuit breaker is Removed* |
| SG[4] . **Interl ON** | *Signal: One or more IL_On inputs are active.* |
| SG[4] . **Interl OFF** | *Signal: One or more IL_Off inputs are active.* |
| SG[4] . **CES succesf** | *Signal: Command Execution Supervision: Switching command executed successfully.* |
| SG[4] . **CES Disturbed** | *Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position.* |
| SG[4] . **CES Fail TripCmd** | *Signal: Command Execution Supervision: Command execution failed because trip command is pending.* |
| SG[4] . **CES SwitchDir** | *Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands.* |
| SG[4] . **CES ON d OFF** | *Signal: Command Execution Supervision: On Command during a pending OFF Command.* |
| SG[4] . **CES SG not ready** | *Signal: Command Execution Supervision: Switchgear not ready* |
| SG[4] . **CES Fiel Interl** | *Signal: Command Execution Supervision: Switching Command not executed because of field interlocking.* |

| 1..n, Assignment List | Description |
|---|---|
| SG[4] . **CES SyncTimeout** | *Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running.* |
| SG[4] . **CES SG removed** | *Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.* |
| SG[4] . **Prot ON** | *Signal: ON Command issued by the Prot module* |
| SG[4] . **TripCmd** | *Signal: Trip Command* |
| SG[4] . **Ack TripCmd** | *Signal: Acknowledge Trip Command* |
| SG[4] . **ON incl Prot ON** | *Signal: The ON Command includes the ON Command issued by the Protection module.* |
| SG[4] . **OFF incl TripCmd** | *Signal: The OFF Command includes the OFF Command issued by the Protection module.* |
| SG[4] . **Position Ind manipul** | *Signal: Position Indicators faked* |
| SG[4] . **SGwear Slow SG** | *Signal: Alarm, the circuit breaker (load-break switch) becomes slower* |
| SG[4] . **Res SGwear Sl SG** | *Signal: Resetting the slow Switchgear Alarm* |
| SG[4] . **ON Cmd** | *Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.* |
| SG[4] . **OFF Cmd** | *Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.* |
| SG[4] . **ON Cmd manual** | *Signal: ON Cmd manual* |
| SG[4] . **OFF Cmd manual** | *Signal: OFF Cmd manual* |
| SG[4] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[4] . **Aux ON-I** | *Module Input State: Position indicator/check-back signal of the CB (52a)* |
| SG[4] . **Aux OFF-I** | *Module input state: Position indicator/check-back signal of the CB (52b)* |
| SG[4] . **Ready-I** | *Module input state: CB ready* |
| SG[4] . **Sys-in-Sync-I** | *State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful.* |
| SG[4] . **Removed-I** | *State of the module input: The withdrawable circuit breaker is Removed* |
| SG[4] . **Ack TripCmd-I** | *State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal* |
| SG[4] . **Interl ON1-I** | *State of the module input: Interlocking of the ON command* |

| 1..n, Assignment List | Description |
|---|---|
| SG[4] . **Interl ON2-I** | *State of the module input: Interlocking of the ON command* |
| SG[4] . **Interl ON3-I** | *State of the module input: Interlocking of the ON command* |
| SG[4] . **Interl OFF1-I** | *State of the module input: Interlocking of the OFF command* |
| SG[4] . **Interl OFF2-I** | *State of the module input: Interlocking of the OFF command* |
| SG[4] . **Interl OFF3-I** | *State of the module input: Interlocking of the OFF command* |
| SG[4] . **SCmd ON-I** | *State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input* |
| SG[4] . **SCmd OFF-I** | *State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input* |
| SG[4] . **Operations Alarm** | *Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)* |
| SG[4] . **Isum Intr trip: IL1** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL1* |
| SG[4] . **Isum Intr trip: IL2** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL2* |
| SG[4] . **Isum Intr trip: IL3** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL3* |
| SG[4] . **Isum Intr trip** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase.* |
| SG[4] . **Res TripCmd Cr** | *Signal: Resetting of the Counter: Total number of trips of the switchgear* |
| SG[4] . **Res Sum trip** | *Signal: Reset summation of the tripping currents* |
| SG[4] . **WearLevel Alarm** | *Signal: Threshold for the Alarm* |
| SG[4] . **WearLevel Lockout** | *Signal: Threshold for the Lockout Level* |
| SG[4] . **Res CB OPEN capacity** | *Signal: Reset of the wear maintenance curve (i. e. of the counter for the Circuit Breaker OPEN capacity.* |
| SG[4] . **Isum Intr ph Alm** | *Signal: Alarm, the per hour Sum (Limit) of interrupting currents has been exceeded.* |
| SG[4] . **Res Isum Intr ph Alm** | *Signal: Reset of the Alarm, "the per hour Sum (Limit) of interrupting currents has been exceeded".* |
| SG[5] . **SI SingleContactInd** | *Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected.* |
| SG[5] . **Pos not ON** | *Signal: Pos not ON* |
| SG[5] . **Pos ON** | *Signal: Circuit Breaker is in ON-Position* |
| SG[5] . **Pos OFF** | *Signal: Circuit Breaker is in OFF-Position* |

| 1..n, Assignment List | Description |
|---|---|
| SG[5] . **Pos Indeterm** | *Signal: Circuit Breaker is in Indeterminate Position* |
| SG[5] . **Pos Disturb** | *Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true.* |
| SG[5] . **Ready** | *Signal: Circuit breaker is ready for operation.* |
| SG[5] . **t-Dwell** | *Signal: Dwell time* |
| SG[5] . **Removed** | *Signal: The withdrawable circuit breaker is Removed* |
| SG[5] . **Interl ON** | *Signal: One or more IL_On inputs are active.* |
| SG[5] . **Interl OFF** | *Signal: One or more IL_Off inputs are active.* |
| SG[5] . **CES succesf** | *Signal: Command Execution Supervision: Switching command executed successfully.* |
| SG[5] . **CES Disturbed** | *Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position.* |
| SG[5] . **CES Fail TripCmd** | *Signal: Command Execution Supervision: Command execution failed because trip command is pending.* |
| SG[5] . **CES SwitchDir** | *Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands.* |
| SG[5] . **CES ON d OFF** | *Signal: Command Execution Supervision: On Command during a pending OFF Command.* |
| SG[5] . **CES SG not ready** | *Signal: Command Execution Supervision: Switchgear not ready* |
| SG[5] . **CES Fiel Interl** | *Signal: Command Execution Supervision: Switching Command not executed because of field interlocking.* |
| SG[5] . **CES SyncTimeout** | *Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running.* |
| SG[5] . **CES SG removed** | *Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.* |
| SG[5] . **Prot ON** | *Signal: ON Command issued by the Prot module* |
| SG[5] . **TripCmd** | *Signal: Trip Command* |
| SG[5] . **Ack TripCmd** | *Signal: Acknowledge Trip Command* |
| SG[5] . **ON incl Prot ON** | *Signal: The ON Command includes the ON Command issued by the Protection module.* |
| SG[5] . **OFF incl TripCmd** | *Signal: The OFF Command includes the OFF Command issued by the Protection module.* |
| SG[5] . **Position Ind manipul** | *Signal: Position Indicators faked* |

Released



| 1..n, Assignment List | Description |
|---|---|
| SG[5] . **SGwear Slow SG** | *Signal: Alarm, the circuit breaker (load-break switch) becomes slower* |
| SG[5] . **Res SGwear Sl SG** | *Signal: Resetting the slow Switchgear Alarm* |
| SG[5] . **ON Cmd** | *Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.* |
| SG[5] . **OFF Cmd** | *Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.* |
| SG[5] . **ON Cmd manual** | *Signal: ON Cmd manual* |
| SG[5] . **OFF Cmd manual** | *Signal: OFF Cmd manual* |
| SG[5] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[5] . **Aux ON-I** | *Module Input State: Position indicator/check-back signal of the CB (52a)* |
| SG[5] . **Aux OFF-I** | *Module input state: Position indicator/check-back signal of the CB (52b)* |
| SG[5] . **Ready-I** | *Module input state: CB ready* |
| SG[5] . **Sys-in-Sync-I** | *State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful.* |
| SG[5] . **Removed-I** | *State of the module input: The withdrawable circuit breaker is Removed* |
| SG[5] . **Ack TripCmd-I** | *State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal* |
| SG[5] . **Interl ON1-I** | *State of the module input: Interlocking of the ON command* |
| SG[5] . **Interl ON2-I** | *State of the module input: Interlocking of the ON command* |
| SG[5] . **Interl ON3-I** | *State of the module input: Interlocking of the ON command* |
| SG[5] . **Interl OFF1-I** | *State of the module input: Interlocking of the OFF command* |
| SG[5] . **Interl OFF2-I** | *State of the module input: Interlocking of the OFF command* |
| SG[5] . **Interl OFF3-I** | *State of the module input: Interlocking of the OFF command* |
| SG[5] . **SCmd ON-I** | *State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input* |
| SG[5] . **SCmd OFF-I** | *State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input* |
| SG[5] . **Operations Alarm** | *Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)* |
| SG[5] . **Isum Intr trip: IL1** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL1* |

| 1..n, Assignment List | Description |
|---|---|
| SG[5] . **Isum Intr trip: IL2** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL2* |
| SG[5] . **Isum Intr trip: IL3** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL3* |
| SG[5] . **Isum Intr trip** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase.* |
| SG[5] . **Res TripCmd Cr** | *Signal: Resetting of the Counter: Total number of trips of the switchgear* |
| SG[5] . **Res Sum trip** | *Signal: Reset summation of the tripping currents* |
| SG[5] . **WearLevel Alarm** | *Signal: Threshold for the Alarm* |
| SG[5] . **WearLevel Lockout** | *Signal: Threshold for the Lockout Level* |
| SG[5] . **Res CB OPEN capacity** | *Signal: Reset of the wear maintenance curve (i. e. of the counter for the Circuit Breaker OPEN capacity.* |
| SG[5] . **Isum Intr ph Alm** | *Signal: Alarm, the per hour Sum (Limit) of interrupting currents has been exceeded.* |
| SG[5] . **Res Isum Intr ph Alm** | *Signal: Reset of the Alarm, "the per hour Sum (Limit) of interrupting currents has been exceeded".* |
| SG[6] . **SI SingleContactInd** | *Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected.* |
| SG[6] . **Pos not ON** | *Signal: Pos not ON* |
| SG[6] . **Pos ON** | *Signal: Circuit Breaker is in ON-Position* |
| SG[6] . **Pos OFF** | *Signal: Circuit Breaker is in OFF-Position* |
| SG[6] . **Pos Indeterm** | *Signal: Circuit Breaker is in Indeterminate Position* |
| SG[6] . **Pos Disturb** | *Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true.* |
| SG[6] . **Ready** | *Signal: Circuit breaker is ready for operation.* |
| SG[6] . **t-Dwell** | *Signal: Dwell time* |
| SG[6] . **Removed** | *Signal: The withdrawable circuit breaker is Removed* |
| SG[6] . **Interl ON** | *Signal: One or more IL_On inputs are active.* |
| SG[6] . **Interl OFF** | *Signal: One or more IL_Off inputs are active.* |
| SG[6] . **CES succesf** | *Signal: Command Execution Supervision: Switching command executed successfully.* |
| SG[6] . **CES Disturbed** | *Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position.* |

Released



| 1..n, Assignment List | Description |
|---|---|
| SG[6] . **CES Fail TripCmd** | *Signal: Command Execution Supervision: Command execution failed because trip command is pending.* |
| SG[6] . **CES SwitchDir** | *Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands.* |
| SG[6] . **CES ON d OFF** | *Signal: Command Execution Supervision: On Command during a pending OFF Command.* |
| SG[6] . **CES SG not ready** | *Signal: Command Execution Supervision: Switchgear not ready* |
| SG[6] . **CES Fiel Interl** | *Signal: Command Execution Supervision: Switching Command not executed because of field interlocking.* |
| SG[6] . **CES SyncTimeout** | *Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running.* |
| SG[6] . **CES SG removed** | *Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.* |
| SG[6] . **Prot ON** | *Signal: ON Command issued by the Prot module* |
| SG[6] . **TripCmd** | *Signal: Trip Command* |
| SG[6] . **Ack TripCmd** | *Signal: Acknowledge Trip Command* |
| SG[6] . **ON incl Prot ON** | *Signal: The ON Command includes the ON Command issued by the Protection module.* |
| SG[6] . **OFF incl TripCmd** | *Signal: The OFF Command includes the OFF Command issued by the Protection module.* |
| SG[6] . **Position Ind manipul** | *Signal: Position Indicators faked* |
| SG[6] . **SGwear Slow SG** | *Signal: Alarm, the circuit breaker (load-break switch) becomes slower* |
| SG[6] . **Res SGwear Sl SG** | *Signal: Resetting the slow Switchgear Alarm* |
| SG[6] . **ON Cmd** | *Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.* |
| SG[6] . **OFF Cmd** | *Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.* |
| SG[6] . **ON Cmd manual** | *Signal: ON Cmd manual* |
| SG[6] . **OFF Cmd manual** | *Signal: OFF Cmd manual* |
| SG[6] . **Sync ON request** | *Signal: Synchronous ON request* |

Released



| 1..n, Assignment List | Description |
|---|---|
| SG[6] . **Aux ON-I** | *Module Input State: Position indicator/check-back signal of the CB (52a)* |
| SG[6] . **Aux OFF-I** | *Module input state: Position indicator/check-back signal of the CB (52b)* |
| SG[6] . **Ready-I** | *Module input state: CB ready* |
| SG[6] . **Sys-in-Sync-I** | *State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful.* |
| SG[6] . **Removed-I** | *State of the module input: The withdrawable circuit breaker is Removed* |
| SG[6] . **Ack TripCmd-I** | *State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal* |
| SG[6] . **Interl ON1-I** | *State of the module input: Interlocking of the ON command* |
| SG[6] . **Interl ON2-I** | *State of the module input: Interlocking of the ON command* |
| SG[6] . **Interl ON3-I** | *State of the module input: Interlocking of the ON command* |
| SG[6] . **Interl OFF1-I** | *State of the module input: Interlocking of the OFF command* |
| SG[6] . **Interl OFF2-I** | *State of the module input: Interlocking of the OFF command* |
| SG[6] . **Interl OFF3-I** | *State of the module input: Interlocking of the OFF command* |
| SG[6] . **SCmd ON-I** | *State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input* |
| SG[6] . **SCmd OFF-I** | *State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input* |
| SG[6] . **Operations Alarm** | *Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)* |
| SG[6] . **Isum Intr trip: IL1** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL1* |
| SG[6] . **Isum Intr trip: IL2** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL2* |
| SG[6] . **Isum Intr trip: IL3** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IL3* |
| SG[6] . **Isum Intr trip** | *Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase.* |
| SG[6] . **Res TripCmd Cr** | *Signal: Resetting of the Counter: Total number of trips of the switchgear* |
| SG[6] . **Res Sum trip** | *Signal: Reset summation of the tripping currents* |
| SG[6] . **WearLevel Alarm** | *Signal: Threshold for the Alarm* |
| SG[6] . **WearLevel Lockout** | *Signal: Threshold for the Lockout Level* |

| 1..n, Assignment List | Description |
|---|---|
| SG[6] . **Res CB OPEN capacity** | *Signal: Reset of the wear maintenance curve (i. e. of the counter for the Circuit Breaker OPEN capacity.* |
| SG[6] . **Isum Intr ph Alm** | *Signal: Alarm, the per hour Sum (Limit) of interrupting currents has been exceeded.* |
| SG[6] . **Res Isum Intr ph Alm** | *Signal: Reset of the Alarm, "the per hour Sum (Limit) of interrupting currents has been exceeded".* |
| Id . **active** | *Signal: active* |
| Id . **ExBlo** | *Signal: External Blocking* |
| Id . **Blo TripCmd** | *Signal: Trip Command blocked* |
| Id . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| Id . **Alarm L1** | *Signal: Alarm System Phase L1* |
| Id . **Alarm L2** | *Signal: Alarm System Phase L2* |
| Id . **Alarm L3** | *Signal: Alarm System L3* |
| Id . **Alarm** | *Signal: Alarm* |
| Id . **Trip L1** | *Signal: Trip System Phase L1* |
| Id . **Trip L2** | *Signal: Trip System Phase L2* |
| Id . **Trip L3** | *Signal: Trip System Phase L3* |
| Id . **Trip** | *Signal: Trip* |
| Id . **TripCmd** | *Signal: Trip Command* |
| Id . **Blo H2** | *Signal: Blocked by Harmonic:2* |
| Id . **Blo H4** | *Signal: Blocked by Harmonic:4* |
| Id . **Blo H5** | *Signal: Blocked by Harmonic:5* |
| Id . **H2,H4,H5 Blo** | *Signal: Blocked by Harmonics (Inhibit)* |
| Id . **CT Satur.Stab. triggered** | *Signal: Temporary restraining of the Phase Differential Protection, triggered by the detection of an external fault in case of CT saturation.* |
| Id . **Transient** | *Signal: Temporary stabilization of the differential protection afterwards the transformer is being engergized.* |
| Id . **Restraining** | *Signal: Restraining of the differential protection by means of rising the tripping curve.* |
| Id . **CT Satur.Stab. L1 trig.** | *Signal: Temporary restraining of the Phase Differential Protection in phase L1, triggered by the detection of an external phase L1 fault in case of CT saturation.* |
| Id . **CT Satur.Stab. L2 trig.** | *Signal: Temporary restraining of the Phase Differential Protection in phase L2, triggered by the detection of an external phase L2 fault in case of CT saturation.* |

| 1..n, Assignment List | Description |
|---|---|
| Id . **CT Satur.Stab. L3 trig.** | *Signal: Temporary restraining of the Phase Differential Protection in phase L3, triggered by the detection of an external phase L3 fault in case of CT saturation.* |
| Id . **Restraining: L1** | *Restraining: L1* |
| Id . **Restraining: L2** | *Restraining: L2* |
| Id . **Restraining: L3** | *Restraining: L3* |
| Id . **IH2 Blo L1** | *Signal:Phase L1: Blocking of the Phase Differential Protection because of second Harmonic.* |
| Id . **IH2 Blo L2** | *Signal:Phase L2: Blocking of the Phase Differential Protection because of second Harmonic.* |
| Id . **IH2 Blo L3** | *Signal:Phase L3: Blocking of the Phase Differential Protection because of second Harmonic.* |
| Id . **IH4 Blo L1** | *Signal:Phase L1: Blocking of the Phase Differential Protection because of fourth Harmonic.* |
| Id . **IH4 Blo L2** | *Signal:Phase L2: Blocking of the Phase Differential Protection because of fourth Harmonic.* |
| Id . **IH4 Blo L3** | *Signal:Phase L3: Blocking of the Phase Differential Protection because of fourth Harmonic.* |
| Id . **IH5 Blo L1** | *Signal:Phase L1: Blocking of the Phase Differential Protection because of fifth Harmonic.* |
| Id . **IH5 Blo L2** | *Signal:Phase L2: Blocking of the Phase Differential Protection because of fifth Harmonic.* |
| Id . **IH5 Blo L3** | *Signal:Phase L3: Blocking of the Phase Differential Protection because of fifth Harmonic.* |
| Id . **ExBlo1-I** | *Module input state: External blocking1* |
| Id . **ExBlo2-I** | *Module input state: External blocking2* |
| Id . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IdH . **active** | *Signal: active* |
| IdH . **ExBlo** | *Signal: External Blocking* |
| IdH . **Blo TripCmd** | *Signal: Trip Command blocked* |
| IdH . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| IdH . **Alarm L1** | *Signal: Alarm System Phase L1* |
| IdH . **Alarm L2** | *Signal: Alarm System Phase L2* |
| IdH . **Alarm L3** | *Signal: Alarm System L3* |
| IdH . **Alarm** | *Signal: Alarm* |
| IdH . **Trip L1** | *Signal: Trip System Phase L1* |
| IdH . **Trip L2** | *Signal: Trip System Phase L2* |

| 1..n, Assignment List | Description |
|---|---|
| IdH . **Trip L3** | *Signal: Trip System Phase L3* |
| IdH . **Trip** | *Signal: Trip* |
| IdH . **TripCmd** | *Signal: Trip Command* |
| IdH . **ExBlo1-I** | *Module input state: External blocking1* |
| IdH . **ExBlo2-I** | *Module input state: External blocking2* |
| IdH . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IdG[1] . **active** | *Signal: active* |
| IdG[1] . **ExBlo** | *Signal: External Blocking* |
| IdG[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| IdG[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| IdG[1] . **Alarm** | *Signal: Alarm* |
| IdG[1] . **Trip** | *Signal: Trip* |
| IdG[1] . **TripCmd** | *Signal: Trip Command* |
| IdG[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| IdG[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| IdG[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IdGH[1] . **active** | *Signal: active* |
| IdGH[1] . **ExBlo** | *Signal: External Blocking* |
| IdGH[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| IdGH[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| IdGH[1] . **Alarm** | *Signal: Alarm* |
| IdGH[1] . **Trip** | *Signal: Trip* |
| IdGH[1] . **TripCmd** | *Signal: Trip Command* |
| IdGH[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| IdGH[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| IdGH[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IdG[2] . **active** | *Signal: active* |
| IdG[2] . **ExBlo** | *Signal: External Blocking* |
| IdG[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| IdG[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |

Released



| 1..n, Assignment List | Description |
|---|---|
| IdG[2] . **Alarm** | *Signal: Alarm* |
| IdG[2] . **Trip** | *Signal: Trip* |
| IdG[2] . **TripCmd** | *Signal: Trip Command* |
| IdG[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| IdG[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| IdG[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IdGH[2] . **active** | *Signal: active* |
| IdGH[2] . **ExBlo** | *Signal: External Blocking* |
| IdGH[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| IdGH[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| IdGH[2] . **Alarm** | *Signal: Alarm* |
| IdGH[2] . **Trip** | *Signal: Trip* |
| IdGH[2] . **TripCmd** | *Signal: Trip Command* |
| IdGH[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| IdGH[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| IdGH[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IH2[1] . **active** | *Signal: active* |
| IH2[1] . **ExBlo** | *Signal: External Blocking* |
| IH2[1] . **Blo L1** | *Signal: Blocked L1* |
| IH2[1] . **Blo L2** | *Signal: Blocked L2* |
| IH2[1] . **Blo L3** | *Signal: Blocked L3* |
| IH2[1] . **Blo IG meas** | *Signal: Blocking of the ground (earth) protection module (measured ground current)* |
| IH2[1] . **Blo IG calc** | *Signal: Blocking of the ground (earth) protection module (calculated ground current)* |
| IH2[1] . **3-ph Blo** | *Signal: Inrush was detected in at least one phase - trip command blocked.* |
| IH2[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| IH2[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| IH2[2] . **active** | *Signal: active* |
| IH2[2] . **ExBlo** | *Signal: External Blocking* |

| 1..n, Assignment List | Description |
|---|---|
| IH2[2] . **Blo L1** | *Signal: Blocked L1* |
| IH2[2] . **Blo L2** | *Signal: Blocked L2* |
| IH2[2] . **Blo L3** | *Signal: Blocked L3* |
| IH2[2] . **Blo IG meas** | *Signal: Blocking of the ground (earth) protection module (measured ground current)* |
| IH2[2] . **Blo IG calc** | *Signal: Blocking of the ground (earth) protection module (calculated ground current)* |
| IH2[2] . **3-ph Blo** | *Signal: Inrush was detected in at least one phase - trip command blocked.* |
| IH2[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| IH2[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| I[1] . **active** | *Signal: active* |
| I[1] . **ExBlo** | *Signal: External Blocking* |
| I[1] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| I[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| I[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| I[1] . **IH2 Blo** | *Signal: Blocking the trip command by an inrush* |
| I[1] . **Alarm L1** | *Signal: Alarm L1* |
| I[1] . **Alarm L2** | *Signal: Alarm L2* |
| I[1] . **Alarm L3** | *Signal: Alarm L3* |
| I[1] . **Alarm** | *Signal: Alarm* |
| I[1] . **Trip L1** | *Signal: General Trip Phase L1* |
| I[1] . **Trip L2** | *Signal: General Trip Phase L2* |
| I[1] . **Trip L3** | *Signal: General Trip Phase L3* |
| I[1] . **Trip** | *Signal: Trip* |
| I[1] . **TripCmd** | *Signal: Trip Command* |
| I[1] . **DefaultSet** | *Signal: Default Parameter Set* |
| I[1] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| I[1] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| I[1] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| I[1] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| I[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| I[1] . **ExBlo2-I** | *Module input state: External blocking2* |

| 1..n, Assignment List | Description |
|---|---|
| I[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| I[1] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| I[1] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| I[1] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| I[1] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| I[1] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| I[2] . **active** | *Signal: active* |
| I[2] . **ExBlo** | *Signal: External Blocking* |
| I[2] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| I[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| I[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| I[2] . **IH2 Blo** | *Signal: Blocking the trip command by an inrush* |
| I[2] . **Alarm L1** | *Signal: Alarm L1* |
| I[2] . **Alarm L2** | *Signal: Alarm L2* |
| I[2] . **Alarm L3** | *Signal: Alarm L3* |
| I[2] . **Alarm** | *Signal: Alarm* |
| I[2] . **Trip L1** | *Signal: General Trip Phase L1* |
| I[2] . **Trip L2** | *Signal: General Trip Phase L2* |
| I[2] . **Trip L3** | *Signal: General Trip Phase L3* |
| I[2] . **Trip** | *Signal: Trip* |
| I[2] . **TripCmd** | *Signal: Trip Command* |
| I[2] . **DefaultSet** | *Signal: Default Parameter Set* |
| I[2] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| I[2] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| I[2] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| I[2] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| I[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| I[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| I[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| I[2] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| I[2] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| I[2] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |

Released



| 1..n, Assignment List | Description |
|---|---|
| I[2] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| I[2] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| I[3] . **active** | *Signal: active* |
| I[3] . **ExBlo** | *Signal: External Blocking* |
| I[3] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| I[3] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| I[3] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| I[3] . **IH2 Blo** | *Signal: Blocking the trip command by an inrush* |
| I[3] . **Alarm L1** | *Signal: Alarm L1* |
| I[3] . **Alarm L2** | *Signal: Alarm L2* |
| I[3] . **Alarm L3** | *Signal: Alarm L3* |
| I[3] . **Alarm** | *Signal: Alarm* |
| I[3] . **Trip L1** | *Signal: General Trip Phase L1* |
| I[3] . **Trip L2** | *Signal: General Trip Phase L2* |
| I[3] . **Trip L3** | *Signal: General Trip Phase L3* |
| I[3] . **Trip** | *Signal: Trip* |
| I[3] . **TripCmd** | *Signal: Trip Command* |
| I[3] . **DefaultSet** | *Signal: Default Parameter Set* |
| I[3] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| I[3] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| I[3] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| I[3] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| I[3] . **ExBlo1-I** | *Module input state: External blocking1* |
| I[3] . **ExBlo2-I** | *Module input state: External blocking2* |
| I[3] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| I[3] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| I[3] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| I[3] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| I[3] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| I[3] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| I[4] . **active** | *Signal: active* |
| I[4] . **ExBlo** | *Signal: External Blocking* |

| 1..n, Assignment List | Description |
|---|---|
| I[4] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| I[4] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| I[4] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| I[4] . **IH2 Blo** | *Signal: Blocking the trip command by an inrush* |
| I[4] . **Alarm L1** | *Signal: Alarm L1* |
| I[4] . **Alarm L2** | *Signal: Alarm L2* |
| I[4] . **Alarm L3** | *Signal: Alarm L3* |
| I[4] . **Alarm** | *Signal: Alarm* |
| I[4] . **Trip L1** | *Signal: General Trip Phase L1* |
| I[4] . **Trip L2** | *Signal: General Trip Phase L2* |
| I[4] . **Trip L3** | *Signal: General Trip Phase L3* |
| I[4] . **Trip** | *Signal: Trip* |
| I[4] . **TripCmd** | *Signal: Trip Command* |
| I[4] . **DefaultSet** | *Signal: Default Parameter Set* |
| I[4] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| I[4] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| I[4] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| I[4] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| I[4] . **ExBlo1-I** | *Module input state: External blocking1* |
| I[4] . **ExBlo2-I** | *Module input state: External blocking2* |
| I[4] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| I[4] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| I[4] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| I[4] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| I[4] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| I[4] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| I[5] . **active** | *Signal: active* |
| I[5] . **ExBlo** | *Signal: External Blocking* |
| I[5] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| I[5] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| I[5] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| I[5] . **IH2 Blo** | *Signal: Blocking the trip command by an inrush* |

| 1..n, Assignment List | Description |
|---|---|
| I[5] . **Alarm L1** | *Signal: Alarm L1* |
| I[5] . **Alarm L2** | *Signal: Alarm L2* |
| I[5] . **Alarm L3** | *Signal: Alarm L3* |
| I[5] . **Alarm** | *Signal: Alarm* |
| I[5] . **Trip L1** | *Signal: General Trip Phase L1* |
| I[5] . **Trip L2** | *Signal: General Trip Phase L2* |
| I[5] . **Trip L3** | *Signal: General Trip Phase L3* |
| I[5] . **Trip** | *Signal: Trip* |
| I[5] . **TripCmd** | *Signal: Trip Command* |
| I[5] . **DefaultSet** | *Signal: Default Parameter Set* |
| I[5] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| I[5] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| I[5] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| I[5] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| I[5] . **ExBlo1-I** | *Module input state: External blocking1* |
| I[5] . **ExBlo2-I** | *Module input state: External blocking2* |
| I[5] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| I[5] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| I[5] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| I[5] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| I[5] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| I[5] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| I[6] . **active** | *Signal: active* |
| I[6] . **ExBlo** | *Signal: External Blocking* |
| I[6] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| I[6] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| I[6] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| I[6] . **IH2 Blo** | *Signal: Blocking the trip command by an inrush* |
| I[6] . **Alarm L1** | *Signal: Alarm L1* |
| I[6] . **Alarm L2** | *Signal: Alarm L2* |
| I[6] . **Alarm L3** | *Signal: Alarm L3* |
| I[6] . **Alarm** | *Signal: Alarm* |

| 1..n, Assignment List | Description |
|---|---|
| I[6] . **Trip L1** | *Signal: General Trip Phase L1* |
| I[6] . **Trip L2** | *Signal: General Trip Phase L2* |
| I[6] . **Trip L3** | *Signal: General Trip Phase L3* |
| I[6] . **Trip** | *Signal: Trip* |
| I[6] . **TripCmd** | *Signal: Trip Command* |
| I[6] . **DefaultSet** | *Signal: Default Parameter Set* |
| I[6] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| I[6] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| I[6] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| I[6] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| I[6] . **ExBlo1-I** | *Module input state: External blocking1* |
| I[6] . **ExBlo2-I** | *Module input state: External blocking2* |
| I[6] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| I[6] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| I[6] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| I[6] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| I[6] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| I[6] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| IG[1] . **active** | *Signal: active* |
| IG[1] . **ExBlo** | *Signal: External Blocking* |
| IG[1] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| IG[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| IG[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| IG[1] . **Alarm** | *Signal: The alarm threshold has been exceeded.* |
| IG[1] . **Trip** | *Signal: Trip* |
| IG[1] . **TripCmd** | *Signal: Trip Command* |
| IG[1] . **IGH2 Blo** | *Signal: blocked by an inrush* |
| IG[1] . **DefaultSet** | *Signal: Default Parameter Set* |
| IG[1] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| IG[1] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| IG[1] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| IG[1] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |

| 1..n, Assignment List | Description |
|---|---|
| IG[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| IG[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| IG[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IG[1] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| IG[1] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| IG[1] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| IG[1] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| IG[1] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| IG[2] . **active** | *Signal: active* |
| IG[2] . **ExBlo** | *Signal: External Blocking* |
| IG[2] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| IG[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| IG[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| IG[2] . **Alarm** | *Signal: The alarm threshold has been exceeded.* |
| IG[2] . **Trip** | *Signal: Trip* |
| IG[2] . **TripCmd** | *Signal: Trip Command* |
| IG[2] . **IGH2 Blo** | *Signal: blocked by an inrush* |
| IG[2] . **DefaultSet** | *Signal: Default Parameter Set* |
| IG[2] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| IG[2] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| IG[2] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| IG[2] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| IG[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| IG[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| IG[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IG[2] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| IG[2] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| IG[2] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| IG[2] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| IG[2] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| IG[3] . **active** | *Signal: active* |
| IG[3] . **ExBlo** | *Signal: External Blocking* |

| 1..n, Assignment List | Description |
|---|---|
| IG[3] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| IG[3] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| IG[3] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| IG[3] . **Alarm** | *Signal: The alarm threshold has been exceeded.* |
| IG[3] . **Trip** | *Signal: Trip* |
| IG[3] . **TripCmd** | *Signal: Trip Command* |
| IG[3] . **IGH2 Blo** | *Signal: blocked by an inrush* |
| IG[3] . **DefaultSet** | *Signal: Default Parameter Set* |
| IG[3] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| IG[3] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| IG[3] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| IG[3] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| IG[3] . **ExBlo1-I** | *Module input state: External blocking1* |
| IG[3] . **ExBlo2-I** | *Module input state: External blocking2* |
| IG[3] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IG[3] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| IG[3] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| IG[3] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| IG[3] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| IG[3] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| IG[4] . **active** | *Signal: active* |
| IG[4] . **ExBlo** | *Signal: External Blocking* |
| IG[4] . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| IG[4] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| IG[4] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| IG[4] . **Alarm** | *Signal: The alarm threshold has been exceeded.* |
| IG[4] . **Trip** | *Signal: Trip* |
| IG[4] . **TripCmd** | *Signal: Trip Command* |
| IG[4] . **IGH2 Blo** | *Signal: blocked by an inrush* |
| IG[4] . **DefaultSet** | *Signal: Default Parameter Set* |
| IG[4] . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| IG[4] . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |

| 1..n, Assignment List | Description |
|---|---|
| IG[4] . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| IG[4] . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| IG[4] . **ExBlo1-I** | *Module input state: External blocking1* |
| IG[4] . **ExBlo2-I** | *Module input state: External blocking2* |
| IG[4] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| IG[4] . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| IG[4] . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |
| IG[4] . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| IG[4] . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| IG[4] . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| ThR . **active** | *Signal: active* |
| ThR . **ExBlo** | *Signal: External Blocking* |
| ThR . **Blo TripCmd** | *Signal: Trip Command blocked* |
| ThR . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| ThR . **Alarm** | *Signal: Alarm Thermal Overload* |
| ThR . **Trip** | *Signal: Trip* |
| ThR . **TripCmd** | *Signal: Trip Command* |
| ThR . **Res Thermal Cap** | *Signal: Resetting Thermal Replica* |
| ThR . **ExBlo1-I** | *Module input state: External blocking1* |
| ThR . **ExBlo2-I** | *Module input state: External blocking2* |
| ThR . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| I2>[1] . **active** | *Signal: active* |
| I2>[1] . **ExBlo** | *Signal: External Blocking* |
| I2>[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| I2>[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| I2>[1] . **Alarm** | *Signal: Alarm Negative Sequence* |
| I2>[1] . **Trip** | *Signal: Trip* |
| I2>[1] . **TripCmd** | *Signal: Trip Command* |
| I2>[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| I2>[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| I2>[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |

| 1..n, Assignment List | Description |
|---|---|
| I2>[2] . **active** | *Signal: active* |
| I2>[2] . **ExBlo** | *Signal: External Blocking* |
| I2>[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| I2>[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| I2>[2] . **Alarm** | *Signal: Alarm Negative Sequence* |
| I2>[2] . **Trip** | *Signal: Trip* |
| I2>[2] . **TripCmd** | *Signal: Trip Command* |
| I2>[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| I2>[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| I2>[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V[1] . **active** | *Signal: active* |
| V[1] . **ExBlo** | *Signal: External Blocking* |
| V[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V[1] . **Alarm L1** | *Signal: Alarm L1* |
| V[1] . **Alarm L2** | *Signal: Alarm L2* |
| V[1] . **Alarm L3** | *Signal: Alarm L3* |
| V[1] . **Alarm** | *Signal: Alarm voltage stage* |
| V[1] . **Trip L1** | *Signal: General Trip Phase L1* |
| V[1] . **Trip L2** | *Signal: General Trip Phase L2* |
| V[1] . **Trip L3** | *Signal: General Trip Phase L3* |
| V[1] . **Trip** | *Signal: Trip* |
| V[1] . **TripCmd** | *Signal: Trip Command* |
| V[1] . **Imin release active** | *Signal that the Imin release (minimum current) check is enabled and does not block the undervoltage detection at the moment.* |
| V[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| V[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| V[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V[2] . **active** | *Signal: active* |
| V[2] . **ExBlo** | *Signal: External Blocking* |
| V[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |

Released



| 1..n, Assignment List | Description |
|---|---|
| V[2] . **Alarm L1** | *Signal: Alarm L1* |
| V[2] . **Alarm L2** | *Signal: Alarm L2* |
| V[2] . **Alarm L3** | *Signal: Alarm L3* |
| V[2] . **Alarm** | *Signal: Alarm voltage stage* |
| V[2] . **Trip L1** | *Signal: General Trip Phase L1* |
| V[2] . **Trip L2** | *Signal: General Trip Phase L2* |
| V[2] . **Trip L3** | *Signal: General Trip Phase L3* |
| V[2] . **Trip** | *Signal: Trip* |
| V[2] . **TripCmd** | *Signal: Trip Command* |
| V[2] . **Imin release active** | *Signal that the Imin release (minimum current) check is enabled and does not block the undervoltage detection at the moment.* |
| V[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| V[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| V[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V[3] . **active** | *Signal: active* |
| V[3] . **ExBlo** | *Signal: External Blocking* |
| V[3] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V[3] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V[3] . **Alarm L1** | *Signal: Alarm L1* |
| V[3] . **Alarm L2** | *Signal: Alarm L2* |
| V[3] . **Alarm L3** | *Signal: Alarm L3* |
| V[3] . **Alarm** | *Signal: Alarm voltage stage* |
| V[3] . **Trip L1** | *Signal: General Trip Phase L1* |
| V[3] . **Trip L2** | *Signal: General Trip Phase L2* |
| V[3] . **Trip L3** | *Signal: General Trip Phase L3* |
| V[3] . **Trip** | *Signal: Trip* |
| V[3] . **TripCmd** | *Signal: Trip Command* |
| V[3] . **Imin release active** | *Signal that the Imin release (minimum current) check is enabled and does not block the undervoltage detection at the moment.* |
| V[3] . **ExBlo1-I** | *Module input state: External blocking1* |
| V[3] . **ExBlo2-I** | *Module input state: External blocking2* |
| V[3] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V[4] . **active** | *Signal: active* |

| 1..n, Assignment List | Description |
|---|---|
| V[4] . **ExBlo** | *Signal: External Blocking* |
| V[4] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V[4] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V[4] . **Alarm L1** | *Signal: Alarm L1* |
| V[4] . **Alarm L2** | *Signal: Alarm L2* |
| V[4] . **Alarm L3** | *Signal: Alarm L3* |
| V[4] . **Alarm** | *Signal: Alarm voltage stage* |
| V[4] . **Trip L1** | *Signal: General Trip Phase L1* |
| V[4] . **Trip L2** | *Signal: General Trip Phase L2* |
| V[4] . **Trip L3** | *Signal: General Trip Phase L3* |
| V[4] . **Trip** | *Signal: Trip* |
| V[4] . **TripCmd** | *Signal: Trip Command* |
| V[4] . **Imin release active** | *Signal that the Imin release (minimum current) check is enabled and does not block the undervoltage detection at the moment.* |
| V[4] . **ExBlo1-I** | *Module input state: External blocking1* |
| V[4] . **ExBlo2-I** | *Module input state: External blocking2* |
| V[4] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V[5] . **active** | *Signal: active* |
| V[5] . **ExBlo** | *Signal: External Blocking* |
| V[5] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V[5] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V[5] . **Alarm L1** | *Signal: Alarm L1* |
| V[5] . **Alarm L2** | *Signal: Alarm L2* |
| V[5] . **Alarm L3** | *Signal: Alarm L3* |
| V[5] . **Alarm** | *Signal: Alarm voltage stage* |
| V[5] . **Trip L1** | *Signal: General Trip Phase L1* |
| V[5] . **Trip L2** | *Signal: General Trip Phase L2* |
| V[5] . **Trip L3** | *Signal: General Trip Phase L3* |
| V[5] . **Trip** | *Signal: Trip* |
| V[5] . **TripCmd** | *Signal: Trip Command* |
| V[5] . **Imin release active** | *Signal that the Imin release (minimum current) check is enabled and does not block the undervoltage detection at the moment.* |
| V[5] . **ExBlo1-I** | *Module input state: External blocking1* |

Released



| 1..n, Assignment List | Description |
|---|---|
| V[5] . **ExBlo2-I** | *Module input state: External blocking2* |
| V[5] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V[6] . **active** | *Signal: active* |
| V[6] . **ExBlo** | *Signal: External Blocking* |
| V[6] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V[6] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V[6] . **Alarm L1** | *Signal: Alarm L1* |
| V[6] . **Alarm L2** | *Signal: Alarm L2* |
| V[6] . **Alarm L3** | *Signal: Alarm L3* |
| V[6] . **Alarm** | *Signal: Alarm voltage stage* |
| V[6] . **Trip L1** | *Signal: General Trip Phase L1* |
| V[6] . **Trip L2** | *Signal: General Trip Phase L2* |
| V[6] . **Trip L3** | *Signal: General Trip Phase L3* |
| V[6] . **Trip** | *Signal: Trip* |
| V[6] . **TripCmd** | *Signal: Trip Command* |
| V[6] . **Imin release active** | *Signal that the Imin release (minimum current) check is enabled and does not block the undervoltage detection at the moment.* |
| V[6] . **ExBlo1-I** | *Module input state: External blocking1* |
| V[6] . **ExBlo2-I** | *Module input state: External blocking2* |
| V[6] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| df/dt . **active** | *Signal: active* |
| df/dt . **ExBlo** | *Signal: External Blocking* |
| df/dt . **Blo by V<** | *Signal: Module is blocked by undervoltage.* |
| df/dt . **Blo TripCmd** | *Signal: Trip Command blocked* |
| df/dt . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| df/dt . **Alarm** | *Signal: Alarm Frequency Protection (collective signal)* |
| df/dt . **Trip** | *Signal: Trip Frequency Protection (collective signal)* |
| df/dt . **TripCmd** | *Signal: Trip Command* |
| df/dt . **ExBlo1-I** | *Module input state: External blocking1* |
| df/dt . **ExBlo2-I** | *Module input state: External blocking2* |
| df/dt . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| delta phi . **active** | *Signal: active* |

| 1..n, Assignment List | Description |
|---|---|
| delta phi . **ExBlo** | *Signal: External Blocking* |
| delta phi . **Blo by V<** | *Signal: Module is blocked by undervoltage.* |
| delta phi . **Blo TripCmd** | *Signal: Trip Command blocked* |
| delta phi . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| delta phi . **Alarm** | *Signal: Alarm Frequency Protection (collective signal)* |
| delta phi . **Trip** | *Signal: Trip Frequency Protection (collective signal)* |
| delta phi . **TripCmd** | *Signal: Trip Command* |
| delta phi . **ExBlo1-I** | *Module input state: External blocking1* |
| delta phi . **ExBlo2-I** | *Module input state: External blocking2* |
| delta phi . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| Intertripping . **active** | *Signal: active* |
| Intertripping . **ExBlo** | *Signal: External Blocking* |
| Intertripping . **Blo TripCmd** | *Signal: Trip Command blocked* |
| Intertripping . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| Intertripping . **Alarm** | *Signal: Alarm* |
| Intertripping . **Trip** | *Signal: Trip* |
| Intertripping . **TripCmd** | *Signal: Trip Command* |
| Intertripping . **ExBlo1-I** | *Module input state: External blocking1* |
| Intertripping . **ExBlo2-I** | *Module input state: External blocking2* |
| Intertripping . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| Intertripping . **Alarm-I** | *Module input state: Alarm* |
| Intertripping . **Trip-I** | *Module input state: Trip* |
| P . **active** | *Signal: active* |
| P . **ExBlo** | *Signal: External Blocking* |
| P . **Blo TripCmd** | *Signal: Trip Command blocked* |
| P . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| P . **Alarm** | *Signal: Alarm Power Protection* |
| P . **Trip** | *Signal: Trip Power Protection* |
| P . **TripCmd** | *Signal: Trip Command* |

| 1..n, Assignment List | Description |
|---|---|
| P . **ExBlo1-I** | *Module input state: External blocking* |
| P . **ExBlo2-I** | *Module input state: External blocking* |
| P . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| Q . **active** | *Signal: active* |
| Q . **ExBlo** | *Signal: External Blocking* |
| Q . **Blo TripCmd** | *Signal: Trip Command blocked* |
| Q . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| Q . **Alarm** | *Signal: Alarm Power Protection* |
| Q . **Trip** | *Signal: Trip Power Protection* |
| Q . **TripCmd** | *Signal: Trip Command* |
| Q . **ExBlo1-I** | *Module input state: External blocking* |
| Q . **ExBlo2-I** | *Module input state: External blocking* |
| Q . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| LVRT[1] . **active** | *Signal: active* |
| LVRT[1] . **ExBlo** | *Signal: External Blocking* |
| LVRT[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| LVRT[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| LVRT[1] . **Alarm L1** | *Signal: Alarm L1* |
| LVRT[1] . **Alarm L2** | *Signal: Alarm L2* |
| LVRT[1] . **Alarm L3** | *Signal: Alarm L3* |
| LVRT[1] . **Alarm** | *Signal: Alarm voltage stage* |
| LVRT[1] . **Trip L1** | *Signal: General Trip Phase L1* |
| LVRT[1] . **Trip L2** | *Signal: General Trip Phase L2* |
| LVRT[1] . **Trip L3** | *Signal: General Trip Phase L3* |
| LVRT[1] . **Trip** | *Signal: Trip* |
| LVRT[1] . **TripCmd** | *Signal: Trip Command* |
| LVRT[1] . **t-LVRT is running** | *Signal: t-LVRT is running* |
| LVRT[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| LVRT[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| LVRT[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |

| 1..n, Assignment List | Description |
|---|---|
| LVRT[2] . **active** | *Signal: active* |
| LVRT[2] . **ExBlo** | *Signal: External Blocking* |
| LVRT[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| LVRT[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| LVRT[2] . **Alarm L1** | *Signal: Alarm L1* |
| LVRT[2] . **Alarm L2** | *Signal: Alarm L2* |
| LVRT[2] . **Alarm L3** | *Signal: Alarm L3* |
| LVRT[2] . **Alarm** | *Signal: Alarm voltage stage* |
| LVRT[2] . **Trip L1** | *Signal: General Trip Phase L1* |
| LVRT[2] . **Trip L2** | *Signal: General Trip Phase L2* |
| LVRT[2] . **Trip L3** | *Signal: General Trip Phase L3* |
| LVRT[2] . **Trip** | *Signal: Trip* |
| LVRT[2] . **TripCmd** | *Signal: Trip Command* |
| LVRT[2] . **t-LVRT is running** | *Signal: t-LVRT is running* |
| LVRT[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| LVRT[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| LVRT[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| VG[1] . **active** | *Signal: active* |
| VG[1] . **ExBlo** | *Signal: External Blocking* |
| VG[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| VG[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| VG[1] . **Alarm** | *Signal: Alarm Residual Voltage Supervision-stage* |
| VG[1] . **Trip** | *Signal: Trip* |
| VG[1] . **TripCmd** | *Signal: Trip Command* |
| VG[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| VG[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| VG[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| VG[2] . **active** | *Signal: active* |
| VG[2] . **ExBlo** | *Signal: External Blocking* |

Released



| 1..n, Assignment List | Description |
|---|---|
| VG[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| VG[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| VG[2] . **Alarm** | *Signal: Alarm Residual Voltage Supervision-stage* |
| VG[2] . **Trip** | *Signal: Trip* |
| VG[2] . **TripCmd** | *Signal: Trip Command* |
| VG[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| VG[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| VG[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V012[1] . **active** | *Signal: active* |
| V012[1] . **ExBlo** | *Signal: External Blocking* |
| V012[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V012[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V012[1] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[1] . **Trip** | *Signal: Trip* |
| V012[1] . **TripCmd** | *Signal: Trip Command* |
| V012[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| V012[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| V012[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V012[2] . **active** | *Signal: active* |
| V012[2] . **ExBlo** | *Signal: External Blocking* |
| V012[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V012[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V012[2] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[2] . **Trip** | *Signal: Trip* |
| V012[2] . **TripCmd** | *Signal: Trip Command* |
| V012[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| V012[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| V012[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V012[3] . **active** | *Signal: active* |

| 1..n, Assignment List | Description |
|---|---|
| V012[3] . **ExBlo** | *Signal: External Blocking* |
| V012[3] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V012[3] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V012[3] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[3] . **Trip** | *Signal: Trip* |
| V012[3] . **TripCmd** | *Signal: Trip Command* |
| V012[3] . **ExBlo1-I** | *Module input state: External blocking1* |
| V012[3] . **ExBlo2-I** | *Module input state: External blocking2* |
| V012[3] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V012[4] . **active** | *Signal: active* |
| V012[4] . **ExBlo** | *Signal: External Blocking* |
| V012[4] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V012[4] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V012[4] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[4] . **Trip** | *Signal: Trip* |
| V012[4] . **TripCmd** | *Signal: Trip Command* |
| V012[4] . **ExBlo1-I** | *Module input state: External blocking1* |
| V012[4] . **ExBlo2-I** | *Module input state: External blocking2* |
| V012[4] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V012[5] . **active** | *Signal: active* |
| V012[5] . **ExBlo** | *Signal: External Blocking* |
| V012[5] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V012[5] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V012[5] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[5] . **Trip** | *Signal: Trip* |
| V012[5] . **TripCmd** | *Signal: Trip Command* |
| V012[5] . **ExBlo1-I** | *Module input state: External blocking1* |
| V012[5] . **ExBlo2-I** | *Module input state: External blocking2* |

Released



| 1..n, Assignment List | Description |
|---|---|
| V012[5] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V012[6] . **active** | *Signal: active* |
| V012[6] . **ExBlo** | *Signal: External Blocking* |
| V012[6] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V012[6] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V012[6] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[6] . **Trip** | *Signal: Trip* |
| V012[6] . **TripCmd** | *Signal: Trip Command* |
| V012[6] . **ExBlo1-I** | *Module input state: External blocking1* |
| V012[6] . **ExBlo2-I** | *Module input state: External blocking2* |
| V012[6] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| f[1] . **active** | *Signal: active* |
| f[1] . **ExBlo** | *Signal: External Blocking* |
| f[1] . **Blo by V<** | *Signal: Module is blocked by undervoltage.* |
| f[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| f[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| f[1] . **Alarm f** | *Signal: Alarm Frequency Protection* |
| f[1] . **Alarm df/dt \| DF/DT** | *Alarm instantaneous or average value of the rate-of-frequency-change* |
| f[1] . **Alarm delta phi** | *Signal: Alarm Vector Surge* |
| f[1] . **Alarm** | *Signal: Alarm Frequency Protection (collective signal)* |
| f[1] . **Trip f** | *Signal: Frequency has exceeded the limit.* |
| f[1] . **Trip df/dt \| DF/DT** | *Signal: Trip df/dt or DF/DT* |
| f[1] . **Trip delta phi** | *Signal: Trip Vector Surge* |
| f[1] . **Trip** | *Signal: Trip Frequency Protection (collective signal)* |
| f[1] . **TripCmd** | *Signal: Trip Command* |
| f[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| f[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| f[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| f[2] . **active** | *Signal: active* |

| 1..n, Assignment List | Description |
|---|---|
| f[2] . **ExBlo** | *Signal: External Blocking* |
| f[2] . **Blo by V<** | *Signal: Module is blocked by undervoltage.* |
| f[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| f[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| f[2] . **Alarm f** | *Signal: Alarm Frequency Protection* |
| f[2] . **Alarm df/dt \| DF/DT** | *Alarm instantaneous or average value of the rate-of-frequency-change* |
| f[2] . **Alarm delta phi** | *Signal: Alarm Vector Surge* |
| f[2] . **Alarm** | *Signal: Alarm Frequency Protection (collective signal)* |
| f[2] . **Trip f** | *Signal: Frequency has exceeded the limit.* |
| f[2] . **Trip df/dt \| DF/DT** | *Signal: Trip df/dt or DF/DT* |
| f[2] . **Trip delta phi** | *Signal: Trip Vector Surge* |
| f[2] . **Trip** | *Signal: Trip Frequency Protection (collective signal)* |
| f[2] . **TripCmd** | *Signal: Trip Command* |
| f[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| f[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| f[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| f[3] . **active** | *Signal: active* |
| f[3] . **ExBlo** | *Signal: External Blocking* |
| f[3] . **Blo by V<** | *Signal: Module is blocked by undervoltage.* |
| f[3] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| f[3] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| f[3] . **Alarm f** | *Signal: Alarm Frequency Protection* |
| f[3] . **Alarm df/dt \| DF/DT** | *Alarm instantaneous or average value of the rate-of-frequency-change* |
| f[3] . **Alarm delta phi** | *Signal: Alarm Vector Surge* |
| f[3] . **Alarm** | *Signal: Alarm Frequency Protection (collective signal)* |
| f[3] . **Trip f** | *Signal: Frequency has exceeded the limit.* |
| f[3] . **Trip df/dt \| DF/DT** | *Signal: Trip df/dt or DF/DT* |
| f[3] . **Trip delta phi** | *Signal: Trip Vector Surge* |
| f[3] . **Trip** | *Signal: Trip Frequency Protection (collective signal)* |
| f[3] . **TripCmd** | *Signal: Trip Command* |
| f[3] . **ExBlo1-I** | *Module input state: External blocking1* |

| 1..n, Assignment List | Description |
|---|---|
| f[3] . **ExBlo2-I** | *Module input state: External blocking2* |
| f[3] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| f[4] . **active** | *Signal: active* |
| f[4] . **ExBlo** | *Signal: External Blocking* |
| f[4] . **Blo by V<** | *Signal: Module is blocked by undervoltage.* |
| f[4] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| f[4] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| f[4] . **Alarm f** | *Signal: Alarm Frequency Protection* |
| f[4] . **Alarm df/dt \| DF/DT** | *Alarm instantaneous or average value of the rate-of-frequency-change* |
| f[4] . **Alarm delta phi** | *Signal: Alarm Vector Surge* |
| f[4] . **Alarm** | *Signal: Alarm Frequency Protection (collective signal)* |
| f[4] . **Trip f** | *Signal: Frequency has exceeded the limit.* |
| f[4] . **Trip df/dt \| DF/DT** | *Signal: Trip df/dt or DF/DT* |
| f[4] . **Trip delta phi** | *Signal: Trip Vector Surge* |
| f[4] . **Trip** | *Signal: Trip Frequency Protection (collective signal)* |
| f[4] . **TripCmd** | *Signal: Trip Command* |
| f[4] . **ExBlo1-I** | *Module input state: External blocking1* |
| f[4] . **ExBlo2-I** | *Module input state: External blocking2* |
| f[4] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| f[5] . **active** | *Signal: active* |
| f[5] . **ExBlo** | *Signal: External Blocking* |
| f[5] . **Blo by V<** | *Signal: Module is blocked by undervoltage.* |
| f[5] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| f[5] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| f[5] . **Alarm f** | *Signal: Alarm Frequency Protection* |
| f[5] . **Alarm df/dt \| DF/DT** | *Alarm instantaneous or average value of the rate-of-frequency-change* |
| f[5] . **Alarm delta phi** | *Signal: Alarm Vector Surge* |
| f[5] . **Alarm** | *Signal: Alarm Frequency Protection (collective signal)* |
| f[5] . **Trip f** | *Signal: Frequency has exceeded the limit.* |
| f[5] . **Trip df/dt \| DF/DT** | *Signal: Trip df/dt or DF/DT* |
| f[5] . **Trip delta phi** | *Signal: Trip Vector Surge* |

| 1..n, Assignment List | Description |
|---|---|
| f[5] . **Trip** | *Signal: Trip Frequency Protection (collective signal)* |
| f[5] . **TripCmd** | *Signal: Trip Command* |
| f[5] . **ExBlo1-I** | *Module input state: External blocking1* |
| f[5] . **ExBlo2-I** | *Module input state: External blocking2* |
| f[5] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| f[6] . **active** | *Signal: active* |
| f[6] . **ExBlo** | *Signal: External Blocking* |
| f[6] . **Blo by V<** | *Signal: Module is blocked by undervoltage.* |
| f[6] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| f[6] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| f[6] . **Alarm f** | *Signal: Alarm Frequency Protection* |
| f[6] . **Alarm df/dt \| DF/DT** | *Alarm instantaneous or average value of the rate-of-frequency-change* |
| f[6] . **Alarm delta phi** | *Signal: Alarm Vector Surge* |
| f[6] . **Alarm** | *Signal: Alarm Frequency Protection (collective signal)* |
| f[6] . **Trip f** | *Signal: Frequency has exceeded the limit.* |
| f[6] . **Trip df/dt \| DF/DT** | *Signal: Trip df/dt or DF/DT* |
| f[6] . **Trip delta phi** | *Signal: Trip Vector Surge* |
| f[6] . **Trip** | *Signal: Trip Frequency Protection (collective signal)* |
| f[6] . **TripCmd** | *Signal: Trip Command* |
| f[6] . **ExBlo1-I** | *Module input state: External blocking1* |
| f[6] . **ExBlo2-I** | *Module input state: External blocking2* |
| f[6] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| PQS[1] . **active** | *Signal: active* |
| PQS[1] . **ExBlo** | *Signal: External Blocking* |
| PQS[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| PQS[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| PQS[1] . **Alarm** | *Signal: Alarm Power Protection* |
| PQS[1] . **Trip** | *Signal: Trip Power Protection* |
| PQS[1] . **TripCmd** | *Signal: Trip Command* |
| PQS[1] . **ExBlo1-I** | *Module input state: External blocking* |
| PQS[1] . **ExBlo2-I** | *Module input state: External blocking* |

| 1..n, Assignment List | Description |
|---|---|
| PQS[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| PQS[2] . **active** | *Signal: active* |
| PQS[2] . **ExBlo** | *Signal: External Blocking* |
| PQS[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| PQS[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| PQS[2] . **Alarm** | *Signal: Alarm Power Protection* |
| PQS[2] . **Trip** | *Signal: Trip Power Protection* |
| PQS[2] . **TripCmd** | *Signal: Trip Command* |
| PQS[2] . **ExBlo1-I** | *Module input state: External blocking* |
| PQS[2] . **ExBlo2-I** | *Module input state: External blocking* |
| PQS[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| PQS[3] . **active** | *Signal: active* |
| PQS[3] . **ExBlo** | *Signal: External Blocking* |
| PQS[3] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| PQS[3] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| PQS[3] . **Alarm** | *Signal: Alarm Power Protection* |
| PQS[3] . **Trip** | *Signal: Trip Power Protection* |
| PQS[3] . **TripCmd** | *Signal: Trip Command* |
| PQS[3] . **ExBlo1-I** | *Module input state: External blocking* |
| PQS[3] . **ExBlo2-I** | *Module input state: External blocking* |
| PQS[3] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| PQS[4] . **active** | *Signal: active* |
| PQS[4] . **ExBlo** | *Signal: External Blocking* |
| PQS[4] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| PQS[4] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| PQS[4] . **Alarm** | *Signal: Alarm Power Protection* |
| PQS[4] . **Trip** | *Signal: Trip Power Protection* |
| PQS[4] . **TripCmd** | *Signal: Trip Command* |
| PQS[4] . **ExBlo1-I** | *Module input state: External blocking* |
| PQS[4] . **ExBlo2-I** | *Module input state: External blocking* |

| 1..n, Assignment List | Description |
|---|---|
| PQS[4] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| PQS[5] . **active** | *Signal: active* |
| PQS[5] . **ExBlo** | *Signal: External Blocking* |
| PQS[5] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| PQS[5] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| PQS[5] . **Alarm** | *Signal: Alarm Power Protection* |
| PQS[5] . **Trip** | *Signal: Trip Power Protection* |
| PQS[5] . **TripCmd** | *Signal: Trip Command* |
| PQS[5] . **ExBlo1-I** | *Module input state: External blocking* |
| PQS[5] . **ExBlo2-I** | *Module input state: External blocking* |
| PQS[5] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| PQS[6] . **active** | *Signal: active* |
| PQS[6] . **ExBlo** | *Signal: External Blocking* |
| PQS[6] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| PQS[6] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| PQS[6] . **Alarm** | *Signal: Alarm Power Protection* |
| PQS[6] . **Trip** | *Signal: Trip Power Protection* |
| PQS[6] . **TripCmd** | *Signal: Trip Command* |
| PQS[6] . **ExBlo1-I** | *Module input state: External blocking* |
| PQS[6] . **ExBlo2-I** | *Module input state: External blocking* |
| PQS[6] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| PF[1] . **active** | *Signal: active* |
| PF[1] . **ExBlo** | *Signal: External Blocking* |
| PF[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| PF[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| PF[1] . **Alarm** | *Signal: Alarm Power Factor* |
| PF[1] . **Trip** | *Signal: Trip Power Factor* |
| PF[1] . **TripCmd** | *Signal: Trip Command* |
| PF[1] . **Compensator** | *Signal: Compensation Signal* |
| PF[1] . **Impossible** | *Signal: Alarm Power Factor Impossible* |

| 1..n, Assignment List | Description |
|---|---|
| PF[1] . **ExBlo1-I** | *Module input state: External blocking* |
| PF[1] . **ExBlo2-I** | *Module input state: External blocking* |
| PF[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| PF[2] . **active** | *Signal: active* |
| PF[2] . **ExBlo** | *Signal: External Blocking* |
| PF[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| PF[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| PF[2] . **Alarm** | *Signal: Alarm Power Factor* |
| PF[2] . **Trip** | *Signal: Trip Power Factor* |
| PF[2] . **TripCmd** | *Signal: Trip Command* |
| PF[2] . **Compensator** | *Signal: Compensation Signal* |
| PF[2] . **Impossible** | *Signal: Alarm Power Factor Impossible* |
| PF[2] . **ExBlo1-I** | *Module input state: External blocking* |
| PF[2] . **ExBlo2-I** | *Module input state: External blocking* |
| PF[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| Q->&V< . **active** | *Signal: active* |
| Q->&V< . **ExBlo** | *Signal: External Blocking* |
| Q->&V< . **Fuse Fail VT Blo** | *Signal: Blocked by Fuse Failure (VT)* |
| Q->&V< . **Alarm** | *Signal: Alarm Reactive Power Undervoltage Protection* |
| Q->&V< . **Decoupling Distr. Generator** | *Signal: Decoupling of the (local) Energy Generator/Resource* |
| Q->&V< . **Decoupling PCC** | *Signal: Decoupling at the Point of Common Coupling* |
| Q->&V< . **Power Angle** | *Signal: Admissible power angle exceeded* |
| Q->&V< . **Reactive Power Thres** | *Signal: Admissible Reactive Power Threshold exceeded* |
| Q->&V< . **VLL too low** | *Signal: Line-to-Line voltage too low* |
| Q->&V< . **ExBlo1-I** | *Module input state: External blocking1* |
| Q->&V< . **ExBlo2-I** | *Module input state: External blocking2* |
| ReCon[1] . **active** | *Signal: active* |
| ReCon[1] . **ExBlo** | *Signal: External Blocking* |
| ReCon[1] . **Blo by Meas Ciruit Superv** | *Signal: Module blocked by measuring cirucuit supervision* |

| 1..n, Assignment List | Description |
|---|---|
| ReCon[1] . **Release Energy Resource** | *Signal: Release Energy Resource.* |
| ReCon[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| ReCon[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| ReCon[1] . **V Ext Release PCC-I** | *Module input state: Release signal is being generated by the PCC (External Release)* |
| ReCon[1] . **PCC Fuse Fail VT-I** | *State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC.* |
| ReCon[1] . **reconnected-I** | *This signal indicates the state "reconnected" (mains parallel).* |
| ReCon[1] . **Decoupling1-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[1] . **Decoupling2-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[1] . **Decoupling3-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[1] . **Decoupling4-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[1] . **Decoupling5-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[1] . **Decoupling6-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[2] . **active** | *Signal: active* |
| ReCon[2] . **ExBlo** | *Signal: External Blocking* |
| ReCon[2] . **Blo by Meas Ciruit Superv** | *Signal: Module blocked by measuring cirucuit supervision* |
| ReCon[2] . **Release Energy Resource** | *Signal: Release Energy Resource.* |
| ReCon[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| ReCon[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| ReCon[2] . **V Ext Release PCC-I** | *Module input state: Release signal is being generated by the PCC (External Release)* |
| ReCon[2] . **PCC Fuse Fail VT-I** | *State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC.* |
| ReCon[2] . **reconnected-I** | *This signal indicates the state "reconnected" (mains parallel).* |
| ReCon[2] . **Decoupling1-I** | *Decoupling function, that blocks the reconnection.* |

| 1..n, Assignment List | Description |
|---|---|
| ReCon[2] . **Decoupling2-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[2] . **Decoupling3-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[2] . **Decoupling4-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[2] . **Decoupling5-I** | *Decoupling function, that blocks the reconnection.* |
| ReCon[2] . **Decoupling6-I** | *Decoupling function, that blocks the reconnection.* |
| UFLS . **active** | *Signal: active* |
| UFLS . **ExBlo** | *Signal: External Blocking* |
| UFLS . **Fuse Fail VT Blo** | *Signal: Blocked by Fuse Failure (VT)* |
| UFLS . **I1 Release** | *Signal: "I Minimum Current" in order to prevent faulty tripping. Module will be released if the current exceeds this value.* |
| UFLS . **VLL min** | *Signal: Minimum Voltage* |
| UFLS . **Power Angle** | *Signal: Trigger Phi-Power (Positive Phase Sequence System)* |
| UFLS . **P min** | *Signal: Minimum Value (threshold) for the Active Power* |
| UFLS . **P Blo Loadshedding** | *Signal: Load shedding blocked based on evaluation of active power* |
| UFLS . **f<** | *Signal: Underfrequency threshold* |
| UFLS . **Alarm** | *Signal: Alarm P->&f<* |
| UFLS . **Trip** | *Signal: Signal: Trip* |
| UFLS . **DefaultSet** | *Signal: Default Parameter Set* |
| UFLS . **AdaptSet 1** | *Signal: Adaptive Parameter 1* |
| UFLS . **AdaptSet 2** | *Signal: Adaptive Parameter 2* |
| UFLS . **AdaptSet 3** | *Signal: Adaptive Parameter 3* |
| UFLS . **AdaptSet 4** | *Signal: Adaptive Parameter 4* |
| UFLS . **AdaptSet 5** | *Signal: Adaptive Parameter 5* |
| UFLS . **ExBlo1-I** | *Module input state: External blocking1* |
| UFLS . **ExBlo2-I** | *Module input state: External blocking2* |
| UFLS . **Ex Pdir-I** | *Ignore (block) the evaluation of the power flow direction. This results in classical frequency based load shedding functionallity. When this feature is set and active, the functionallity of the module turns into conventional, only frequency based load shedding.* |
| UFLS . **AdaptSet1-I** | *Module input state: Adaptive Parameter1* |

| 1..n, Assignment List | Description |
|---|---|
| UFLS . **AdaptSet2-I** | *Module input state: Adaptive Parameter2* |
| UFLS . **AdaptSet3-I** | *Module input state: Adaptive Parameter3* |
| UFLS . **AdaptSet4-I** | *Module input state: Adaptive Parameter4* |
| UFLS . **AdaptSet5-I** | *Module input state: Adaptive Parameter5* |
| Sync . **active** | *Signal: active* |
| Sync . **ExBlo** | *Signal: External Blocking* |
| Sync . **LiveBus** | *Signal: Live-Bus flag: 1=Live-Bus, 0=Voltage is below the LiveBus threshold* |
| Sync . **LiveLine** | *Signal: Live Line flag: 1=Live-Line, 0=Voltage is below the LiveLine threshold* |
| Sync . **SynchronRunTiming** | *Signal: Synchron-Run-timer is timing (This timer starts when Close-Initiate is coming and stops if breaker is closed. Timeout means synchronizing failed.)* |
| Sync . **SynchronFailed** | *Signal: This signal indicates a failed synchronization. It is set for 5s when the circuit breaker is still open after the Synchron-Run-timer has timed out.* |
| Sync . **SyncOverridden** | *Signal:Synchronism Check is overridden because one of the Synchronism overriding conditions (DB/DL or ExtBypass) is met.* |
| Sync . **VDiffTooHigh** | *Signal: Voltage difference between bus and line too high.* |
| Sync . **SlipTooHigh** | *Signal: Frequency difference (slip frequency) between bus and line voltages too high.* |
| Sync . **AngleDiffTooHigh** | *Signal: Phase Angle difference between bus and line voltages too high.* |
| Sync . **Sys-in-Sync** | *Signal: Bus and line voltages are in synchronism according to the system synchronism criteria.* |
| Sync . **Ready to Close** | *Signal: Ready to Close* |
| Sync . **ExBlo1-I** | *Module input state: External blocking1* |
| Sync . **ExBlo2-I** | *Module input state: External blocking2* |
| Sync . **Bypass-I** | *State of the module input: The Synchrocheck will be bypassed if the state of the assigned signal (logic input) becomes true.* |
| Sync . **CBCloseInitiate-I** | *State of the module input: Breaker Close Initiate with synchronism check from any control sources (e.g. HMI / SCADA). If the state of the assigned signal becomes true, a Breaker Close will be initiated (Trigger Source).* |
| V/f>[1] . **active** | *Signal: active* |
| V/f>[1] . **ExBlo** | *Signal: External Blocking* |
| V/f>[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |

Released



| 1..n, Assignment List | Description |
|---|---|
| V/f>[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V/f>[1] . **Alarm** | *Signal: Alarm Overexcitation* |
| V/f>[1] . **Trip** | *Signal: Trip* |
| V/f>[1] . **TripCmd** | *Signal: Trip Command* |
| V/f>[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| V/f>[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| V/f>[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| V/f>[2] . **active** | *Signal: active* |
| V/f>[2] . **ExBlo** | *Signal: External Blocking* |
| V/f>[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| V/f>[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| V/f>[2] . **Alarm** | *Signal: Alarm Overexcitation* |
| V/f>[2] . **Trip** | *Signal: Trip* |
| V/f>[2] . **TripCmd** | *Signal: Trip Command* |
| V/f>[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| V/f>[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| V/f>[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| SOTF . **active** | *Signal: active* |
| SOTF . **ExBlo** | *Signal: External Blocking* |
| SOTF . **Ex rev Interl** | *Signal: External reverse Interlocking* |
| SOTF . **enabled** | *Signal: Switch Onto Fault enabled. This Signal can be used to modify Overcurrent Protection Settings.* |
| SOTF . **I<** | *Signal: No Load Current.* |
| SOTF . **ExBlo1-I** | *Module input state: External blocking* |
| SOTF . **ExBlo2-I** | *Module input state: External blocking* |
| SOTF . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| SOTF . **Ext SOTF-I** | *Module input state: External Switch Onto Fault Alarm* |
| CLPU . **active** | *Signal: active* |
| CLPU . **ExBlo** | *Signal: External Blocking* |
| CLPU . **Ex rev Interl** | *Signal: External reverse Interlocking* |

| 1..n, Assignment List | Description |
|---|---|
| CLPU . **enabled** | *Signal: Cold Load enabled* |
| CLPU . **detected** | *Signal: Cold Load detected* |
| CLPU . **I<** | *Signal: No Load Current.* |
| CLPU . **Load Inrush** | *Signal: Load Inrush* |
| CLPU . **Settle Time** | *Signal: Settle Time* |
| CLPU . **ExBlo1-I** | *Module input state: External blocking* |
| CLPU . **ExBlo2-I** | *Module input state: External blocking* |
| CLPU . **Ex rev Interl-I** | *Module input state: External reverse interlocking* |
| ExP[1] . **active** | *Signal: active* |
| ExP[1] . **ExBlo** | *Signal: External Blocking* |
| ExP[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| ExP[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| ExP[1] . **Alarm** | *Signal: Alarm* |
| ExP[1] . **Trip** | *Signal: Trip* |
| ExP[1] . **TripCmd** | *Signal: Trip Command* |
| ExP[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| ExP[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| ExP[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| ExP[1] . **Alarm-I** | *Module input state: Alarm* |
| ExP[1] . **Trip-I** | *Module input state: Trip* |
| ExP[2] . **active** | *Signal: active* |
| ExP[2] . **ExBlo** | *Signal: External Blocking* |
| ExP[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| ExP[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| ExP[2] . **Alarm** | *Signal: Alarm* |
| ExP[2] . **Trip** | *Signal: Trip* |
| ExP[2] . **TripCmd** | *Signal: Trip Command* |
| ExP[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| ExP[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| ExP[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| ExP[2] . **Alarm-I** | *Module input state: Alarm* |

Released



| 1..n, Assignment List | Description |
|---|---|
| ExP[2] . **Trip-I** | *Module input state: Trip* |
| ExP[3] . **active** | *Signal: active* |
| ExP[3] . **ExBlo** | *Signal: External Blocking* |
| ExP[3] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| ExP[3] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| ExP[3] . **Alarm** | *Signal: Alarm* |
| ExP[3] . **Trip** | *Signal: Trip* |
| ExP[3] . **TripCmd** | *Signal: Trip Command* |
| ExP[3] . **ExBlo1-I** | *Module input state: External blocking1* |
| ExP[3] . **ExBlo2-I** | *Module input state: External blocking2* |
| ExP[3] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| ExP[3] . **Alarm-I** | *Module input state: Alarm* |
| ExP[3] . **Trip-I** | *Module input state: Trip* |
| ExP[4] . **active** | *Signal: active* |
| ExP[4] . **ExBlo** | *Signal: External Blocking* |
| ExP[4] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| ExP[4] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| ExP[4] . **Alarm** | *Signal: Alarm* |
| ExP[4] . **Trip** | *Signal: Trip* |
| ExP[4] . **TripCmd** | *Signal: Trip Command* |
| ExP[4] . **ExBlo1-I** | *Module input state: External blocking1* |
| ExP[4] . **ExBlo2-I** | *Module input state: External blocking2* |
| ExP[4] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| ExP[4] . **Alarm-I** | *Module input state: Alarm* |
| ExP[4] . **Trip-I** | *Module input state: Trip* |
| Ext Sudd Press . **active** | *Signal: active* |
| Ext Sudd Press . **ExBlo** | *Signal: External Blocking* |
| Ext Sudd Press . **Blo TripCmd** | *Signal: Trip Command blocked* |
| Ext Sudd Press . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |

| 1..n, Assignment List | Description |
|---|---|
| Ext Sudd Press . **Alarm** | *Signal: Alarm* |
| Ext Sudd Press . **Trip** | *Signal: Trip* |
| Ext Sudd Press . **TripCmd** | *Signal: Trip Command* |
| Ext Sudd Press . **ExBlo1-I** | *Module input state: External blocking1* |
| Ext Sudd Press . **ExBlo2-I** | *Module input state: External blocking2* |
| Ext Sudd Press . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| Ext Sudd Press . **Alarm-I** | *Module input state: Alarm* |
| Ext Sudd Press . **Trip-I** | *Module input state: Trip* |
| Ext Oil Temp . **active** | *Signal: active* |
| Ext Oil Temp . **ExBlo** | *Signal: External Blocking* |
| Ext Oil Temp . **Blo TripCmd** | *Signal: Trip Command blocked* |
| Ext Oil Temp . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| Ext Oil Temp . **Alarm** | *Signal: Alarm* |
| Ext Oil Temp . **Trip** | *Signal: Trip* |
| Ext Oil Temp . **TripCmd** | *Signal: Trip Command* |
| Ext Oil Temp . **ExBlo1-I** | *Module input state: External blocking1* |
| Ext Oil Temp . **ExBlo2-I** | *Module input state: External blocking2* |
| Ext Oil Temp . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| Ext Oil Temp . **Alarm-I** | *Module input state: Alarm* |
| Ext Oil Temp . **Trip-I** | *Module input state: Trip* |
| Ext Temp Superv[1] . **active** | *Signal: active* |
| Ext Temp Superv[1] . **ExBlo** | *Signal: External Blocking* |
| Ext Temp Superv[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| Ext Temp Superv[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| Ext Temp Superv[1] . **Alarm** | *Signal: Alarm* |

| 1..n, Assignment List | Description |
|---|---|
| Ext Temp Superv[1] . **Trip** | *Signal: Trip* |
| Ext Temp Superv[1] . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| Ext Temp Superv[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| Ext Temp Superv[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| Ext Temp Superv[1] . **Alarm-I** | *Module input state: Alarm* |
| Ext Temp Superv[1] . **Trip-I** | *Module input state: Trip* |
| Ext Temp Superv[2] . **active** | *Signal: active* |
| Ext Temp Superv[2] . **ExBlo** | *Signal: External Blocking* |
| Ext Temp Superv[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| Ext Temp Superv[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| Ext Temp Superv[2] . **Alarm** | *Signal: Alarm* |
| Ext Temp Superv[2] . **Trip** | *Signal: Trip* |
| Ext Temp Superv[2] . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| Ext Temp Superv[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| Ext Temp Superv[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| Ext Temp Superv[2] . **Alarm-I** | *Module input state: Alarm* |
| Ext Temp Superv[2] . **Trip-I** | *Module input state: Trip* |
| Ext Temp Superv[3] . **active** | *Signal: active* |

| 1..n, Assignment List | Description |
|---|---|
| Ext Temp Superv[3] . **ExBlo** | *Signal: External Blocking* |
| Ext Temp Superv[3] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| Ext Temp Superv[3] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| Ext Temp Superv[3] . **Alarm** | *Signal: Alarm* |
| Ext Temp Superv[3] . **Trip** | *Signal: Trip* |
| Ext Temp Superv[3] . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[3] . **ExBlo1-I** | *Module input state: External blocking1* |
| Ext Temp Superv[3] . **ExBlo2-I** | *Module input state: External blocking2* |
| Ext Temp Superv[3] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| Ext Temp Superv[3] . **Alarm-I** | *Module input state: Alarm* |
| Ext Temp Superv[3] . **Trip-I** | *Module input state: Trip* |
| URTD . **W1L1 Superv** | *Signal: Winding1 Phase L1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **W1L2 Superv** | *Signal: Winding1 Phase L2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **W1L3 Superv** | *Signal: Winding1 Phase L3, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **W2L1 Superv** | *Signal: Winding2 Phase L1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **W2L2 Superv** | *Signal: Winding2 Phase L2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **W2L3 Superv** | *Signal: Winding2 Phase L3, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **Amb1 Superv** | *Signal: Ambient1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |

| 1..n, Assignment List | Description |
|---|---|
| URTD . **Amb2 Superv** | *Signal: Ambient2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **Aux1 Superv** | *Signal: Auxiliary1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **Aux2 Superv** | *Signal: Auxiliary2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **Aux3 Superv** | *Signal: Auxiliary3, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **Aux4 Superv** | *Signal: Auxiliary4, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)* |
| URTD . **Superv** | *Signal: URTD Channel Supervision. The value “1” reports a detected channel failure of at least one channel. (The value “0” means that all RTD channels are healthy.)* |
| URTD . **Connection active** | *Signal: There is an active connection between the Temperature Detector (URTD) and the protective relay.* |
| URTD . **Outs forced** | *Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals.* |
| RTD . **active** | *Signal: active* |
| RTD . **ExBlo** | *Signal: External Blocking* |
| RTD . **Blo TripCmd** | *Signal: Trip Command blocked* |
| RTD . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| RTD . **Alarm** | *Alarm RTD Temperature Protection* |
| RTD . **Trip** | *Signal: Trip* |
| RTD . **TripCmd** | *Signal: Trip Command* |
| RTD . **W1L1 Trip** | *Winding1 Phase L1 Signal: Trip* |
| RTD . **W1L1 Alarm** | *Winding1 Phase L1 Alarm RTD Temperature Protection* |
| RTD . **W1L1 Timeout Alarm** | *Winding1 Phase L1 Timeout Alarm* |
| RTD . **W1L1 Invalid** | *Winding1 Phase L1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **W1L2 Trip** | *Winding1 Phase L2 Signal: Trip* |
| RTD . **W1L2 Alarm** | *Winding1 Phase L2 Alarm RTD Temperature Protection* |
| RTD . **W1L2 Timeout Alarm** | *Winding1 Phase L2 Timeout Alarm* |

Released



| 1..n, Assignment List | Description |
|---|---|
| RTD . **W1L2 Invalid** | *Winding1 Phase L2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **W1L3 Trip** | *Winding1 Phase L3 Signal: Trip* |
| RTD . **W1L3 Alarm** | *Winding1 Phase L3 Alarm RTD Temperature Protection* |
| RTD . **W1L3 Timeout Alarm** | *Winding1 Phase L3 Timeout Alarm* |
| RTD . **W1L3 Invalid** | *Winding1 Phase L3 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **W2L1 Trip** | *Winding2 Phase L1 Signal: Trip* |
| RTD . **W2L1 Alarm** | *Winding2 Phase L1 Alarm RTD Temperature Protection* |
| RTD . **W2L1 Timeout Alarm** | *Winding2 Phase L1 Timeout Alarm* |
| RTD . **W2L1 Invalid** | *Winding2 Phase L1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **W2L2 Trip** | *Winding2 Phase L2 Signal: Trip* |
| RTD . **W2L2 Alarm** | *Winding2 Phase L2 Alarm RTD Temperature Protection* |
| RTD . **W2L2 Timeout Alarm** | *Winding2 Phase L2 Timeout Alarm* |
| RTD . **W2L2 Invalid** | *Winding2 Phase L2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **W2L3 Trip** | *Winding2 Phase L3 Signal: Trip* |
| RTD . **W2L3 Alarm** | *Winding2 Phase L3 Alarm RTD Temperature Protection* |
| RTD . **W2L3 Timeout Alarm** | *Winding2 Phase L3 Timeout Alarm* |
| RTD . **W2L3 Invalid** | *Winding2 Phase L3 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **Amb 1 Trip** | *Ambient 1 Signal: Trip* |
| RTD . **Amb 1 Alarm** | *Ambient 1 Alarm RTD Temperature Protection* |
| RTD . **Amb 1 Timeout Alarm** | *Ambient 1 Timeout Alarm* |
| RTD . **Amb 1 Invalid** | *Ambient 1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **Amb 2 Trip** | *Ambient 2 Signal: Trip* |
| RTD . **Amb 2 Alarm** | *Ambient 2 Alarm RTD Temperature Protection* |
| RTD . **Amb 2 Timeout Alarm** | *Ambient 2 Timeout Alarm* |
| RTD . **Amb 2 Invalid** | *Ambient 2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |

| 1..n, Assignment List | Description |
|---|---|
| RTD . **Aux 1 Trip** | *Auxiliary 1 Signal: Trip* |
| RTD . **Aux 1 Alarm** | *Auxiliary 1 Alarm RTD Temperature Protection* |
| RTD . **Aux 1 Timeout Alarm** | *Auxiliary 1 Timeout Alarm* |
| RTD . **Aux 1 Invalid** | *Auxiliary 1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **Aux 2 Trip** | *Auxiliary 2 Signal: Trip* |
| RTD . **Aux 2 Alarm** | *Auxiliary 2 Alarm RTD Temperature Protection* |
| RTD . **Aux 2 Timeout Alarm** | *Auxiliary 2 Timeout Alarm* |
| RTD . **Aux 2 Invalid** | *Auxiliary 2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **Aux 3 Trip** | *Auxiliary 3 Signal: Trip* |
| RTD . **Aux 3 Alarm** | *Auxiliary 3 Alarm RTD Temperature Protection* |
| RTD . **Aux 3 Timeout Alarm** | *Auxiliary 3 Timeout Alarm* |
| RTD . **Aux 3 Invalid** | *Auxiliary 4 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **Aux4 Trip** | *Auxiliary 4 Signal: Trip* |
| RTD . **Aux4 Alarm** | *Auxiliary 4 Alarm RTD Temperature Protection* |
| RTD . **Aux4 Timeout Alarm** | *Auxiliary 4 Timeout Alarm* |
| RTD . **Aux4 Invalid** | *Auxiliary 4 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **Trip WD W1 Group** | *Trip all Windings of group W1* |
| RTD . **Alarm WD W1 Group** | *Alarm all Windings of group W1* |
| RTD . **TimeoutAlmWDW1Grp** | *Timeout Alarm of group W1* |
| RTD . **Windg W1 Group Invalid** | *Winding W1 Group Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **Trip WD W2 Group** | *Trip all Windings of group W2* |
| RTD . **Alarm WD W2 Group** | *Alarm all Windings of group W2* |
| RTD . **TimeoutAlmWDW2Grp** | *Timeout Alarm of group W2* |

| 1..n, Assignment List | Description |
|---|---|
| RTD . **Windg W2 Group Invalid** | *Winding W2 Group Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **Trip Amb Group** | *Trip all Windings of group Ambient* |
| RTD . **Alarm Amb Group** | *Alarm all Windings of group Ambient* |
| RTD . **TimeoutAlmAmbGrp** | *Timeout Alarm of group Ambient* |
| RTD . **Amb Group Invalid** | *Ambient Group Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)* |
| RTD . **Trip Any Group** | *Trip Any Group* |
| RTD . **Alarm Any Group** | *Alarm Any Group* |
| RTD . **TimeoutAlmAnyGrp** | *Timeout Alarm Any Group* |
| RTD . **Trip Group 1** | *Trip Group 1* |
| RTD . **Trip Group 2** | *Trip Group 2* |
| RTD . **Timeout Alarm** | *Alarm timeout expired* |
| RTD . **Trip Aux Group** | *Trip Auxiliary Group* |
| RTD . **Alarm Aux Group** | *Alarm Auxiliary Group* |
| RTD . **TimeoutAlmAuxGrp** | *Timeout Alarm Auxiliary Group* |
| RTD . **AuxGrpInvalid** | *Invalid Auxiliary Group* |
| RTD . **ExBlo1-I** | *Module input state: External blocking1* |
| RTD . **ExBlo2-I** | *Module input state: External blocking2* |
| RTD . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| CBF[1] . **active** | *Signal: active* |
| CBF[1] . **ExBlo** | *Signal: External Blocking* |
| CBF[1] . **Waiting for Trigger** | *Waiting for Trigger* |
| CBF[1] . **running** | *Signal: CBF-Module started* |
| CBF[1] . **Alarm** | *Signal: Circuit Breaker Failure* |
| CBF[1] . **Lockout** | *Signal: Lockout* |
| CBF[1] . **Res Lockout** | *Signal: Reset Lockout* |
| CBF[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| CBF[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| CBF[1] . **Trigger1-I** | *Module Input: Trigger that will start the CBF* |

| 1..n, Assignment List | Description |
|---|---|
| CBF[1] . **Trigger2-I** | *Module Input: Trigger that will start the CBF* |
| CBF[1] . **Trigger3-I** | *Module Input: Trigger that will start the CBF* |
| CBF[2] . **active** | *Signal: active* |
| CBF[2] . **ExBlo** | *Signal: External Blocking* |
| CBF[2] . **Waiting for Trigger** | *Waiting for Trigger* |
| CBF[2] . **running** | *Signal: CBF-Module started* |
| CBF[2] . **Alarm** | *Signal: Circuit Breaker Failure* |
| CBF[2] . **Lockout** | *Signal: Lockout* |
| CBF[2] . **Res Lockout** | *Signal: Reset Lockout* |
| CBF[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| CBF[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| CBF[2] . **Trigger1-I** | *Module Input: Trigger that will start the CBF* |
| CBF[2] . **Trigger2-I** | *Module Input: Trigger that will start the CBF* |
| CBF[2] . **Trigger3-I** | *Module Input: Trigger that will start the CBF* |
| TCS[1] . **active** | *Signal: active* |
| TCS[1] . **ExBlo** | *Signal: External Blocking* |
| TCS[1] . **Alarm** | *Signal: Alarm Trip Circuit Supervision* |
| TCS[1] . **Not Possible** | *Not possible because no state indicator assigned to the breaker.* |
| TCS[1] . **Aux ON-I** | *Module Input State: Position indicator/check-back signal of the CB (52a)* |
| TCS[1] . **Aux OFF-I** | *Module input state: Position indicator/check-back signal of the CB (52b)* |
| TCS[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| TCS[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| TCS[2] . **active** | *Signal: active* |
| TCS[2] . **ExBlo** | *Signal: External Blocking* |
| TCS[2] . **Alarm** | *Signal: Alarm Trip Circuit Supervision* |
| TCS[2] . **Not Possible** | *Not possible because no state indicator assigned to the breaker.* |
| TCS[2] . **Aux ON-I** | *Module Input State: Position indicator/check-back signal of the CB (52a)* |
| TCS[2] . **Aux OFF-I** | *Module input state: Position indicator/check-back signal of the CB (52b)* |
| TCS[2] . **ExBlo1-I** | *Module input state: External blocking1* |

Released



| 1..n, Assignment List | Description |
|---|---|
| TCS[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| CTS[1] . **active** | *Signal: active* |
| CTS[1] . **ExBlo** | *Signal: External Blocking* |
| CTS[1] . **Alarm** | *Signal: Alarm Current Transformer Measuring Circuit Supervision* |
| CTS[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| CTS[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| CTS[2] . **active** | *Signal: active* |
| CTS[2] . **ExBlo** | *Signal: External Blocking* |
| CTS[2] . **Alarm** | *Signal: Alarm Current Transformer Measuring Circuit Supervision* |
| CTS[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| CTS[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| LOP . **active** | *Signal: active* |
| LOP . **ExBlo** | *Signal: External Blocking* |
| LOP . **Alarm** | *Signal: Alarm Loss of Potential* |
| LOP . **LOP Blo** | *Signal: Loss of Potential blocks other elements.* |
| LOP . **Ex FF VT** | *Signal: Ex FF VT* |
| LOP . **Ex FF EVT** | *Signal: Alarm Fuse Failure Earth Voltage Transformers* |
| LOP . **ExBlo1-I** | *Module input state: External blocking1* |
| LOP . **ExBlo2-I** | *Module input state: External blocking2* |
| LOP . **Ex FF VT-I** | *State of the module input: Alarm Fuse Failure Voltage Transformers* |
| LOP . **Ex FF EVT-I** | *State of the module input: Alarm Fuse Failure Earth Voltage Transformers* |
| LOP . **Blo Trigger1-I** | *State of the module input: An Alarm of this protective element will block the Loss of Potential Detection.* |
| LOP . **Blo Trigger2-I** | *State of the module input: An Alarm of this protective element will block the Loss of Potential Detection.* |
| LOP . **Blo Trigger3-I** | *State of the module input: An Alarm of this protective element will block the Loss of Potential Detection.* |
| LOP . **Blo Trigger4-I** | *State of the module input: An Alarm of this protective element will block the Loss of Potential Detection.* |
| LOP . **Blo Trigger5-I** | *State of the module input: An Alarm of this protective element will block the Loss of Potential Detection.* |
| PQSCr . **Cr Oflw Ws Net** | *Signal: Counter Overflow Ws Net* |
| PQSCr . **Cr Oflw Wp Net** | *Signal: Counter Overflow Wp Net* |

| 1..n, Assignment List | Description |
|---|---|
| PQSCr . **Cr Oflw Wp+** | *Signal: Counter Overflow Wp+* |
| PQSCr . **Cr Oflw Wp-** | *Signal: Counter Overflow Wp-* |
| PQSCr . **Cr Oflw Wq Net** | *Signal: Counter Overflow Wq Net* |
| PQSCr . **Cr Oflw Wq+** | *Signal: Counter Overflow Wq+* |
| PQSCr . **Cr Oflw Wq-** | *Signal: Counter Overflow Wq-* |
| PQSCr . **Ws Net Res Cr** | *Signal: Ws Net Reset Counter* |
| PQSCr . **Wp Net Res Cr** | *Signal: Wp Net Reset Counter* |
| PQSCr . **Wp+ Res Cr** | *Signal: Wp+ Reset Counter* |
| PQSCr . **Wp- Res Cr** | *Signal: Wp- Reset Counter* |
| PQSCr . **Wq Net Res Cr** | *Signal: Wq Net Reset Counter* |
| PQSCr . **Wq+ Res Cr** | *Signal: Wq+ Reset Counter* |
| PQSCr . **Wq- Res Cr** | *Signal: Wq- Reset Counter* |
| PQSCr . **Res all Energy Cr** | *Signal: Reset of all Energy Counters* |
| PQSCr . **Cr OflwW Ws Net** | *Signal: Counter Ws Net will overflow soon* |
| PQSCr . **Cr OflwW Wp Net** | *Signal: Counter Wp Net will overflow soon* |
| PQSCr . **Cr OflwW Wp+** | *Signal: Counter Wp+ will overflow soon* |
| PQSCr . **Cr OflwW Wp-** | *Signal: Counter Wp- will overflow soon* |
| PQSCr . **Cr OflwW Wq Net** | *Signal: Counter Wq Net will overflow soon* |
| PQSCr . **Cr OflwW Wq+** | *Signal: Counter Wq+ will overflow soon* |
| PQSCr . **Cr OflwW Wq-** | *Signal: Counter Wq- will overflow soon* |
| SysA . **active** | *Signal: active* |
| SysA . **ExBlo** | *Signal: External Blocking* |
| SysA . **Alarm Watt Power max** | *Signal: Alarm: Permitted Active Power exceeded* |
| SysA . **Alarm VAr Power max** | *Signal: Alarm: Permitted Reactive Power exceeded* |
| SysA . **Alarm VA Power max** | *Signal: Alarm: Permitted Apparent Power exceeded* |
| SysA . **Alarm Watt avg (Demand)** | *Signal: Alarm: Averaged Active Power exceeded* |

| 1..n, Assignment List | Description |
|---|---|
| SysA . **Alarm VAr avg (Demand)** | *Signal: Alarm: Averaged Reactive Power exceeded* |
| SysA . **Alarm VA avg (Demand)** | *Signal: Alarm: Averaged Apparent Power exceeded* |
| SysA . **Alm Current avg (Demd)** | *Signal: Alarm: Averaged demand current exceeded* |
| SysA . **Alarm I THD** | *Signal: Alarm Total Harmonic Distortion Current* |
| SysA . **Alarm V THD** | *Signal: Alarm Total Harmonic Distortion Voltage* |
| SysA . **Trip Watt Power max** | *Signal: Trip maximum permitted Active Power exceeded* |
| SysA . **Trip VAr Power max** | *Signal: Trip maximum permitted Reactive Power exceeded* |
| SysA . **Trip VA Power max** | *Signal: Trip maximum permitted Apparent Power exceeded* |
| SysA . **Trip Watt avg (Demand)** | *Signal: Trip: Averaged Active Power exceeded* |
| SysA . **Trip VAr avg (Demand)** | *Signal: Trip: Averaged Reactive Power exceeded* |
| SysA . **Trip VA avg (Demand)** | *Signal: Trip: Averaged Apparent Power exceeded* |
| SysA . **Trip Current avg (Demd)** | *Signal: Trip: Averaged demand current exceeded* |
| SysA . **Trip I THD** | *Signal: Trip Total Harmonic Distortion Current* |
| SysA . **Trip V THD** | *Signal: Trip Total Harmonic Distortion Voltage* |
| SysA . **ExBlo-I** | *Module input state: External blocking* |
| DI Slot X1 . **DI 1** | *Signal: Digital Input* |
| DI Slot X1 . **DI 2** | *Signal: Digital Input* |
| DI Slot X1 . **DI 3** | *Signal: Digital Input* |
| DI Slot X1 . **DI 4** | *Signal: Digital Input* |
| DI Slot X1 . **DI 5** | *Signal: Digital Input* |
| DI Slot X1 . **DI 6** | *Signal: Digital Input* |
| DI Slot X1 . **DI 7** | *Signal: Digital Input* |
| DI Slot X1 . **DI 8** | *Signal: Digital Input* |
| DI Slot X5 . **DI 1** | *Signal: Digital Input* |
| DI Slot X5 . **DI 2** | *Signal: Digital Input* |
| DI Slot X5 . **DI 3** | *Signal: Digital Input* |

| 1..n, Assignment List | Description |
|---|---|
| DI Slot X5 . **DI 4** | *Signal: Digital Input* |
| DI Slot X5 . **DI 5** | *Signal: Digital Input* |
| DI Slot X5 . **DI 6** | *Signal: Digital Input* |
| DI Slot X5 . **DI 7** | *Signal: Digital Input* |
| DI Slot X5 . **DI 8** | *Signal: Digital Input* |
| DI Slot X6 . **DI 1** | *Signal: Digital Input* |
| DI Slot X6 . **DI 2** | *Signal: Digital Input* |
| DI Slot X6 . **DI 3** | *Signal: Digital Input* |
| DI Slot X6 . **DI 4** | *Signal: Digital Input* |
| DI Slot X6 . **DI 5** | *Signal: Digital Input* |
| DI Slot X6 . **DI 6** | *Signal: Digital Input* |
| DI Slot X6 . **DI 7** | *Signal: Digital Input* |
| DI Slot X6 . **DI 8** | *Signal: Digital Input* |
| BO Slot X2 . **BO 1** | *Signal: Binary Output Relay* |
| BO Slot X2 . **BO 2** | *Signal: Binary Output Relay* |
| BO Slot X2 . **BO 3** | *Signal: Binary Output Relay* |
| BO Slot X2 . **BO 4** | *Signal: Binary Output Relay* |
| BO Slot X2 . **BO 5** | *Signal: Binary Output Relay* |
| BO Slot X2 . **BO 6** | *Signal: Binary Output Relay* |
| BO Slot X2 . **DISARMED!** | *Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Self Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance* |
| BO Slot X2 . **Outs forced** | *Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals.* |
| BO Slot X5 . **BO 1** | *Signal: Binary Output Relay* |
| BO Slot X5 . **BO 2** | *Signal: Binary Output Relay* |
| BO Slot X5 . **BO 3** | *Signal: Binary Output Relay* |
| BO Slot X5 . **BO 4** | *Signal: Binary Output Relay* |
| BO Slot X5 . **DISARMED!** | *Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Self Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance* |

| 1..n, Assignment List | Description |
|---|---|
| BO Slot X5 . **Outs forced** | *Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals.* |
| AnIn[1] . **Broken wire** | *Signal: Broken wire. This signal is only valid, if the analog input is used in the 4...20 mA mode.* |
| AnIn[1] . **Input forced** | *The value of analog Input has been set by force. That means that the value of the analog Input is forced and does not represent the real measured value.* |
| AnIn[2] . **Broken wire** | *Signal: Broken wire. This signal is only valid, if the analog input is used in the 4...20 mA mode.* |
| AnIn[2] . **Input forced** | *The value of analog Input has been set by force. That means that the value of the analog Input is forced and does not represent the real measured value.* |
| AnIn[3] . **Broken wire** | *Signal: Broken wire. This signal is only valid, if the analog input is used in the 4...20 mA mode.* |
| AnIn[3] . **Input forced** | *The value of analog Input has been set by force. That means that the value of the analog Input is forced and does not represent the real measured value.* |
| AnIn[4] . **Broken wire** | *Signal: Broken wire. This signal is only valid, if the analog input is used in the 4...20 mA mode.* |
| AnIn[4] . **Input forced** | *The value of analog Input has been set by force. That means that the value of the analog Input is forced and does not represent the real measured value.* |
| AnaP[1] . **active** | *Signal: active* |
| AnaP[1] . **ExBlo** | *Signal: External Blocking* |
| AnaP[1] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| AnaP[1] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| AnaP[1] . **Pickup** | *Signal: Alarm Analog Input* |
| AnaP[1] . **Trip** | *Signal: Trip* |
| AnaP[1] . **TripCmd** | *Signal: Trip Command* |
| AnaP[1] . **ExBlo1-I** | *Module input state: External blocking1* |
| AnaP[1] . **ExBlo2-I** | *Module input state: External blocking2* |
| AnaP[1] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| AnaP[2] . **active** | *Signal: active* |
| AnaP[2] . **ExBlo** | *Signal: External Blocking* |
| AnaP[2] . **Blo TripCmd** | *Signal: Trip Command blocked* |

Released



| 1..n, Assignment List | Description |
|---|---|
| AnaP[2] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| AnaP[2] . **Pickup** | *Signal: Alarm Analog Input* |
| AnaP[2] . **Trip** | *Signal: Trip* |
| AnaP[2] . **TripCmd** | *Signal: Trip Command* |
| AnaP[2] . **ExBlo1-I** | *Module input state: External blocking1* |
| AnaP[2] . **ExBlo2-I** | *Module input state: External blocking2* |
| AnaP[2] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| AnaP[3] . **active** | *Signal: active* |
| AnaP[3] . **ExBlo** | *Signal: External Blocking* |
| AnaP[3] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| AnaP[3] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| AnaP[3] . **Pickup** | *Signal: Alarm Analog Input* |
| AnaP[3] . **Trip** | *Signal: Trip* |
| AnaP[3] . **TripCmd** | *Signal: Trip Command* |
| AnaP[3] . **ExBlo1-I** | *Module input state: External blocking1* |
| AnaP[3] . **ExBlo2-I** | *Module input state: External blocking2* |
| AnaP[3] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| AnaP[4] . **active** | *Signal: active* |
| AnaP[4] . **ExBlo** | *Signal: External Blocking* |
| AnaP[4] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| AnaP[4] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| AnaP[4] . **Pickup** | *Signal: Alarm Analog Input* |
| AnaP[4] . **Trip** | *Signal: Trip* |
| AnaP[4] . **TripCmd** | *Signal: Trip Command* |
| AnaP[4] . **ExBlo1-I** | *Module input state: External blocking1* |
| AnaP[4] . **ExBlo2-I** | *Module input state: External blocking2* |
| AnaP[4] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| AnaP[5] . **active** | *Signal: active* |

| 1..n, Assignment List | Description |
|---|---|
| AnaP[5] . **ExBlo** | *Signal: External Blocking* |
| AnaP[5] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| AnaP[5] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| AnaP[5] . **Pickup** | *Signal: Alarm Analog Input* |
| AnaP[5] . **Trip** | *Signal: Trip* |
| AnaP[5] . **TripCmd** | *Signal: Trip Command* |
| AnaP[5] . **ExBlo1-I** | *Module input state: External blocking1* |
| AnaP[5] . **ExBlo2-I** | *Module input state: External blocking2* |
| AnaP[5] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| AnaP[6] . **active** | *Signal: active* |
| AnaP[6] . **ExBlo** | *Signal: External Blocking* |
| AnaP[6] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| AnaP[6] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| AnaP[6] . **Pickup** | *Signal: Alarm Analog Input* |
| AnaP[6] . **Trip** | *Signal: Trip* |
| AnaP[6] . **TripCmd** | *Signal: Trip Command* |
| AnaP[6] . **ExBlo1-I** | *Module input state: External blocking1* |
| AnaP[6] . **ExBlo2-I** | *Module input state: External blocking2* |
| AnaP[6] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| AnaP[7] . **active** | *Signal: active* |
| AnaP[7] . **ExBlo** | *Signal: External Blocking* |
| AnaP[7] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| AnaP[7] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| AnaP[7] . **Pickup** | *Signal: Alarm Analog Input* |
| AnaP[7] . **Trip** | *Signal: Trip* |
| AnaP[7] . **TripCmd** | *Signal: Trip Command* |
| AnaP[7] . **ExBlo1-I** | *Module input state: External blocking1* |
| AnaP[7] . **ExBlo2-I** | *Module input state: External blocking2* |

| 1..n, Assignment List | Description |
|---|---|
| AnaP[7] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| AnaP[8] . **active** | *Signal: active* |
| AnaP[8] . **ExBlo** | *Signal: External Blocking* |
| AnaP[8] . **Blo TripCmd** | *Signal: Trip Command blocked* |
| AnaP[8] . **ExBlo TripCmd** | *Signal: External Blocking of the Trip Command* |
| AnaP[8] . **Pickup** | *Signal: Alarm Analog Input* |
| AnaP[8] . **Trip** | *Signal: Trip* |
| AnaP[8] . **TripCmd** | *Signal: Trip Command* |
| AnaP[8] . **ExBlo1-I** | *Module input state: External blocking1* |
| AnaP[8] . **ExBlo2-I** | *Module input state: External blocking2* |
| AnaP[8] . **ExBlo TripCmd-I** | *Module input state: External Blocking of the Trip Command* |
| AnOut[1] . **Force Mode** | *For commissioning purposes or for maintenance, Analog Outputs can be set by force. By means of this function the normal Analog Outputs can be overwritten (forced).* |
| AnOut[2] . **Force Mode** | *For commissioning purposes or for maintenance, Analog Outputs can be set by force. By means of this function the normal Analog Outputs can be overwritten (forced).* |
| AnOut[3] . **Force Mode** | *For commissioning purposes or for maintenance, Analog Outputs can be set by force. By means of this function the normal Analog Outputs can be overwritten (forced).* |
| AnOut[4] . **Force Mode** | *For commissioning purposes or for maintenance, Analog Outputs can be set by force. By means of this function the normal Analog Outputs can be overwritten (forced).* |
| Event rec . **Res all records** | *Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.)* |
| Disturb rec . **recording** | *Signal: Recording* |
| Disturb rec . **memory full** | *Signal: Memory full* |
| Disturb rec . **Clear fail** | *Signal: Clear failure in memory* |
| Disturb rec . **Res all records** | *Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.)* |
| Disturb rec . **Res record** | *Signal: Delete record* |
| Disturb rec . **Man Trigger** | *Signal: Manual Trigger* |
| Disturb rec . **Start1-I** | *State of the module input:: Trigger event / start recording* |

| 1..n, Assignment List | Description |
|---|---|
| Disturb rec . **Start2-I** | *State of the module input:: Trigger event / start recording* |
| Disturb rec . **Start3-I** | *State of the module input:: Trigger event / start recording* |
| Disturb rec . **Start4-I** | *State of the module input:: Trigger event / start recording* |
| Disturb rec . **Start5-I** | *State of the module input:: Trigger event / start recording* |
| Disturb rec . **Start6-I** | *State of the module input:: Trigger event / start recording* |
| Disturb rec . **Start7-I** | *State of the module input:: Trigger event / start recording* |
| Disturb rec . **Start8-I** | *State of the module input:: Trigger event / start recording* |
| Fault rec . **Res record** | *Signal: Delete record* |
| Trend rec . **Res all records** | *Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.)* |
| SSV . **System Error** | *Signal: Device Failure* |
| SSV . **SelfSuperVision Contact** | *Signal: SelfSuperVision Contact* |
| SSV . **New error** | *Signal: A new error message has been issued.* |
| SSV . **New warning** | *Signal: A new warning message has been issued.* |
| Syslog . **active** | *Signal: active* |
| Sys . **Smart view via USB** | *Information whether or not the Smart view access via the USB interface is activated (allowed).* |
| Sys . **Smart view via Eth** | *Information whether or not the Smart view access via the Ethernet interface is activated (allowed).* |
| Scada . **SCADA connected** | *At least one SCADA System is connected to the device.* |
| Scada . **SCADA not connected** | *No SCADA System is connected to the device* |
| DNP3 . **busy** | *This message is set if the protocol is started. It will be reset if the protocol is shut down.* |
| DNP3 . **ready** | *The message will be set if the protocol is successfully started and ready for data exchange.* |
| DNP3 . **active** | *The communication with the Master (SCADA) is active.*<br><br>*Note that for TCP/UDP, this state is permanently “Low” unless »DataLink confirm« is set to “Always”.* |
| DNP3 . **BinaryOutput0** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput1** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput2** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |

Released



| 1..n, Assignment List | Description |
|---|---|
| DNP3 . **BinaryOutput3** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput4** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput5** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput6** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput7** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput8** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput9** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput10** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput11** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput12** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput13** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput14** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput15** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput16** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput17** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput18** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput19** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput20** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput21** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput22** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |

Released



| 1..n, Assignment List | Description |
|---|---|
| DNP3 . **BinaryOutput23** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput24** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput25** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput26** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput27** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput28** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput29** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput30** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput31** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryInput0-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput1-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput2-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput3-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput4-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput5-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput6-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput7-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput8-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput9-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput10-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |

| 1..n, Assignment List | Description |
|---|---|
| DNP3 . **BinaryInput11-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput12-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput13-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput14-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput15-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput16-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput17-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput18-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput19-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput20-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput21-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput22-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput23-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput24-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput25-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput26-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput27-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput28-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput29-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput30-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |

Released



| 1..n, Assignment List | Description |
|---|---|
| DNP3 . **BinaryInput31-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput32-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput33-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput34-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput35-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput36-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput37-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput38-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput39-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput40-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput41-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput42-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput43-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput44-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput45-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput46-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput47-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput48-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput49-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput50-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |

Released



| 1..n, Assignment List | Description |
|---|---|
| DNP3 . **BinaryInput51-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput52-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput53-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput54-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput55-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput56-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput57-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput58-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput59-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput60-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput61-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput62-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| DNP3 . **BinaryInput63-I** | *Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.* |
| Modbus . **Transmission RTU** | *Signal: SCADA active* |
| Modbus . **Transmission TCP** | *Signal: SCADA active* |
| Modbus . **Scada Cmd 1** | *Scada Command* |
| Modbus . **Scada Cmd 2** | *Scada Command* |
| Modbus . **Scada Cmd 3** | *Scada Command* |
| Modbus . **Scada Cmd 4** | *Scada Command* |
| Modbus . **Scada Cmd 5** | *Scada Command* |
| Modbus . **Scada Cmd 6** | *Scada Command* |
| Modbus . **Scada Cmd 7** | *Scada Command* |
| Modbus . **Scada Cmd 8** | *Scada Command* |

| 1..n, Assignment List | Description |
|---|---|
| Modbus . **Scada Cmd 9** | *Scada Command* |
| Modbus . **Scada Cmd 10** | *Scada Command* |
| Modbus . **Scada Cmd 11** | *Scada Command* |
| Modbus . **Scada Cmd 12** | *Scada Command* |
| Modbus . **Scada Cmd 13** | *Scada Command* |
| Modbus . **Scada Cmd 14** | *Scada Command* |
| Modbus . **Scada Cmd 15** | *Scada Command* |
| Modbus . **Scada Cmd 16** | *Scada Command* |
| Modbus . **Config Bin Inp1-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp2-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp3-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp4-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp5-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp6-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp7-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp8-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp9-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp10-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp11-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp12-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp13-I** | *State of the module input: Config Bin Inp* |

| 1..n, Assignment List | Description |
|---|---|
| Modbus . **Config Bin Inp14-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp15-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp16-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp17-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp18-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp19-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp20-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp21-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp22-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp23-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp24-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp25-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp26-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp27-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp28-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp29-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp30-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp31-I** | *State of the module input: Config Bin Inp* |
| Modbus . **Config Bin Inp32-I** | *State of the module input: Config Bin Inp* |
| IEC 61850 . **MMS Client connected** | *At least one MMS client is connected to the device* |

| 1..n, Assignment List | Description |
|---|---|
| IEC 61850 . **All Goose Subscriber active** | *All Goose subscriber in the device are working* |
| IEC 61850 . **GOSINGGIO1.Ind1.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind2.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind3.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind4.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind5.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind6.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind7.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind8.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind9.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind10.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind11.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind12.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind13.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind14.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind15.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind16.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind17.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind18.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind19.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |

| 1..n, Assignment List | Description |
|---|---|
| IEC 61850 . **GOSINGGIO1.Ind20.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind21.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind22.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind23.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind24.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind25.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind26.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind27.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind28.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind29.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind30.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind31.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind32.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind1.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind2.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind3.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind4.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind5.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind6.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind7.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |

| 1..n, Assignment List | Description |
|---|---|
| IEC 61850 . **GOSINGGIO2.Ind8.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind9.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind10.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind11.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind12.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind13.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind14.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind15.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind16.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind17.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind18.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind19.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind20.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind21.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind22.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind23.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind24.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind25.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind26.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind27.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |

| 1..n, Assignment List | Description |
|---|---|
| IEC 61850 . **GOSINGGIO2.Ind28.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind29.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind30.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind31.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO2.Ind32.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind1.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind2.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind3.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind4.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind5.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind6.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind7.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind8.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind9.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind10.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind11.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind12.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind13.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind14.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind15.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |

| 1..n, Assignment List | Description |
|---|---|
| IEC 61850 . **GOSINGGIO1.Ind16.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind17.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind18.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind19.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind20.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind21.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind22.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind23.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind24.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind25.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind26.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind27.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind28.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind29.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind30.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind31.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO1.Ind32.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind1.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind2.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind3.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |

| 1..n, Assignment List | Description |
|---|---|
| IEC 61850 . **GOSINGGIO2.Ind4.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind5.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind6.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind7.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind8.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind9.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind10.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind11.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind12.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind13.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind14.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind15.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind16.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind17.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind18.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind19.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind20.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind21.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind22.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind23.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |

Released



| 1..n, Assignment List | Description |
|---|---|
| IEC 61850 . **GOSINGGIO2.Ind24.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind25.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind26.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind27.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind28.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind29.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind30.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind31.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **GOSINGGIO2.Ind32.q** | *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input* |
| IEC 61850 . **SPCSO1** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO2** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO3** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO4** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO5** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO6** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO7** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO8** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO9** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO10** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO11** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |

Released



| 1..n, Assignment List | Description |
|---|---|
| IEC 61850 . **SPCSO12** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO13** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO14** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO15** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO16** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO17** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO18** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO19** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO20** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO21** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO22** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO23** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO24** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO25** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO26** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO27** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO28** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO29** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO30** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO31** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |

| 1..n, Assignment List | Description |
|---|---|
| IEC 61850 . **SPCSO32** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC103 . **Scada Cmd 1** | *Scada Command* |
| IEC103 . **Scada Cmd 2** | *Scada Command* |
| IEC103 . **Scada Cmd 3** | *Scada Command* |
| IEC103 . **Scada Cmd 4** | *Scada Command* |
| IEC103 . **Scada Cmd 5** | *Scada Command* |
| IEC103 . **Scada Cmd 6** | *Scada Command* |
| IEC103 . **Scada Cmd 7** | *Scada Command* |
| IEC103 . **Scada Cmd 8** | *Scada Command* |
| IEC103 . **Scada Cmd 9** | *Scada Command* |
| IEC103 . **Scada Cmd 10** | *Scada Command* |
| IEC103 . **Transmission** | *Signal: SCADA active* |
| IEC103 . **Failure Event lost** | *Failure event lost* |
| IEC103 . **Test mode active** | *Signal: IEC103 communication has been switched over into Test Mode.* |
| IEC103 . **Block MD active** | *Signal: The blocking of IEC103 transmission in monitor direction has been activated.* |
| IEC103 . **Ex activate test mode-I** | *Module input state: Test Mode of the IEC103 communication.* |
| IEC103 . **Ex activate Block MD-I** | *Module input state: Activation of the blocking of IEC103 transmission in monitor direction.* |
| IEC104 . **busy** | *This message is set if the protocol is started. It will be reset if the protocol is shut down.* |
| IEC104 . **ready** | *The message will be set if the protocol is successfully started and ready for data exchange.* |
| IEC104 . **Transmission** | *Signal: SCADA active* |
| IEC104 . **Failure Event lost** | *Failure event lost* |
| IEC104 . **Scada Cmd 1** | *Scada Command* |
| IEC104 . **Scada Cmd 2** | *Scada Command* |
| IEC104 . **Scada Cmd 3** | *Scada Command* |
| IEC104 . **Scada Cmd 4** | *Scada Command* |
| IEC104 . **Scada Cmd 5** | *Scada Command* |
| IEC104 . **Scada Cmd 6** | *Scada Command* |

| 1..n, Assignment List | Description |
|---|---|
| IEC104 . **Scada Cmd 7** | *Scada Command* |
| IEC104 . **Scada Cmd 8** | *Scada Command* |
| IEC104 . **Scada Cmd 9** | *Scada Command* |
| IEC104 . **Scada Cmd 10** | *Scada Command* |
| IEC104 . **Scada Cmd 11** | *Scada Command* |
| IEC104 . **Scada Cmd 12** | *Scada Command* |
| IEC104 . **Scada Cmd 13** | *Scada Command* |
| IEC104 . **Scada Cmd 14** | *Scada Command* |
| IEC104 . **Scada Cmd 15** | *Scada Command* |
| IEC104 . **Scada Cmd 16** | *Scada Command* |
| Profibus . **Data OK** | *Data within the Input field are OK (Yes=1)* |
| Profibus . **SubModul Err** | *Assignable Signal, Failure in Sub-Module, Communication Failure.* |
| Profibus . **Connection active** | *Connection active* |
| Profibus . **Scada Cmd 1** | *Scada Command* |
| Profibus . **Scada Cmd 2** | *Scada Command* |
| Profibus . **Scada Cmd 3** | *Scada Command* |
| Profibus . **Scada Cmd 4** | *Scada Command* |
| Profibus . **Scada Cmd 5** | *Scada Command* |
| Profibus . **Scada Cmd 6** | *Scada Command* |
| Profibus . **Scada Cmd 7** | *Scada Command* |
| Profibus . **Scada Cmd 8** | *Scada Command* |
| Profibus . **Scada Cmd 9** | *Scada Command* |
| Profibus . **Scada Cmd 10** | *Scada Command* |
| Profibus . **Scada Cmd 11** | *Scada Command* |
| Profibus . **Scada Cmd 12** | *Scada Command* |
| Profibus . **Scada Cmd 13** | *Scada Command* |
| Profibus . **Scada Cmd 14** | *Scada Command* |
| Profibus . **Scada Cmd 15** | *Scada Command* |

| 1..n, Assignment List | Description |
|---|---|
| Profibus . **Scada Cmd 16** | *Scada Command* |
| IRIG-B . **IRIG-B active** | *Signal: If there is no valid IRIG-B signal for 60 sec, IRIG-B is regarded as inactive.* |
| IRIG-B . **High-Low Invert** | *Signal: The High and Low signals of the IRIG-B are inverted. This does NOT mean that the wiring is faulty. If the wiring is faulty no IRIG-B signal will be detected.* |
| IRIG-B . **Control Signal1** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal2** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal3** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal4** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal5** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal6** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal7** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal8** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal9** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal10** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal11** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal12** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |

| 1..n, Assignment List | Description |
|---|---|
| IRIG-B . **Control Signal13** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal14** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal15** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal16** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal17** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| IRIG-B . **Control Signal18** | *Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).* |
| SNTP . **SNTP active** | *Signal: If there is no valid SNTP signal for 120 sec, SNTP is regarded as inactive.* |
| TimeSync . **synchronized** | *Clock is synchronized.* |
| Statistics . **ResFc all** | *Signal: Resetting of all Statistic values (Current Demand, Power Demand, Min, Max)* |
| Statistics . **ResFc Vavg** | *Signal: Resetting of the sliding average calculation.* |
| Statistics . **ResFc I Demand** | *Signal: Resetting of Statistics - Current Demand (avg, peak avg)* |
| Statistics . **ResFc P Demand** | *Signal: Resetting of Statistics - Power Demand (avg, peak avg)* |
| Statistics . **ResFc Max** | *Signal: Resetting of all Maximum values* |
| Statistics . **ResFc Min** | *Signal: Resetting of all Minimum values* |
| Statistics . **StartFc Vavg-I** | *State of the module input: Start of Statistics Average Voltage* |
| Statistics . **StartFc I Demand-I** | *State of the module input: Start of the Statistics of the Current Demand* |
| Statistics . **StartFc P Demand-I** | *State of the module input: Start of the Statistics of the Active Power Demand* |
| Logics . **LE1.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE1.Timer Out** | *Signal: Timer Output* |
| Logics . **LE1.Out** | *Signal: Latched Output (Q)* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE1.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE1.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE1.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE1.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE1.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE1.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE2.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE2.Timer Out** | *Signal: Timer Output* |
| Logics . **LE2.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE2.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE2.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE2.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE2.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE2.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE2.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE3.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE3.Timer Out** | *Signal: Timer Output* |
| Logics . **LE3.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE3.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE3.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE3.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE3.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE3.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE3.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE4.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE4.Timer Out** | *Signal: Timer Output* |
| Logics . **LE4.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE4.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

Released



| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE4.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE4.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE4.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE4.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE4.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE5.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE5.Timer Out** | *Signal: Timer Output* |
| Logics . **LE5.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE5.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE5.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE5.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE5.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE5.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE5.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE6.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE6.Timer Out** | *Signal: Timer Output* |
| Logics . **LE6.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE6.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE6.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE6.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE6.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE6.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE6.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE7.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE7.Timer Out** | *Signal: Timer Output* |
| Logics . **LE7.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE7.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE7.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE7.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE7.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE7.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE7.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE8.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE8.Timer Out** | *Signal: Timer Output* |
| Logics . **LE8.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE8.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE8.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE8.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE8.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE8.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE8.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE9.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE9.Timer Out** | *Signal: Timer Output* |
| Logics . **LE9.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE9.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE9.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE9.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE9.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE9.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE9.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE10.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE10.Timer Out** | *Signal: Timer Output* |
| Logics . **LE10.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE10.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE10.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE10.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE10.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE10.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE10.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE11.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE11.Timer Out** | *Signal: Timer Output* |
| Logics . **LE11.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE11.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE11.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE11.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE11.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE11.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE11.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE12.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE12.Timer Out** | *Signal: Timer Output* |
| Logics . **LE12.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE12.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE12.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE12.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE12.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE12.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE12.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE13.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE13.Timer Out** | *Signal: Timer Output* |
| Logics . **LE13.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE13.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE13.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE13.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE13.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE13.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE13.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE14.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE14.Timer Out** | *Signal: Timer Output* |
| Logics . **LE14.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE14.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE14.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE14.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE14.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE14.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE14.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE15.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE15.Timer Out** | *Signal: Timer Output* |
| Logics . **LE15.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE15.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE15.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE15.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE15.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE15.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE15.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE16.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE16.Timer Out** | *Signal: Timer Output* |
| Logics . **LE16.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE16.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE16.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE16.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE16.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE16.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE16.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE17.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE17.Timer Out** | *Signal: Timer Output* |
| Logics . **LE17.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE17.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE17.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE17.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE17.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE17.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE17.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE18.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE18.Timer Out** | *Signal: Timer Output* |
| Logics . **LE18.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE18.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE18.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE18.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE18.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE18.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE18.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE19.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE19.Timer Out** | *Signal: Timer Output* |
| Logics . **LE19.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE19.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE19.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE19.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE19.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE19.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE19.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE20.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE20.Timer Out** | *Signal: Timer Output* |
| Logics . **LE20.Out** | *Signal: Latched Output (Q)* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE20.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE20.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE20.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE20.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE20.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE20.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE21.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE21.Timer Out** | *Signal: Timer Output* |
| Logics . **LE21.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE21.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE21.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE21.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE21.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE21.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE21.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE22.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE22.Timer Out** | *Signal: Timer Output* |
| Logics . **LE22.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE22.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE22.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE22.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE22.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE22.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE22.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE23.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE23.Timer Out** | *Signal: Timer Output* |
| Logics . **LE23.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE23.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE23.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE23.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE23.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE23.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE23.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE24.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE24.Timer Out** | *Signal: Timer Output* |
| Logics . **LE24.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE24.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE24.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE24.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE24.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE24.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE24.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE25.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE25.Timer Out** | *Signal: Timer Output* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE25.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE25.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE25.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE25.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE25.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE25.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE25.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE26.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE26.Timer Out** | *Signal: Timer Output* |
| Logics . **LE26.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE26.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE26.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE26.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE26.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE26.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE26.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE27.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE27.Timer Out** | *Signal: Timer Output* |
| Logics . **LE27.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE27.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE27.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE27.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE27.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE27.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE27.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE28.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE28.Timer Out** | *Signal: Timer Output* |
| Logics . **LE28.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE28.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE28.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE28.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE28.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE28.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE28.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE29.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE29.Timer Out** | *Signal: Timer Output* |
| Logics . **LE29.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE29.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE29.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE29.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE29.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE29.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE29.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE30.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE30.Timer Out** | *Signal: Timer Output* |
| Logics . **LE30.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE30.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE30.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE30.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE30.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE30.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE30.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE31.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE31.Timer Out** | *Signal: Timer Output* |
| Logics . **LE31.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE31.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE31.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE31.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE31.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE31.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE31.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE32.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE32.Timer Out** | *Signal: Timer Output* |
| Logics . **LE32.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE32.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE32.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE32.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE32.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE32.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE32.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE33.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE33.Timer Out** | *Signal: Timer Output* |
| Logics . **LE33.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE33.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE33.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE33.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE33.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE33.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE33.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE34.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE34.Timer Out** | *Signal: Timer Output* |
| Logics . **LE34.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE34.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE34.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE34.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE34.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE34.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE34.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE35.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE35.Timer Out** | *Signal: Timer Output* |
| Logics . **LE35.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE35.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE35.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE35.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE35.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE35.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE35.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE36.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE36.Timer Out** | *Signal: Timer Output* |
| Logics . **LE36.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE36.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE36.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE36.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE36.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE36.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE36.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE37.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE37.Timer Out** | *Signal: Timer Output* |
| Logics . **LE37.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE37.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE37.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE37.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE37.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE37.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE37.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE38.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE38.Timer Out** | *Signal: Timer Output* |
| Logics . **LE38.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE38.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE38.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE38.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE38.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE38.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE38.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE39.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE39.Timer Out** | *Signal: Timer Output* |
| Logics . **LE39.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE39.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE39.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE39.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE39.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE39.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE39.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE40.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE40.Timer Out** | *Signal: Timer Output* |
| Logics . **LE40.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE40.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE40.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE40.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE40.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE40.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE40.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE41.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE41.Timer Out** | *Signal: Timer Output* |
| Logics . **LE41.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE41.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE41.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE41.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE41.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE41.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE41.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE42.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE42.Timer Out** | *Signal: Timer Output* |
| Logics . **LE42.Out** | *Signal: Latched Output (Q)* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE42.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE42.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE42.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE42.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE42.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE42.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE43.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE43.Timer Out** | *Signal: Timer Output* |
| Logics . **LE43.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE43.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE43.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE43.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE43.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE43.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE43.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE44.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE44.Timer Out** | *Signal: Timer Output* |
| Logics . **LE44.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE44.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE44.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE44.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE44.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE44.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE44.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE45.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE45.Timer Out** | *Signal: Timer Output* |
| Logics . **LE45.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE45.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE45.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE45.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE45.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE45.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE45.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE46.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE46.Timer Out** | *Signal: Timer Output* |
| Logics . **LE46.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE46.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE46.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE46.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE46.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE46.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE46.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE47.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE47.Timer Out** | *Signal: Timer Output* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE47.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE47.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE47.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE47.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE47.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE47.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE47.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE48.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE48.Timer Out** | *Signal: Timer Output* |
| Logics . **LE48.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE48.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE48.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE48.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE48.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE48.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE48.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE49.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE49.Timer Out** | *Signal: Timer Output* |
| Logics . **LE49.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE49.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE49.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE49.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE49.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE49.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE49.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE50.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE50.Timer Out** | *Signal: Timer Output* |
| Logics . **LE50.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE50.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE50.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE50.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE50.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE50.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE50.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE51.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE51.Timer Out** | *Signal: Timer Output* |
| Logics . **LE51.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE51.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE51.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE51.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE51.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE51.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE51.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE52.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE52.Timer Out** | *Signal: Timer Output* |
| Logics . **LE52.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE52.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE52.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE52.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE52.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE52.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE52.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE53.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE53.Timer Out** | *Signal: Timer Output* |
| Logics . **LE53.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE53.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE53.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE53.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE53.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE53.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE53.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE54.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE54.Timer Out** | *Signal: Timer Output* |
| Logics . **LE54.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE54.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE54.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE54.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE54.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE54.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE54.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE55.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE55.Timer Out** | *Signal: Timer Output* |
| Logics . **LE55.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE55.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE55.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE55.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE55.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE55.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE55.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE56.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE56.Timer Out** | *Signal: Timer Output* |
| Logics . **LE56.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE56.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE56.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE56.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE56.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE56.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE56.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE57.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE57.Timer Out** | *Signal: Timer Output* |
| Logics . **LE57.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE57.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE57.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE57.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE57.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE57.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE57.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE58.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE58.Timer Out** | *Signal: Timer Output* |
| Logics . **LE58.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE58.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE58.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE58.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE58.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE58.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE58.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE59.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE59.Timer Out** | *Signal: Timer Output* |
| Logics . **LE59.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE59.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE59.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE59.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE59.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE59.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE59.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE60.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE60.Timer Out** | *Signal: Timer Output* |
| Logics . **LE60.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE60.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE60.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE60.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE60.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE60.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE60.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE61.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE61.Timer Out** | *Signal: Timer Output* |
| Logics . **LE61.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE61.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE61.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE61.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE61.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE61.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE61.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE62.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE62.Timer Out** | *Signal: Timer Output* |
| Logics . **LE62.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE62.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE62.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE62.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE62.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE62.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE62.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE63.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE63.Timer Out** | *Signal: Timer Output* |
| Logics . **LE63.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE63.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE63.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE63.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE63.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE63.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE63.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE64.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE64.Timer Out** | *Signal: Timer Output* |
| Logics . **LE64.Out** | *Signal: Latched Output (Q)* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE64.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE64.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE64.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE64.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE64.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE64.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE65.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE65.Timer Out** | *Signal: Timer Output* |
| Logics . **LE65.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE65.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE65.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE65.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE65.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE65.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE65.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE66.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE66.Timer Out** | *Signal: Timer Output* |
| Logics . **LE66.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE66.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE66.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE66.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE66.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE66.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE66.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE67.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE67.Timer Out** | *Signal: Timer Output* |
| Logics . **LE67.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE67.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE67.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE67.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE67.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE67.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE67.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE68.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE68.Timer Out** | *Signal: Timer Output* |
| Logics . **LE68.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE68.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE68.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE68.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE68.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE68.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE68.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE69.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE69.Timer Out** | *Signal: Timer Output* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE69.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE69.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE69.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE69.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE69.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE69.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE69.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE70.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE70.Timer Out** | *Signal: Timer Output* |
| Logics . **LE70.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE70.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE70.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE70.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE70.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE70.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE70.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE71.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE71.Timer Out** | *Signal: Timer Output* |
| Logics . **LE71.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE71.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE71.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE71.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE71.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE71.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE71.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE72.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE72.Timer Out** | *Signal: Timer Output* |
| Logics . **LE72.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE72.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE72.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE72.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE72.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE72.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE72.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE73.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE73.Timer Out** | *Signal: Timer Output* |
| Logics . **LE73.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE73.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE73.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE73.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE73.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE73.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE73.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE74.Gate Out** | *Signal: Output of the logic gate* |

Released



| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE74.Timer Out** | *Signal: Timer Output* |
| Logics . **LE74.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE74.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE74.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE74.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE74.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE74.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE74.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE75.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE75.Timer Out** | *Signal: Timer Output* |
| Logics . **LE75.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE75.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE75.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE75.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE75.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE75.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE75.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE76.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE76.Timer Out** | *Signal: Timer Output* |
| Logics . **LE76.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE76.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE76.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE76.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE76.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE76.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE76.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE77.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE77.Timer Out** | *Signal: Timer Output* |
| Logics . **LE77.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE77.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE77.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE77.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE77.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE77.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE77.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE78.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE78.Timer Out** | *Signal: Timer Output* |
| Logics . **LE78.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE78.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE78.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE78.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE78.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE78.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE78.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |

| 1..n, Assignment List | Description |
|---|---|
| Logics . **LE79.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE79.Timer Out** | *Signal: Timer Output* |
| Logics . **LE79.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE79.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE79.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE79.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE79.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE79.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE79.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Logics . **LE80.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE80.Timer Out** | *Signal: Timer Output* |
| Logics . **LE80.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE80.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE80.Gate In1-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE80.Gate In2-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE80.Gate In3-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE80.Gate In4-I** | *State of the module input: Assignment of the Input Signal* |
| Logics . **LE80.Reset Latch-I** | *State of the module input: Reset Signal for the Latching* |
| Sgen . **Manual Start** | *Fault Simulation has been started manually.* |
| Sgen . **Manual Stop** | *Fault Simulation has been stopped manually.* |
| Sgen . **Running** | *Signal; Measuring value simulation is running* |
| Sgen . **Started** | *Fault Simulation has been started* |
| Sgen . **Stopped** | *Fault Simulation has been stopped* |

| 1..n, Assignment List | Description |
|---|---|
| Sgen . **Ex Start Simulation-I** | *State of the module input:External Start of Fault Simulation (Using the test parameters)* |
| Sgen . **ExBlo1-I** | *Module input state: External blocking1* |
| Sgen . **ExBlo2-I** | *Module input state: External blocking2* |
| Sgen . **Ex ForcePost-I** | *State of the module input:Force Post state. Abort simulation.* |
| Sys . **PS 1** | *Signal: The currently active Parameter Set is PS 1* |
| Sys . **PS 2** | *Signal: The currently active Parameter Set is PS 2* |
| Sys . **PS 3** | *Signal: The currently active Parameter Set is PS 3* |
| Sys . **PS 4** | *Signal: The currently active Parameter Set is PS 4* |
| Sys . **PSS manual** | *Signal: Manual Switch over of a Parameter Set* |
| Sys . **PSS via Scada** | *Signal: Parameter Set Switch via Scada. Write into this output byte the integer of the parameter set that should become active (e.g. 4 => Switch onto parameter set 4).* |
| Sys . **PSS via Inp fct** | *Signal: Parameter Set Switch via input function* |
| Sys . **min 1 param changed** | *Signal: At least one parameter has been changed* |
| Sys . **Setting Lock Bypass** | *Signal: Short-period unlock of the Setting Lock* |
| Sys . **Ack LED** | *Signal: LEDs acknowledgement* |
| Sys . **Ack BO** | *Signal: Acknowledgement of the Binary Outputs* |
| Sys . **Ack Scada** | *Signal: Acknowledge latched SCADA signals* |
| Sys . **Ack TripCmd** | *Signal: Reset Trip Command* |
| Sys . **Ack LED-HMI** | *Signal: LEDs acknowledgement, triggered at the HMI* |
| Sys . **Ack BO-HMI** | *Signal: Acknowledgement of the Binary Outputs, triggered at the HMI* |
| Sys . **Ack Scada-HMI** | *Signal: Acknowledge latched SCADA signals, triggered at the HMI* |
| Sys . **Ack TripCmd-HMI** | *Signal: Reset Trip Command, triggered at the HMI* |
| Sys . **Ack LED-Sca** | *Signal: LEDs acknowledgement, triggered via SCADA* |
| Sys . **Ack BO-Sca** | *Signal: Acknowledgement of the Binary Outputs, triggered via SCADA* |
| Sys . **Ack Counter-Sca** | *Signal: Reset of all Counters, triggered via SCADA* |
| Sys . **Ack Scada-Sca** | *Signal: Acknowledge latched SCADA signals, triggered via SCADA* |
| Sys . **Ack TripCmd-Sca** | *Signal: Reset Trip Command, triggered via SCADA* |
| Sys . **Res OperationsCr** | *Signal:: Res OperationsCr* |
| Sys . **Res AlarmCr** | *Signal:: Res AlarmCr* |
| Sys . **Res TripCmdCr** | *Signal:: Res TripCmdCr* |

| 1..n, Assignment List | Description |
|---|---|
| Sys . **Res TotalCr** | *Signal:: Res TotalCr* |
| Sys . **Ack LED-I** | *Module input state: LEDs acknowledgement by digital input* |
| Sys . **Ack BO-I** | *Module input state: Acknowledgement of the binary Output Relays* |
| Sys . **Ack Scada-I** | *Module input state: Acknowledge latched SCADA signals.* |
| Sys . **PS1-I** | *State of the module input respectively of the signal, that should activate this Parameter Setting Group.* |
| Sys . **PS2-I** | *State of the module input respectively of the signal, that should activate this Parameter Setting Group.* |
| Sys . **PS3-I** | *State of the module input respectively of the signal, that should activate this Parameter Setting Group.* |
| Sys . **PS4-I** | *State of the module input respectively of the signal, that should activate this Parameter Setting Group.* |
| Sys . **Setting Lock-I** | *State of the module input: No parameters can be changed as long as this input is true. The parameter settings are locked.* |
| Sys . **Internal test state** | *Auxiliary state for testing purposes.* |

### *1...n Operating Modes*

Selection list referenced by the following parameters:

- ⮡ BO Slot X5 . Operating Mode
- ⮡ BO Slot X5 . Operating Mode
- ⮡ BO Slot X5 . Operating Mode
- ⮡ BO Slot X5 . Operating Mode

| 1...n Operating Modes | Description |
|---|---|
| **Normally open (NO)** | *The working principle of the relay corresponds to a normally open contact.* |
| **Normally closed (NC)** | *The working principle of the relay corresponds to a normally closed contact.* |

### *Type of Input*

Type of Input: Select the input range and type

Selection list referenced by the following parameters:

- ⮡ AnIn[1] . Mode

| Type of Input | Description |
|---|---|
| **0...20 mA** | *0...20 mA* |
| **4...20 mA** | *4...20 mA* |
| **0...10V** | *0...10V* |

### *1..n, AnalogOutputList*

Selection list referenced by the following parameters:

- ⮡ AnOut[1] . Assignment

| 1..n, AnalogOutputList | Description |
|---|---|
| **“-”** | *No assignment* |
| VT . **f** | *Measured value: Frequency* |
| VT . **VL12 RMS** | *Measured value: Phase-to-phase voltage (RMS)* |
| VT . **VL23 RMS** | *Measured value: Phase-to-phase voltage (RMS)* |
| VT . **VL31 RMS** | *Measured value: Phase-to-phase voltage (RMS)* |
| VT . **VL1 RMS** | *Measured value: Phase-to-neutral voltage (RMS)* |
| VT . **VL2 RMS** | *Measured value: Phase-to-neutral voltage (RMS)* |
| VT . **VL3 RMS** | *Measured value: Phase-to-neutral voltage (RMS)* |
| VT . **VX meas RMS** | *Measured value (measured): VX measured (RMS)* |
| VT . **VG calc RMS** | *Measured value (calculated): VG (RMS)* |
| VT . **VL12 THD** | *Measured value (calculated): V12 Total Harmonic Distortion* |
| VT . **VL23 THD** | *Measured value (calculated): V23 Total Harmonic Distortion* |
| VT . **VL31 THD** | *Measured value (calculated): V31 Total Harmonic Distortion* |
| VT . **VL1 THD** | *Measured value (calculated): VL1 Total Harmonic Distortion* |
| VT . **VL2 THD** | *Measured value (calculated): VL2 Total Harmonic Distortion* |
| VT . **VL3 THD** | *Measured value (calculated): VL3 Total Harmonic Distortion* |
| CT W1 . **IL1 RMS** | *Measured value: Phase current (RMS)* |
| CT W1 . **IL2 RMS** | *Measured value: Phase current (RMS)* |

| 1..n, AnalogOutputList | Description |
|---|---|
| CT W1 . **IL3 RMS** | *Measured value: Phase current (RMS)* |
| CT W1 . **IG meas RMS** | *Measured value (measured): IG (RMS)* |
| CT W1 . **IG calc RMS** | *Measured value (calculated): IG (RMS)* |
| CT W1 . **IL1 THD** | *Measured value (calculated): IL1 Total Harmonic Current* |
| CT W1 . **IL2 THD** | *Measured value (calculated): IL2 Total Harmonic Current* |
| CT W1 . **IL3 THD** | *Measured value (calculated): IL3 Total Harmonic Current* |
| CT W2 . **IL1 RMS** | *Measured value: Phase current (RMS)* |
| CT W2 . **IL2 RMS** | *Measured value: Phase current (RMS)* |
| CT W2 . **IL3 RMS** | *Measured value: Phase current (RMS)* |
| CT W2 . **IG meas RMS** | *Measured value (measured): IG (RMS)* |
| CT W2 . **IG calc RMS** | *Measured value (calculated): IG (RMS)* |
| CT W2 . **IL1 THD** | *Measured value (calculated): IL1 Total Harmonic Current* |
| CT W2 . **IL2 THD** | *Measured value (calculated): IL2 Total Harmonic Current* |
| CT W2 . **IL3 THD** | *Measured value (calculated): IL3 Total Harmonic Current* |
| ThR . **Thermal Cap Used** | *Measured value: Thermal Capacity Used* |
| Sync . **Slip Freq** | *Slip frequency* |
| Sync . **Volt Diff** | *Voltage difference between bus and line.* |
| Sync . **Angle Diff** | *Angle difference between bus and line voltages.* |
| Sync . **f Bus** | *Bus frequency* |
| Sync . **f Line** | *Line frequency* |
| Sync . **V Bus** | *Bus Voltage* |
| Sync . **V Line** | *Line Voltage* |
| Sync . **Angle Bus** | *Bus Angle (Reference)* |
| Sync . **Angle Line** | *Line Angle* |
| URTD . **W1 L1** | *Measured Value: Winding Temperature* |
| URTD . **W1 L2** | *Measured Value: Winding Temperature* |
| URTD . **W1 L3** | *Measured Value: Winding Temperature* |
| URTD . **W2 L1** | *Measured Value: Winding Temperature* |
| URTD . **W2 L2** | *Measured Value: Winding Temperature* |
| URTD . **W2 L3** | *Measured Value: Winding Temperature* |
| URTD . **Amb1** | *Measured Value: Ambient Temperature* |

| 1..n, AnalogOutputList | Description |
|---|---|
| URTD . **Amb2** | *Measured Value: Ambient Temperature* |
| URTD . **Aux1** | *Measured Value: Auxiliary Temperature* |
| URTD . **Aux2** | *Measured Value: Auxiliary Temperature* |
| URTD . **Aux3** | *Measured Value: Auxiliary Temperature* |
| URTD . **Aux4** | *Measured Value: Auxiliary Temperature* |
| URTD . **RTD Max** | *Maximum temperature of all channels.* |
| RTD . **Hottest WD W1** | *Hottest winding on side W1* |
| RTD . **Hottest WD W2** | *Hottest winding on side W2* |
| PQSCr . **S RMS** | *Measured Value (Calculated): Apparent power (RMS)* |
| PQSCr . **P RMS** | *Measured value (calculated): Active power (P- = Fed Active Power, P+ = Consumpted Active Power) (RMS)* |
| PQSCr . **Q** | *Measured value (calculated): Reactive power (Q- = Fed Reactive Power, Q+ = Consumpted Reactive Power) (fundamental)* |
| PQSCr . **cos phi (±)** | *Measured value (calculated): Power factor: Sign Convention: (+)PF:I lags V (-)PF:I leads V* |
| PQSCr . **cos phi RMS(±)** | *Measured value (calculated): Power factor: Sign Convention: (+)PF:I lags V (-)PF:I leads V* |
| PQSCr . **Ws Net** | *Absolute Apparent Power Hours* |
| PQSCr . **Wp Net** | *Absolute Active Power Hours* |
| PQSCr . **Wp+** | *Positive Active Power is consumed active energy* |
| PQSCr . **Wp-** | *Negative Active Power (Fed Energy)* |
| PQSCr . **Wq Net** | *Absolute Reactive Power Hours* |
| PQSCr . **Wq+** | *Positive Reactive Power is consumed Reactive Energy* |
| PQSCr . **Wq-** | *Negative Reactive Power (Fed Energy)* |

### *Type of Output*

Type of Output: Select the output range and type

Selection list referenced by the following parameters:

- ⮡ AnOut[1] . Range

| Type of Output | Description |
|---|---|
| **0...20mA** | *0...20mA* |

| Type of Output | Description |
|---|---|
| **4...20mA** | *4...20mA* |
| **0...10V** | *0...10V* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ LEDs group A . Latched
- ⮡ LEDs group A . Latched
- ⮡ LEDs group A . Latched
- ⮡ LEDs group A . Latched
- ⮡ LEDs group A . Latched
- ⮡ LEDs group A . Latched
- *[...]*

| Mode | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |
| **active, ack. by alarm** | *Latching of LEDs is active, but will be acknowledged (reset) automatically (by a protection function) in case of a new alarm.* |

***LED active color***

Selection list referenced by the following parameters:

- ⮡ LEDs group A . LED active color
- ⮡ LEDs group A . LED inactive color
- ⮡ LEDs group A . LED active color
- ⮡ LEDs group A . LED inactive color
- ⮡ LEDs group A . LED active color
- ⮡ LEDs group A . LED inactive color
- *[...]*

| LED active color | Description |
|---|---|
| **green** | *green* |
| **red** | *red* |
| **red flash** | *red flashing* |
| **green flash** | *green blinking* |
| **“-”** | *No assignment* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ LEDs group B . Latched
- ⮡ LEDs group B . Latched
- ⮡ LEDs group B . Latched
- ⮡ LEDs group B . Latched
- ⮡ LEDs group B . Latched
- ⮡ LEDs group B . Latched
- *[ . . . ]*

| Mode | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |
| **active, ack. by alarm** | *Latching of LEDs is active, but will be acknowledged (reset) automatically (by a protection function) in case of a new alarm.* |

***LED active color***

Selection list referenced by the following parameters:

- ⮡ LEDs group B . LED active color
- ⮡ LEDs group B . LED inactive color
- ⮡ LEDs group B . LED active color
- ⮡ LEDs group B . LED inactive color

- ⮡ LEDs group B . LED active color
- ⮡ LEDs group B . LED inactive color
- *[ . . . ]*

| LED active color | Description |
|---|---|
| **green** | *green* |
| **red** | *red* |
| **red flash** | *red flashing* |
| **green flash** | *green blinking* |
| **“-”** | *No assignment* |

***Ack via »C« key***

Select which acknowledgeable elements can be reset via pressing the »C« key.

Selection list referenced by the following parameters:

- ⮡ Sys . Ack via »C« key

| Ack via »C« key | Description |
|---|---|
| **Nothing** | *No elements can be simply reset via pressing the »C« key for a long time (ca. 1 second). This has the consequence that pressing the »C« key is only a shortcut to the Acknowledge menu, from which the user has to select the elements to be reset.* |
| **Ack LEDs w/o passw.** | *All LEDs are acknowledged (reset) via pressing the »C« key for ca. 1 second. No password has to be entered for this. The reset activity can be recognized from the fact that it always includes an LED test, i.e. all LEDs flash in red color for a second, then flash in green color for a second.* |
| **Ack LEDs** | *All LEDs are reset via pressing the »C« key (for ca. 1 second). The reset activity can be recognized from the fact that it always includes an LED test, i.e. all LEDs flash in red color for a second, then flash in green color for a second.* |
| **Ack LEDs and relays** | *All LEDs and all acknowledgeable binary output relays are reset via pressing the »C« key (for ca. 1 second). The reset activity can be recognized from the fact that it always includes an LED test, i.e. all LEDs flash in red color for a second, then flash in green color for a second.* |
| **Ack Everything** | *All acknowledgeable elements are reset via pressing the »C« key (for ca. 1 second):*<br><br>*- All LEDs, and*<br><br>*- all binary output relays, and* |

| Ack via »C« key | Description |
|---|---|
| | *- all latched SCADA signals, and*<br><br>*- the Trip command.*<br><br>*The reset activity can be recognized from the fact that it always includes an LED test, i.e. all LEDs flash in red color for a second, then flash in green color for a second.* |

***Duration***

Recording time

Selection list referenced by the following parameters:

- ⮡ Statistics . Start I Demand via:
- ⮡ Statistics . Start P Demand via:
- ⮡ Statistics . Start Vavg via:

| Duration | Description |
|---|---|
| **Duration** | *Recording time* |
| **StartFct** | *Start function* |

***Duration***

Recording time

Selection list referenced by the following parameters:

- ⮡ Statistics . Duration I Demand
- ⮡ Statistics . Duration P Demand
- ⮡ Statistics . Duration Vavg

| Duration | Description |
|---|---|
| **2 s** | *s* |
| **5 s** | *s* |
| **10 s** | *s* |
| **15 s** | *seconds* |
| **30 s** | *seconds* |

| Duration | Description |
|---|---|
| **1 min** | *minute* |
| **5 min** | *minute* |
| **10 min** | *minute* |
| **15 min** | *minute* |
| **30 min** | *minute* |
| **1 h** | *Hours* |
| **2 h** | *Hours* |
| **6 h** | *Hours* |
| **12 h** | *Hours* |
| **1 d** | *days* |
| **2 d** | *days* |
| **5 d** | *days* |
| **7 d** | *days* |
| **10 d** | *days* |
| **30 d** | *days* |

### *Window configuration*

Selection list referenced by the following parameters:

- ⮡ Statistics . Window I Demand
- ⮡ Statistics . Window P Demand
- ⮡ Statistics . Window Vavg

| Window configuration | Description |
|---|---|
| **sliding** | *Moving mean: Continuously the newest measuring value is added and the oldest measuring value is removed from the moving mean (average value).* |
| **fixed** | *The average value is calculated for a fixed window.* |

### *Selection*

Selection list referenced by the following parameters:

- ⮡ HMI . Menu language

| Selection | Description |
|---|---|
| **English** | *English* |
| **German** | *German* |
| **Russian** | *Russian* |
| **Polish** | *Polish* |
| **French** | *French* |
| **Portuguese** | *Portuguese* |
| **Spanish** | *Spanish* |
| **Romanian** | *Romanian* |

***Record-Mode***

Recorder Mode (Set the behaviour of the recorder)

Selection list referenced by the following parameters:

- ⮡ Fault rec . Record-Mode

| Record-Mode | Description |
|---|---|
| **Alarms and Trips** | *A recording is started in case of an alarm or a trip.* |
| **Trips only** | *A recording is started only in case of a trip.* |

***Resolution***

Resolution (recording frequency)

Selection list referenced by the following parameters:

- ⮡ Trend rec . Resolution

| Resolution | Description |
|---|---|
| **60 min** | *Add next entry: 60 min* |
| **30 min** | *Add next entry: 30 min* |
| **15 min** | *Add next entry: 15 min* |
| **10 min** | *Add next entry: 10 min* |

| Resolution | Description |
|---|---|
| **5 min** | *Add next entry: 5 min* |

***1..n, TrendRecList***

Selection list referenced by the following parameters:

- ⮡ DNP3 . Analog value 0
- ⮡ Modbus . Mapped Meas 1
- ⮡ Trend rec . Trend1
- ⮡ Trend rec . Trend2
- ⮡ Trend rec . Trend3
- ⮡ Trend rec . Trend4
- *[ . . . ]*

| 1..n, TrendRecList | Description |
|---|---|
| **“-”** | *No assignment* |
| VT . **VL1** | *Measured value: Phase-to-neutral voltage (fundamental)* |
| VT . **VL2** | *Measured value: Phase-to-neutral voltage (fundamental)* |
| VT . **VL3** | *Measured value: Phase-to-neutral voltage (fundamental)* |
| VT . **VX meas** | *Measured value (measured): VX measured (fundamental)* |
| VT . **VG calc** | *Measured value (calculated): VG (fundamental)* |
| VT . **VL12** | *Measured value: Phase-to-phase voltage (fundamental)* |
| VT . **VL23** | *Measured value: Phase-to-phase voltage (fundamental)* |
| VT . **VL31** | *Measured value: Phase-to-phase voltage (fundamental)* |
| VT . **VL1 RMS** | *Measured value: Phase-to-neutral voltage (RMS)* |
| VT . **VL2 RMS** | *Measured value: Phase-to-neutral voltage (RMS)* |
| VT . **VL3 RMS** | *Measured value: Phase-to-neutral voltage (RMS)* |
| VT . **VX meas RMS** | *Measured value (measured): VX measured (RMS)* |
| VT . **VG calc RMS** | *Measured value (calculated): VG (RMS)* |
| VT . **VL12 RMS** | *Measured value: Phase-to-phase voltage (RMS)* |
| VT . **VL23 RMS** | *Measured value: Phase-to-phase voltage (RMS)* |
| VT . **VL31 RMS** | *Measured value: Phase-to-phase voltage (RMS)* |

| 1..n, TrendRecList | Description |
|---|---|
| VT . **V/f** | *Ratio Volts/Hertz in relation to nominal values.* |
| VT . **V0** | *Measured value (calculated): Symmetrical components Zero voltage(fundamental)* |
| VT . **V1** | *Measured value (calculated): Symmetrical components positive phase sequence voltage(fundamental)* |
| VT . **V2** | *Measured value (calculated): Symmetrical components negative phase sequence voltage(fundamental)* |
| VT . **%(V2/V1)** | *Measured value (calculated): V2/V1, phase sequence will be taken into account automatically.* |
| VT . **VL1 avg RMS** | *VL1 average value (RMS)* |
| VT . **VL2 avg RMS** | *VL2 average value (RMS)* |
| VT . **VL3 avg RMS** | *VL3 average value (RMS)* |
| VT . **VL12 avg RMS** | *VL12 average value (RMS)* |
| VT . **VL23 avg RMS** | *VL23 average value (RMS)* |
| VT . **VL31 avg RMS** | *VL31 average value (RMS)* |
| VT . **f** | *Measured value: Frequency* |
| VT . **VL1 THD** | *Measured value (calculated): VL1 Total Harmonic Distortion* |
| VT . **VL2 THD** | *Measured value (calculated): VL2 Total Harmonic Distortion* |
| VT . **VL3 THD** | *Measured value (calculated): VL3 Total Harmonic Distortion* |
| VT . **VL12 THD** | *Measured value (calculated): V12 Total Harmonic Distortion* |
| VT . **VL23 THD** | *Measured value (calculated): V23 Total Harmonic Distortion* |
| VT . **VL31 THD** | *Measured value (calculated): V31 Total Harmonic Distortion* |
| CT W1 . **IL1** | *Measured value: Phase current (fundamental)* |
| CT W1 . **IL2** | *Measured value: Phase current (fundamental)* |
| CT W1 . **IL3** | *Measured value: Phase current (fundamental)* |
| CT W1 . **IG meas** | *Measured value (measured): IG (fundamental)* |
| CT W1 . **IG calc** | *Measured value (calculated): IG (fundamental)* |
| CT W1 . **IL1 RMS** | *Measured value: Phase current (RMS)* |
| CT W1 . **IL2 RMS** | *Measured value: Phase current (RMS)* |
| CT W1 . **IL3 RMS** | *Measured value: Phase current (RMS)* |
| CT W1 . **IG meas RMS** | *Measured value (measured): IG (RMS)* |
| CT W1 . **IG calc RMS** | *Measured value (calculated): IG (RMS)* |
| CT W1 . **I0** | *Measured value (calculated): Zero current (fundamental)* |

Released



| 1..n, TrendRecList | Description |
|---|---|
| CT W1 . **I1** | *Measured value (calculated): Positive phase sequence current (fundamental)* |
| CT W1 . **I2** | *Measured value (calculated): Unbalanced load current (fundamental)* |
| CT W1 . **%(I2/I1)** | *Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.* |
| CT W1 . **IL1 avg RMS** | *IL1 average value (RMS)* |
| CT W1 . **IL2 avg RMS** | *IL2 average value (RMS)* |
| CT W1 . **IL3 avg RMS** | *IL3 average value (RMS)* |
| CT W1 . **IL1 THD** | *Measured value (calculated): IL1 Total Harmonic Current* |
| CT W1 . **IL2 THD** | *Measured value (calculated): IL2 Total Harmonic Current* |
| CT W1 . **IL3 THD** | *Measured value (calculated): IL3 Total Harmonic Current* |
| CT W2 . **IL1** | *Measured value: Phase current (fundamental)* |
| CT W2 . **IL2** | *Measured value: Phase current (fundamental)* |
| CT W2 . **IL3** | *Measured value: Phase current (fundamental)* |
| CT W2 . **IG meas** | *Measured value (measured): IG (fundamental)* |
| CT W2 . **IG calc** | *Measured value (calculated): IG (fundamental)* |
| CT W2 . **IL1 RMS** | *Measured value: Phase current (RMS)* |
| CT W2 . **IL2 RMS** | *Measured value: Phase current (RMS)* |
| CT W2 . **IL3 RMS** | *Measured value: Phase current (RMS)* |
| CT W2 . **IG meas RMS** | *Measured value (measured): IG (RMS)* |
| CT W2 . **IG calc RMS** | *Measured value (calculated): IG (RMS)* |
| CT W2 . **I0** | *Measured value (calculated): Zero current (fundamental)* |
| CT W2 . **I1** | *Measured value (calculated): Positive phase sequence current (fundamental)* |
| CT W2 . **I2** | *Measured value (calculated): Unbalanced load current (fundamental)* |
| CT W2 . **%(I2/I1)** | *Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.* |
| CT W2 . **IL1 avg RMS** | *IL1 average value (RMS)* |
| CT W2 . **IL2 avg RMS** | *IL2 average value (RMS)* |
| CT W2 . **IL3 avg RMS** | *IL3 average value (RMS)* |
| CT W2 . **IL1 THD** | *Measured value (calculated): IL1 Total Harmonic Current* |
| CT W2 . **IL2 THD** | *Measured value (calculated): IL2 Total Harmonic Current* |
| CT W2 . **IL3 THD** | *Measured value (calculated): IL3 Total Harmonic Current* |

Released



| 1..n, TrendRecList | Description |
|---|---|
| ThR . **Thermal Cap Used** | *Measured value: Thermal Capacity Used* |
| URTD . **W1 L1** | *Measured Value: Winding Temperature* |
| URTD . **W1 L1 max** | *Measured Value: Winding Temperature Maximum Value* |
| URTD . **W1 L2** | *Measured Value: Winding Temperature* |
| URTD . **W1 L2 max** | *Measured Value: Winding Temperature Maximum Value* |
| URTD . **W1 L3** | *Measured Value: Winding Temperature* |
| URTD . **W1 L3 max** | *Measured Value: Winding Temperature Maximum Value* |
| URTD . **W2 L1** | *Measured Value: Winding Temperature* |
| URTD . **W2 L1 max** | *Measured Value: Winding Temperature Maximum Value* |
| URTD . **W2 L2** | *Measured Value: Winding Temperature* |
| URTD . **W2 L2 max** | *Measured Value: Winding Temperature Maximum Value* |
| URTD . **W2 L3** | *Measured Value: Winding Temperature* |
| URTD . **W2 L3 max** | *Measured Value: Winding Temperature Maximum Value* |
| URTD . **Amb1** | *Measured Value: Ambient Temperature* |
| URTD . **Amb1 max** | *Measured Value: Ambient Temperature Maximum Value* |
| URTD . **Amb2** | *Measured Value: Ambient Temperature* |
| URTD . **Amb2 max** | *Measured Value: Ambient Temperature Maximum Value* |
| URTD . **Aux1** | *Measured Value: Auxiliary Temperature* |
| URTD . **Aux1 max** | *Measured Value: Auxiliary Temperature Maximum Value* |
| URTD . **Aux2** | *Measured Value: Auxiliary Temperature* |
| URTD . **Aux2 max** | *Measured Value: Auxiliary Temperature Maximum Value* |
| URTD . **Aux3** | *Measured Value: Auxiliary Temperature* |
| URTD . **Aux3 max** | *Measured Value: Auxiliary Temperature Maximum Value* |
| URTD . **Aux4** | *Measured Value: Auxiliary Temperature* |
| URTD . **Aux4 max** | *Measured Value: Auxiliary Temperature Maximum Value* |
| URTD . **RTD Max** | *Maximum temperature of all channels.* |
| RTD . **Hottest WD W1** | *Hottest winding on side W1* |
| RTD . **Hottest WD W2** | *Hottest winding on side W2* |
| RTD . **Hottest Amb** | *Hottest Ambient Temperature* |
| RTD . **Hottest Aux Temp** | *The actual value for the hottest Auxiliary temperature.* |
| PQSCr . **S** | *Measured Value (Calculated): Apparent power (fundamental)* |

| 1..n, TrendRecList | Description |
|---|---|
| PQSCr . **P** | *Measured value (calculated): Active power (P- = Fed Active Power, P+ = Consumpted Active Power) (fundamental)* |
| PQSCr . **Q** | *Measured value (calculated): Reactive power (Q- = Fed Reactive Power, Q+ = Consumpted Reactive Power) (fundamental)* |
| PQSCr . **P 1** | *Measured value (calculated): Active power in positive sequence system (P- = Fed Active Power, P+ = Consumpted Active Power)* |
| PQSCr . **Q 1** | *Measured value (calculated): Reactive power in positive sequence system (Q- = Fed Reactive Power, Q+ = Consumpted Reactive Power)* |
| PQSCr . **S RMS** | *Measured Value (Calculated): Apparent power (RMS)* |
| PQSCr . **P RMS** | *Measured value (calculated): Active power (P- = Fed Active Power, P+ = Consumpted Active Power) (RMS)* |
| PQSCr . **cos phi** | *Measured value (calculated): Power factor: Sign Convention: sign(PF) = sign(P )* |
| PQSCr . **cos phi RMS** | *Measured value (calculated): Power factor: Sign Convention: sign(PF) = sign(P )* |
| PQSCr . **Ws Net** | *Absolute Apparent Power Hours* |
| PQSCr . **Wp Net** | *Absolute Active Power Hours* |
| PQSCr . **Wq Net** | *Absolute Reactive Power Hours* |
| PQSCr . **Wp+** | *Positive Active Power is consumed active energy* |
| PQSCr . **Wp-** | *Negative Active Power (Fed Energy)* |
| PQSCr . **Wq+** | *Positive Reactive Power is consumed Reactive Energy* |
| PQSCr . **Wq-** | *Negative Reactive Power (Fed Energy)* |
| AnIn[1] . **Value** | *Measured value of the Input in percent* |
| AnIn[2] . **Value** | *Measured value of the Input in percent* |
| AnIn[3] . **Value** | *Measured value of the Input in percent* |
| AnIn[4] . **Value** | *Measured value of the Input in percent* |

### *1..n, OnOffList*

Selection list referenced by the following parameters:

- ⮡ IEC 61850 . Function

| 1..n, OnOffList | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

### *Baud rate*

Selection list referenced by the following parameters:

- ⮡ DNP3 . Baud rate

| Baud rate | Description |
|---|---|
| **1200** | *1200* |
| **2400** | *2400* |
| **4800** | *4800* |
| **9600** | *9600* |
| **19200** | *19200* |
| **38400** | *38400* |
| **57600** | *57600* |
| **115200** | *115200* |

### *Byte Frame*

Selection list referenced by the following parameters:

- ⮡ DNP3 . Frame Layout

| Byte Frame | Description |
|---|---|
| **8E1** | *8 data bits, even parity, 1 stopbit.* |
| **8O1** | *8 data bits, odd, 1 stopbit.* |
| **8N1** | *8 data bits, no parity, 1 stopbit.* |
| **8N2** | *8 data bits, no parity, 2 stopbits.* |

### *Optical rest position*

Selection list referenced by the following parameters:

- ⮡ DNP3 . Optical rest position

| Optical rest position | Description |
|---|---|
| **Light off** | *Light off* |
| **Light on** | *Light on* |

### *Communication Start Variants*

Selection list referenced by the following parameters:

- ⮡ DNP3 . DataLink confirm

| Communication Start Variants | Description |
|---|---|
| **Never** | *Option Never is recommended* |
| **Always** | *If this variable is set to Always then LinkLayer needs to establish a connection before sending any Frame.* |
| **On_Large** | *If set to On_Large then a connection needs to be established before sending the first Frame of a multi Term Message* |

### *_AL_ResponseType_k*

_AL_ResponseType_h

Selection list referenced by the following parameters:

- ⮡ DNP3 . AppLink confirm

| _AL_ResponseType_k | Description |
|---|---|
| **Never** | *Never* |
| **Always** | *Always* |
| **Event** | *Event* |

### *1..n, Assignment List*

Assignment List

Selection list referenced by the following parameters:

- ⮡ DNP3 . DoubleBitInput 0

| 1..n, Assignment List | Description |
|---|---|
| **“-”** | *No assignment* |
| SG[1] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[2] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[3] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[4] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[5] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[6] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |

### *1..n, Assignment List*

Assignment List

Selection list referenced by the following parameters:

- ⮡ DNP3 . BinaryCounter 0

| 1..n, Assignment List | Description |
|---|---|
| **“-”** | *No assignment* |
| Prot . **Fault No.** | *Fault number* |
| Prot . **No. of Grid Faults** | *Number of grid faults: This is a counter for all faults (i.e. General Alarms »Prot . Alarm«), but except faults during a running cycle of the Automatic Reclosure module (signal »AR . running«). (Remark: The »Fault No.« counts every new fault independent of AR cycles. This means that for protective devices without AR module these two counters are equivalent.)* |
| SG[1] . **TripCmd Cr** | *Counter: Total number of trips of the switchgear.* |
| SG[2] . **TripCmd Cr** | *Counter: Total number of trips of the switchgear.* |
| SG[3] . **TripCmd Cr** | *Counter: Total number of trips of the switchgear.* |
| SG[4] . **TripCmd Cr** | *Counter: Total number of trips of the switchgear.* |
| SG[5] . **TripCmd Cr** | *Counter: Total number of trips of the switchgear.* |
| SG[6] . **TripCmd Cr** | *Counter: Total number of trips of the switchgear.* |
| LVRT[1] . **NumOf Vdips in t-LVRT** | *Number of Voltage dips during t-LVRT* |

| 1..n, Assignment List | Description |
|---|---|
| LVRT[1] . **Cr Tot Numb of Vdips** | *Counter Total number of voltage dips.* |
| LVRT[1] . **Cr Tot Numb of Vdips to Trip** | *Counter Total number of voltage dips that caused a Trip.* |
| LVRT[2] . **NumOf Vdips in t-LVRT** | *Number of Voltage dips during t-LVRT* |
| LVRT[2] . **Cr Tot Numb of Vdips** | *Counter Total number of voltage dips.* |
| LVRT[2] . **Cr Tot Numb of Vdips to Trip** | *Counter Total number of voltage dips that caused a Trip.* |
| PQSCr . **Wp+** | *Positive Active Power is consumed active energy* |
| PQSCr . **Wp-** | *Negative Active Power (Fed Energy)* |
| PQSCr . **Wq+** | *Positive Reactive Power is consumed Reactive Energy* |
| PQSCr . **Wq-** | *Negative Reactive Power (Fed Energy)* |
| Sys . **Operating hours Cr** | *Operating hours counter of the protective device* |

### *Scale Factor*

Multiplier in order to convert float values into integer.

Selection list referenced by the following parameters:

- ⮡ DNP3 . Scale Factor 0

| Scale Factor | Description |
|---|---|
| **0.001** | *0.001* |
| **0.01** | *0.01* |
| **0.1** | *0.1* |
| **1** | *1* |
| **10** | *10* |
| **100** | *100* |
| **1000** | *1000* |
| **10000** | *10000* |
| **100000** | *100000* |
| **1000000** | *1000000* |

### *Optical rest position*

Selection list referenced by the following parameters:

- ⮡ Modbus . Optical rest position

| Optical rest position | Description |
|---|---|
| **Light off** | *Light off* |
| **Light on** | *Light on* |

### *Port selection*

Selection list referenced by the following parameters:

- ⮡ Modbus . TCP Port Config

| Port selection | Description |
|---|---|
| **Default** | *Default Port* |
| **Private** | *Private Port* |

### *Baud rate*

Selection list referenced by the following parameters:

- ⮡ Modbus . Baud rate

| Baud rate | Description |
|---|---|
| **1200** | *1200* |
| **2400** | *2400* |
| **4800** | *4800* |
| **9600** | *9600* |
| **19200** | *19200* |
| **38400** | *38400* |

### *Byte Frame*

Selection list referenced by the following parameters:

- ⮡ Modbus . Physical Settings

| Byte Frame | Description |
|---|---|
| **8E1** | *8 data bits, even parity, 1 stopbit.* |
| **8O1** | *8 data bits, odd, 1 stopbit.* |
| **8N1** | *8 data bits, no parity, 1 stopbit.* |
| **8N2** | *8 data bits, no parity, 2 stopbits.* |

### *Type of SCADA mapping*

This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.

Selection list referenced by the following parameters:

- ⮡ Modbus . Type of SCADA mapping

| Type of SCADA mapping | Description |
|---|---|
| **Standard** | *Default mapping of data objects* |
| **User-defined** | *User-defined mapping of data objects* |

### *Config status*

Status of the user-defined SCADA configuration.\nPossible values:

Selection list referenced by the following parameters:

- ⮡ Modbus . Config status

| Config status | Description |
|---|---|
| **Changing** | *New SCADA configuration is being loaded, but not active yet.* |
| **OK** | *The SCADA configuration is active.* |
| **Config. not avail.** | *The user-defined SCADA configuration is not available (e.g. has not been loaded into the device).* |
| **Error** | *Unexpected error. Please contact our service-team.* |

### *Baud rate*

Selection list referenced by the following parameters:

- ⮡ IEC103 . Baud rate

| Baud rate | Description |
|---|---|
| **1200** | *1200* |
| **2400** | *2400* |
| **4800** | *4800* |
| **9600** | *9600* |
| **19200** | *19200* |
| **38400** | *38400* |
| **57600** | *57600* |

### *Byte Frame*

Selection list referenced by the following parameters:

- ⮡ IEC103 . Physical Settings

| Byte Frame | Description |
|---|---|
| **8E1** | *8 data bits, even parity, 1 stopbit.* |
| **8O1** | *8 data bits, odd, 1 stopbit.* |
| **8N1** | *8 data bits, no parity, 1 stopbit.* |
| **8N2** | *8 data bits, no parity, 2 stopbits.* |

### *Timezone*

Selection whether the timestamps in IEC103 messages shall be given as UTC or local time. (“Local time” always includes the actual daylight saving settings.)

Selection list referenced by the following parameters:

- ⮡ IEC103 . Timezone

| Timezone | Description |
|---|---|
| **UTC** | *UTC* |
| **Local Time** | *Local time according to the »Time Zones« setting (in Device Parameters) (incl. daylight saving settings).* |

### *Type of SCADA mapping*

This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.

Selection list referenced by the following parameters:

- ⮡ IEC103 . Type of SCADA mapping

| Type of SCADA mapping | Description |
|---|---|
| **Standard** | *Default mapping of data objects* |
| **User-defined** | *User-defined mapping of data objects* |

### *Config status*

Status of the user-defined SCADA configuration.\nPossible values:

Selection list referenced by the following parameters:

- ⮡ IEC103 . Config status

| Config status | Description |
|---|---|
| **Changing** | *New SCADA configuration is being loaded, but not active yet.* |
| **OK** | *The SCADA configuration is active.* |
| **Config. not avail.** | *The user-defined SCADA configuration is not available (e.g. has not been loaded into the device).* |
| **Error** | *Unexpected error. Please contact our service-team.* |

### *Port selection*

Selection list referenced by the following parameters:

- ⮡ IEC104 . TCP Port Config

| Port selection | Description |
|---|---|
| **Default** | *Default Port* |
| **Private** | *Private Port* |

***Timezone***

Selection whether the timestamps in the transmitted communication telegrams shall be given as UTC or local time. (“Local time” always includes the actual daylight saving settings.)

Selection list referenced by the following parameters:

- ⮡ IEC104 . Timezone

| Timezone | Description |
|---|---|
| **UTC** | *UTC* |
| **Local Time** | *Local time according to the »Time Zones« setting (in Device Parameters) (incl. daylight saving settings).* |

***Type of SCADA mapping***

This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.

Selection list referenced by the following parameters:

- ⮡ IEC104 . Type of SCADA mapping

| Type of SCADA mapping | Description |
|---|---|
| **Standard** | *Default mapping of data objects* |
| **User-defined** | *User-defined mapping of data objects* |

***Config status***

Status of the user-defined SCADA configuration.\nPossible values:

Selection list referenced by the following parameters:

- ⮡ IEC104 . Config status

| Config status | Description |
|---|---|
| **Changing** | *New SCADA configuration is being loaded, but not active yet.* |
| **OK** | *The SCADA configuration is active.* |
| **Config. not avail.** | *The user-defined SCADA configuration is not available (e.g. has not been loaded into the device).* |
| **Error** | *Unexpected error. Please contact our service-team.* |

***Type of SCADA mapping***

This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.

Selection list referenced by the following parameters:

- ⮡ Profibus . Type of SCADA mapping

| Type of SCADA mapping | Description |
|---|---|
| **Standard** | *Default mapping of data objects* |
| **User-defined** | *User-defined mapping of data objects* |

***Time Zones***

Selection list referenced by the following parameters:

- ⮡ TimeSync . Time Zones

| Time Zones | Description |
|---|---|
| **UTC+14 Kiritimati** | *UTC+14 Kiritimati* |
| **UTC+13 Rawaki** | *UTC+13 Rawaki* |
| **UTC+12.75 Chatham Island** | *UTC+12.75 Chatham Island* |
| **UTC+12 Wellington** | *UTC+12 Wellington* |
| **UTC+11.5 Kingston** | *UTC+11.5 Kingston* |

| Time Zones | Description |
|---|---|
| **UTC+11 Port Vila** | *UTC+11 Port Vila* |
| **UTC+10.5 Lord Howe Island** | *UTC+10.5 Lord Howe Island* |
| **UTC+10 Sydney** | *UTC+10 Sydney* |
| **UTC+9.5 Adelaide** | *UTC+9.5 Adelaide* |
| **UTC+9 Tokyo** | *UTC+9 Tokyo* |
| **UTC+8 Hong Kong** | *UTC+8 Hong Kong* |
| **UTC+7 Bangkok** | *UTC+7 Bangkok* |
| **UTC+6.5 Rangoon** | *UTC+6.5 Rangoon* |
| **UTC+6 Colombo** | *UTC+6 Colombo* |
| **UTC+5.75 Kathmandu** | *UTC+5.75 Kathmandu* |
| **UTC+5.5 New Delhi** | *UTC+5.5 New Delhi* |
| **UTC+5 Islamabad** | *UTC+5 Islamabad* |
| **UTC+4.5 Kabul** | *UTC+4.5 Kabul* |
| **UTC+4 Abu Dhabi** | *UTC+4 Abu Dhabi* |
| **UTC+3.5 Tehran** | *UTC+3.5 Tehran* |
| **UTC+3 Moscow** | *UTC+3 Moscow* |
| **UTC+2 Athens** | *UTC+2 Athens* |
| **UTC+1 Berlin** | *UTC+1 Berlin* |
| **UTC+0 London** | *UTC+0 London* |
| **UTC-1 Azores** | *UTC-1 Azores* |
| **UTC-2 Fern. d. Noronha** | *UTC-2 Fern. d. Noronha* |
| **UTC-3 Buenos Aires** | *UTC-3 Buenos Aires* |
| **UTC-3.5 St. John’s** | *UTC-3.5 St. John’s* |
| **UTC-4 Santiago** | *UTC-4 Santiago* |
| **UTC-5 New York** | *UTC-5 New York* |
| **UTC-6 Chicago** | *UTC-6 Chicago* |
| **UTC-7 Salt Lake City** | *UTC-7 Salt Lake City* |
| **UTC-8 Los Angeles** | *UTC-8 Los Angeles* |
| **UTC-9 Anchorage** | *UTC-9 Anchorage* |
| **UTC-9.5 Taiohae** | *UTC-9.5 Taiohae* |
| **UTC-10 Honolulu** | *UTC-10 Honolulu* |

| Time Zones | Description |
|---|---|
| **UTC-11 Midway Islands** | *UTC-11 Midway Islands* |

### *Month of clock change*

Selection list referenced by the following parameters:

- ⮡ TimeSync . Summertime m
- ⮡ TimeSync . Wintertime m

| Month of clock change | Description |
|---|---|
| **January** | *January* |
| **February** | *February* |
| **March** | *March* |
| **April** | *April* |
| **May** | *May* |
| **June** | *June* |
| **July** | *July* |
| **August** | *August* |
| **September** | *September* |
| **October** | *October* |
| **November** | *November* |
| **December** | *December* |

### *Date*

Selection list referenced by the following parameters:

- ⮡ TimeSync . Summertime d
- ⮡ TimeSync . Wintertime d

| Date | Description |
|---|---|
| **Sunday** | *Sunday* |

| Date | Description |
|---|---|
| **Monday** | *Monday* |
| **Tuesday** | *Tuesday* |
| **Wednesday** | *Wednesday* |
| **Thursday** | *Thursday* |
| **Friday** | *Friday* |
| **Saturday** | *Saturday* |
| **General day** | *General day: Examples: first day of month, last day of month* |

### *Day of clock change*

Day of Time Saving change

Selection list referenced by the following parameters:

- ⮡ TimeSync . Summertime w
- ⮡ TimeSync . Wintertime w

| Day of clock change | Description |
|---|---|
| **First** | *First week of the month* |
| **Second** | *Second week of the month* |
| **Third** | *Third week of the month* |
| **Fourth** | *Fourth week of the month* |
| **Last** | *Last week of the month* |

### *Used Protocol*

Selection list referenced by the following parameters:

- ⮡ TimeSync . TimeSync

| Used Protocol | Description |
|---|---|
| **“-”** | - |
| IRIG-B . **IRIG-B** | *IRIG-B-Module* |
| SNTP . **SNTP** | *SNTP-Module* |

| Used Protocol | Description |
|---|---|
| Modbus . **Modbus** | *Modbus Protocol* |
| IEC103 . **IEC 60870-5-103** | *IEC 60870-5-103 Protocol* |
| IEC104 . **IEC104** | *IEC 60870-5-104 communication* |
| DNP3 . **DNP3** | *Distributed Network Protocol* |

***IRIG-B00X***

Determination of the Type: IRIG-B00X. IRIG-B types differ in types of included “Coded Expressions” (year, control-functions, straight-binary-seconds).

Selection list referenced by the following parameters:

- ⮡ IRIG-B . IRIG-B00X

| IRIG-B00X | Description |
|---|---|
| **IRIGB-000** | *Please refer to: IRIG STANDARD 200-04* |
| **IRIGB-001** | *Please refer to: IRIG STANDARD 200-04* |
| **IRIGB-002** | *Please refer to: IRIG STANDARD 200-04* |
| **IRIGB-003** | *Please refer to: IRIG STANDARD 200-04* |
| **IRIGB-004** | *Please refer to: IRIG STANDARD 200-04* |
| **IRIGB-005** | *Please refer to: IRIG STANDARD 200-04* |
| **IRIGB-006** | *Please refer to: IRIG STANDARD 200-04* |
| **IRIGB-007** | *Please refer to: IRIG STANDARD 200-04* |

Selection list referenced by the following parameters:

- ⮡ Sys . DM version

| | Description |
|---|---|
| **3.7.b** | *Version* |

### *Phase Sequence*

Selection list referenced by the following parameters:

- ⮡ Field Para . Phase Sequence

| Phase Sequence | Description |
|---|---|
| **ABC** | *rotating clockwise* |
| **ACB** | *Counter-clockwise phase sequence. Positive and negative phase sequence are exchanged and MTA is turned for 180°.* |

### *fN*

Selection list referenced by the following parameters:

- ⮡ Field Para . f

| fN | Description |
|---|---|
| **50** | *Rated frequency* |
| **60** | *Rated frequency* |

### *W1 Connection/Grounding*

Note: The zero current will be removed in order to prevent faulty tripping of the differential protection. If a star point is connected to ground according to the winding connection, the zero current (symmetrical components) will be removed.

Selection list referenced by the following parameters:

- ⮡ Transformer . W1 Connection/Grounding

| W1 Connection/ Grounding | Description |
|---|---|
| **Y** | *Star (connection group winding on primary side)* |
| **D** | *Delta (connection group winding on primary side)* |
| **Z** | *Zig-Zag (connection group winding on primary side)* |
| **YN** | *Star grounded (connection group winding on primary side)* |
| **ZN** | *Zig-Zag with ground connection (connection group winding on primary side)* |

### *W2 Connection/Grounding*

Note: The zero current will be removed in order to prevent faulty tripping of the differential protection. If a star point is connected to ground according to the winding connection, the zero current (symmetrical components) will be removed.

Selection list referenced by the following parameters:

- ⮡ Transformer . W2 Connection/Grounding

| W2 Connection/ Grounding | Description |
|---|---|
| **y** | *Star (connection group winding on secondary side)* |
| **d** | *Delta (connection group winding on secondary side)* |
| **z** | *Zig-Zag (connection group winding on secondary side)* |
| **yn** | *Star grounded (connection group winding on secondary side)* |
| **zn** | *Zig-Zag with ground connection (connection group winding on secondary side)* |

### *VT Winding Side*

Directional elements are dependant on the location of the VTs (primary or secondary winding) when voltage is used as the polarizing quantity. This parameter also determines the side from which power elements take their measuring quantities.

Selection list referenced by the following parameters:

- ⮡ VT . VT Winding Side
- ⮡ VT . VX Winding Side

| VT Winding Side | Description |
|---|---|
| **W1** | *W1* |
| **W2** | *W2* |

### *VT con*

This parameter has to be set in order to ensure the correct assignment of the voltage measurement channels in the device.

Selection list referenced by the following parameters:

- ⮡ VT . VT con

| VT con | Description |
|---|---|
| **Phase to Phase** | *The phase voltage measuring inputs are feed with “Phase-to-Phase” voltages (Delta-Connection)* |
| **Phase to Ground** | *The phase voltage measuring inputs are feed with “Phase-to-Ground” voltages (Star-Connection)* |

### *Voltages to be synchronized*

Selection list referenced by the following parameters:

- ⮡ VT . V Sync

| Voltages to be synchronized | Description |
|---|---|
| **L1** | *Phase L1* |
| **L2** | *Phase L2* |
| **L3** | *Phase L3* |
| **L12** | *L12* |
| **L23** | *L23* |
| **L31** | *L31* |

### *Ratio prim/sec*

w_prim/w_sec

Selection list referenced by the following parameters:

- ⮡ CT W1 . CT sec
- ⮡ CT W1 . ECT sec

| Ratio prim/sec | Description |
|---|---|
| **1** | *Rated value of the secondary side of the current transformers.* |
| **5** | *Rated value of the secondary side of the current transformers.* |

***Polarity***

Selection list referenced by the following parameters:

- ⮡ CT W1 . CT dir
- ⮡ CT W1 . ECT dir

| Polarity | Description |
|---|---|
| **0** | *0* |
| **180** | *180 degree polarity correction (wiring faults)* |

***Ratio prim/sec***

w_prim/w_sec

Selection list referenced by the following parameters:

- ⮡ CT W2 . CT sec
- ⮡ CT W2 . ECT sec

| Ratio prim/sec | Description |
|---|---|
| **1** | *Rated value of the secondary side of the current transformers.* |
| **5** | *Rated value of the secondary side of the current transformers.* |

***Polarity***

Selection list referenced by the following parameters:

- ⮡ CT W2 . CT dir
- ⮡ CT W2 . ECT dir

| Polarity | Description |
|---|---|
| **0** | *0* |
| **180** | *180 degree polarity correction (wiring faults)* |

### *3V0 Source*

Earth overcurrent protection elements take into account this parameter for direction decisions. You have to ensure, that this parameter is set to "Measured" only if the residual voltage is fed to the fourth measuring input of the voltage measuring card.

Selection list referenced by the following parameters:

- ⮡ VT . 3V0 Source

| 3V0 Source | Description |
|---|---|
| **measured** | *measured* |
| **calculated** | *calculated* |

### *IG meas dir control*

Options for direction detection. IGmeas is used as operating quantity.

Selection list referenced by the following parameters:

- ⮡ VT . IG meas dir control

| IG meas dir control | Description |
|---|---|
| **IG meas 3V0** | *Direction detection mode IG meas 3V0 (Angle between measured ground current and residual voltage (measured or calculated))* |
| **I2,V2** | *IG meas Direction Unit polarizing mode: Neg (Use IG meas as operating quantity but use V2/I2 to detect the direction)* |
| **Dual** | *IG meas Direction Unit polarizing mode: Dual (Use V2/I2 to detect the direction (preferred, if available), else use measured ground current and neutral voltage.* |
| **cos(ϕ)** | *Direction detection mode: This method is used for ground fault direction detection in compensated grids. 3V0 is the polarizing quantity and IG meas is the operating quantity.* |
| **sin(ϕ)** | *Direction detection mode: This method is used for ground fault direction detection in isolated grids. 3V0 is the polarizing quantity and IG meas is the operating quantity.* |

### *IG calc dir control*

Options for direction detection. IGcalc is used as operating quantity.

Selection list referenced by the following parameters:

- ⮡ VT . IG calc dir control

| IG calc dir control | Description |
|---|---|
| **IG calc 3V0** | *Direction detection mode IG calc 3V0 (Angle between calculated ground current and residual voltage (measured or calculated))* |
| **IG calc IPol (IG meas)** | *Direction detection: Angle between calculated and measured ground current.* |
| **Dual** | *Direction detection mode: Dual (The angle between residual current and measured ground current (preferred, if possible) is evaluated. Alternatively the angle between residual current and neutral voltage is evaluated.* |
| **I2,V2** | *Direction Unit polarizing mode: Use the angle between V2/I2 to detect the direction* |
| **cos(ϕ)** | *Direction detection mode: This method is used for ground fault direction detection in compensated grids. 3V0 is the polarizing quantity and IG calc is the operating quantity.* |
| **sin(ϕ)** | *Direction detection mode: This method is used for ground fault direction detection in isolated grids. 3V0 is the polarizing quantity and IG calc is the operating quantity.* |

### *delta phi - Mode*

The delta phi element (vector surge) trips, if the permissable voltage angle shift (delta phi) of the three measured voltages (phase-ground or phase-phase) in: one phase, two phases or within all phases is exceeded.

Selection list referenced by the following parameters:

- ⮡ VT . delta phi - Mode

| delta phi - Mode | Description |
|---|---|
| **one phase** | *one phase* |
| **two phases** | *two phases* |
| **three phases** | *three phases* |

### *active/inactive*

Selection list referenced by the following parameters:

- ⮡ BO Slot X2 . DISARMED Ctrl
- ⮡ BO Slot X5 . DISARMED Ctrl
- ⮡ Prot . ExBlo Fc

- ↳ Prot . ExBlo TripCmd Fc
- ↳ Id . ExBlo Fc
- ↳ Id . ExBlo TripCmd Fc
- *[ . . . ]*

| active/inactive | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

***CT Winding Side***

Measuring values will be used from this winding side

Selection list referenced by the following parameters:

- ↳ IdG[1] . CT Winding Side
- ↳ IdGH[1] . CT Winding Side
- ↳ IH2[1] . CT Winding Side
- ↳ I[1] . CT Winding Side
- ↳ IG[1] . CT Winding Side
- ↳ ThR . CT Winding Side
- *[ . . . ]*

| CT Winding Side | Description |
|---|---|
| **W1** | *W1* |
| **W2** | *W2* |

***AdaptSet***

Adaptive Parameters

Selection list referenced by the following parameters:

- ↳ I[1] . AdaptSet 1
- ↳ I[1] . AdaptSet 2
- ↳ I[1] . AdaptSet 3

- ⮡ I[1] . AdaptSet 4
- ⮡ IG[1] . AdaptSet 1
- ⮡ IG[1] . AdaptSet 2
- *[ . . . ]*

| AdaptSet | Description |
|---|---|
| **“-”** | *No assignment* |
| IH2[1] . **Blo L1** | *Signal: Blocked L1* |
| IH2[1] . **Blo L2** | *Signal: Blocked L2* |
| IH2[1] . **Blo L3** | *Signal: Blocked L3* |
| IH2[1] . **Blo IG meas** | *Signal: Blocking of the ground (earth) protection module (measured ground current)* |
| IH2[1] . **Blo IG calc** | *Signal: Blocking of the ground (earth) protection module (calculated ground current)* |
| IH2[1] . **3-ph Blo** | *Signal: Inrush was detected in at least one phase - trip command blocked.* |
| IH2[2] . **Blo L1** | *Signal: Blocked L1* |
| IH2[2] . **Blo L2** | *Signal: Blocked L2* |
| IH2[2] . **Blo L3** | *Signal: Blocked L3* |
| IH2[2] . **Blo IG meas** | *Signal: Blocking of the ground (earth) protection module (measured ground current)* |
| IH2[2] . **Blo IG calc** | *Signal: Blocking of the ground (earth) protection module (calculated ground current)* |
| IH2[2] . **3-ph Blo** | *Signal: Inrush was detected in at least one phase - trip command blocked.* |
| V[1] . **Alarm** | *Signal: Alarm voltage stage* |
| V[2] . **Alarm** | *Signal: Alarm voltage stage* |
| V[3] . **Alarm** | *Signal: Alarm voltage stage* |
| V[4] . **Alarm** | *Signal: Alarm voltage stage* |
| V[5] . **Alarm** | *Signal: Alarm voltage stage* |
| V[6] . **Alarm** | *Signal: Alarm voltage stage* |
| Intertripping . **Alarm** | *Signal: Alarm* |
| LVRT[1] . **Alarm** | *Signal: Alarm voltage stage* |
| LVRT[1] . **t-LVRT is running** | *Signal: t-LVRT is running* |
| LVRT[2] . **Alarm** | *Signal: Alarm voltage stage* |

| AdaptSet | Description |
|---|---|
| LVRT[2] . **t-LVRT is running** | *Signal: t-LVRT is running* |
| VG[1] . **Alarm** | *Signal: Alarm Residual Voltage Supervision-stage* |
| VG[2] . **Alarm** | *Signal: Alarm Residual Voltage Supervision-stage* |
| V012[1] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[2] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[3] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[4] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[5] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| V012[6] . **Alarm** | *Signal: Alarm voltage asymmetry* |
| UFLS . **Alarm** | *Signal: Alarm P->&f<* |
| UFLS . **Trip** | *Signal: Signal: Trip* |
| SOTF . **enabled** | *Signal: Switch Onto Fault enabled. This Signal can be used to modify Overcurrent Protection Settings.* |
| CLPU . **enabled** | *Signal: Cold Load enabled* |
| ExP[1] . **Alarm** | *Signal: Alarm* |
| ExP[2] . **Alarm** | *Signal: Alarm* |
| ExP[3] . **Alarm** | *Signal: Alarm* |
| ExP[4] . **Alarm** | *Signal: Alarm* |
| Ext Sudd Press . **Alarm** | *Signal: Alarm* |
| Ext Oil Temp . **Alarm** | *Signal: Alarm* |
| Ext Temp Superv[1] . **Alarm** | *Signal: Alarm* |
| Ext Temp Superv[2] . **Alarm** | *Signal: Alarm* |
| Ext Temp Superv[3] . **Alarm** | *Signal: Alarm* |
| CTS[1] . **Alarm** | *Signal: Alarm Current Transformer Measuring Circuit Supervision* |
| CTS[2] . **Alarm** | *Signal: Alarm Current Transformer Measuring Circuit Supervision* |
| LOP . **Alarm** | *Signal: Alarm Loss of Potential* |
| DI Slot X1 . **DI 1** | *Signal: Digital Input* |
| DI Slot X1 . **DI 2** | *Signal: Digital Input* |
| DI Slot X1 . **DI 3** | *Signal: Digital Input* |
| DI Slot X1 . **DI 4** | *Signal: Digital Input* |

| AdaptSet | Description |
|---|---|
| DI Slot X1 . **DI 5** | *Signal: Digital Input* |
| DI Slot X1 . **DI 6** | *Signal: Digital Input* |
| DI Slot X1 . **DI 7** | *Signal: Digital Input* |
| DI Slot X1 . **DI 8** | *Signal: Digital Input* |
| DI Slot X5 . **DI 1** | *Signal: Digital Input* |
| DI Slot X5 . **DI 2** | *Signal: Digital Input* |
| DI Slot X5 . **DI 3** | *Signal: Digital Input* |
| DI Slot X5 . **DI 4** | *Signal: Digital Input* |
| DI Slot X5 . **DI 5** | *Signal: Digital Input* |
| DI Slot X5 . **DI 6** | *Signal: Digital Input* |
| DI Slot X5 . **DI 7** | *Signal: Digital Input* |
| DI Slot X5 . **DI 8** | *Signal: Digital Input* |
| DI Slot X6 . **DI 1** | *Signal: Digital Input* |
| DI Slot X6 . **DI 2** | *Signal: Digital Input* |
| DI Slot X6 . **DI 3** | *Signal: Digital Input* |
| DI Slot X6 . **DI 4** | *Signal: Digital Input* |
| DI Slot X6 . **DI 5** | *Signal: Digital Input* |
| DI Slot X6 . **DI 6** | *Signal: Digital Input* |
| DI Slot X6 . **DI 7** | *Signal: Digital Input* |
| DI Slot X6 . **DI 8** | *Signal: Digital Input* |
| Modbus . **Scada Cmd 1** | *Scada Command* |
| Modbus . **Scada Cmd 2** | *Scada Command* |
| Modbus . **Scada Cmd 3** | *Scada Command* |
| Modbus . **Scada Cmd 4** | *Scada Command* |
| Modbus . **Scada Cmd 5** | *Scada Command* |
| Modbus . **Scada Cmd 6** | *Scada Command* |
| Modbus . **Scada Cmd 7** | *Scada Command* |
| Modbus . **Scada Cmd 8** | *Scada Command* |
| Modbus . **Scada Cmd 9** | *Scada Command* |
| Modbus . **Scada Cmd 10** | *Scada Command* |
| Modbus . **Scada Cmd 11** | *Scada Command* |

| AdaptSet | Description |
|---|---|
| Modbus . **Scada Cmd 12** | *Scada Command* |
| Modbus . **Scada Cmd 13** | *Scada Command* |
| Modbus . **Scada Cmd 14** | *Scada Command* |
| Modbus . **Scada Cmd 15** | *Scada Command* |
| Modbus . **Scada Cmd 16** | *Scada Command* |
| IEC 61850 . **GOSINGGIO1.Ind1.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind2.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind3.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind4.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind5.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind6.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind7.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind8.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind9.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind10.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind11.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind12.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind13.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind14.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind15.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |

| AdaptSet | Description |
|---|---|
| IEC 61850 . **GOSINGGIO1.Ind16.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind17.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind18.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind19.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind20.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind21.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind22.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind23.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind24.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind25.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind26.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind27.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind28.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind29.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind30.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind31.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind32.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **SPCSO1** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO2** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO3** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |

| AdaptSet | Description |
|---|---|
| IEC 61850 . **SPCSO4** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO5** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO6** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO7** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO8** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO9** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO10** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO11** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO12** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO13** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO14** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO15** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO16** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC103 . **Scada Cmd 1** | *Scada Command* |
| IEC103 . **Scada Cmd 2** | *Scada Command* |
| IEC103 . **Scada Cmd 3** | *Scada Command* |
| IEC103 . **Scada Cmd 4** | *Scada Command* |
| IEC103 . **Scada Cmd 5** | *Scada Command* |
| IEC103 . **Scada Cmd 6** | *Scada Command* |
| IEC103 . **Scada Cmd 7** | *Scada Command* |
| IEC103 . **Scada Cmd 8** | *Scada Command* |
| IEC103 . **Scada Cmd 9** | *Scada Command* |
| IEC103 . **Scada Cmd 10** | *Scada Command* |
| IEC104 . **Scada Cmd 1** | *Scada Command* |
| IEC104 . **Scada Cmd 2** | *Scada Command* |

| AdaptSet | Description |
|---|---|
| IEC104 . **Scada Cmd 3** | *Scada Command* |
| IEC104 . **Scada Cmd 4** | *Scada Command* |
| IEC104 . **Scada Cmd 5** | *Scada Command* |
| IEC104 . **Scada Cmd 6** | *Scada Command* |
| IEC104 . **Scada Cmd 7** | *Scada Command* |
| IEC104 . **Scada Cmd 8** | *Scada Command* |
| IEC104 . **Scada Cmd 9** | *Scada Command* |
| IEC104 . **Scada Cmd 10** | *Scada Command* |
| IEC104 . **Scada Cmd 11** | *Scada Command* |
| IEC104 . **Scada Cmd 12** | *Scada Command* |
| IEC104 . **Scada Cmd 13** | *Scada Command* |
| IEC104 . **Scada Cmd 14** | *Scada Command* |
| IEC104 . **Scada Cmd 15** | *Scada Command* |
| IEC104 . **Scada Cmd 16** | *Scada Command* |
| Profibus . **Scada Cmd 1** | *Scada Command* |
| Profibus . **Scada Cmd 2** | *Scada Command* |
| Profibus . **Scada Cmd 3** | *Scada Command* |
| Profibus . **Scada Cmd 4** | *Scada Command* |
| Profibus . **Scada Cmd 5** | *Scada Command* |
| Profibus . **Scada Cmd 6** | *Scada Command* |
| Profibus . **Scada Cmd 7** | *Scada Command* |
| Profibus . **Scada Cmd 8** | *Scada Command* |
| Profibus . **Scada Cmd 9** | *Scada Command* |
| Profibus . **Scada Cmd 10** | *Scada Command* |
| Profibus . **Scada Cmd 11** | *Scada Command* |
| Profibus . **Scada Cmd 12** | *Scada Command* |
| Profibus . **Scada Cmd 13** | *Scada Command* |
| Profibus . **Scada Cmd 14** | *Scada Command* |

| AdaptSet | Description |
|---|---|
| Profibus . **Scada Cmd 15** | *Scada Command* |
| Profibus . **Scada Cmd 16** | *Scada Command* |
| Logics . **LE1.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE1.Timer Out** | *Signal: Timer Output* |
| Logics . **LE1.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE1.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE2.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE2.Timer Out** | *Signal: Timer Output* |
| Logics . **LE2.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE2.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE3.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE3.Timer Out** | *Signal: Timer Output* |
| Logics . **LE3.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE3.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE4.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE4.Timer Out** | *Signal: Timer Output* |
| Logics . **LE4.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE4.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE5.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE5.Timer Out** | *Signal: Timer Output* |
| Logics . **LE5.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE5.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE6.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE6.Timer Out** | *Signal: Timer Output* |
| Logics . **LE6.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE6.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE7.Gate Out** | *Signal: Output of the logic gate* |

| AdaptSet | Description |
|---|---|
| Logics . **LE7.Timer Out** | *Signal: Timer Output* |
| Logics . **LE7.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE7.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE8.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE8.Timer Out** | *Signal: Timer Output* |
| Logics . **LE8.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE8.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE9.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE9.Timer Out** | *Signal: Timer Output* |
| Logics . **LE9.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE9.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE10.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE10.Timer Out** | *Signal: Timer Output* |
| Logics . **LE10.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE10.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE11.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE11.Timer Out** | *Signal: Timer Output* |
| Logics . **LE11.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE11.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE12.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE12.Timer Out** | *Signal: Timer Output* |
| Logics . **LE12.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE12.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE13.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE13.Timer Out** | *Signal: Timer Output* |
| Logics . **LE13.Out** | *Signal: Latched Output (Q)* |

| AdaptSet | Description |
|---|---|
| Logics . **LE13.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE14.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE14.Timer Out** | *Signal: Timer Output* |
| Logics . **LE14.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE14.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE15.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE15.Timer Out** | *Signal: Timer Output* |
| Logics . **LE15.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE15.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE16.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE16.Timer Out** | *Signal: Timer Output* |
| Logics . **LE16.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE16.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE17.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE17.Timer Out** | *Signal: Timer Output* |
| Logics . **LE17.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE17.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE18.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE18.Timer Out** | *Signal: Timer Output* |
| Logics . **LE18.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE18.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE19.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE19.Timer Out** | *Signal: Timer Output* |
| Logics . **LE19.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE19.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| AdaptSet | Description |
|---|---|
| Logics . **LE20.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE20.Timer Out** | *Signal: Timer Output* |
| Logics . **LE20.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE20.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE21.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE21.Timer Out** | *Signal: Timer Output* |
| Logics . **LE21.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE21.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE22.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE22.Timer Out** | *Signal: Timer Output* |
| Logics . **LE22.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE22.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE23.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE23.Timer Out** | *Signal: Timer Output* |
| Logics . **LE23.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE23.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE24.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE24.Timer Out** | *Signal: Timer Output* |
| Logics . **LE24.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE24.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE25.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE25.Timer Out** | *Signal: Timer Output* |
| Logics . **LE25.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE25.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE26.Gate Out** | *Signal: Output of the logic gate* |

Released



| AdaptSet | Description |
|---|---|
| Logics . **LE26.Timer Out** | *Signal: Timer Output* |
| Logics . **LE26.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE26.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE27.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE27.Timer Out** | *Signal: Timer Output* |
| Logics . **LE27.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE27.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE28.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE28.Timer Out** | *Signal: Timer Output* |
| Logics . **LE28.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE28.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE29.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE29.Timer Out** | *Signal: Timer Output* |
| Logics . **LE29.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE29.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE30.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE30.Timer Out** | *Signal: Timer Output* |
| Logics . **LE30.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE30.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE31.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE31.Timer Out** | *Signal: Timer Output* |
| Logics . **LE31.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE31.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE32.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE32.Timer Out** | *Signal: Timer Output* |

| AdaptSet | Description |
|---|---|
| Logics . **LE32.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE32.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE33.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE33.Timer Out** | *Signal: Timer Output* |
| Logics . **LE33.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE33.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE34.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE34.Timer Out** | *Signal: Timer Output* |
| Logics . **LE34.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE34.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE35.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE35.Timer Out** | *Signal: Timer Output* |
| Logics . **LE35.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE35.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE36.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE36.Timer Out** | *Signal: Timer Output* |
| Logics . **LE36.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE36.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE37.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE37.Timer Out** | *Signal: Timer Output* |
| Logics . **LE37.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE37.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE38.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE38.Timer Out** | *Signal: Timer Output* |
| Logics . **LE38.Out** | *Signal: Latched Output (Q)* |

| AdaptSet | Description |
|---|---|
| Logics . **LE38.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE39.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE39.Timer Out** | *Signal: Timer Output* |
| Logics . **LE39.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE39.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE40.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE40.Timer Out** | *Signal: Timer Output* |
| Logics . **LE40.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE40.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE41.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE41.Timer Out** | *Signal: Timer Output* |
| Logics . **LE41.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE41.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE42.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE42.Timer Out** | *Signal: Timer Output* |
| Logics . **LE42.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE42.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE43.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE43.Timer Out** | *Signal: Timer Output* |
| Logics . **LE43.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE43.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE44.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE44.Timer Out** | *Signal: Timer Output* |
| Logics . **LE44.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE44.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| AdaptSet | Description |
|---|---|
| Logics . **LE45.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE45.Timer Out** | *Signal: Timer Output* |
| Logics . **LE45.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE45.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE46.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE46.Timer Out** | *Signal: Timer Output* |
| Logics . **LE46.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE46.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE47.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE47.Timer Out** | *Signal: Timer Output* |
| Logics . **LE47.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE47.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE48.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE48.Timer Out** | *Signal: Timer Output* |
| Logics . **LE48.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE48.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE49.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE49.Timer Out** | *Signal: Timer Output* |
| Logics . **LE49.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE49.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE50.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE50.Timer Out** | *Signal: Timer Output* |
| Logics . **LE50.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE50.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE51.Gate Out** | *Signal: Output of the logic gate* |

Released



| AdaptSet | Description |
|---|---|
| Logics . **LE51.Timer Out** | *Signal: Timer Output* |
| Logics . **LE51.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE51.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE52.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE52.Timer Out** | *Signal: Timer Output* |
| Logics . **LE52.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE52.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE53.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE53.Timer Out** | *Signal: Timer Output* |
| Logics . **LE53.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE53.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE54.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE54.Timer Out** | *Signal: Timer Output* |
| Logics . **LE54.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE54.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE55.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE55.Timer Out** | *Signal: Timer Output* |
| Logics . **LE55.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE55.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE56.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE56.Timer Out** | *Signal: Timer Output* |
| Logics . **LE56.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE56.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE57.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE57.Timer Out** | *Signal: Timer Output* |

| AdaptSet | Description |
|---|---|
| Logics . **LE57.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE57.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE58.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE58.Timer Out** | *Signal: Timer Output* |
| Logics . **LE58.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE58.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE59.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE59.Timer Out** | *Signal: Timer Output* |
| Logics . **LE59.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE59.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE60.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE60.Timer Out** | *Signal: Timer Output* |
| Logics . **LE60.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE60.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE61.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE61.Timer Out** | *Signal: Timer Output* |
| Logics . **LE61.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE61.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE62.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE62.Timer Out** | *Signal: Timer Output* |
| Logics . **LE62.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE62.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE63.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE63.Timer Out** | *Signal: Timer Output* |
| Logics . **LE63.Out** | *Signal: Latched Output (Q)* |

| AdaptSet | Description |
|---|---|
| Logics . **LE63.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE64.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE64.Timer Out** | *Signal: Timer Output* |
| Logics . **LE64.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE64.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE65.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE65.Timer Out** | *Signal: Timer Output* |
| Logics . **LE65.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE65.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE66.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE66.Timer Out** | *Signal: Timer Output* |
| Logics . **LE66.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE66.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE67.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE67.Timer Out** | *Signal: Timer Output* |
| Logics . **LE67.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE67.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE68.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE68.Timer Out** | *Signal: Timer Output* |
| Logics . **LE68.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE68.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE69.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE69.Timer Out** | *Signal: Timer Output* |
| Logics . **LE69.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE69.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| AdaptSet | Description |
|---|---|
| Logics . **LE70.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE70.Timer Out** | *Signal: Timer Output* |
| Logics . **LE70.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE70.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE71.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE71.Timer Out** | *Signal: Timer Output* |
| Logics . **LE71.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE71.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE72.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE72.Timer Out** | *Signal: Timer Output* |
| Logics . **LE72.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE72.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE73.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE73.Timer Out** | *Signal: Timer Output* |
| Logics . **LE73.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE73.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE74.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE74.Timer Out** | *Signal: Timer Output* |
| Logics . **LE74.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE74.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE75.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE75.Timer Out** | *Signal: Timer Output* |
| Logics . **LE75.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE75.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE76.Gate Out** | *Signal: Output of the logic gate* |

| AdaptSet | Description |
|---|---|
| Logics . **LE76.Timer Out** | *Signal: Timer Output* |
| Logics . **LE76.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE76.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE77.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE77.Timer Out** | *Signal: Timer Output* |
| Logics . **LE77.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE77.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE78.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE78.Timer Out** | *Signal: Timer Output* |
| Logics . **LE78.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE78.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE79.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE79.Timer Out** | *Signal: Timer Output* |
| Logics . **LE79.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE79.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE80.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE80.Timer Out** | *Signal: Timer Output* |
| Logics . **LE80.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE80.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

***CurrentBase***

Base Current Selection (based on Device Rating (1A/5A)/Protected Object Rating).

Selection list referenced by the following parameters:

- ⮡ I2>[1] . CurrentBase

| CurrentBase | Description |
|---|---|
| **Device Rating** | *Device Rating* |
| **Protected Object Rating** | *Protected Object Rating* |

***Power Trip dir***

By means of this parameter the trip direction of active and reactive power can be inverted within the QV-Module (sign reversal).

Selection list referenced by the following parameters:

- ⮡ Q->&V< . Power Trip dir

| Power Trip dir | Description |
|---|---|
| **positive** | *Positive P/Q (active/reactive power) Trip* |
| **negative** | *Negative P/Q (active/reactive power) Trip* |

***1..n, Dig Inputs***

List of Digital Inputs that are available for the detection of the Circuit Breaker Position.

Selection list referenced by the following parameters:

- ⮡ ReCon[1] . PCC Fuse Fail VT
- ⮡ TCS[1] . Input 1
- ⮡ TCS[1] . Input 2

| 1..n, Dig Inputs | Description |
|---|---|
| **“-”** | *No assignment* |
| DI Slot X1 . **DI 1** | *Signal: Digital Input* |
| DI Slot X1 . **DI 2** | *Signal: Digital Input* |
| DI Slot X1 . **DI 3** | *Signal: Digital Input* |
| DI Slot X1 . **DI 4** | *Signal: Digital Input* |
| DI Slot X1 . **DI 5** | *Signal: Digital Input* |
| DI Slot X1 . **DI 6** | *Signal: Digital Input* |
| DI Slot X1 . **DI 7** | *Signal: Digital Input* |

| 1..n, Dig Inputs | Description |
|---|---|
| DI Slot X1 . **DI 8** | *Signal: Digital Input* |
| DI Slot X5 . **DI 1** | *Signal: Digital Input* |
| DI Slot X5 . **DI 2** | *Signal: Digital Input* |
| DI Slot X5 . **DI 3** | *Signal: Digital Input* |
| DI Slot X5 . **DI 4** | *Signal: Digital Input* |
| DI Slot X5 . **DI 5** | *Signal: Digital Input* |
| DI Slot X5 . **DI 6** | *Signal: Digital Input* |
| DI Slot X5 . **DI 7** | *Signal: Digital Input* |
| DI Slot X5 . **DI 8** | *Signal: Digital Input* |
| DI Slot X6 . **DI 1** | *Signal: Digital Input* |
| DI Slot X6 . **DI 2** | *Signal: Digital Input* |
| DI Slot X6 . **DI 3** | *Signal: Digital Input* |
| DI Slot X6 . **DI 4** | *Signal: Digital Input* |
| DI Slot X6 . **DI 5** | *Signal: Digital Input* |
| DI Slot X6 . **DI 6** | *Signal: Digital Input* |
| DI Slot X6 . **DI 7** | *Signal: Digital Input* |
| DI Slot X6 . **DI 8** | *Signal: Digital Input* |

### *Decoupling Functions*

Selection list referenced by the following parameters:

- ReCon[1] . Decoupling1

| Decoupling Functions | Description |
|---|---|
| **“-”** | *No assignment* |
| Id . **TripCmd** | *Signal: Trip Command* |
| IdH . **TripCmd** | *Signal: Trip Command* |
| IdG[1] . **TripCmd** | *Signal: Trip Command* |
| IdGH[1] . **TripCmd** | *Signal: Trip Command* |
| IdG[2] . **TripCmd** | *Signal: Trip Command* |
| IdGH[2] . **TripCmd** | *Signal: Trip Command* |
| I[1] . **TripCmd** | *Signal: Trip Command* |

| Decoupling Functions | Description |
|---|---|
| I[2] . **TripCmd** | *Signal: Trip Command* |
| I[3] . **TripCmd** | *Signal: Trip Command* |
| I[4] . **TripCmd** | *Signal: Trip Command* |
| I[5] . **TripCmd** | *Signal: Trip Command* |
| I[6] . **TripCmd** | *Signal: Trip Command* |
| IG[1] . **TripCmd** | *Signal: Trip Command* |
| IG[2] . **TripCmd** | *Signal: Trip Command* |
| IG[3] . **TripCmd** | *Signal: Trip Command* |
| IG[4] . **TripCmd** | *Signal: Trip Command* |
| ThR . **TripCmd** | *Signal: Trip Command* |
| I2>[1] . **TripCmd** | *Signal: Trip Command* |
| I2>[2] . **TripCmd** | *Signal: Trip Command* |
| V[1] . **TripCmd** | *Signal: Trip Command* |
| V[2] . **TripCmd** | *Signal: Trip Command* |
| V[3] . **TripCmd** | *Signal: Trip Command* |
| V[4] . **TripCmd** | *Signal: Trip Command* |
| V[5] . **TripCmd** | *Signal: Trip Command* |
| V[6] . **TripCmd** | *Signal: Trip Command* |
| df/dt . **TripCmd** | *Signal: Trip Command* |
| delta phi . **TripCmd** | *Signal: Trip Command* |
| Intertripping . **TripCmd** | *Signal: Trip Command* |
| P . **TripCmd** | *Signal: Trip Command* |
| Q . **TripCmd** | *Signal: Trip Command* |
| LVRT[1] . **TripCmd** | *Signal: Trip Command* |
| LVRT[2] . **TripCmd** | *Signal: Trip Command* |
| VG[1] . **TripCmd** | *Signal: Trip Command* |
| VG[2] . **TripCmd** | *Signal: Trip Command* |
| V012[1] . **TripCmd** | *Signal: Trip Command* |
| V012[2] . **TripCmd** | *Signal: Trip Command* |
| V012[3] . **TripCmd** | *Signal: Trip Command* |
| V012[4] . **TripCmd** | *Signal: Trip Command* |
| V012[5] . **TripCmd** | *Signal: Trip Command* |

| Decoupling Functions | Description |
|---|---|
| V012[6] . **TripCmd** | *Signal: Trip Command* |
| f[1] . **TripCmd** | *Signal: Trip Command* |
| f[2] . **TripCmd** | *Signal: Trip Command* |
| f[3] . **TripCmd** | *Signal: Trip Command* |
| f[4] . **TripCmd** | *Signal: Trip Command* |
| f[5] . **TripCmd** | *Signal: Trip Command* |
| f[6] . **TripCmd** | *Signal: Trip Command* |
| PQS[1] . **TripCmd** | *Signal: Trip Command* |
| PQS[2] . **TripCmd** | *Signal: Trip Command* |
| PQS[3] . **TripCmd** | *Signal: Trip Command* |
| PQS[4] . **TripCmd** | *Signal: Trip Command* |
| PQS[5] . **TripCmd** | *Signal: Trip Command* |
| PQS[6] . **TripCmd** | *Signal: Trip Command* |
| PF[1] . **TripCmd** | *Signal: Trip Command* |
| PF[2] . **TripCmd** | *Signal: Trip Command* |
| Q->&V< . **Decoupling Distr. Generator** | *Signal: Decoupling of the (local) Energy Generator/Resource* |
| Q->&V< . **Decoupling PCC** | *Signal: Decoupling at the Point of Common Coupling* |
| UFLS . **Trip** | *Signal: Signal: Trip* |
| V/f>[1] . **TripCmd** | *Signal: Trip Command* |
| V/f>[2] . **TripCmd** | *Signal: Trip Command* |
| ExP[1] . **TripCmd** | *Signal: Trip Command* |
| ExP[2] . **TripCmd** | *Signal: Trip Command* |
| ExP[3] . **TripCmd** | *Signal: Trip Command* |
| ExP[4] . **TripCmd** | *Signal: Trip Command* |
| Ext Sudd Press . **TripCmd** | *Signal: Trip Command* |
| Ext Oil Temp . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[1] . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[2] . **TripCmd** | *Signal: Trip Command* |

Released



| Decoupling Functions | Description |
|---|---|
| Ext Temp Superv[3] . **TripCmd** | *Signal: Trip Command* |
| RTD . **TripCmd** | *Signal: Trip Command* |
| DI Slot X1 . **DI 1** | *Signal: Digital Input* |
| DI Slot X1 . **DI 2** | *Signal: Digital Input* |
| DI Slot X1 . **DI 3** | *Signal: Digital Input* |
| DI Slot X1 . **DI 4** | *Signal: Digital Input* |
| DI Slot X1 . **DI 5** | *Signal: Digital Input* |
| DI Slot X1 . **DI 6** | *Signal: Digital Input* |
| DI Slot X1 . **DI 7** | *Signal: Digital Input* |
| DI Slot X1 . **DI 8** | *Signal: Digital Input* |
| DI Slot X5 . **DI 1** | *Signal: Digital Input* |
| DI Slot X5 . **DI 2** | *Signal: Digital Input* |
| DI Slot X5 . **DI 3** | *Signal: Digital Input* |
| DI Slot X5 . **DI 4** | *Signal: Digital Input* |
| DI Slot X5 . **DI 5** | *Signal: Digital Input* |
| DI Slot X5 . **DI 6** | *Signal: Digital Input* |
| DI Slot X5 . **DI 7** | *Signal: Digital Input* |
| DI Slot X5 . **DI 8** | *Signal: Digital Input* |
| DI Slot X6 . **DI 1** | *Signal: Digital Input* |
| DI Slot X6 . **DI 2** | *Signal: Digital Input* |
| DI Slot X6 . **DI 3** | *Signal: Digital Input* |
| DI Slot X6 . **DI 4** | *Signal: Digital Input* |
| DI Slot X6 . **DI 5** | *Signal: Digital Input* |
| DI Slot X6 . **DI 6** | *Signal: Digital Input* |
| DI Slot X6 . **DI 7** | *Signal: Digital Input* |
| DI Slot X6 . **DI 8** | *Signal: Digital Input* |
| AnaP[1] . **TripCmd** | *Signal: Trip Command* |
| AnaP[2] . **TripCmd** | *Signal: Trip Command* |
| AnaP[3] . **TripCmd** | *Signal: Trip Command* |
| AnaP[4] . **TripCmd** | *Signal: Trip Command* |
| AnaP[5] . **TripCmd** | *Signal: Trip Command* |

Released



| Decoupling Functions | Description |
|---|---|
| AnaP[6] . **TripCmd** | *Signal: Trip Command* |
| AnaP[7] . **TripCmd** | *Signal: Trip Command* |
| AnaP[8] . **TripCmd** | *Signal: Trip Command* |
| DNP3 . **BinaryOutput0** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput1** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput2** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput3** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput4** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput5** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput6** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput7** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput8** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput9** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput10** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput11** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput12** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput13** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput14** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput15** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput16** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput17** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |

| Decoupling Functions | Description |
|---|---|
| DNP3 . **BinaryOutput18** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput19** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput20** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput21** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput22** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput23** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput24** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput25** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput26** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput27** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput28** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput29** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput30** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput31** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| Modbus . **Scada Cmd 1** | *Scada Command* |
| Modbus . **Scada Cmd 2** | *Scada Command* |
| Modbus . **Scada Cmd 3** | *Scada Command* |
| Modbus . **Scada Cmd 4** | *Scada Command* |
| Modbus . **Scada Cmd 5** | *Scada Command* |
| Modbus . **Scada Cmd 6** | *Scada Command* |
| Modbus . **Scada Cmd 7** | *Scada Command* |
| Modbus . **Scada Cmd 8** | *Scada Command* |
| Modbus . **Scada Cmd 9** | *Scada Command* |

| Decoupling Functions | Description |
|---|---|
| Modbus . **Scada Cmd 10** | *Scada Command* |
| Modbus . **Scada Cmd 11** | *Scada Command* |
| Modbus . **Scada Cmd 12** | *Scada Command* |
| Modbus . **Scada Cmd 13** | *Scada Command* |
| Modbus . **Scada Cmd 14** | *Scada Command* |
| Modbus . **Scada Cmd 15** | *Scada Command* |
| Modbus . **Scada Cmd 16** | *Scada Command* |
| IEC 61850 . **GOSINGGIO1.Ind1.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind2.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind3.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind4.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind5.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind6.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind7.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind8.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind9.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind10.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind11.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind12.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind13.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |

| Decoupling Functions | Description |
|---|---|
| IEC 61850 . **GOSINGGIO1.Ind14.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind15.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind16.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind17.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind18.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind19.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind20.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind21.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind22.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind23.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind24.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind25.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind26.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind27.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind28.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind29.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind30.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind31.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **GOSINGGIO1.Ind32.stVal** | *Signal: Virtual Input (IEC61850 GGIO Ind): State* |
| IEC 61850 . **SPCSO1** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |

Released



| Decoupling Functions | Description |
|---|---|
| IEC 61850 . **SPCSO2** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO3** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO4** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO5** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO6** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO7** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO8** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO9** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO10** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO11** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO12** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO13** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO14** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO15** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC 61850 . **SPCSO16** | *Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).* |
| IEC103 . **Scada Cmd 1** | *Scada Command* |
| IEC103 . **Scada Cmd 2** | *Scada Command* |
| IEC103 . **Scada Cmd 3** | *Scada Command* |
| IEC103 . **Scada Cmd 4** | *Scada Command* |
| IEC103 . **Scada Cmd 5** | *Scada Command* |
| IEC103 . **Scada Cmd 6** | *Scada Command* |
| IEC103 . **Scada Cmd 7** | *Scada Command* |
| IEC103 . **Scada Cmd 8** | *Scada Command* |

| Decoupling Functions | Description |
|---|---|
| IEC103 . **Scada Cmd 9** | *Scada Command* |
| IEC103 . **Scada Cmd 10** | *Scada Command* |
| IEC104 . **Scada Cmd 1** | *Scada Command* |
| IEC104 . **Scada Cmd 2** | *Scada Command* |
| IEC104 . **Scada Cmd 3** | *Scada Command* |
| IEC104 . **Scada Cmd 4** | *Scada Command* |
| IEC104 . **Scada Cmd 5** | *Scada Command* |
| IEC104 . **Scada Cmd 6** | *Scada Command* |
| IEC104 . **Scada Cmd 7** | *Scada Command* |
| IEC104 . **Scada Cmd 8** | *Scada Command* |
| IEC104 . **Scada Cmd 9** | *Scada Command* |
| IEC104 . **Scada Cmd 10** | *Scada Command* |
| IEC104 . **Scada Cmd 11** | *Scada Command* |
| IEC104 . **Scada Cmd 12** | *Scada Command* |
| IEC104 . **Scada Cmd 13** | *Scada Command* |
| IEC104 . **Scada Cmd 14** | *Scada Command* |
| IEC104 . **Scada Cmd 15** | *Scada Command* |
| IEC104 . **Scada Cmd 16** | *Scada Command* |
| Profibus . **Scada Cmd 1** | *Scada Command* |
| Profibus . **Scada Cmd 2** | *Scada Command* |
| Profibus . **Scada Cmd 3** | *Scada Command* |
| Profibus . **Scada Cmd 4** | *Scada Command* |
| Profibus . **Scada Cmd 5** | *Scada Command* |
| Profibus . **Scada Cmd 6** | *Scada Command* |
| Profibus . **Scada Cmd 7** | *Scada Command* |
| Profibus . **Scada Cmd 8** | *Scada Command* |
| Profibus . **Scada Cmd 9** | *Scada Command* |
| Profibus . **Scada Cmd 10** | *Scada Command* |
| Profibus . **Scada Cmd 11** | *Scada Command* |
| Profibus . **Scada Cmd 12** | *Scada Command* |

| Decoupling Functions | Description |
|---|---|
| Profibus . **Scada Cmd 13** | *Scada Command* |
| Profibus . **Scada Cmd 14** | *Scada Command* |
| Profibus . **Scada Cmd 15** | *Scada Command* |
| Profibus . **Scada Cmd 16** | *Scada Command* |
| Logics . **LE1.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE1.Timer Out** | *Signal: Timer Output* |
| Logics . **LE1.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE1.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE2.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE2.Timer Out** | *Signal: Timer Output* |
| Logics . **LE2.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE2.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE3.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE3.Timer Out** | *Signal: Timer Output* |
| Logics . **LE3.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE3.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE4.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE4.Timer Out** | *Signal: Timer Output* |
| Logics . **LE4.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE4.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE5.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE5.Timer Out** | *Signal: Timer Output* |
| Logics . **LE5.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE5.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE6.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE6.Timer Out** | *Signal: Timer Output* |
| Logics . **LE6.Out** | *Signal: Latched Output (Q)* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE6.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE7.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE7.Timer Out** | *Signal: Timer Output* |
| Logics . **LE7.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE7.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE8.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE8.Timer Out** | *Signal: Timer Output* |
| Logics . **LE8.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE8.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE9.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE9.Timer Out** | *Signal: Timer Output* |
| Logics . **LE9.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE9.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE10.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE10.Timer Out** | *Signal: Timer Output* |
| Logics . **LE10.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE10.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE11.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE11.Timer Out** | *Signal: Timer Output* |
| Logics . **LE11.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE11.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE12.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE12.Timer Out** | *Signal: Timer Output* |
| Logics . **LE12.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE12.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE13.Gate Out** | *Signal: Output of the logic gate* |

Released



| Decoupling Functions | Description |
|---|---|
| Logics . **LE13.Timer Out** | *Signal: Timer Output* |
| Logics . **LE13.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE13.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE14.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE14.Timer Out** | *Signal: Timer Output* |
| Logics . **LE14.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE14.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE15.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE15.Timer Out** | *Signal: Timer Output* |
| Logics . **LE15.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE15.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE16.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE16.Timer Out** | *Signal: Timer Output* |
| Logics . **LE16.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE16.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE17.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE17.Timer Out** | *Signal: Timer Output* |
| Logics . **LE17.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE17.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE18.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE18.Timer Out** | *Signal: Timer Output* |
| Logics . **LE18.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE18.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE19.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE19.Timer Out** | *Signal: Timer Output* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE19.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE19.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE20.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE20.Timer Out** | *Signal: Timer Output* |
| Logics . **LE20.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE20.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE21.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE21.Timer Out** | *Signal: Timer Output* |
| Logics . **LE21.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE21.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE22.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE22.Timer Out** | *Signal: Timer Output* |
| Logics . **LE22.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE22.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE23.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE23.Timer Out** | *Signal: Timer Output* |
| Logics . **LE23.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE23.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE24.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE24.Timer Out** | *Signal: Timer Output* |
| Logics . **LE24.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE24.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE25.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE25.Timer Out** | *Signal: Timer Output* |
| Logics . **LE25.Out** | *Signal: Latched Output (Q)* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE25.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE26.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE26.Timer Out** | *Signal: Timer Output* |
| Logics . **LE26.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE26.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE27.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE27.Timer Out** | *Signal: Timer Output* |
| Logics . **LE27.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE27.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE28.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE28.Timer Out** | *Signal: Timer Output* |
| Logics . **LE28.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE28.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE29.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE29.Timer Out** | *Signal: Timer Output* |
| Logics . **LE29.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE29.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE30.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE30.Timer Out** | *Signal: Timer Output* |
| Logics . **LE30.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE30.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE31.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE31.Timer Out** | *Signal: Timer Output* |
| Logics . **LE31.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE31.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE32.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE32.Timer Out** | *Signal: Timer Output* |
| Logics . **LE32.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE32.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE33.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE33.Timer Out** | *Signal: Timer Output* |
| Logics . **LE33.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE33.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE34.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE34.Timer Out** | *Signal: Timer Output* |
| Logics . **LE34.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE34.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE35.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE35.Timer Out** | *Signal: Timer Output* |
| Logics . **LE35.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE35.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE36.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE36.Timer Out** | *Signal: Timer Output* |
| Logics . **LE36.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE36.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE37.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE37.Timer Out** | *Signal: Timer Output* |
| Logics . **LE37.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE37.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE38.Gate Out** | *Signal: Output of the logic gate* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE38.Timer Out** | *Signal: Timer Output* |
| Logics . **LE38.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE38.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE39.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE39.Timer Out** | *Signal: Timer Output* |
| Logics . **LE39.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE39.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE40.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE40.Timer Out** | *Signal: Timer Output* |
| Logics . **LE40.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE40.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE41.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE41.Timer Out** | *Signal: Timer Output* |
| Logics . **LE41.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE41.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE42.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE42.Timer Out** | *Signal: Timer Output* |
| Logics . **LE42.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE42.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE43.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE43.Timer Out** | *Signal: Timer Output* |
| Logics . **LE43.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE43.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE44.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE44.Timer Out** | *Signal: Timer Output* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE44.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE44.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE45.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE45.Timer Out** | *Signal: Timer Output* |
| Logics . **LE45.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE45.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE46.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE46.Timer Out** | *Signal: Timer Output* |
| Logics . **LE46.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE46.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE47.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE47.Timer Out** | *Signal: Timer Output* |
| Logics . **LE47.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE47.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE48.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE48.Timer Out** | *Signal: Timer Output* |
| Logics . **LE48.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE48.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE49.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE49.Timer Out** | *Signal: Timer Output* |
| Logics . **LE49.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE49.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE50.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE50.Timer Out** | *Signal: Timer Output* |
| Logics . **LE50.Out** | *Signal: Latched Output (Q)* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE50.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE51.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE51.Timer Out** | *Signal: Timer Output* |
| Logics . **LE51.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE51.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE52.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE52.Timer Out** | *Signal: Timer Output* |
| Logics . **LE52.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE52.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE53.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE53.Timer Out** | *Signal: Timer Output* |
| Logics . **LE53.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE53.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE54.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE54.Timer Out** | *Signal: Timer Output* |
| Logics . **LE54.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE54.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE55.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE55.Timer Out** | *Signal: Timer Output* |
| Logics . **LE55.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE55.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE56.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE56.Timer Out** | *Signal: Timer Output* |
| Logics . **LE56.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE56.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE57.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE57.Timer Out** | *Signal: Timer Output* |
| Logics . **LE57.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE57.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE58.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE58.Timer Out** | *Signal: Timer Output* |
| Logics . **LE58.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE58.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE59.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE59.Timer Out** | *Signal: Timer Output* |
| Logics . **LE59.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE59.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE60.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE60.Timer Out** | *Signal: Timer Output* |
| Logics . **LE60.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE60.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE61.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE61.Timer Out** | *Signal: Timer Output* |
| Logics . **LE61.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE61.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE62.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE62.Timer Out** | *Signal: Timer Output* |
| Logics . **LE62.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE62.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE63.Gate Out** | *Signal: Output of the logic gate* |

Released



| Decoupling Functions | Description |
|---|---|
| Logics . **LE63.Timer Out** | *Signal: Timer Output* |
| Logics . **LE63.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE63.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE64.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE64.Timer Out** | *Signal: Timer Output* |
| Logics . **LE64.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE64.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE65.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE65.Timer Out** | *Signal: Timer Output* |
| Logics . **LE65.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE65.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE66.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE66.Timer Out** | *Signal: Timer Output* |
| Logics . **LE66.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE66.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE67.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE67.Timer Out** | *Signal: Timer Output* |
| Logics . **LE67.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE67.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE68.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE68.Timer Out** | *Signal: Timer Output* |
| Logics . **LE68.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE68.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE69.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE69.Timer Out** | *Signal: Timer Output* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE69.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE69.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE70.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE70.Timer Out** | *Signal: Timer Output* |
| Logics . **LE70.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE70.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE71.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE71.Timer Out** | *Signal: Timer Output* |
| Logics . **LE71.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE71.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE72.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE72.Timer Out** | *Signal: Timer Output* |
| Logics . **LE72.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE72.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE73.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE73.Timer Out** | *Signal: Timer Output* |
| Logics . **LE73.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE73.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE74.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE74.Timer Out** | *Signal: Timer Output* |
| Logics . **LE74.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE74.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE75.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE75.Timer Out** | *Signal: Timer Output* |
| Logics . **LE75.Out** | *Signal: Latched Output (Q)* |

| Decoupling Functions | Description |
|---|---|
| Logics . **LE75.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE76.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE76.Timer Out** | *Signal: Timer Output* |
| Logics . **LE76.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE76.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE77.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE77.Timer Out** | *Signal: Timer Output* |
| Logics . **LE77.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE77.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE78.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE78.Timer Out** | *Signal: Timer Output* |
| Logics . **LE78.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE78.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE79.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE79.Timer Out** | *Signal: Timer Output* |
| Logics . **LE79.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE79.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE80.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE80.Timer Out** | *Signal: Timer Output* |
| Logics . **LE80.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE80.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

***P Block dir***

By means of this parameter the block direction of active power can be inverted within this (sign reversal).

Selection list referenced by the following parameters:

- ⮡ UFLS . P Block dir

| P Block dir | Description |
|---|---|
| **positive** | *Blocking the load shedding if active power is positive* |
| **negative** | *Blocking the load shedding if active power is negative* |

### *1..n, DI-LogicList*

Selection list referenced by the following parameters:

- ⮡ Sync . Bypass
- ⮡ SOTF . Ext SOTF
- ⮡ SG[1] . Aux ON
- ⮡ SG[1] . Aux OFF
- ⮡ SG[1] . Ready
- ⮡ SG[1] . Removed
- *[ . . . ]*

| 1..n, DI-LogicList | Description |
|---|---|
| **“-”** | *No assignment* |
| DI Slot X1 . **DI 1** | *Signal: Digital Input* |
| DI Slot X1 . **DI 2** | *Signal: Digital Input* |
| DI Slot X1 . **DI 3** | *Signal: Digital Input* |
| DI Slot X1 . **DI 4** | *Signal: Digital Input* |
| DI Slot X1 . **DI 5** | *Signal: Digital Input* |
| DI Slot X1 . **DI 6** | *Signal: Digital Input* |
| DI Slot X1 . **DI 7** | *Signal: Digital Input* |
| DI Slot X1 . **DI 8** | *Signal: Digital Input* |
| DI Slot X5 . **DI 1** | *Signal: Digital Input* |
| DI Slot X5 . **DI 2** | *Signal: Digital Input* |
| DI Slot X5 . **DI 3** | *Signal: Digital Input* |
| DI Slot X5 . **DI 4** | *Signal: Digital Input* |
| DI Slot X5 . **DI 5** | *Signal: Digital Input* |

Released



| 1..n, DI-LogicList | Description |
|---|---|
| DI Slot X5 . **DI 6** | *Signal: Digital Input* |
| DI Slot X5 . **DI 7** | *Signal: Digital Input* |
| DI Slot X5 . **DI 8** | *Signal: Digital Input* |
| DI Slot X6 . **DI 1** | *Signal: Digital Input* |
| DI Slot X6 . **DI 2** | *Signal: Digital Input* |
| DI Slot X6 . **DI 3** | *Signal: Digital Input* |
| DI Slot X6 . **DI 4** | *Signal: Digital Input* |
| DI Slot X6 . **DI 5** | *Signal: Digital Input* |
| DI Slot X6 . **DI 6** | *Signal: Digital Input* |
| DI Slot X6 . **DI 7** | *Signal: Digital Input* |
| DI Slot X6 . **DI 8** | *Signal: Digital Input* |
| DNP3 . **BinaryOutput0** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput1** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput2** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput3** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput4** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput5** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput6** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput7** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput8** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput9** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput10** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput11** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput12** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |

Released



| 1..n, DI-LogicList | Description |
|---|---|
| DNP3 . **BinaryOutput13** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput14** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput15** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput16** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput17** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput18** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput19** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput20** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput21** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput22** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput23** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput24** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput25** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput26** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput27** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput28** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput29** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput30** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| DNP3 . **BinaryOutput31** | *Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device.* |
| IEC104 . **Scada Cmd 1** | *Scada Command* |
| IEC104 . **Scada Cmd 2** | *Scada Command* |

| 1..n, DI-LogicList | Description |
|---|---|
| IEC104 . **Scada Cmd 3** | *Scada Command* |
| IEC104 . **Scada Cmd 4** | *Scada Command* |
| IEC104 . **Scada Cmd 5** | *Scada Command* |
| IEC104 . **Scada Cmd 6** | *Scada Command* |
| IEC104 . **Scada Cmd 7** | *Scada Command* |
| IEC104 . **Scada Cmd 8** | *Scada Command* |
| IEC104 . **Scada Cmd 9** | *Scada Command* |
| IEC104 . **Scada Cmd 10** | *Scada Command* |
| IEC104 . **Scada Cmd 11** | *Scada Command* |
| IEC104 . **Scada Cmd 12** | *Scada Command* |
| IEC104 . **Scada Cmd 13** | *Scada Command* |
| IEC104 . **Scada Cmd 14** | *Scada Command* |
| IEC104 . **Scada Cmd 15** | *Scada Command* |
| IEC104 . **Scada Cmd 16** | *Scada Command* |
| Logics . **LE1.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE1.Timer Out** | *Signal: Timer Output* |
| Logics . **LE1.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE1.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE2.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE2.Timer Out** | *Signal: Timer Output* |
| Logics . **LE2.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE2.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE3.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE3.Timer Out** | *Signal: Timer Output* |
| Logics . **LE3.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE3.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE4.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE4.Timer Out** | *Signal: Timer Output* |
| Logics . **LE4.Out** | *Signal: Latched Output (Q)* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE4.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE5.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE5.Timer Out** | *Signal: Timer Output* |
| Logics . **LE5.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE5.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE6.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE6.Timer Out** | *Signal: Timer Output* |
| Logics . **LE6.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE6.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE7.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE7.Timer Out** | *Signal: Timer Output* |
| Logics . **LE7.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE7.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE8.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE8.Timer Out** | *Signal: Timer Output* |
| Logics . **LE8.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE8.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE9.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE9.Timer Out** | *Signal: Timer Output* |
| Logics . **LE9.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE9.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE10.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE10.Timer Out** | *Signal: Timer Output* |
| Logics . **LE10.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE10.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE11.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE11.Timer Out** | *Signal: Timer Output* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE11.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE11.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE12.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE12.Timer Out** | *Signal: Timer Output* |
| Logics . **LE12.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE12.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE13.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE13.Timer Out** | *Signal: Timer Output* |
| Logics . **LE13.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE13.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE14.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE14.Timer Out** | *Signal: Timer Output* |
| Logics . **LE14.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE14.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE15.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE15.Timer Out** | *Signal: Timer Output* |
| Logics . **LE15.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE15.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE16.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE16.Timer Out** | *Signal: Timer Output* |
| Logics . **LE16.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE16.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE17.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE17.Timer Out** | *Signal: Timer Output* |
| Logics . **LE17.Out** | *Signal: Latched Output (Q)* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE17.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE18.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE18.Timer Out** | *Signal: Timer Output* |
| Logics . **LE18.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE18.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE19.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE19.Timer Out** | *Signal: Timer Output* |
| Logics . **LE19.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE19.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE20.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE20.Timer Out** | *Signal: Timer Output* |
| Logics . **LE20.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE20.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE21.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE21.Timer Out** | *Signal: Timer Output* |
| Logics . **LE21.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE21.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE22.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE22.Timer Out** | *Signal: Timer Output* |
| Logics . **LE22.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE22.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE23.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE23.Timer Out** | *Signal: Timer Output* |
| Logics . **LE23.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE23.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE24.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE24.Timer Out** | *Signal: Timer Output* |
| Logics . **LE24.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE24.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE25.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE25.Timer Out** | *Signal: Timer Output* |
| Logics . **LE25.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE25.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE26.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE26.Timer Out** | *Signal: Timer Output* |
| Logics . **LE26.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE26.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE27.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE27.Timer Out** | *Signal: Timer Output* |
| Logics . **LE27.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE27.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE28.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE28.Timer Out** | *Signal: Timer Output* |
| Logics . **LE28.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE28.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE29.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE29.Timer Out** | *Signal: Timer Output* |
| Logics . **LE29.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE29.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE30.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE30.Timer Out** | *Signal: Timer Output* |
| Logics . **LE30.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE30.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE31.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE31.Timer Out** | *Signal: Timer Output* |
| Logics . **LE31.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE31.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE32.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE32.Timer Out** | *Signal: Timer Output* |
| Logics . **LE32.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE32.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE33.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE33.Timer Out** | *Signal: Timer Output* |
| Logics . **LE33.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE33.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE34.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE34.Timer Out** | *Signal: Timer Output* |
| Logics . **LE34.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE34.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE35.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE35.Timer Out** | *Signal: Timer Output* |
| Logics . **LE35.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE35.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE36.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE36.Timer Out** | *Signal: Timer Output* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE36.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE36.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE37.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE37.Timer Out** | *Signal: Timer Output* |
| Logics . **LE37.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE37.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE38.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE38.Timer Out** | *Signal: Timer Output* |
| Logics . **LE38.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE38.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE39.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE39.Timer Out** | *Signal: Timer Output* |
| Logics . **LE39.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE39.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE40.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE40.Timer Out** | *Signal: Timer Output* |
| Logics . **LE40.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE40.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE41.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE41.Timer Out** | *Signal: Timer Output* |
| Logics . **LE41.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE41.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE42.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE42.Timer Out** | *Signal: Timer Output* |
| Logics . **LE42.Out** | *Signal: Latched Output (Q)* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE42.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE43.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE43.Timer Out** | *Signal: Timer Output* |
| Logics . **LE43.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE43.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE44.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE44.Timer Out** | *Signal: Timer Output* |
| Logics . **LE44.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE44.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE45.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE45.Timer Out** | *Signal: Timer Output* |
| Logics . **LE45.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE45.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE46.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE46.Timer Out** | *Signal: Timer Output* |
| Logics . **LE46.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE46.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE47.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE47.Timer Out** | *Signal: Timer Output* |
| Logics . **LE47.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE47.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE48.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE48.Timer Out** | *Signal: Timer Output* |
| Logics . **LE48.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE48.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE49.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE49.Timer Out** | *Signal: Timer Output* |
| Logics . **LE49.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE49.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE50.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE50.Timer Out** | *Signal: Timer Output* |
| Logics . **LE50.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE50.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE51.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE51.Timer Out** | *Signal: Timer Output* |
| Logics . **LE51.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE51.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE52.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE52.Timer Out** | *Signal: Timer Output* |
| Logics . **LE52.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE52.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE53.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE53.Timer Out** | *Signal: Timer Output* |
| Logics . **LE53.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE53.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE54.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE54.Timer Out** | *Signal: Timer Output* |
| Logics . **LE54.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE54.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE55.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE55.Timer Out** | *Signal: Timer Output* |
| Logics . **LE55.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE55.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE56.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE56.Timer Out** | *Signal: Timer Output* |
| Logics . **LE56.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE56.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE57.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE57.Timer Out** | *Signal: Timer Output* |
| Logics . **LE57.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE57.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE58.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE58.Timer Out** | *Signal: Timer Output* |
| Logics . **LE58.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE58.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE59.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE59.Timer Out** | *Signal: Timer Output* |
| Logics . **LE59.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE59.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE60.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE60.Timer Out** | *Signal: Timer Output* |
| Logics . **LE60.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE60.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE61.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE61.Timer Out** | *Signal: Timer Output* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE61.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE61.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE62.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE62.Timer Out** | *Signal: Timer Output* |
| Logics . **LE62.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE62.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE63.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE63.Timer Out** | *Signal: Timer Output* |
| Logics . **LE63.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE63.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE64.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE64.Timer Out** | *Signal: Timer Output* |
| Logics . **LE64.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE64.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE65.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE65.Timer Out** | *Signal: Timer Output* |
| Logics . **LE65.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE65.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE66.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE66.Timer Out** | *Signal: Timer Output* |
| Logics . **LE66.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE66.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE67.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE67.Timer Out** | *Signal: Timer Output* |
| Logics . **LE67.Out** | *Signal: Latched Output (Q)* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE67.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE68.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE68.Timer Out** | *Signal: Timer Output* |
| Logics . **LE68.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE68.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE69.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE69.Timer Out** | *Signal: Timer Output* |
| Logics . **LE69.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE69.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE70.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE70.Timer Out** | *Signal: Timer Output* |
| Logics . **LE70.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE70.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE71.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE71.Timer Out** | *Signal: Timer Output* |
| Logics . **LE71.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE71.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE72.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE72.Timer Out** | *Signal: Timer Output* |
| Logics . **LE72.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE72.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE73.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE73.Timer Out** | *Signal: Timer Output* |
| Logics . **LE73.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE73.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE74.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE74.Timer Out** | *Signal: Timer Output* |
| Logics . **LE74.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE74.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE75.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE75.Timer Out** | *Signal: Timer Output* |
| Logics . **LE75.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE75.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE76.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE76.Timer Out** | *Signal: Timer Output* |
| Logics . **LE76.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE76.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE77.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE77.Timer Out** | *Signal: Timer Output* |
| Logics . **LE77.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE77.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE78.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE78.Timer Out** | *Signal: Timer Output* |
| Logics . **LE78.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE78.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE79.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE79.Timer Out** | *Signal: Timer Output* |
| Logics . **LE79.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE79.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE80.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, DI-LogicList | Description |
|---|---|
| Logics . **LE80.Timer Out** | *Signal: Timer Output* |
| Logics . **LE80.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE80.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

### *CB Manager*

Circuit Breaker States

Selection list referenced by the following parameters:

- ⮡ Sync . CB Pos Detect
- ⮡ CLPU . CB Pos Detect
- ⮡ TCS[1] . CB Pos Detect
- ⮡ LOP . CB Pos Detect

| CB Manager | Description |
|---|---|
| **“-”** | *No assignment* |
| SG[1] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[2] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[3] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[4] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[5] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |
| SG[6] . **Pos** | *Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)* |

### *1..n, SyncRequestList*

Selection list referenced by the following parameters:

- ⮡ Sync . CBCloseInitiate

Released



| 1..n, SyncRequestList | Description |
|---|---|
| **“-”** | *No assignment* |
| SG[1] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[2] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[3] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[4] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[5] . **Sync ON request** | *Signal: Synchronous ON request* |
| SG[6] . **Sync ON request** | *Signal: Synchronous ON request* |
| DI Slot X1 . **DI 1** | *Signal: Digital Input* |
| DI Slot X1 . **DI 2** | *Signal: Digital Input* |
| DI Slot X1 . **DI 3** | *Signal: Digital Input* |
| DI Slot X1 . **DI 4** | *Signal: Digital Input* |
| DI Slot X1 . **DI 5** | *Signal: Digital Input* |
| DI Slot X1 . **DI 6** | *Signal: Digital Input* |
| DI Slot X1 . **DI 7** | *Signal: Digital Input* |
| DI Slot X1 . **DI 8** | *Signal: Digital Input* |
| DI Slot X5 . **DI 1** | *Signal: Digital Input* |
| DI Slot X5 . **DI 2** | *Signal: Digital Input* |
| DI Slot X5 . **DI 3** | *Signal: Digital Input* |
| DI Slot X5 . **DI 4** | *Signal: Digital Input* |
| DI Slot X5 . **DI 5** | *Signal: Digital Input* |
| DI Slot X5 . **DI 6** | *Signal: Digital Input* |
| DI Slot X5 . **DI 7** | *Signal: Digital Input* |
| DI Slot X5 . **DI 8** | *Signal: Digital Input* |
| DI Slot X6 . **DI 1** | *Signal: Digital Input* |
| DI Slot X6 . **DI 2** | *Signal: Digital Input* |
| DI Slot X6 . **DI 3** | *Signal: Digital Input* |
| DI Slot X6 . **DI 4** | *Signal: Digital Input* |
| DI Slot X6 . **DI 5** | *Signal: Digital Input* |

| 1..n, SyncRequestList | Description |
|---|---|
| DI Slot X6 . **DI 6** | *Signal: Digital Input* |
| DI Slot X6 . **DI 7** | *Signal: Digital Input* |
| DI Slot X6 . **DI 8** | *Signal: Digital Input* |
| Logics . **LE1.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE1.Timer Out** | *Signal: Timer Output* |
| Logics . **LE1.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE1.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE2.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE2.Timer Out** | *Signal: Timer Output* |
| Logics . **LE2.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE2.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE3.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE3.Timer Out** | *Signal: Timer Output* |
| Logics . **LE3.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE3.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE4.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE4.Timer Out** | *Signal: Timer Output* |
| Logics . **LE4.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE4.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE5.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE5.Timer Out** | *Signal: Timer Output* |
| Logics . **LE5.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE5.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE6.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE6.Timer Out** | *Signal: Timer Output* |
| Logics . **LE6.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE6.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE7.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE7.Timer Out** | *Signal: Timer Output* |
| Logics . **LE7.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE7.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE8.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE8.Timer Out** | *Signal: Timer Output* |
| Logics . **LE8.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE8.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE9.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE9.Timer Out** | *Signal: Timer Output* |
| Logics . **LE9.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE9.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE10.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE10.Timer Out** | *Signal: Timer Output* |
| Logics . **LE10.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE10.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE11.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE11.Timer Out** | *Signal: Timer Output* |
| Logics . **LE11.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE11.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE12.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE12.Timer Out** | *Signal: Timer Output* |
| Logics . **LE12.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE12.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE13.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE13.Timer Out** | *Signal: Timer Output* |
| Logics . **LE13.Out** | *Signal: Latched Output (Q)* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE13.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE14.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE14.Timer Out** | *Signal: Timer Output* |
| Logics . **LE14.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE14.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE15.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE15.Timer Out** | *Signal: Timer Output* |
| Logics . **LE15.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE15.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE16.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE16.Timer Out** | *Signal: Timer Output* |
| Logics . **LE16.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE16.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE17.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE17.Timer Out** | *Signal: Timer Output* |
| Logics . **LE17.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE17.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE18.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE18.Timer Out** | *Signal: Timer Output* |
| Logics . **LE18.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE18.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE19.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE19.Timer Out** | *Signal: Timer Output* |
| Logics . **LE19.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE19.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE20.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE20.Timer Out** | *Signal: Timer Output* |
| Logics . **LE20.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE20.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE21.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE21.Timer Out** | *Signal: Timer Output* |
| Logics . **LE21.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE21.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE22.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE22.Timer Out** | *Signal: Timer Output* |
| Logics . **LE22.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE22.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE23.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE23.Timer Out** | *Signal: Timer Output* |
| Logics . **LE23.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE23.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE24.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE24.Timer Out** | *Signal: Timer Output* |
| Logics . **LE24.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE24.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE25.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE25.Timer Out** | *Signal: Timer Output* |
| Logics . **LE25.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE25.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE26.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE26.Timer Out** | *Signal: Timer Output* |
| Logics . **LE26.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE26.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE27.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE27.Timer Out** | *Signal: Timer Output* |
| Logics . **LE27.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE27.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE28.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE28.Timer Out** | *Signal: Timer Output* |
| Logics . **LE28.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE28.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE29.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE29.Timer Out** | *Signal: Timer Output* |
| Logics . **LE29.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE29.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE30.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE30.Timer Out** | *Signal: Timer Output* |
| Logics . **LE30.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE30.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE31.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE31.Timer Out** | *Signal: Timer Output* |
| Logics . **LE31.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE31.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE32.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE32.Timer Out** | *Signal: Timer Output* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE32.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE32.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE33.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE33.Timer Out** | *Signal: Timer Output* |
| Logics . **LE33.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE33.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE34.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE34.Timer Out** | *Signal: Timer Output* |
| Logics . **LE34.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE34.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE35.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE35.Timer Out** | *Signal: Timer Output* |
| Logics . **LE35.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE35.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE36.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE36.Timer Out** | *Signal: Timer Output* |
| Logics . **LE36.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE36.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE37.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE37.Timer Out** | *Signal: Timer Output* |
| Logics . **LE37.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE37.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE38.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE38.Timer Out** | *Signal: Timer Output* |
| Logics . **LE38.Out** | *Signal: Latched Output (Q)* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE38.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE39.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE39.Timer Out** | *Signal: Timer Output* |
| Logics . **LE39.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE39.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE40.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE40.Timer Out** | *Signal: Timer Output* |
| Logics . **LE40.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE40.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE41.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE41.Timer Out** | *Signal: Timer Output* |
| Logics . **LE41.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE41.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE42.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE42.Timer Out** | *Signal: Timer Output* |
| Logics . **LE42.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE42.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE43.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE43.Timer Out** | *Signal: Timer Output* |
| Logics . **LE43.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE43.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE44.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE44.Timer Out** | *Signal: Timer Output* |
| Logics . **LE44.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE44.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE45.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE45.Timer Out** | *Signal: Timer Output* |
| Logics . **LE45.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE45.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE46.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE46.Timer Out** | *Signal: Timer Output* |
| Logics . **LE46.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE46.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE47.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE47.Timer Out** | *Signal: Timer Output* |
| Logics . **LE47.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE47.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE48.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE48.Timer Out** | *Signal: Timer Output* |
| Logics . **LE48.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE48.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE49.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE49.Timer Out** | *Signal: Timer Output* |
| Logics . **LE49.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE49.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE50.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE50.Timer Out** | *Signal: Timer Output* |
| Logics . **LE50.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE50.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE51.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE51.Timer Out** | *Signal: Timer Output* |
| Logics . **LE51.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE51.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE52.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE52.Timer Out** | *Signal: Timer Output* |
| Logics . **LE52.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE52.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE53.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE53.Timer Out** | *Signal: Timer Output* |
| Logics . **LE53.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE53.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE54.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE54.Timer Out** | *Signal: Timer Output* |
| Logics . **LE54.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE54.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE55.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE55.Timer Out** | *Signal: Timer Output* |
| Logics . **LE55.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE55.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE56.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE56.Timer Out** | *Signal: Timer Output* |
| Logics . **LE56.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE56.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE57.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE57.Timer Out** | *Signal: Timer Output* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE57.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE57.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE58.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE58.Timer Out** | *Signal: Timer Output* |
| Logics . **LE58.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE58.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE59.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE59.Timer Out** | *Signal: Timer Output* |
| Logics . **LE59.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE59.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE60.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE60.Timer Out** | *Signal: Timer Output* |
| Logics . **LE60.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE60.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE61.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE61.Timer Out** | *Signal: Timer Output* |
| Logics . **LE61.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE61.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE62.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE62.Timer Out** | *Signal: Timer Output* |
| Logics . **LE62.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE62.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE63.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE63.Timer Out** | *Signal: Timer Output* |
| Logics . **LE63.Out** | *Signal: Latched Output (Q)* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE63.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE64.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE64.Timer Out** | *Signal: Timer Output* |
| Logics . **LE64.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE64.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE65.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE65.Timer Out** | *Signal: Timer Output* |
| Logics . **LE65.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE65.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE66.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE66.Timer Out** | *Signal: Timer Output* |
| Logics . **LE66.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE66.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE67.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE67.Timer Out** | *Signal: Timer Output* |
| Logics . **LE67.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE67.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE68.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE68.Timer Out** | *Signal: Timer Output* |
| Logics . **LE68.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE68.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE69.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE69.Timer Out** | *Signal: Timer Output* |
| Logics . **LE69.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE69.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE70.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE70.Timer Out** | *Signal: Timer Output* |
| Logics . **LE70.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE70.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE71.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE71.Timer Out** | *Signal: Timer Output* |
| Logics . **LE71.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE71.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE72.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE72.Timer Out** | *Signal: Timer Output* |
| Logics . **LE72.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE72.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE73.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE73.Timer Out** | *Signal: Timer Output* |
| Logics . **LE73.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE73.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE74.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE74.Timer Out** | *Signal: Timer Output* |
| Logics . **LE74.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE74.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE75.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE75.Timer Out** | *Signal: Timer Output* |
| Logics . **LE75.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE75.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE76.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, SyncRequestList | Description |
|---|---|
| Logics . **LE76.Timer Out** | *Signal: Timer Output* |
| Logics . **LE76.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE76.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE77.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE77.Timer Out** | *Signal: Timer Output* |
| Logics . **LE77.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE77.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE78.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE78.Timer Out** | *Signal: Timer Output* |
| Logics . **LE78.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE78.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE79.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE79.Timer Out** | *Signal: Timer Output* |
| Logics . **LE79.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE79.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE80.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE80.Timer Out** | *Signal: Timer Output* |
| Logics . **LE80.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE80.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ SOTF . Mode

| Mode | Description |
|---|---|
| **CB Pos** | *The CB Pos Indicator starts the Timer.* |
| **I<** | *The CB is in the OFF Position, if the measured current is less than this parameter.* |
| **CB Pos And I<** | *(The CB Pos Indicator starts the Timer.) And (The CB is in the OFF Position, if the measured current is less than this parameter.)* |
| **CB manual ON** | *Circuit breaker was switched on manually* |
| **Ext SOTF** | *External Switch Onto Fault* |

### *CB List*

Selection list referenced by the following parameters:

- ⮡ SOTF . Assigned SG

| CB List | Description |
|---|---|
| **“-”** | *No assignment* |
| . **SG[1]** | *Switchgear* |
| . **SG[2]** | *Switchgear* |
| . **SG[3]** | *Switchgear* |
| . **SG[4]** | *Switchgear* |
| . **SG[5]** | *Switchgear* |
| . **SG[6]** | *Switchgear* |

### *Mode*

general operation mode

Selection list referenced by the following parameters:

- ⮡ CLPU . Mode

| Mode | Description |
|---|---|
| **CB Pos** | *The CB Pos Indicator starts the Timer.* |
| **I<** | *The Pickup Timer will be started, if the measured current is less than parameter "I<".* |

| Mode | Description |
|---|---|
| **CB Pos Or I<** | *(The CB Pos Indicator starts the Timer.) Or (The Pickup Timer will be started, if the measured current is less than parameter "I<".)* |
| **CB Pos And I<** | *(The CB Pos Indicator starts the Timer.) And (The Pickup Timer will be started, if the measured current is less than parameter "I<".)* |

### *TripCmd Selection*

This parameter determines if the final trip of the RTD module is issued by the default way or by the voting groups.

Selection list referenced by the following parameters:

- ⮡ RTD . TripCmd Selection

| TripCmd Selection | Description |
|---|---|
| **Trip** | *Default RTD Trip* |
| **Voting Trip** | *Voting Trip. Trip if one of the voting groups has a pending/active trip.* |

### *1..n, AnalogOutputList*

Selection list referenced by the following parameters:

- ⮡ AnaP[1] . Measuring Input

| 1..n, AnalogOutputList | Description |
|---|---|
| **“-”** | *No assignment* |
| AnIn[1] . **Value** | *Measured value of the Input in percent* |
| AnIn[2] . **Value** | *Measured value of the Input in percent* |
| AnIn[3] . **Value** | *Measured value of the Input in percent* |
| AnIn[4] . **Value** | *Measured value of the Input in percent* |

### *t-Alarm*

Tripping Delay

Selection list referenced by the following parameters:

- ⮡ AnaP[1] . Alarm mode

| t-Alarm | Description |
|---|---|
| **Over** | *Alarm, when the input signal exceeds the threshold.* |
| **Under** | *Under* |

***Scheme***

Via this selection menu, the BF supervision scheme is to be selected.

Selection list referenced by the following parameters:

- ⮡ CBF[1] . Scheme

| Scheme | Description |
|---|---|
| **50BF** | *A Breaker Failure is detected, if the measured currents do not fall below a settable threshold within a settable time interval.* |
| **CB Pos** | *A Circuit Breaker Failure is detected after a CB open command, if the Position Contacts of the Circuit Breaker do not allow the conclusion that the Breaker is now in the Open Position within a settable time interval.* |
| **50BF and CB Pos** | *A Circuit Breaker Failure is detected if the evaluation of the Position Indicators or the evaluation of the current measurement indicate that the CB Off-Command was not excecuted. This scheme is called "Minimal Current Scheme" according to IEEEC37.119.* |

***CB List***

Selection list referenced by the following parameters:

- ⮡ CBF[1] . CB

| CB List | Description |
|---|---|
| ***“-”*** | *No assignment* |
| SG[1] . | |
| SG[2] . | |
| SG[3] . | |
| SG[4] . | |
| SG[5] . | |

| CB List | Description |
|---|---|
| SG[6] . | |

### *Trigger*

Determining the trigger mode for the Breaker Failure. The selection will pickup the Breaker Failure as well as the assignments (Trigger 1, Trigger 2, Trigger 3). They are OR connected.

Selection list referenced by the following parameters:

- ⮡ CBF[1] . Trigger

| Trigger | Description |
|---|---|
| **- . -** | *no assignment* |
| **All Trips** | *All trip signals that are assigned to this breaker (within the trip manager) will start the BF module.* |
| **External Trips** | *All external trips that are assigned to this breaker (within the trip manager) will start the BF module.* |
| **Current Trips** | *All current trips that are assigned to this breaker (within the trip manager) will start the BF module.* |

### *External Trips*

All external trips that are assigned to this breaker (within the trip manager) will start the BF module.

| External Trips | Description |
|---|---|
| **“-”** | *No assignment* |
| Intertripping . **TripCmd** | *Signal: Trip Command* |
| ExP[1] . **TripCmd** | *Signal: Trip Command* |
| ExP[2] . **TripCmd** | *Signal: Trip Command* |
| ExP[3] . **TripCmd** | *Signal: Trip Command* |
| ExP[4] . **TripCmd** | *Signal: Trip Command* |
| Ext Sudd Press . **TripCmd** | *Signal: Trip Command* |
| Ext Oil Temp . **TripCmd** | *Signal: Trip Command* |

| External Trips | Description |
|---|---|
| Ext Temp Superv[1] . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[2] . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[3] . **TripCmd** | *Signal: Trip Command* |
| AnaP[1] . **TripCmd** | *Signal: Trip Command* |
| AnaP[2] . **TripCmd** | *Signal: Trip Command* |
| AnaP[3] . **TripCmd** | *Signal: Trip Command* |
| AnaP[4] . **TripCmd** | *Signal: Trip Command* |
| AnaP[5] . **TripCmd** | *Signal: Trip Command* |
| AnaP[6] . **TripCmd** | *Signal: Trip Command* |
| AnaP[7] . **TripCmd** | *Signal: Trip Command* |
| AnaP[8] . **TripCmd** | *Signal: Trip Command* |

***Current Trips***

All current trips that are assigned to this breaker (within the trip manager) will start the BF module.

| Current Trips | Description |
|---|---|
| **“-”** | *No assignment* |
| Id . **TripCmd** | *Signal: Trip Command* |
| IdH . **TripCmd** | *Signal: Trip Command* |
| IdG[1] . **TripCmd** | *Signal: Trip Command* |
| IdGH[1] . **TripCmd** | *Signal: Trip Command* |
| IdG[2] . **TripCmd** | *Signal: Trip Command* |
| IdGH[2] . **TripCmd** | *Signal: Trip Command* |
| I[1] . **TripCmd** | *Signal: Trip Command* |
| I[2] . **TripCmd** | *Signal: Trip Command* |
| I[3] . **TripCmd** | *Signal: Trip Command* |
| I[4] . **TripCmd** | *Signal: Trip Command* |
| I[5] . **TripCmd** | *Signal: Trip Command* |
| I[6] . **TripCmd** | *Signal: Trip Command* |

| Current Trips | Description |
|---|---|
| IG[1] . **TripCmd** | *Signal: Trip Command* |
| IG[2] . **TripCmd** | *Signal: Trip Command* |
| IG[3] . **TripCmd** | *Signal: Trip Command* |
| IG[4] . **TripCmd** | *Signal: Trip Command* |
| ThR . **TripCmd** | *Signal: Trip Command* |
| I2>[1] . **TripCmd** | *Signal: Trip Command* |
| I2>[2] . **TripCmd** | *Signal: Trip Command* |

***Trigger***

Determining the trigger mode for the Breaker Failure. The selection will pickup the Breaker Failure as well as the assignments (Trigger 1, Trigger 2, Trigger 3). They are OR connected.

Selection list referenced by the following parameters:

- ⮡ CBF[1] . Trigger1

| Trigger | Description |
|---|---|
| **“-”** | *No assignment* |
| Id . **TripCmd** | *Signal: Trip Command* |
| IdH . **TripCmd** | *Signal: Trip Command* |
| IdG[1] . **TripCmd** | *Signal: Trip Command* |
| IdGH[1] . **TripCmd** | *Signal: Trip Command* |
| IdG[2] . **TripCmd** | *Signal: Trip Command* |
| IdGH[2] . **TripCmd** | *Signal: Trip Command* |
| I[1] . **TripCmd** | *Signal: Trip Command* |
| I[2] . **TripCmd** | *Signal: Trip Command* |
| I[3] . **TripCmd** | *Signal: Trip Command* |
| I[4] . **TripCmd** | *Signal: Trip Command* |
| I[5] . **TripCmd** | *Signal: Trip Command* |
| I[6] . **TripCmd** | *Signal: Trip Command* |
| IG[1] . **TripCmd** | *Signal: Trip Command* |
| IG[2] . **TripCmd** | *Signal: Trip Command* |

| Trigger | Description |
|---|---|
| IG[3] . **TripCmd** | *Signal: Trip Command* |
| IG[4] . **TripCmd** | *Signal: Trip Command* |
| ThR . **TripCmd** | *Signal: Trip Command* |
| I2>[1] . **TripCmd** | *Signal: Trip Command* |
| I2>[2] . **TripCmd** | *Signal: Trip Command* |
| V[1] . **TripCmd** | *Signal: Trip Command* |
| V[2] . **TripCmd** | *Signal: Trip Command* |
| V[3] . **TripCmd** | *Signal: Trip Command* |
| V[4] . **TripCmd** | *Signal: Trip Command* |
| V[5] . **TripCmd** | *Signal: Trip Command* |
| V[6] . **TripCmd** | *Signal: Trip Command* |
| df/dt . **TripCmd** | *Signal: Trip Command* |
| delta phi . **TripCmd** | *Signal: Trip Command* |
| Intertripping . **TripCmd** | *Signal: Trip Command* |
| P . **TripCmd** | *Signal: Trip Command* |
| Q . **TripCmd** | *Signal: Trip Command* |
| LVRT[1] . **TripCmd** | *Signal: Trip Command* |
| LVRT[2] . **TripCmd** | *Signal: Trip Command* |
| VG[1] . **TripCmd** | *Signal: Trip Command* |
| VG[2] . **TripCmd** | *Signal: Trip Command* |
| V012[1] . **TripCmd** | *Signal: Trip Command* |
| V012[2] . **TripCmd** | *Signal: Trip Command* |
| V012[3] . **TripCmd** | *Signal: Trip Command* |
| V012[4] . **TripCmd** | *Signal: Trip Command* |
| V012[5] . **TripCmd** | *Signal: Trip Command* |
| V012[6] . **TripCmd** | *Signal: Trip Command* |
| f[1] . **TripCmd** | *Signal: Trip Command* |
| f[2] . **TripCmd** | *Signal: Trip Command* |
| f[3] . **TripCmd** | *Signal: Trip Command* |
| f[4] . **TripCmd** | *Signal: Trip Command* |
| f[5] . **TripCmd** | *Signal: Trip Command* |
| f[6] . **TripCmd** | *Signal: Trip Command* |

| Trigger | Description |
|---|---|
| PQS[1] . **TripCmd** | *Signal: Trip Command* |
| PQS[2] . **TripCmd** | *Signal: Trip Command* |
| PQS[3] . **TripCmd** | *Signal: Trip Command* |
| PQS[4] . **TripCmd** | *Signal: Trip Command* |
| PQS[5] . **TripCmd** | *Signal: Trip Command* |
| PQS[6] . **TripCmd** | *Signal: Trip Command* |
| PF[1] . **TripCmd** | *Signal: Trip Command* |
| PF[2] . **TripCmd** | *Signal: Trip Command* |
| Q->&V< . **Decoupling PCC** | *Signal: Decoupling at the Point of Common Coupling* |
| Q->&V< . **Decoupling Distr. Generator** | *Signal: Decoupling of the (local) Energy Generator/Resource* |
| UFLS . **Trip** | *Signal: Signal: Trip* |
| V/f>[1] . **TripCmd** | *Signal: Trip Command* |
| V/f>[2] . **TripCmd** | *Signal: Trip Command* |
| ExP[1] . **TripCmd** | *Signal: Trip Command* |
| ExP[2] . **TripCmd** | *Signal: Trip Command* |
| ExP[3] . **TripCmd** | *Signal: Trip Command* |
| ExP[4] . **TripCmd** | *Signal: Trip Command* |
| Ext Sudd Press . **TripCmd** | *Signal: Trip Command* |
| Ext Oil Temp . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[1] . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[2] . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[3] . **TripCmd** | *Signal: Trip Command* |
| RTD . **TripCmd** | *Signal: Trip Command* |
| DI Slot X1 . **DI 1** | *Signal: Digital Input* |
| DI Slot X1 . **DI 2** | *Signal: Digital Input* |
| DI Slot X1 . **DI 3** | *Signal: Digital Input* |
| DI Slot X1 . **DI 4** | *Signal: Digital Input* |
| DI Slot X1 . **DI 5** | *Signal: Digital Input* |

| Trigger | Description |
|---|---|
| DI Slot X1 . **DI 6** | *Signal: Digital Input* |
| DI Slot X1 . **DI 7** | *Signal: Digital Input* |
| DI Slot X1 . **DI 8** | *Signal: Digital Input* |
| DI Slot X5 . **DI 1** | *Signal: Digital Input* |
| DI Slot X5 . **DI 2** | *Signal: Digital Input* |
| DI Slot X5 . **DI 3** | *Signal: Digital Input* |
| DI Slot X5 . **DI 4** | *Signal: Digital Input* |
| DI Slot X5 . **DI 5** | *Signal: Digital Input* |
| DI Slot X5 . **DI 6** | *Signal: Digital Input* |
| DI Slot X5 . **DI 7** | *Signal: Digital Input* |
| DI Slot X5 . **DI 8** | *Signal: Digital Input* |
| DI Slot X6 . **DI 1** | *Signal: Digital Input* |
| DI Slot X6 . **DI 2** | *Signal: Digital Input* |
| DI Slot X6 . **DI 3** | *Signal: Digital Input* |
| DI Slot X6 . **DI 4** | *Signal: Digital Input* |
| DI Slot X6 . **DI 5** | *Signal: Digital Input* |
| DI Slot X6 . **DI 6** | *Signal: Digital Input* |
| DI Slot X6 . **DI 7** | *Signal: Digital Input* |
| DI Slot X6 . **DI 8** | *Signal: Digital Input* |
| AnaP[1] . **TripCmd** | *Signal: Trip Command* |
| AnaP[2] . **TripCmd** | *Signal: Trip Command* |
| AnaP[3] . **TripCmd** | *Signal: Trip Command* |
| AnaP[4] . **TripCmd** | *Signal: Trip Command* |
| AnaP[5] . **TripCmd** | *Signal: Trip Command* |
| AnaP[6] . **TripCmd** | *Signal: Trip Command* |
| AnaP[7] . **TripCmd** | *Signal: Trip Command* |
| AnaP[8] . **TripCmd** | *Signal: Trip Command* |
| Logics . **LE1.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE1.Timer Out** | *Signal: Timer Output* |
| Logics . **LE1.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE1.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| Trigger | Description |
|---|---|
| Logics . **LE2.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE2.Timer Out** | *Signal: Timer Output* |
| Logics . **LE2.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE2.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE3.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE3.Timer Out** | *Signal: Timer Output* |
| Logics . **LE3.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE3.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE4.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE4.Timer Out** | *Signal: Timer Output* |
| Logics . **LE4.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE4.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE5.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE5.Timer Out** | *Signal: Timer Output* |
| Logics . **LE5.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE5.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE6.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE6.Timer Out** | *Signal: Timer Output* |
| Logics . **LE6.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE6.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE7.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE7.Timer Out** | *Signal: Timer Output* |
| Logics . **LE7.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE7.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE8.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE8.Timer Out** | *Signal: Timer Output* |
| Logics . **LE8.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE8.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| Trigger | Description |
|---|---|
| Logics . **LE9.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE9.Timer Out** | *Signal: Timer Output* |
| Logics . **LE9.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE9.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE10.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE10.Timer Out** | *Signal: Timer Output* |
| Logics . **LE10.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE10.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE11.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE11.Timer Out** | *Signal: Timer Output* |
| Logics . **LE11.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE11.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE12.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE12.Timer Out** | *Signal: Timer Output* |
| Logics . **LE12.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE12.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE13.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE13.Timer Out** | *Signal: Timer Output* |
| Logics . **LE13.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE13.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE14.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE14.Timer Out** | *Signal: Timer Output* |
| Logics . **LE14.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE14.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE15.Gate Out** | *Signal: Output of the logic gate* |

| Trigger | Description |
|---|---|
| Logics . **LE15.Timer Out** | *Signal: Timer Output* |
| Logics . **LE15.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE15.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE16.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE16.Timer Out** | *Signal: Timer Output* |
| Logics . **LE16.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE16.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE17.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE17.Timer Out** | *Signal: Timer Output* |
| Logics . **LE17.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE17.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE18.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE18.Timer Out** | *Signal: Timer Output* |
| Logics . **LE18.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE18.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE19.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE19.Timer Out** | *Signal: Timer Output* |
| Logics . **LE19.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE19.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE20.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE20.Timer Out** | *Signal: Timer Output* |
| Logics . **LE20.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE20.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE21.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE21.Timer Out** | *Signal: Timer Output* |

| Trigger | Description |
|---|---|
| Logics . **LE21.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE21.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE22.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE22.Timer Out** | *Signal: Timer Output* |
| Logics . **LE22.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE22.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE23.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE23.Timer Out** | *Signal: Timer Output* |
| Logics . **LE23.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE23.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE24.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE24.Timer Out** | *Signal: Timer Output* |
| Logics . **LE24.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE24.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE25.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE25.Timer Out** | *Signal: Timer Output* |
| Logics . **LE25.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE25.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE26.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE26.Timer Out** | *Signal: Timer Output* |
| Logics . **LE26.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE26.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE27.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE27.Timer Out** | *Signal: Timer Output* |
| Logics . **LE27.Out** | *Signal: Latched Output (Q)* |

| Trigger | Description |
|---|---|
| Logics . **LE27.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE28.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE28.Timer Out** | *Signal: Timer Output* |
| Logics . **LE28.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE28.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE29.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE29.Timer Out** | *Signal: Timer Output* |
| Logics . **LE29.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE29.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE30.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE30.Timer Out** | *Signal: Timer Output* |
| Logics . **LE30.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE30.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE31.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE31.Timer Out** | *Signal: Timer Output* |
| Logics . **LE31.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE31.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE32.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE32.Timer Out** | *Signal: Timer Output* |
| Logics . **LE32.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE32.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE33.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE33.Timer Out** | *Signal: Timer Output* |
| Logics . **LE33.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE33.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| Trigger | Description |
|---|---|
| Logics . **LE34.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE34.Timer Out** | *Signal: Timer Output* |
| Logics . **LE34.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE34.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE35.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE35.Timer Out** | *Signal: Timer Output* |
| Logics . **LE35.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE35.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE36.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE36.Timer Out** | *Signal: Timer Output* |
| Logics . **LE36.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE36.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE37.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE37.Timer Out** | *Signal: Timer Output* |
| Logics . **LE37.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE37.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE38.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE38.Timer Out** | *Signal: Timer Output* |
| Logics . **LE38.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE38.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE39.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE39.Timer Out** | *Signal: Timer Output* |
| Logics . **LE39.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE39.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE40.Gate Out** | *Signal: Output of the logic gate* |

| Trigger | Description |
|---|---|
| Logics . **LE40.Timer Out** | *Signal: Timer Output* |
| Logics . **LE40.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE40.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE41.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE41.Timer Out** | *Signal: Timer Output* |
| Logics . **LE41.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE41.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE42.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE42.Timer Out** | *Signal: Timer Output* |
| Logics . **LE42.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE42.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE43.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE43.Timer Out** | *Signal: Timer Output* |
| Logics . **LE43.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE43.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE44.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE44.Timer Out** | *Signal: Timer Output* |
| Logics . **LE44.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE44.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE45.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE45.Timer Out** | *Signal: Timer Output* |
| Logics . **LE45.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE45.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE46.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE46.Timer Out** | *Signal: Timer Output* |

| Trigger | Description |
|---|---|
| Logics . **LE46.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE46.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE47.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE47.Timer Out** | *Signal: Timer Output* |
| Logics . **LE47.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE47.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE48.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE48.Timer Out** | *Signal: Timer Output* |
| Logics . **LE48.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE48.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE49.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE49.Timer Out** | *Signal: Timer Output* |
| Logics . **LE49.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE49.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE50.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE50.Timer Out** | *Signal: Timer Output* |
| Logics . **LE50.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE50.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE51.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE51.Timer Out** | *Signal: Timer Output* |
| Logics . **LE51.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE51.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE52.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE52.Timer Out** | *Signal: Timer Output* |
| Logics . **LE52.Out** | *Signal: Latched Output (Q)* |

| Trigger | Description |
|---|---|
| Logics . **LE52.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE53.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE53.Timer Out** | *Signal: Timer Output* |
| Logics . **LE53.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE53.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE54.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE54.Timer Out** | *Signal: Timer Output* |
| Logics . **LE54.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE54.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE55.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE55.Timer Out** | *Signal: Timer Output* |
| Logics . **LE55.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE55.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE56.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE56.Timer Out** | *Signal: Timer Output* |
| Logics . **LE56.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE56.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE57.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE57.Timer Out** | *Signal: Timer Output* |
| Logics . **LE57.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE57.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE58.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE58.Timer Out** | *Signal: Timer Output* |
| Logics . **LE58.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE58.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| Trigger | Description |
|---|---|
| Logics . **LE59.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE59.Timer Out** | *Signal: Timer Output* |
| Logics . **LE59.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE59.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE60.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE60.Timer Out** | *Signal: Timer Output* |
| Logics . **LE60.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE60.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE61.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE61.Timer Out** | *Signal: Timer Output* |
| Logics . **LE61.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE61.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE62.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE62.Timer Out** | *Signal: Timer Output* |
| Logics . **LE62.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE62.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE63.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE63.Timer Out** | *Signal: Timer Output* |
| Logics . **LE63.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE63.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE64.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE64.Timer Out** | *Signal: Timer Output* |
| Logics . **LE64.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE64.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE65.Gate Out** | *Signal: Output of the logic gate* |

| Trigger | Description |
|---|---|
| Logics . **LE65.Timer Out** | *Signal: Timer Output* |
| Logics . **LE65.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE65.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE66.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE66.Timer Out** | *Signal: Timer Output* |
| Logics . **LE66.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE66.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE67.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE67.Timer Out** | *Signal: Timer Output* |
| Logics . **LE67.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE67.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE68.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE68.Timer Out** | *Signal: Timer Output* |
| Logics . **LE68.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE68.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE69.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE69.Timer Out** | *Signal: Timer Output* |
| Logics . **LE69.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE69.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE70.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE70.Timer Out** | *Signal: Timer Output* |
| Logics . **LE70.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE70.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE71.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE71.Timer Out** | *Signal: Timer Output* |

| Trigger | Description |
|---|---|
| Logics . **LE71.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE71.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE72.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE72.Timer Out** | *Signal: Timer Output* |
| Logics . **LE72.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE72.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE73.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE73.Timer Out** | *Signal: Timer Output* |
| Logics . **LE73.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE73.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE74.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE74.Timer Out** | *Signal: Timer Output* |
| Logics . **LE74.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE74.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE75.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE75.Timer Out** | *Signal: Timer Output* |
| Logics . **LE75.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE75.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE76.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE76.Timer Out** | *Signal: Timer Output* |
| Logics . **LE76.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE76.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE77.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE77.Timer Out** | *Signal: Timer Output* |
| Logics . **LE77.Out** | *Signal: Latched Output (Q)* |

| Trigger | Description |
|---|---|
| Logics . **LE77.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE78.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE78.Timer Out** | *Signal: Timer Output* |
| Logics . **LE78.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE78.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE79.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE79.Timer Out** | *Signal: Timer Output* |
| Logics . **LE79.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE79.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE80.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE80.Timer Out** | *Signal: Timer Output* |
| Logics . **LE80.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE80.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ TCS[1] . Mode

| Mode | Description |
|---|---|
| **Closed** | *Selects that the breaker is going to be monitored when the breaker is closed.* |
| **Either** | *Selects that the breaker is going to be monitored when the breaker is either closed or open.* |

### *Blo Trigger*

Determining the blockings for Loss of Potential

Selection list referenced by the following parameters:

- LOP . Blo Trigger1

| Blo Trigger | Description |
|---|---|
| **“-”** | *No assignment* |
| I[1] . **Alarm** | *Signal: Alarm* |
| I[2] . **Alarm** | *Signal: Alarm* |
| I[3] . **Alarm** | *Signal: Alarm* |
| I[4] . **Alarm** | *Signal: Alarm* |
| I[5] . **Alarm** | *Signal: Alarm* |
| I[6] . **Alarm** | *Signal: Alarm* |
| IG[1] . **Alarm** | *Signal: The alarm threshold has been exceeded.* |
| IG[2] . **Alarm** | *Signal: The alarm threshold has been exceeded.* |
| IG[3] . **Alarm** | *Signal: The alarm threshold has been exceeded.* |
| IG[4] . **Alarm** | *Signal: The alarm threshold has been exceeded.* |

### *PSet-Switch*

Switching Parameter Set

Selection list referenced by the following parameters:

- Sys . PSet-Switch

| PSet-Switch | Description |
|---|---|
| **PS1** | *The currently active Parameter Set is PS1* |
| **PS2** | *The currently active Parameter Set is PS2* |
| **PS3** | *The currently active Parameter Set is PS3* |
| **PS4** | *The currently active Parameter Set is PS4* |
| **PSS via Inp fct** | *Parameter Set Switch via input function* |
| **PSS via Scada** | *Parameter Set Switch via Scada. Write into this output byte the integer of the parameter set that should become active (e.g. 4 => Switch onto parameter set 4).* |

### *1..n, PSS*

List of the available Parameter Setting Group Switching Signals

Selection list referenced by the following parameters:

- ⮡ Sys . PS1: activated by

| 1..n, PSS | Description |
|---|---|
| **“-”** | *No assignment* |
| CTS[1] . **Alarm** | *Signal: Alarm Current Transformer Measuring Circuit Supervision* |
| CTS[2] . **Alarm** | *Signal: Alarm Current Transformer Measuring Circuit Supervision* |
| LOP . **Alarm** | *Signal: Alarm Loss of Potential* |
| DI Slot X1 . **DI 1** | *Signal: Digital Input* |
| DI Slot X1 . **DI 2** | *Signal: Digital Input* |
| DI Slot X1 . **DI 3** | *Signal: Digital Input* |
| DI Slot X1 . **DI 4** | *Signal: Digital Input* |
| DI Slot X1 . **DI 5** | *Signal: Digital Input* |
| DI Slot X1 . **DI 6** | *Signal: Digital Input* |
| DI Slot X1 . **DI 7** | *Signal: Digital Input* |
| DI Slot X1 . **DI 8** | *Signal: Digital Input* |
| DI Slot X5 . **DI 1** | *Signal: Digital Input* |
| DI Slot X5 . **DI 2** | *Signal: Digital Input* |
| DI Slot X5 . **DI 3** | *Signal: Digital Input* |
| DI Slot X5 . **DI 4** | *Signal: Digital Input* |
| DI Slot X5 . **DI 5** | *Signal: Digital Input* |
| DI Slot X5 . **DI 6** | *Signal: Digital Input* |
| DI Slot X5 . **DI 7** | *Signal: Digital Input* |
| DI Slot X5 . **DI 8** | *Signal: Digital Input* |
| DI Slot X6 . **DI 1** | *Signal: Digital Input* |
| DI Slot X6 . **DI 2** | *Signal: Digital Input* |
| DI Slot X6 . **DI 3** | *Signal: Digital Input* |
| DI Slot X6 . **DI 4** | *Signal: Digital Input* |
| DI Slot X6 . **DI 5** | *Signal: Digital Input* |
| DI Slot X6 . **DI 6** | *Signal: Digital Input* |

| 1..n, PSS | Description |
|---|---|
| DI Slot X6 . **DI 7** | *Signal: Digital Input* |
| DI Slot X6 . **DI 8** | *Signal: Digital Input* |
| Logics . **LE1.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE1.Timer Out** | *Signal: Timer Output* |
| Logics . **LE1.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE1.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE2.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE2.Timer Out** | *Signal: Timer Output* |
| Logics . **LE2.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE2.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE3.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE3.Timer Out** | *Signal: Timer Output* |
| Logics . **LE3.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE3.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE4.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE4.Timer Out** | *Signal: Timer Output* |
| Logics . **LE4.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE4.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE5.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE5.Timer Out** | *Signal: Timer Output* |
| Logics . **LE5.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE5.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE6.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE6.Timer Out** | *Signal: Timer Output* |
| Logics . **LE6.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE6.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE7.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE7.Timer Out** | *Signal: Timer Output* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE7.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE7.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE8.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE8.Timer Out** | *Signal: Timer Output* |
| Logics . **LE8.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE8.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE9.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE9.Timer Out** | *Signal: Timer Output* |
| Logics . **LE9.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE9.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE10.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE10.Timer Out** | *Signal: Timer Output* |
| Logics . **LE10.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE10.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE11.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE11.Timer Out** | *Signal: Timer Output* |
| Logics . **LE11.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE11.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE12.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE12.Timer Out** | *Signal: Timer Output* |
| Logics . **LE12.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE12.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE13.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE13.Timer Out** | *Signal: Timer Output* |
| Logics . **LE13.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE13.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE14.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE14.Timer Out** | *Signal: Timer Output* |
| Logics . **LE14.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE14.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE15.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE15.Timer Out** | *Signal: Timer Output* |
| Logics . **LE15.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE15.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE16.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE16.Timer Out** | *Signal: Timer Output* |
| Logics . **LE16.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE16.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE17.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE17.Timer Out** | *Signal: Timer Output* |
| Logics . **LE17.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE17.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE18.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE18.Timer Out** | *Signal: Timer Output* |
| Logics . **LE18.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE18.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE19.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE19.Timer Out** | *Signal: Timer Output* |
| Logics . **LE19.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE19.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE20.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE20.Timer Out** | *Signal: Timer Output* |
| Logics . **LE20.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE20.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE21.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE21.Timer Out** | *Signal: Timer Output* |
| Logics . **LE21.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE21.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE22.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE22.Timer Out** | *Signal: Timer Output* |
| Logics . **LE22.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE22.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE23.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE23.Timer Out** | *Signal: Timer Output* |
| Logics . **LE23.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE23.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE24.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE24.Timer Out** | *Signal: Timer Output* |
| Logics . **LE24.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE24.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE25.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE25.Timer Out** | *Signal: Timer Output* |
| Logics . **LE25.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE25.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE26.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE26.Timer Out** | *Signal: Timer Output* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE26.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE26.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE27.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE27.Timer Out** | *Signal: Timer Output* |
| Logics . **LE27.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE27.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE28.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE28.Timer Out** | *Signal: Timer Output* |
| Logics . **LE28.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE28.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE29.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE29.Timer Out** | *Signal: Timer Output* |
| Logics . **LE29.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE29.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE30.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE30.Timer Out** | *Signal: Timer Output* |
| Logics . **LE30.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE30.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE31.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE31.Timer Out** | *Signal: Timer Output* |
| Logics . **LE31.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE31.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE32.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE32.Timer Out** | *Signal: Timer Output* |
| Logics . **LE32.Out** | *Signal: Latched Output (Q)* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE32.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE33.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE33.Timer Out** | *Signal: Timer Output* |
| Logics . **LE33.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE33.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE34.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE34.Timer Out** | *Signal: Timer Output* |
| Logics . **LE34.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE34.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE35.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE35.Timer Out** | *Signal: Timer Output* |
| Logics . **LE35.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE35.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE36.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE36.Timer Out** | *Signal: Timer Output* |
| Logics . **LE36.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE36.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE37.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE37.Timer Out** | *Signal: Timer Output* |
| Logics . **LE37.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE37.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE38.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE38.Timer Out** | *Signal: Timer Output* |
| Logics . **LE38.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE38.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE39.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE39.Timer Out** | *Signal: Timer Output* |
| Logics . **LE39.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE39.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE40.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE40.Timer Out** | *Signal: Timer Output* |
| Logics . **LE40.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE40.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE41.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE41.Timer Out** | *Signal: Timer Output* |
| Logics . **LE41.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE41.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE42.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE42.Timer Out** | *Signal: Timer Output* |
| Logics . **LE42.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE42.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE43.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE43.Timer Out** | *Signal: Timer Output* |
| Logics . **LE43.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE43.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE44.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE44.Timer Out** | *Signal: Timer Output* |
| Logics . **LE44.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE44.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE45.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE45.Timer Out** | *Signal: Timer Output* |
| Logics . **LE45.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE45.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE46.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE46.Timer Out** | *Signal: Timer Output* |
| Logics . **LE46.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE46.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE47.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE47.Timer Out** | *Signal: Timer Output* |
| Logics . **LE47.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE47.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE48.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE48.Timer Out** | *Signal: Timer Output* |
| Logics . **LE48.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE48.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE49.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE49.Timer Out** | *Signal: Timer Output* |
| Logics . **LE49.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE49.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE50.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE50.Timer Out** | *Signal: Timer Output* |
| Logics . **LE50.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE50.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE51.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE51.Timer Out** | *Signal: Timer Output* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE51.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE51.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE52.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE52.Timer Out** | *Signal: Timer Output* |
| Logics . **LE52.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE52.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE53.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE53.Timer Out** | *Signal: Timer Output* |
| Logics . **LE53.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE53.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE54.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE54.Timer Out** | *Signal: Timer Output* |
| Logics . **LE54.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE54.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE55.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE55.Timer Out** | *Signal: Timer Output* |
| Logics . **LE55.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE55.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE56.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE56.Timer Out** | *Signal: Timer Output* |
| Logics . **LE56.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE56.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE57.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE57.Timer Out** | *Signal: Timer Output* |
| Logics . **LE57.Out** | *Signal: Latched Output (Q)* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE57.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE58.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE58.Timer Out** | *Signal: Timer Output* |
| Logics . **LE58.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE58.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE59.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE59.Timer Out** | *Signal: Timer Output* |
| Logics . **LE59.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE59.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE60.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE60.Timer Out** | *Signal: Timer Output* |
| Logics . **LE60.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE60.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE61.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE61.Timer Out** | *Signal: Timer Output* |
| Logics . **LE61.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE61.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE62.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE62.Timer Out** | *Signal: Timer Output* |
| Logics . **LE62.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE62.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE63.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE63.Timer Out** | *Signal: Timer Output* |
| Logics . **LE63.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE63.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE64.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE64.Timer Out** | *Signal: Timer Output* |
| Logics . **LE64.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE64.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE65.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE65.Timer Out** | *Signal: Timer Output* |
| Logics . **LE65.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE65.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE66.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE66.Timer Out** | *Signal: Timer Output* |
| Logics . **LE66.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE66.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE67.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE67.Timer Out** | *Signal: Timer Output* |
| Logics . **LE67.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE67.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE68.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE68.Timer Out** | *Signal: Timer Output* |
| Logics . **LE68.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE68.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE69.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE69.Timer Out** | *Signal: Timer Output* |
| Logics . **LE69.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE69.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE70.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE70.Timer Out** | *Signal: Timer Output* |
| Logics . **LE70.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE70.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE71.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE71.Timer Out** | *Signal: Timer Output* |
| Logics . **LE71.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE71.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE72.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE72.Timer Out** | *Signal: Timer Output* |
| Logics . **LE72.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE72.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE73.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE73.Timer Out** | *Signal: Timer Output* |
| Logics . **LE73.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE73.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE74.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE74.Timer Out** | *Signal: Timer Output* |
| Logics . **LE74.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE74.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE75.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE75.Timer Out** | *Signal: Timer Output* |
| Logics . **LE75.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE75.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE76.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE76.Timer Out** | *Signal: Timer Output* |

| 1..n, PSS | Description |
|---|---|
| Logics . **LE76.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE76.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE77.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE77.Timer Out** | *Signal: Timer Output* |
| Logics . **LE77.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE77.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE78.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE78.Timer Out** | *Signal: Timer Output* |
| Logics . **LE78.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE78.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE79.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE79.Timer Out** | *Signal: Timer Output* |
| Logics . **LE79.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE79.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE80.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE80.Timer Out** | *Signal: Timer Output* |
| Logics . **LE80.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE80.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

### *Measuring method*

Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)

Selection list referenced by the following parameters:

- ⮡ I[1] . Measuring method

| Measuring method | Description |
|---|---|
| **Fundamental** | *Protection is based on Fundamental (1st. Harmonic)* |
| **True RMS** | *Protection is based on root-mean-square value (True RMS)* |
| **I2** | *Protection is based on negative phase sequence current* |

### *Char*

Characteristic

Selection list referenced by the following parameters:

- ⮡ I[1] . Char

| Char | Description |
|---|---|
| **DEFT** | *DEFT* |
| **IEC NINV** | *IEC Normal Inverse* |
| **IEC VINV** | *IEC Very Inverse [VINV]* |
| **IEC EINV** | *IEC Extremely Inverse - Characteristic* |
| **IEC LINV** | *IEC Long Time Inverse - Characteristic [LINV]* |
| **RINV** | *R Inverse [RINV] - Characteristic* |
| **ANSI MINV** | *ANSI Moderately Inverse [MINV] - Characteristic* |
| **ANSI VINV** | *ANSI Very Inverse [VINV]* |
| **ANSI EINV** | *ANSI Extremely Inverse - Characteristic* |
| **Therm Flat** | *Therm Flat [TF] - Characteristic* |
| **IT** | *IT - Characteristic* |
| **I2T** | *I2T - Characteristic* |
| **I4T** | *I4T - Characteristic* |

### *Reset Mode*

Selection list referenced by the following parameters:

- ⮡ I[1] . Reset Mode

| Reset Mode | Description |
|---|---|
| **instantaneous** | *Instantaneous reset: when the current drops below the pickup setting, the TOC time resets to zero within 2 cycles.* |
| **definite time** | *Reset after a fixed time.*<br><br>*(Remark: This delay is then defined by the parameter »t-reset delay«.)* |
| **inverse time** | *Calculated reset, based on the selected characteristic.* |

### *IH2 Blo*

Blocking the trip command, if an inrush is detected.

Selection list referenced by the following parameters:

- ⮡ I[1] . IH2 Blo
- ⮡ IG[1] . IH2 Blo

| IH2 Blo | Description |
|---|---|
| Sys . **inactive** | *inactive* |
| Sys . **active** | *active* |

### *Measuring Mode*

Selection list referenced by the following parameters:

- ⮡ I[1] . Measuring Mode

| Measuring Mode | Description |
|---|---|
| **Phase to Ground** | *Phase-to-Ground Voltage* |
| **Phase to Phase** | *The voltage transformers are connected to phase-to-phase voltages* |

### *VTS Block*

Blocking of the module if the voltage transformer supervision detects a fault.

Selection list referenced by the following parameters:

- ⮡ I[1] . Meas Circuit Superv

- ⮡ IG[1] . Meas Circuit Superv
- ⮡ V[1] . Meas Circuit Superv
- ⮡ P . MeasCircSv Volt
- ⮡ Q . MeasCircSv Volt
- ⮡ LVRT[1] . Meas Circuit Superv
- *[ . . . ]*

| VTS Block | Description |
|---|---|
| Sys . **inactive** | *inactive* |
| LOP . **active** | *active* |

***Measuring Channel***

Selection list referenced by the following parameters:

- ⮡ IG[1] . IG Source

| Measuring Channel | Description |
|---|---|
| CT W1 . **sensitive measurement** | *sensitive measurement* |
| CT W1 . **measured** | *measured* |
| CT W1 . **calculated** | *calculated* |
| CT W2 . **measured (X4)** | *measured (slot X4)* |
| CT W2 . **sensitive measurement (X4)** | *sensitive measurement (slot X4)* |

***Measuring method***

Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)

Selection list referenced by the following parameters:

- ⮡ IG[1] . Measuring method

| Measuring method | Description |
|---|---|
| **Fundamental** | *Protection is based on Fundamental (1st. Harmonic)* |

| Measuring method | Description |
|---|---|
| **True RMS** | *Protection is based on root-mean-square value (True RMS)* |

***VX Source***

Selection if VG is measured or calculated (neutral voltage or residual voltage)

Selection list referenced by the following parameters:

- ⮡ IG[1] . VX Source

| VX Source | Description |
|---|---|
| **measured** | *measured* |
| **calculated** | *calculated* |

***Char***

Characteristic

Selection list referenced by the following parameters:

- ⮡ IG[1] . Char

| Char | Description |
|---|---|
| **DEFT** | *DEFT* |
| **IEC NINV** | *IEC Normal Inverse* |
| **IEC VINV** | *IEC Very Inverse [VINV]* |
| **IEC EINV** | *IEC Extremely Inverse - Characteristic* |
| **IEC LINV** | *IEC Long Time Inverse - Characteristic [LINV]* |
| **RINV** | *R Inverse [RINV] - Characteristic* |
| **ANSI MINV** | *ANSI Moderately Inverse [MINV] - Characteristic* |
| **ANSI VINV** | *ANSI Very Inverse [VINV]* |
| **ANSI EINV** | *ANSI Extremely Inverse - Characteristic* |
| **Therm Flat** | *Therm Flat [TF] - Characteristic* |
| **IT** | *IT - Characteristic* |
| **I2T** | *I2T - Characteristic* |

| Char | Description |
|---|---|
| **I4T** | *I4T - Characteristic* |
| **RXIDG** | *Special Overcurrent Curve* |

### *Reset Mode*

Selection list referenced by the following parameters:

- ⮡ IG[1] . Reset Mode

| Reset Mode | Description |
|---|---|
| **instantaneous** | *Instantaneous reset: when the current drops below the pickup setting, the TOC time resets to zero within 2 cycles.* |
| **definite time** | *Reset after a fixed time.*<br><br>*(Remark: This delay is then defined by the parameter »t-reset delay«.)* |
| **inverse time** | *Calculated reset, based on the selected characteristic.* |

### *Char*

Characteristic

Selection list referenced by the following parameters:

- ⮡ I2>[1] . Char

| Char | Description |
|---|---|
| **DEFT** | *DEFT* |
| **INV** | *INV* |

### *block mode*

Selection list referenced by the following parameters:

- ⮡ IH2[1] . block mode

| block mode | Description |
|---|---|
| **1-ph Blo** | *1-ph Blo: If an inrush is detected in one phase, the corresponding phase of those modules will be blocked, where inrush blocking is set to active.* |
| **3-ph Blo** | *3-ph Blo: If an inrush is detected in at least one phase, all three phases of those modules where inrush blocking is set to active will be blocked (cross blocking).* |

### *Measuring Mode*

Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised

Selection list referenced by the following parameters:

- ⮡ V[1] . Measuring Mode

| Measuring Mode | Description |
|---|---|
| **Phase to Ground** | *The voltage transformers are connected to phase-to-ground voltages* |
| **Phase to Phase** | *The voltage transformers are connected to phase-to-phase voltages* |

### *Measuring method*

Measuring method: fundamental or rms or "sliding average supervision"

Selection list referenced by the following parameters:

- ⮡ V[1] . Measuring method

| Measuring method | Description |
|---|---|
| **Fundamental** | *Protection is based on Fundamental (1st. Harmonic)* |
| **True RMS** | *Protection is based on root-mean-square value (True RMS)* |
| **Vavg** | *Sliding Voltage Average Supervision. Note: The settings for the average calculation have to be made within menu [Device Para/ Statistics/Vavg].* |

### *Alarm Mode*

Alarm criterion for the voltage protection stage.

Selection list referenced by the following parameters:

- ⮡ V[1] . Alarm Mode

| Alarm Mode | Description |
|---|---|
| **any one** | *any one: Trip Command, if the tripping criterion is fulfilled within at least one phase.* |
| **any two** | *any two* |
| **all** | *all: Trip Command for 3p-faults, i.e. if the tripping criterion is fulfilled in all three phases.* |

***VX Source***

Selection if VG is measured or calculated (neutral voltage or residual voltage)

Selection list referenced by the following parameters:

- ⮡ VG[1] . VX Source

| VX Source | Description |
|---|---|
| **measured** | *VX/VG is measured at the 4th measuring input* |
| **calculated** | *VX/VG is calculated from the three phase-to-ground voltages.* |

***Measuring method***

Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)

Selection list referenced by the following parameters:

- ⮡ VG[1] . Measuring method

| Measuring method | Description |
|---|---|
| **Fundamental** | *Protection is based on Fundamental (1st. Harmonic)* |
| **True RMS** | *Protection is based on root-mean-square value (True RMS)* |

### *Mode*

general operation mode

Selection list referenced by the following parameters:

- ⮡ f[1] . df/dt mode

| Mode | Description |
|---|---|
| **absolute df/dt** | *positive and negative rise of frequency frequency* |
| **positive df/dt** | *positive rise of frequency* |
| **negative df/dt** | *negative rise of frequency frequency* |

### *VTS Block*

Blocking of the module if the voltage transformer supervision detects a fault.

Selection list referenced by the following parameters:

- ⮡ P . MeasCircSv Curr
- ⮡ Q . MeasCircSv Curr
- ⮡ PQS[1] . MeasCircSv Curr

| VTS Block | Description |
|---|---|
| Sys . **inactive** | *inactive* |
| Sys . **active** | *active* |

### *PowMeasMethod*

Determines if the active power, reactive power and apparent power are calculated on the basis of RMS or DFT.

Selection list referenced by the following parameters:

- ⮡ PQS[1] . PowMeasMethod

| PowMeasMethod | Description |
|---|---|
| **Fundamental** | *The active power, reactive power and apparent power are calculated on the basis of DFT.* |
| **True RMS** | *The active power, reactive power and apparent power are calculated on the basis of RMS.* |

### *Measuring method*

Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)

Selection list referenced by the following parameters:

- ⮡ PF[1] . Measuring method

| Measuring method | Description |
|---|---|
| **Fundamental** | *Protection is based on Fundamental (1st. Harmonic)* |
| **True RMS** | *Protection is based on root-mean-square value (True RMS)* |

### *Mode*

general operation mode

Selection list referenced by the following parameters:

- ⮡ PF[1] . Trig Mode
- ⮡ PF[1] . Res Mode

| Mode | Description |
|---|---|
| **I leads V** | *At capacitive loads (capacitor bank) the current phasor is leading to the voltage phasor.* |
| **I lags V** | *At inductive loads (e.g. motors) the current phasor is lagging to the voltage phasor.* |

### *Tripping characteristics of V/f Over-Excitation protection.*

Selection list referenced by the following parameters:

- ⮡ V/f>[1] . Curve Shape

| Tripping characteristics of V/f Over-Excitation protection. | Description |
|---|---|
| **DEFT** | *DEFT* |
| **Inv A** | *Inverse characteristic Type A* |

| Tripping characteristics of V/f Over-Excitation protection. | Description |
|---|---|
| **Inv B** | *Inverse characteristic Type B* |
| **Inv C** | *Inverse characteristic Type C* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ df/dt . df/dt mode

| Mode | Description |
|---|---|
| **absolute df/dt** | *positive and negative rise of frequency frequency* |
| **positive df/dt** | *positive rise of frequency* |
| **negative df/dt** | *negative rise of frequency frequency* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ delta phi . df/dt mode

| Mode | Description |
|---|---|
| **absolute df/dt** | *positive and negative rise of frequency frequency* |
| **positive df/dt** | *positive rise of frequency* |
| **negative df/dt** | *negative rise of frequency frequency* |

***PowMeasMethod***

Determines if the active power, reactive power and apparent power are calculated on the basis of RMS or DFT.

Selection list referenced by the following parameters:

- ⮡ P . PowMeasMethod

| PowMeasMethod | Description |
|---|---|
| **Fundamental** | *The active power, reactive power and apparent power are calculated on the basis of DFT.* |
| **True RMS** | *The active power, reactive power and apparent power are calculated on the basis of RMS.* |

***Measuring Mode***

Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised

Selection list referenced by the following parameters:

- ⮡ LVRT[1] . Measuring Mode

| Measuring Mode | Description |
|---|---|
| **Phase to Ground** | *The voltage transformers are connected to phase-to-ground voltages* |
| **Phase to Phase** | *The voltage transformers are connected to phase-to-phase voltages* |

***Measuring method***

Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)

Selection list referenced by the following parameters:

- ⮡ LVRT[1] . Measuring method

| Measuring method | Description |
|---|---|
| **Fundamental** | *Protection is based on Fundamental (1st. Harmonic)* |
| **True RMS** | *Protection is based on root-mean-square value (True RMS)* |

***Alarm Mode***

Alarm criterion for the voltage protection stage.

Selection list referenced by the following parameters:

- ⮡ LVRT[1] . Alarm Mode

| Alarm Mode | Description |
|---|---|
| **any one** | *any one: Trip Command, if the tripping criterion is fulfilled within at least one phase.* |
| **any two** | *any two: Trip Command only if the tripping criterion is fulfilled in minimum two phases.* |
| **all** | *all: Trip Command for 3p-faults, i.e. if the tripping criterion is fulfilled in all three phases.* |
| **only 2** | *only 2: Trip Command for 2p-faults, i.e. if the tripping criterion is fulfilled in exactly two phases.* |

### *Selection of the Q(V)-Method: Power Angle or Reactive Power Threshold*

Selection list referenced by the following parameters:

- ⮡ Q->&V< . QV-Method

| Selection of the Q(V)-Method: Power Angle or Reactive Power Threshold | Description |
|---|---|
| **Power Angle Supervision** | *Power Angle Supervision* |
| **Pure Reactive Power Superv** | *Pure Reactive Power Supervision* |

### *I1 Release*

Activation of the "I1 Minimum Current"-Criterion.

Selection list referenced by the following parameters:

- ⮡ Q->&V< . I1 Release

| I1 Release | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

### *Reconnect. Release Cond*

This parameter ensures that the mains voltage is recovered.

Selection list referenced by the following parameters:

- ReCon[1] . Reconnect. Release Cond

| Reconnect. Release Cond | Description |
|---|---|
| **V Internal Release** | *Release signal is being generated by internal voltage measuring values. The line-to-line voltage exceeds 95% Vn.* |
| **V Ext Release PCC** | *Release signal is being generated by the PCC (External Release). The line-to-line voltage exceeds 95% Vn.* |
| **Both** | *Both: Release signal is being generated by the PCC (External Release) and by internal voltage measuring values.* |

### *Measuring method*

Measuring method: fundamental or rms or "sliding average supervision"

Selection list referenced by the following parameters:

- ReCon[1] . Measuring method

| Measuring method | Description |
|---|---|
| **Fundamental** | *Protection is based on Fundamental (1st. Harmonic)* |
| **True RMS** | *Protection is based on root-mean-square value (True RMS)* |
| **Vavg** | *Sliding Voltage Average Supervision. Note: The settings for the average calculation have to be made within menu [Device Para/ Statistics/Vavg].* |

### *UFLS-Method*

Selection of the UFLS-Method: Power Angle or Active Power Threshold of frequency based only

Selection list referenced by the following parameters:

- UFLS . UFLS-Method

| UFLS-Method | Description |
|---|---|
| **No Pdir / Ex Pdir** | *Classic frequency based load shedding. Ignores the direction of the power flow or external control of the blocking area.* |

| UFLS-Method | Description |
|---|---|
| **Power Angle Supervision** | *Pure Active Power Supervision* |
| **Pure Active Power Superv** | *Pure Active Power Supervision* |

### *I1 Release*

"I Minimum Current" in order to prevent faulty tripping. Module will be released if the current exceeds this value.

Selection list referenced by the following parameters:

- ⮡ UFLS . I1 Release

| I1 Release | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

### *SyncMode*

Synchrocheck mode: GENERATOR2SYSTEM = Synchronizing generator to system (breaker close initiate needed). SYSTEM2SYSTEM = SynchronCheck between two systems (Stand-Alone, no breaker info needed)

Selection list referenced by the following parameters:

- ⮡ Sync . SyncMode

| SyncMode | Description |
|---|---|
| **System2System** | *SYSTEM2SYSTEM = SynchronCheck between two systems (Stand-Alone, no breaker info needed)* |
| **Generator2System** | *GENERATOR2SYSTEM = Synchronizing generator to system (breaker close initiate needed).* |

### *NonIL ResetMode*

Non-Interlocking ResetMode

Selection list referenced by the following parameters:

- ⮡ Ctrl . Res NonIL

| NonIL ResetMode | Description |
|---|---|
| **single Operation** | *single Operation* |
| **timeout** | *timeout* |
| **permanent** | *permanent* |

***Manipulate Position***

WARNING! Fake Position - Manual Position Manipulation

Selection list referenced by the following parameters:

- ⮡ SG[1] . Manipulate Position

| Manipulate Position | Description |
|---|---|
| **inactive** | *inactive* |
| **Pos OFF** | *Signal: Circuit Breaker is in OFF-Position* |
| **Pos ON** | *Signal: Circuit Breaker is in ON-Position* |

***1..n, Trip Cmds***

List of available Trip Commands

Selection list referenced by the following parameters:

- ⮡ SG[1] . Off Cmd1
- ⮡ SG[1] . Off Cmd2
- ⮡ SG[1] . Off Cmd3
- ⮡ SG[1] . Off Cmd4
- ⮡ SG[1] . Off Cmd5
- ⮡ SG[1] . Off Cmd6
- *[ . . . ]*

| 1..n, Trip Cmds | Description |
|---|---|
| **“-”** | *No assignment* |
| Id . **TripCmd** | *Signal: Trip Command* |

| 1..n, Trip Cmds | Description |
|---|---|
| IdH . **TripCmd** | *Signal: Trip Command* |
| IdG[1] . **TripCmd** | *Signal: Trip Command* |
| IdGH[1] . **TripCmd** | *Signal: Trip Command* |
| IdG[2] . **TripCmd** | *Signal: Trip Command* |
| IdGH[2] . **TripCmd** | *Signal: Trip Command* |
| I[1] . **TripCmd** | *Signal: Trip Command* |
| I[2] . **TripCmd** | *Signal: Trip Command* |
| I[3] . **TripCmd** | *Signal: Trip Command* |
| I[4] . **TripCmd** | *Signal: Trip Command* |
| I[5] . **TripCmd** | *Signal: Trip Command* |
| I[6] . **TripCmd** | *Signal: Trip Command* |
| IG[1] . **TripCmd** | *Signal: Trip Command* |
| IG[2] . **TripCmd** | *Signal: Trip Command* |
| IG[3] . **TripCmd** | *Signal: Trip Command* |
| IG[4] . **TripCmd** | *Signal: Trip Command* |
| ThR . **TripCmd** | *Signal: Trip Command* |
| I2>[1] . **TripCmd** | *Signal: Trip Command* |
| I2>[2] . **TripCmd** | *Signal: Trip Command* |
| V[1] . **TripCmd** | *Signal: Trip Command* |
| V[2] . **TripCmd** | *Signal: Trip Command* |
| V[3] . **TripCmd** | *Signal: Trip Command* |
| V[4] . **TripCmd** | *Signal: Trip Command* |
| V[5] . **TripCmd** | *Signal: Trip Command* |
| V[6] . **TripCmd** | *Signal: Trip Command* |
| df/dt . **TripCmd** | *Signal: Trip Command* |
| delta phi . **TripCmd** | *Signal: Trip Command* |
| Intertripping . **TripCmd** | *Signal: Trip Command* |
| P . **TripCmd** | *Signal: Trip Command* |
| Q . **TripCmd** | *Signal: Trip Command* |
| LVRT[1] . **TripCmd** | *Signal: Trip Command* |
| LVRT[2] . **TripCmd** | *Signal: Trip Command* |
| VG[1] . **TripCmd** | *Signal: Trip Command* |

| 1..n, Trip Cmds | Description |
|---|---|
| VG[2] . **TripCmd** | *Signal: Trip Command* |
| V012[1] . **TripCmd** | *Signal: Trip Command* |
| V012[2] . **TripCmd** | *Signal: Trip Command* |
| V012[3] . **TripCmd** | *Signal: Trip Command* |
| V012[4] . **TripCmd** | *Signal: Trip Command* |
| V012[5] . **TripCmd** | *Signal: Trip Command* |
| V012[6] . **TripCmd** | *Signal: Trip Command* |
| f[1] . **TripCmd** | *Signal: Trip Command* |
| f[2] . **TripCmd** | *Signal: Trip Command* |
| f[3] . **TripCmd** | *Signal: Trip Command* |
| f[4] . **TripCmd** | *Signal: Trip Command* |
| f[5] . **TripCmd** | *Signal: Trip Command* |
| f[6] . **TripCmd** | *Signal: Trip Command* |
| PQS[1] . **TripCmd** | *Signal: Trip Command* |
| PQS[2] . **TripCmd** | *Signal: Trip Command* |
| PQS[3] . **TripCmd** | *Signal: Trip Command* |
| PQS[4] . **TripCmd** | *Signal: Trip Command* |
| PQS[5] . **TripCmd** | *Signal: Trip Command* |
| PQS[6] . **TripCmd** | *Signal: Trip Command* |
| PF[1] . **TripCmd** | *Signal: Trip Command* |
| PF[2] . **TripCmd** | *Signal: Trip Command* |
| V/f>[1] . **TripCmd** | *Signal: Trip Command* |
| V/f>[2] . **TripCmd** | *Signal: Trip Command* |
| ExP[1] . **TripCmd** | *Signal: Trip Command* |
| ExP[2] . **TripCmd** | *Signal: Trip Command* |
| ExP[3] . **TripCmd** | *Signal: Trip Command* |
| ExP[4] . **TripCmd** | *Signal: Trip Command* |
| Ext Sudd Press . **TripCmd** | *Signal: Trip Command* |
| Ext Oil Temp . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[1] . **TripCmd** | *Signal: Trip Command* |

| 1..n, Trip Cmds | Description |
|---|---|
| Ext Temp Superv[2] . **TripCmd** | *Signal: Trip Command* |
| Ext Temp Superv[3] . **TripCmd** | *Signal: Trip Command* |
| RTD . **TripCmd** | *Signal: Trip Command* |
| AnaP[1] . **TripCmd** | *Signal: Trip Command* |
| AnaP[2] . **TripCmd** | *Signal: Trip Command* |
| AnaP[3] . **TripCmd** | *Signal: Trip Command* |
| AnaP[4] . **TripCmd** | *Signal: Trip Command* |
| AnaP[5] . **TripCmd** | *Signal: Trip Command* |
| AnaP[6] . **TripCmd** | *Signal: Trip Command* |
| AnaP[7] . **TripCmd** | *Signal: Trip Command* |
| AnaP[8] . **TripCmd** | *Signal: Trip Command* |

### *1..n, In-SyncList*

Selection list referenced by the following parameters:

- ⮡ SG[1] . Synchronism

| 1..n, In-SyncList | Description |
|---|---|
| **“-”** | *No assignment* |
| Sync . **Ready to Close** | *Signal: Ready to Close* |
| DI Slot X1 . **DI 1** | *Signal: Digital Input* |
| DI Slot X1 . **DI 2** | *Signal: Digital Input* |
| DI Slot X1 . **DI 3** | *Signal: Digital Input* |
| DI Slot X1 . **DI 4** | *Signal: Digital Input* |
| DI Slot X1 . **DI 5** | *Signal: Digital Input* |
| DI Slot X1 . **DI 6** | *Signal: Digital Input* |
| DI Slot X1 . **DI 7** | *Signal: Digital Input* |
| DI Slot X1 . **DI 8** | *Signal: Digital Input* |
| DI Slot X5 . **DI 1** | *Signal: Digital Input* |
| DI Slot X5 . **DI 2** | *Signal: Digital Input* |

| 1..n, In-SyncList | Description |
|---|---|
| DI Slot X5 . **DI 3** | *Signal: Digital Input* |
| DI Slot X5 . **DI 4** | *Signal: Digital Input* |
| DI Slot X5 . **DI 5** | *Signal: Digital Input* |
| DI Slot X5 . **DI 6** | *Signal: Digital Input* |
| DI Slot X5 . **DI 7** | *Signal: Digital Input* |
| DI Slot X5 . **DI 8** | *Signal: Digital Input* |
| DI Slot X6 . **DI 1** | *Signal: Digital Input* |
| DI Slot X6 . **DI 2** | *Signal: Digital Input* |
| DI Slot X6 . **DI 3** | *Signal: Digital Input* |
| DI Slot X6 . **DI 4** | *Signal: Digital Input* |
| DI Slot X6 . **DI 5** | *Signal: Digital Input* |
| DI Slot X6 . **DI 6** | *Signal: Digital Input* |
| DI Slot X6 . **DI 7** | *Signal: Digital Input* |
| DI Slot X6 . **DI 8** | *Signal: Digital Input* |
| Logics . **LE1.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE1.Timer Out** | *Signal: Timer Output* |
| Logics . **LE1.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE1.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE2.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE2.Timer Out** | *Signal: Timer Output* |
| Logics . **LE2.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE2.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE3.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE3.Timer Out** | *Signal: Timer Output* |
| Logics . **LE3.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE3.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE4.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE4.Timer Out** | *Signal: Timer Output* |
| Logics . **LE4.Out** | *Signal: Latched Output (Q)* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE4.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE5.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE5.Timer Out** | *Signal: Timer Output* |
| Logics . **LE5.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE5.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE6.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE6.Timer Out** | *Signal: Timer Output* |
| Logics . **LE6.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE6.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE7.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE7.Timer Out** | *Signal: Timer Output* |
| Logics . **LE7.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE7.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE8.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE8.Timer Out** | *Signal: Timer Output* |
| Logics . **LE8.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE8.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE9.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE9.Timer Out** | *Signal: Timer Output* |
| Logics . **LE9.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE9.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE10.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE10.Timer Out** | *Signal: Timer Output* |
| Logics . **LE10.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE10.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE11.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE11.Timer Out** | *Signal: Timer Output* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE11.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE11.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE12.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE12.Timer Out** | *Signal: Timer Output* |
| Logics . **LE12.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE12.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE13.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE13.Timer Out** | *Signal: Timer Output* |
| Logics . **LE13.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE13.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE14.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE14.Timer Out** | *Signal: Timer Output* |
| Logics . **LE14.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE14.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE15.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE15.Timer Out** | *Signal: Timer Output* |
| Logics . **LE15.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE15.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE16.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE16.Timer Out** | *Signal: Timer Output* |
| Logics . **LE16.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE16.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE17.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE17.Timer Out** | *Signal: Timer Output* |
| Logics . **LE17.Out** | *Signal: Latched Output (Q)* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE17.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE18.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE18.Timer Out** | *Signal: Timer Output* |
| Logics . **LE18.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE18.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE19.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE19.Timer Out** | *Signal: Timer Output* |
| Logics . **LE19.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE19.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE20.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE20.Timer Out** | *Signal: Timer Output* |
| Logics . **LE20.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE20.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE21.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE21.Timer Out** | *Signal: Timer Output* |
| Logics . **LE21.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE21.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE22.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE22.Timer Out** | *Signal: Timer Output* |
| Logics . **LE22.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE22.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE23.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE23.Timer Out** | *Signal: Timer Output* |
| Logics . **LE23.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE23.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE24.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE24.Timer Out** | *Signal: Timer Output* |
| Logics . **LE24.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE24.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE25.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE25.Timer Out** | *Signal: Timer Output* |
| Logics . **LE25.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE25.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE26.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE26.Timer Out** | *Signal: Timer Output* |
| Logics . **LE26.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE26.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE27.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE27.Timer Out** | *Signal: Timer Output* |
| Logics . **LE27.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE27.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE28.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE28.Timer Out** | *Signal: Timer Output* |
| Logics . **LE28.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE28.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE29.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE29.Timer Out** | *Signal: Timer Output* |
| Logics . **LE29.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE29.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE30.Gate Out** | *Signal: Output of the logic gate* |

Released



| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE30.Timer Out** | *Signal: Timer Output* |
| Logics . **LE30.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE30.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE31.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE31.Timer Out** | *Signal: Timer Output* |
| Logics . **LE31.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE31.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE32.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE32.Timer Out** | *Signal: Timer Output* |
| Logics . **LE32.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE32.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE33.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE33.Timer Out** | *Signal: Timer Output* |
| Logics . **LE33.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE33.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE34.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE34.Timer Out** | *Signal: Timer Output* |
| Logics . **LE34.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE34.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE35.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE35.Timer Out** | *Signal: Timer Output* |
| Logics . **LE35.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE35.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE36.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE36.Timer Out** | *Signal: Timer Output* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE36.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE36.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE37.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE37.Timer Out** | *Signal: Timer Output* |
| Logics . **LE37.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE37.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE38.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE38.Timer Out** | *Signal: Timer Output* |
| Logics . **LE38.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE38.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE39.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE39.Timer Out** | *Signal: Timer Output* |
| Logics . **LE39.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE39.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE40.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE40.Timer Out** | *Signal: Timer Output* |
| Logics . **LE40.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE40.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE41.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE41.Timer Out** | *Signal: Timer Output* |
| Logics . **LE41.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE41.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE42.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE42.Timer Out** | *Signal: Timer Output* |
| Logics . **LE42.Out** | *Signal: Latched Output (Q)* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE42.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE43.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE43.Timer Out** | *Signal: Timer Output* |
| Logics . **LE43.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE43.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE44.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE44.Timer Out** | *Signal: Timer Output* |
| Logics . **LE44.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE44.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE45.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE45.Timer Out** | *Signal: Timer Output* |
| Logics . **LE45.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE45.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE46.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE46.Timer Out** | *Signal: Timer Output* |
| Logics . **LE46.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE46.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE47.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE47.Timer Out** | *Signal: Timer Output* |
| Logics . **LE47.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE47.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE48.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE48.Timer Out** | *Signal: Timer Output* |
| Logics . **LE48.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE48.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE49.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE49.Timer Out** | *Signal: Timer Output* |
| Logics . **LE49.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE49.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE50.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE50.Timer Out** | *Signal: Timer Output* |
| Logics . **LE50.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE50.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE51.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE51.Timer Out** | *Signal: Timer Output* |
| Logics . **LE51.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE51.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE52.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE52.Timer Out** | *Signal: Timer Output* |
| Logics . **LE52.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE52.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE53.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE53.Timer Out** | *Signal: Timer Output* |
| Logics . **LE53.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE53.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE54.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE54.Timer Out** | *Signal: Timer Output* |
| Logics . **LE54.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE54.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE55.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE55.Timer Out** | *Signal: Timer Output* |
| Logics . **LE55.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE55.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE56.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE56.Timer Out** | *Signal: Timer Output* |
| Logics . **LE56.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE56.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE57.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE57.Timer Out** | *Signal: Timer Output* |
| Logics . **LE57.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE57.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE58.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE58.Timer Out** | *Signal: Timer Output* |
| Logics . **LE58.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE58.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE59.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE59.Timer Out** | *Signal: Timer Output* |
| Logics . **LE59.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE59.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE60.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE60.Timer Out** | *Signal: Timer Output* |
| Logics . **LE60.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE60.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE61.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE61.Timer Out** | *Signal: Timer Output* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE61.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE61.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE62.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE62.Timer Out** | *Signal: Timer Output* |
| Logics . **LE62.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE62.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE63.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE63.Timer Out** | *Signal: Timer Output* |
| Logics . **LE63.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE63.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE64.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE64.Timer Out** | *Signal: Timer Output* |
| Logics . **LE64.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE64.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE65.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE65.Timer Out** | *Signal: Timer Output* |
| Logics . **LE65.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE65.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE66.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE66.Timer Out** | *Signal: Timer Output* |
| Logics . **LE66.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE66.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE67.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE67.Timer Out** | *Signal: Timer Output* |
| Logics . **LE67.Out** | *Signal: Latched Output (Q)* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE67.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE68.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE68.Timer Out** | *Signal: Timer Output* |
| Logics . **LE68.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE68.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE69.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE69.Timer Out** | *Signal: Timer Output* |
| Logics . **LE69.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE69.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE70.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE70.Timer Out** | *Signal: Timer Output* |
| Logics . **LE70.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE70.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE71.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE71.Timer Out** | *Signal: Timer Output* |
| Logics . **LE71.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE71.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE72.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE72.Timer Out** | *Signal: Timer Output* |
| Logics . **LE72.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE72.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE73.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE73.Timer Out** | *Signal: Timer Output* |
| Logics . **LE73.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE73.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE74.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE74.Timer Out** | *Signal: Timer Output* |
| Logics . **LE74.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE74.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE75.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE75.Timer Out** | *Signal: Timer Output* |
| Logics . **LE75.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE75.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE76.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE76.Timer Out** | *Signal: Timer Output* |
| Logics . **LE76.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE76.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE77.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE77.Timer Out** | *Signal: Timer Output* |
| Logics . **LE77.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE77.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE78.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE78.Timer Out** | *Signal: Timer Output* |
| Logics . **LE78.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE78.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE79.Gate Out** | *Signal: Output of the logic gate* |
| Logics . **LE79.Timer Out** | *Signal: Timer Output* |
| Logics . **LE79.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE79.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |
| Logics . **LE80.Gate Out** | *Signal: Output of the logic gate* |

| 1..n, In-SyncList | Description |
|---|---|
| Logics . **LE80.Timer Out** | *Signal: Timer Output* |
| Logics . **LE80.Out** | *Signal: Latched Output (Q)* |
| Logics . **LE80.Out inverted** | *Signal: Negated Latched Output (Q NOT)* |

***LE1.Gate***

Logic gate

Selection list referenced by the following parameters:

- ⮡ Logics . LE1.Gate

| LE1.Gate | Description |
|---|---|
| **AND** | *AND Gate* |
| **OR** | *OR Gate* |
| **NAND** | *NAND Gate* |
| **NOR** | *NOR Gate* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ BO Slot X2 . Disarm Mode
- ⮡ BO Slot X2 . Force Mode

| Mode | Description |
|---|---|
| **permanent** | *permanent* |
| **timeout** | *timeout* |

***active/inactive***

Selection list referenced by the following parameters:

- ⮡ BO Slot X2 . DISARMED

| active/inactive | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ BO Slot X5 . Disarm Mode
- ⮡ BO Slot X5 . Force Mode

| Mode | Description |
|---|---|
| **permanent** | *permanent* |
| **timeout** | *timeout* |

***active/inactive***

Selection list referenced by the following parameters:

- ⮡ BO Slot X5 . DISARMED

| active/inactive | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

***Relay operating modes***

Selection list referenced by the following parameters:

- ⮡ BO Slot X2 . Force all Outs
- ⮡ BO Slot X2 . Force OR1

| Relay operating modes | Description |
|---|---|
| **Normal** | *Normal* |
| **De-Energized** | *De-Energized* |
| **Energized** | *Energized* |

***Relay operating modes***

Selection list referenced by the following parameters:

- ⮡ BO Slot X5 . Force all Outs
- ⮡ BO Slot X5 . Force OR1

| Relay operating modes | Description |
|---|---|
| **Normal** | *Normal* |
| **De-Energized** | *De-Energized* |
| **Energized** | *Energized* |

***Mode***

general operation mode

Selection list referenced by the following parameters:

- ⮡ URTD . Force Mode

| Mode | Description |
|---|---|
| **permanent** | *permanent* |
| **timeout** | *timeout* |

***active/inactive***

Selection list referenced by the following parameters:

- ⮡ URTD . Function

| active/inactive | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

***Disarm***

Selection list referenced by the following parameters:

- ⮡ AnIn[1] . Force Mode

| Disarm | Description |
|---|---|
| **permanent** | *permanent* |
| **timeout** | *timeout* |

***active***

Selection list referenced by the following parameters:

- ⮡ AnIn[1] . Function

| active | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

***Disarm***

Selection list referenced by the following parameters:

- ⮡ AnOut[1] . Force Mode

| Disarm | Description |
|---|---|
| **permanent** | *permanent* |
| **timeout** | *timeout* |

### *active*

Selection list referenced by the following parameters:

- ⮡ AnOut[1] . Function

| active | Description |
|---|---|
| **inactive** | *inactive* |
| **active** | *active* |

### *State*

Selection list referenced by the following parameters:

- ⮡ Sgen . State

| State | Description |
|---|---|
| **Off** | *Off* |
| **PreFault** | *Pre Fault Duration* |
| **FaultSimulation** | *Duration of Fault Simulation* |
| **PostFault** | *Post Fault Duration* |
| **Init Res** | *Init Reset* |

### *TripCmd Mode*

Trip Command Mode: Select between two operating modes for the Fault Simulator: "cold simulation” (without tripping the circuit breaker), or "hot simulation” (i.e. the simulation is authorized to trip the circuit breaker)

Selection list referenced by the following parameters:

- ⮡ Sgen . TripCmd Mode

| TripCmd Mode | Description |
|---|---|
| **No TripCmd** | *No Trip Command: The TripCmd of all protection functions is blocked. The protection function will possibly trip but not generate a TripCmd.* |
| **With TripCmd** | *With Trip Command: The trip of a protection function generates a TripCmd, that can open the circuit breaker.* |

Released

Released



# Index

. . . . . 620

***1***

1...n Operating Modes . . . . . 470, 592
1..n Energy Scaling . . . . . 467
1..n Power Scaling . . . . . 466
1..n, AnalogOutputList . . . . . 593, 704
1..n, Assignment List . . . . . 470, 608, 609
1..n, DI-LogicList . . . . . 672
1..n, Dig Inputs . . . . . 648
1..n, In-SyncList . . . . . 757
1..n, OnOffList . . . . . 606
1..n, PSS . . . . . 726
1..n, SyncRequestList . . . . . 688
1..n, TrendRecList . . . . . 602
1..n, Trip Cmds . . . . . 754

***3***

3V0 Source . . . . . 625

***A***

Ack via »C« key . . . . . 598
AdaptSet . . . . . 627
Alarm Mode . . . . . 746, 750
AnIn[1] . . . . . 26, 26, 27, 27
AnOut[1] . . . . . 48, 49, 49
AnaP[1] . . . . . 377, 377, 378, 379, 379
active . . . . . 774, 775
active/inactive . . . . . 626, 771, 772, 773

Released



## B

BO Slot X2 . . . . . 28, 38, 39
BO Slot X5 . . . . . 40, 46, 47
Baud rate . . . . . 446, 607, 611, 613
Blo Trigger . . . . . 725
Byte Frame . . . . . 607, 612, 613
block mode . . . . . 744

## C

CB List . . . . . 703, 705
CB Manager . . . . . 688
CBF[1] . . . . . 381, 381, 382, 383, 383, 383
CLPU . . . . . 326, 326, 327, 328, 328
CT W1 . . . . . 87, 88, 89, 92
CT W2 . . . . . 96, 97, 98, 101
CT Winding Side . . . . . 627
CTS[1] . . . . . 388, 388, 388, 389, 390
Char . . . . . 740, 743, 744
Communication Start Variants . . . . . 608
Config status . . . . . 447, 612, 614, 616
Config. Device Reset . . . . . 450
Ctrl . . . . . 395, 395, 395, 396, 396, 397
Current Trips . . . . . 707
CurrentBase . . . . . 647

## D

DI Slot X1 . . . . . 22, 23
DI Slot X5 . . . . . 24, 24
DI Slot X6 . . . . . 25, 25
DNP3 . . . . . 133, 138, 138, 139, 139
Date . . . . . 618
Day of clock change . . . . . 619
Debouncing time . . . . . 468, 468, 469

Released



Decoupling Functions . . . . . 649
Device planning . . . . . 452, 453, 454, 454, 454, 455, 455, 456, 456, 456, 457, 461, 461, 461, 461, 462, 462, 462, 463, 463
Direction . . . . . 444
Disarm . . . . . 774, 774
Disturb rec . . . . . 419, 420, 420, 420, 421
Duration . . . . . 599, 599
delta phi . . . . . 245, 245, 245, 248, 248
delta phi - Mode . . . . . 626
df/dt . . . . . 240, 240, 240, 243, 243

***E***

Earth overcurrent . . . . . 453
Event rec . . . . . 418, 418
ExP[1] . . . . . 330, 330, 331, 332, 332
Ext Oil Temp . . . . . 338, 338, 339, 340, 340
Ext Sudd Press . . . . . 334, 334, 335, 336, 336
Ext Temp Superv[1] . . . . . 342, 342, 343, 344, 344
External Trips . . . . . 706

***F***

Fault . . . . . 444
Fault rec . . . . . 422, 422, 422
Field Para . . . . . 72
fN . . . . . 621
f[1] . . . . . 280, 280, 280, 282, 283

***H***

HMI . . . . . 68, 69, 69

***I***

I1 Release . . . . . 751, 753
I2>[1] . . . . . 229, 229, 230, 232, 232

Released



I> . . . . . 452
IEC 61850 . . . . . 148, 148, 148, 149, 150, 152, 152
IEC103 . . . . . 153, 155, 155, 156, 156
IEC104 . . . . . 158, 161, 161, 161, 162
IG calc dir control . . . . . 625
IG meas dir control . . . . . 625
IG[1] . . . . . 215, 215, 216, 220, 221
IH2 Blo . . . . . 741
IH2[1] . . . . . 204, 204, 204, 205, 205
IRIG-B . . . . . 168, 168, 168, 168, 169
IRIG-B00X . . . . . 620
I[1] . . . . . 207, 207, 208, 212, 213
Id . . . . . 115, 115, 116, 182, 182, 182, 186, 186, 190, 190
IdG . . . . . 117, 117, 117
IdGH[1] . . . . . 200, 200, 201, 202, 202
IdG[1] . . . . . 196, 196, 197, 198, 198
IdH . . . . . 192, 192, 192, 193, 194
Intertripping . . . . . 250, 250, 251, 252, 252

## *L*

LE1.Gate . . . . . 771
LED active color . . . . . 596, 597
LEDs group A . . . . . 50
LEDs group B . . . . . 59
LOP . . . . . 391, 391, 392, 393, 394
LVRT[1] . . . . . 264, 264, 264, 268, 268, 269, 270
Logics . . . . . 426, 427, 428, 428

## *M*

Manipulate Position . . . . . 754
Measuring Channel . . . . . 742
Measuring Mode . . . . . 741, 745, 750

Released



Measuring method . . . . . 739, 742, 745, 746, 748, 750, 752

Modbus . . . . . 141, 144, 144, 144, 145, 146

Mode . . . . . 448, 451, 451, 451, 452, 455, 456, 457, 458, 458, 459, 459, 459, 460, 460, 460, 463, 463, 464, 465, 465, 596, 597, 702, 703, 724, 747, 748, 749, 749, 771, 772, 773

Month of clock change . . . . . 618

***N***

No of Equations: . . . . . 465

Nom voltage . . . . . 467, 468, 469

NonIL ResetMode . . . . . 753

***O***

Optical rest position . . . . . 607, 611

***P***

P . . . . . 254, 254, 254, 257, 257

P Block dir . . . . . 672

PF[1] . . . . . 290, 290, 290, 292, 293

PNO Id . . . . . 446

PQSCr . . . . . 119, 119, 119, 121, 122

PQS[1] . . . . . 285, 285, 285, 288, 288

PSet-Switch . . . . . 725

Phase Sequence . . . . . 621

Polarity . . . . . 624, 624

Port selection . . . . . 611, 614

PowMeasMethod . . . . . 747, 749

Power Trip dir . . . . . 648

Profibus . . . . . 163, 164, 164, 164, 165, 166

Prot . . . . . 177, 178, 178, 178, 181

***Q***

Q . . . . . 259, 259, 259, 261, 262

Released



Q->&V< . . . . . 294, 294, 294, 297, 297

***R***

RTD . . . . . 354, 354, 355, 367, 368, 376
Ratio prim/sec . . . . . 623, 624
ReCon[1] . . . . . 299, 299, 300, 302, 303
Rec state . . . . . 444
Reconnect. Release Cond . . . . . 752
Record-Mode . . . . . 601
Relay operating modes . . . . . 772, 773
Reset Mode . . . . . 740, 744
Resolution . . . . . 601

***S***

SG[1] . . . . . 398, 402, 403, 404, 408, 411, 412, 413, 413
SNTP . . . . . 170, 170, 171, 171, 171, 172
SOTF . . . . . 322, 322, 323, 324, 324
SSV . . . . . 430, 430, 430
Scada . . . . . 131, 131
Scale Factor . . . . . 610
Scaling . . . . . 466
Scheme . . . . . 705
Selection . . . . . 600
Selection of the Q(V)-Method: Power Angle or Reactive Power Threshold . . . . . 751
Server State . . . . . 447
Sgen . . . . . 432, 432, 433, 433, 434, 435, 436, 440
State . . . . . 445, 445, 447, 775
Statistics . . . . . 125, 128, 129, 129, 130
Switching Authority . . . . . 450
Sync . . . . . 311, 311, 312, 315, 315, 316
SyncMode . . . . . 753

Released



Sys . . . . . 107, 108, 109, 110, 113

SysA . . . . . 414, 414, 416, 416

## *T*

TCS[1] . . . . . 385, 385, 386, 386, 387

TLS Certificate . . . . . 449

TcpIp . . . . . 132

ThR . . . . . 224, 224, 225, 226, 226, 227, 227, 228

Time Zones . . . . . 616

TimeSync . . . . . 174, 176

Timezone . . . . . 613, 615

Transformer . . . . . 105

Trend rec . . . . . 423, 425, 425, 425

Trigger . . . . . 706, 708

TripCmd Mode . . . . . 775

TripCmd Selection . . . . . 704

Tripping characteristics of V/f Over-Excitation protection. . . . . 748

Type of Input . . . . . 593

Type of Output . . . . . 595

Type of SCADA mapping . . . . . 612, 614, 615, 616

Type of passw. def. . . . . 449

t-Alarm . . . . . 704

true or not true . . . . . 448

## *U*

UFLS . . . . . 304, 304, 305, 308, 309

UFLS-Method . . . . . 752

URTD . . . . . 346, 346, 350, 351, 352

Units . . . . . 466

Used Protocol . . . . . 464, 619

Released



## V

V/f>[1] . . . . . 318, 318, 318, 320, 320
V012[1] . . . . . 276, 276, 277, 278, 279
VG[1] . . . . . 271, 271, 272, 273, 274
VT . . . . . 73, 78, 78, 83
VT Winding Side . . . . . 622
VT con . . . . . 622
VTS Block . . . . . 741, 747
VX Source . . . . . 743, 746
V[1] . . . . . 234, 234, 234, 237, 238
Voltages to be synchronized . . . . . 623

## W

W1 Connection/Grounding . . . . . 621
W2 Connection/Grounding . . . . . 622
Window configuration . . . . . 600

## Y

yes/no . . . . . 453

## _

_AL_ResponseType_k . . . . . 608

Released

**We appreciate your comments about the content of our publications.**

**Send comments to: kemp.doc@woodward.com**

**Please reference publication MCDTV4-3.7-EN-REF**

**http://wwdmanuals.com/mcdtv4-2**

Woodward Kempen GmbH reserves the right to update any portion of this publication at any time. Information provided by Woodward Kempen GmbH is believed to be correct and reliable. However, Woodward Kempen GmbH assumes no responsibility unless otherwise expressly undertaken.

Woodward Kempen GmbH
Krefelder Weg 47 • D–47906 Kempen (Germany)
Postfach 10 07 55 (P.O.Box) • D–47884 Kempen (Germany)
Telephone: : +49 (0) 21 52 145 1

**Internet: — www.woodward.com**

**Sales**
Telephone: : +49 (0) 21 52 145 331
Fax: : +49 (0) 21 52 145 354
Email: : SalesPGD_EMEA@woodward.com

**Service**
Telephone: : +49 (0) 21 52 145 614
Fax: : +49 (0) 21 52 145 354
Email: : industrial.support@woodward.com

Woodward has company-owned plants, subsidiaries, and branches, as well as authorized distributors and other authorized service and sales facilities throughout the world.

Complete address / phone / fax / email information for all locations is available on our website.