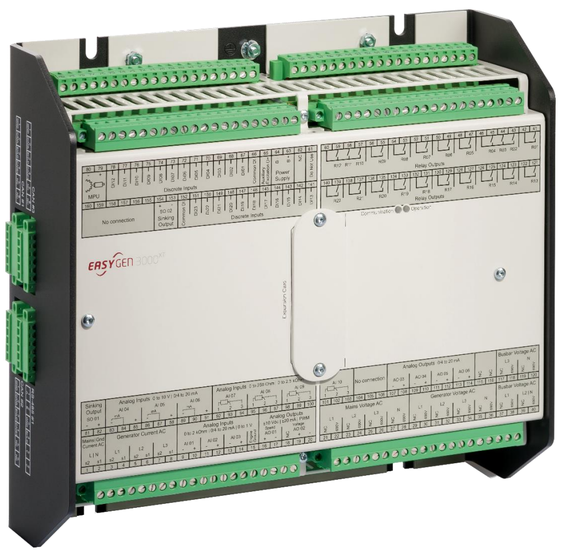
PRODUCT SPECIFICATION 45027 A

easYgen-3000XT

Reliable Control for Complex Power Systems

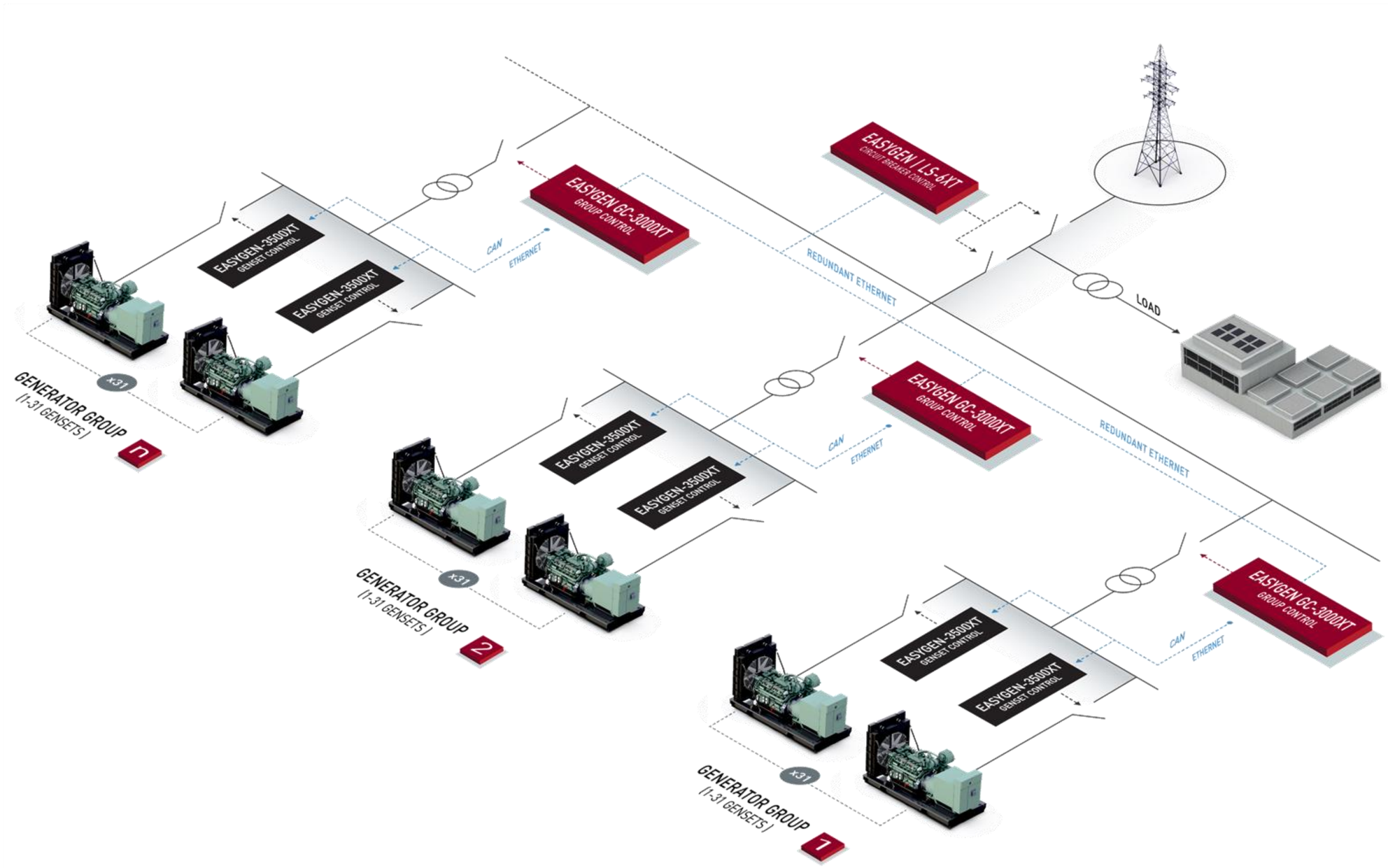


- › Proven Reliability
- › Cost-Effective Energy Management
- › Scalable Breaker Management
- › Enhanced Asset Protection
- › Prevent single point of failure
- › standardize + simplify complexity

Simplifying and Efficiently Managing Complex Power Systems with Standardized Controls

Maximize reliability and safeguard your assets with proven quality and advanced redundancy features designed to eliminate single points of failure, even in extreme environmental conditions.

The innovative control architecture streamlines the management of complex systems, including utility feeds, tie breakers, and load-sharing networks. Leveraging globally standardized controls ensures greater flexibility, accelerates planning and commissioning, and optimizes manufacturing and inventory management processes.



Powering a clean future

WOODWARD

Simplifying Complexity

› Streamlined commissioning with a powerful configuration and simulation + emulation tools.

› Combines multiple functions (synchronization, protection, AVR, configurable PIDs for process control, genset automation, load and power factor control) into one controller, enabling streamlined design.

› Simplifies the integration of small-scale microgrids and optimizes large-scale systems through collaboration with Woodward's easYi product. (Photovoltaic, Batteries, Gensets, …)

› Use the device's flexibility to simplify and standardize switchboard layouts across diverse applications.

Saving Time and Resources

› On-site configurability, real-time configuration during operation, and efficient power system trouble-shooting reduce delays from custom software requirements.

› Drop-in replacement for legacy systems minimizes upgrade time and effort.

› Remote monitoring and control via secure cloud interfacing speeds up remote troubleshooting. (utilizing 3rd party devices)

Expanding Application Possibilities

› Open System Design for a seamless interaction with most standard PLCs.

› customize the operation sequences and adapt them to specific needs

› Functions with all speed governors and voltage regulators

› Precise measurements with Class I accuracy for true RMS power sensing

Reducing Costs

› Lifecycle savings with proven, globally supported control standards.

› Eliminates need for external PLC modules with integrated logic and analog management.

› Long-term reliability, combined with the prolonged availability of controllers and spare parts through an extended Product Life Cycle, reduces replacement and repair costs.

› Standardized controls for all engines and energy sources lower upfront investment.

› Globally standardized control (e.g. with 14 standard languages and customizable language options).

Ensuring Reliability and Durability

› Advanced asset protection for engines, generators, and utility grids.

› Robust design with conformal coating and galvanic isolation for harsh environments.

› Multi-mastering, redundant communication, and redundancy functionality ensure seamless transfer of primary control to the standby controller in the event of a failure, enabling uninterrupted operation. This enhances control system uptime, prevents engine spin-down, and eliminates single points of failure.

	Standard	Package 1	Package 2
	3100 3200	3400 3500	
Synchronization			
generator circuit breaker	✓	✓	✓
mains circuit breaker	✓	✓	✓
generator group breaker	⊗	✓	✓
Run Up / Black Start	⊗	✓	✓
Protection			
Generator	✓	✓	✓
Engine	✓	✓	✓
Mains	✓	✓	✓
Busbar Phase Rotation	⊗	⊗	✓
Hardware			
CANBus ports	2	3	3
RS485	✓	✓	✓
Ethernet Modbus TCP ports	1	3	3
Free configurable PID's (eg. speed & voltage bias)	3	3	3
busbar, mains sensing			
100 V_{AC}	✓	✓	✓
400 V_{AC}	✓	✓	✓
600 V_{AC}	⊗	✓	✓
busbar voltage	1-ph	1-ph	3-ph
Control			
Support Group Controller, LS-5 [#1] and LS-6XT [#2]	⊗	✓	✓
AVR integral voltage regulation (e.g. exciter-10)	⊗	✓	✓
I/O			
Discrete alarm inputs (configurable)	12 (10)	12 (9)	23 (20)
Discrete outputs, configurable	Max. 12	Max. 12	Max 22
Analog inputs configurable [#3]	3	3	10
Analog outputs: 0 to 20 mA (0 to 10 V with external 500 Ω resistor)	0	0	4
CAN bus communication interfaces [#4]	2	3	3
Ethernet Modbus TCP Slave interface	1	3	3
Interface Expansion Capability	⊗	⊗	✓

Generator Protection	**ANSI**
voltage / frequency	59 / 27 / 81O / 81U
overload, reverse/reduced power	32 / 32R / 32F
Synch Check	25
unbalanced load	46
instantaneous overcurrent	50
time-overcurrent (IEC 255 compliant)	51 / 51 V
ground fault (measured ground current)	50G
power factor	55
rotation field	✓

Engine Protection	**ANSI**
overspeed / underspeed	12 / 14
speed / frequency mismatch	✓
D+ auxiliary excitation failure	✓
Cylinder temperature	✓
Mains Protection	ANSI
voltage / frequency / synch check	59 / 27 / 81O / 81U / 25
phase shift / rotation field / ROCOF (df/dt)	78

Busbar Protection	
voltage / frequency	✓

Control	
Critrical Operation	✓
Solar Function	✓
Mains parallel multiple-unit operation	✓
Synchronization	✓
Load Dependent Start / Stop	✓
Import / export control (kW and kvar)	✓
Run-up Synchronization / Dead Field Paralleling	✓

I/O all Variants	
Speed input: magnetic / switching; Pickup	✓
External discrete inputs / outputs via CANopen	32 / 32
External analog inputs / outputs via CANopen	16 / 4
Display and evaluation of J1939 analog values, “supported SPNs”	100
Analog outputs configurable ± 10V, ± 20mA, PWM;	2
USB Serial interface	1
RS-485 Modbus RTU Slave interface	1

#1 The easYgen-3500 / LS5 communication system allows up to 48 members on the bus. If the easYgen count is reduced from 32, the LS-5 count can be increased (up to 32).

#2 Up to 32 LS-6XT controls are supported with up to 32 easYgen-3400XT/3500XT. Up to 64 LS-6XT are supported in one network with up to 16 GC-3400XT, each group consisting up to 31 gensets.

#3 selectable senders: VDO (0 to 180 Ohm, 0 to 5 bar), VDO (0 to 180 Ohm, 0 to 10 bar), VDO (0 to 380 Ohm, 40 to 120°C), VDO (0 to 380 Ohm, 50 to 150°C), Pt100, Pt1000, resistive input (one- or two-pole, 2pt. linear or 9pt. user defined)

#4 CAN#2 freely selectable during configuration between CANopen or J1939; please feel free to request more information

Option Selection

	Standard 3100 3200	Package 1 3400 3500	Package 2 3400 3500
back-panel mounted	8440-2081	8440-2084	8440-2087
Rental Functions	8440-2284	8440-2287	8440-2289
Display #1	8440-2082	8440-2085	8440-2088
Rental Functions	8440-2285	8440-2283	8440-2290
Low Temperature	8440-2083	8440-2086	8440-2089
Rental Functions Low Temperature	8440-2286	8440-2288	8440-2291

#1 a screw and a clamp kit are delivered with the unit for fastening

Option Details

Rental Functions

For mobile genset fleets with additional counters for billing and switchable parameter sets

Video: Applying Rental Functions

Low Temperature

Heated display for operation in -40 °C (standard operation temperature -20°C)

Product Documents and Files
http://wwdmanuals.com/easYgen-3000XT/

Commercial support
industrial.salesPG@woodward.com

Technical support
industrial.support@woodward.com

Power	
Power Supply	12 / 24 V_{DC} (8 to 40 V_{DC})
Intrinsic consumption	max. 22 W (LT: max.32 W)

Ambient	
temperature operation	No Display and Low Temperature Variant: -40°C to 70°C With Display: -20°C to 70 °C
temperature storage	-30 to 80 °C / -22 to 176 °F
humidity	95%, non-condensing

Voltage (software configurable)	both ranges within one unit on different terminals, Y/Δ
100 V_{AC}	
Rated (V_{rated})	69/120 V_{AC}
Max. value (V_{max})	86/150 V_{AC}
400 V_{AC}	
Rated (V_{rated})	277/480 V_{AC}
Max. value (V_{max})	346/600 V_{AC}
Rated surge volt. (V_{surge})	4.0 kV
400 / 600 V_{AC} **	** easYgen 3400 / 3500 XT only
Rated (V_{rated})	400/690 V_{AC}*
	* 3 phase 3 wire Δ constellations are limited to 600 V_{AC}
Max. value (V_{max})	520/897 V_{AC}
Rated surge volt. (V_{surge})	6.0 kV
Measuring frequency	50/60 Hz (40 to 85 Hz) (30 to 85 Hz)**
High Impedance Input; Resistance per path	2.0 M 2.5 MΩ** ** easYgen 3400 / 3500 only
Accuracy	Class 0.5
Measurable alternator windings	3p-3w, 3p-4w, 3p-4w OD, 1p-2w, 1p-3w
Setting range	primary 50 to 650,000 V_{AC}
Linear measuring range	1.25×V_{rated}
Max. power consumption per path	< 0.15 W

Current	(Isolated, software configurable)
Rated (I_{rated})	1 A or 5 A
Linear measuring range	I_{gen} = 3.0×I_{rated}
	$I_{mains/ground}$ = 1.5 × I_{rated}
Setting range	1 to 32,000 A
Burden	< 0.10 VA
Rated short-time overcurrent (1 s)	[1] 50×I_{rated}, [5] 10×I_{rated}
Accuracy	Class 0.5

Analog inputs (isolated)	freely scalable
Type 1	0 to 1 V 0 to 2000 Ω 0 to 20 mA
Resolution	16 Bit
Maximum permissible voltage against genset Ground	9 V
Maximum permissible voltage between genset Ground & PE	100 V
Type 2 (easYgen-3400 / 3500 XT P2 only)	0 to 10 V 0 to 20 mA
Resolution	14 Bit
Maximum permissible voltage against PE (Ground)	100 V
Maximum differential voltage to other DC Analog Inputs	15 V
Type 3 (easYgen-3400 / 3500 XT P2 only)	0 to 250 Ω 0 to 2500 Ω
Resolution	14 Bit
Maximum permissible voltage against PE (Ground)	100 V
Maximum differential voltage to other DC Analog Inputs	10 V

Analog outputs (isolated)	freely scalable
Type 1	± 10 V / ± 20 mA / PWM
Basic insulation voltage (continuously, AVR_{out})	500 V_{AC}
Reinforced insulation voltage (continuously, AVR_{out})	300 V_{AC}
Insulation voltage (continuously, Gov_{out})	100 V_{AC}
Versions	±10 V_{DC}, ±20 mA, PWM
Resolution	12 Bit
Output ± 10 V (scalable)	internal resistance
Output ± 20 mA (scalable)	maximum load 500 Ω
Type 2 (easYgen-3400 / 3500 XT P2 only)	0/4 to 20 mA
Insulation voltage (continuously)	100 V_{AC}
Insulation voltage (test; >2 s)	1700 V_{AC}
Resolution	12 Bit
Output	maximum load 500 Ω

Power	
Setting range	0.5 to 99,999.9 kW/kvar
Accuracy	Class 1.0

Discrete inputs	Isolated
Input range	12/24 V_{DC} (8 to 40 V_{DC})
Input resistance	approx. 20 kΩ

Transistor outputs (P2 only)	Isolated
Rated switching voltage	max. 24 V_{DC}
Maximum switching voltage	40 V_{DC}
Maximum switching current	300 mA DC
Isolation Test voltage (<1s)	500 V_{AC}
Isolation voltage (continuously)	100 $V_{AC/DC}$

Relay outputs	Isolated
Contact material	AgNi
Load (GP)	2.00 A_{AC}@250 $V_{AC,}$ resistive GP 2.00 A_{DC}@24 $V_{DC,}$ inductive 0.36 A_{DC}@125 V_{DC}* / 0.18 A_{DC}@250 V_{DC}* * Not suitable for USA and Canada applications. Not evaluated by UL.

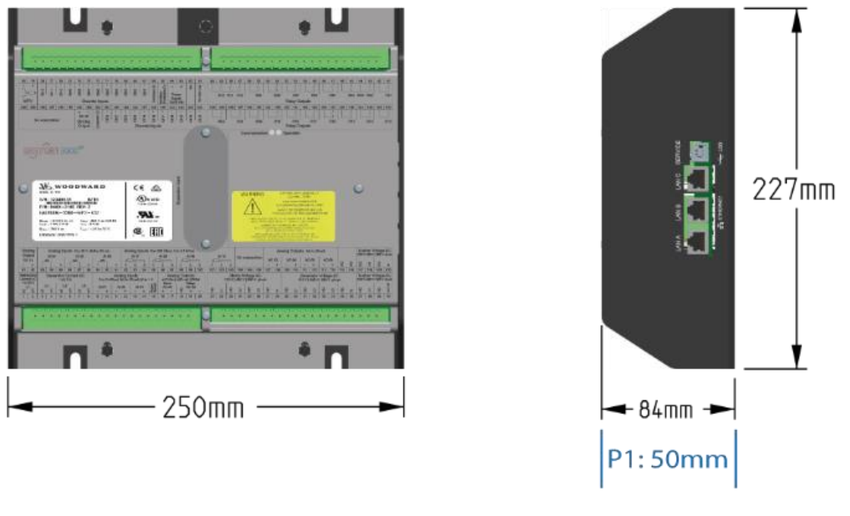
Housing	
Front panel flush mounting	Plastic housing
Dimensions WxHxD	282 × 216 × 96 mm
Front cutout WxH	249 [+1.1] × 183 [+1.0] mm
Connection	screw/plug terminals 2.5 mm²
Front	insulating surface
Sealing	
Front	IP66 (with screw fastening)
Front	IP54 (with clamp fastening)
Back	IP20
Weight	approx. 1,850 g

Housing	
Back panel mounting	Powder Coated Sheet metal housing
Dimensions WxHxD	
P1	250 × 228 × 50 mm
P2	250 × 228 × 84 mm
Connection	screw/plug terminals 2.5 mm²
Protection system	IP 20
Weight	approx. 1,750 g
Disturbance test (CE)	tested according to applicable IEC standards
Compliance	c UL us LISTED, CSA, EAC, CE VDE-4105, VDE-4110
Marine	LR APPROVED, ABS TYPE APPROVED PRODUCT ABS

Dimensions

Plastic housing for front panel mounting

Metal housing for cabinet mounting

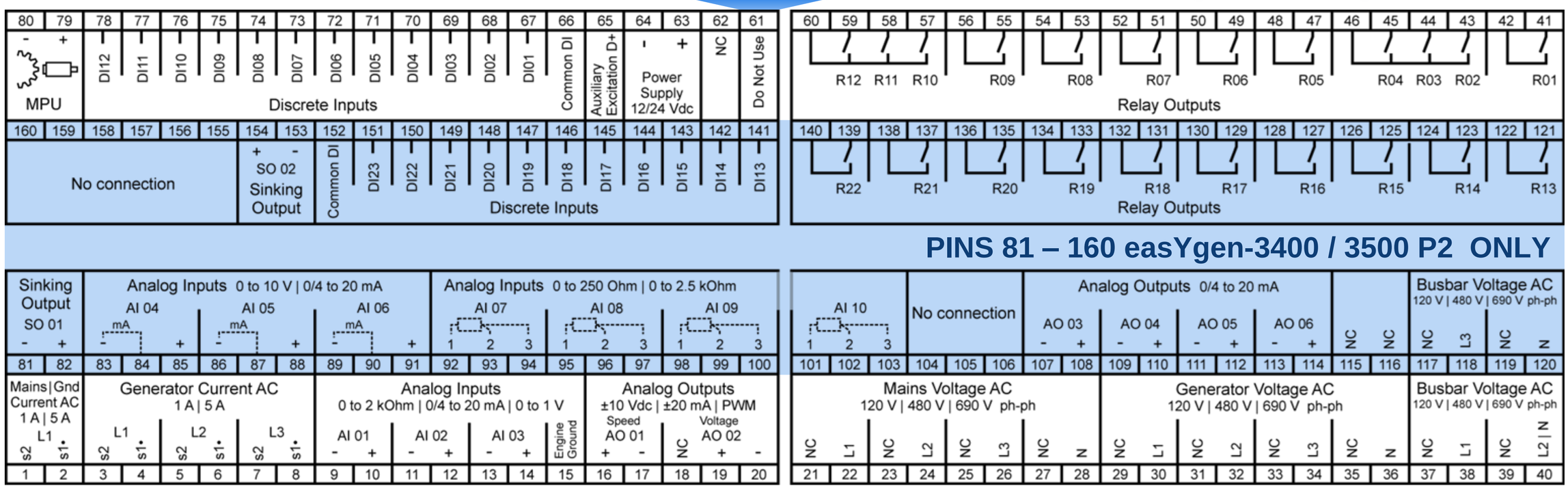


Blue color: Package P1 is more compact depth + height

Terminal Diagram

easYgen-3400XT No Connection | **easYgen-3500XT** Protective Earth

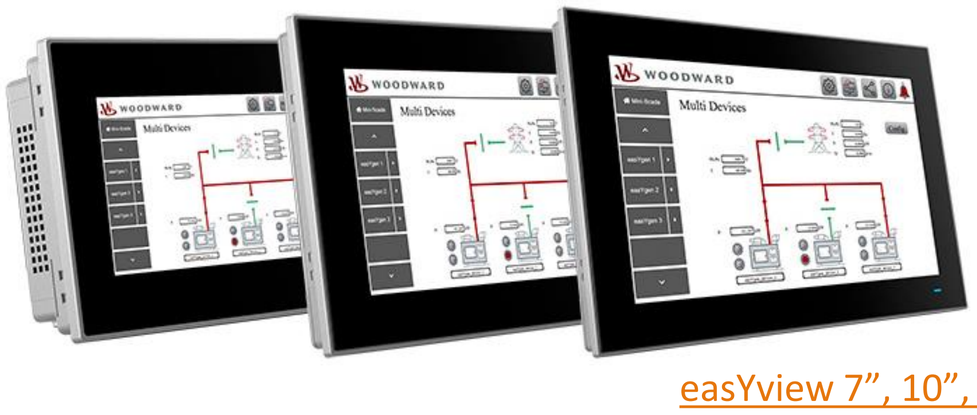
white background = all easYgen-3000XT variants



PINS 81 – 160 easYgen-3400 / 3500 P2 ONLY

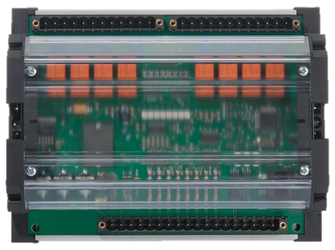
Accessories

Visualization Displays



easYview 7”, 10”, 15”

Digital Expansion Boards

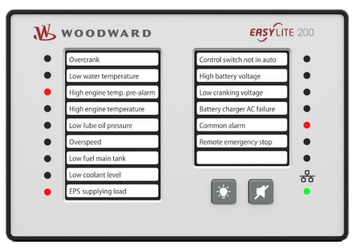


IKD1-M

IKD-IN-16

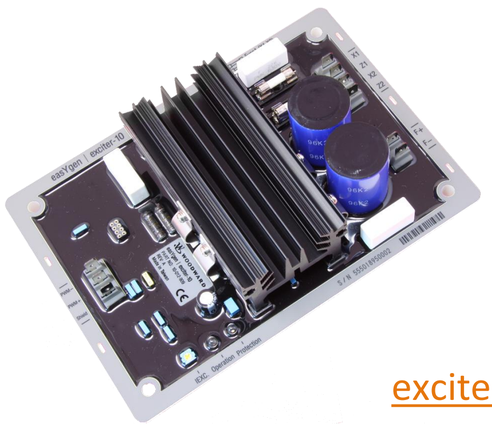
IKD-OUT-16

Remote Annunciator



easYlite-200

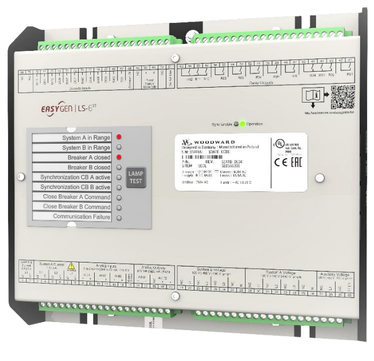
AVR integral voltage regulation



exciter-10

Breaker Synchronisation, Segmentation, Generator Groups

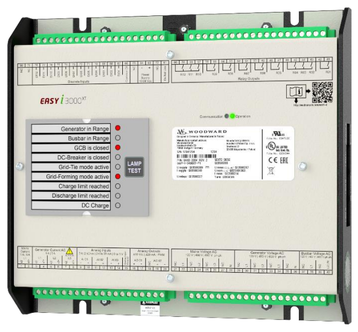
LS-5



LS-6XT

GC-3000XT

Inverter Controller for Batteries | Photovoltaic



easYi 3000XT

Spare Connectors

easYgen-3100 / 3200 XT P1: P/N 8923-2318
easYgen3400 / 3500 XT P1: P/N 8923-2319
easYgen3400 / 3500 XT P2: P/N 8923-2320

Software

ToolKit .
Modbus Master Mapper .
Data Telegram Mapper .
HMI Localization Tool .
LDSS Emulation Tool .
Power Generation Learning Module .
IKD Configuration Tool .
Interconnect Mapper

Other

Remote Access Gateways

HMS Netbiter EasyConnect EC250 and EC350
101 Solutions DCB 4.0

Engine Speed Control actiVgen

Profibus Gateway ESEPRO
Fibre Optic Converter
Load Share Gateway LSG

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