



Power Management Application Guide

March 2025



Downloads + Support

Knowledgebase & FAQ



Documentation server

- CAD files (2D / 3D / EPlan)
- software / configuration files
- manuals / modbus protocol .xls / ...

Software Tools

Configuration Files

Application Notes

YouTube Channel

Company Certifications

News



Support server

- firmware upgrades
- trainings, ...

Webinar Recordings

Training Presentations

substitute products

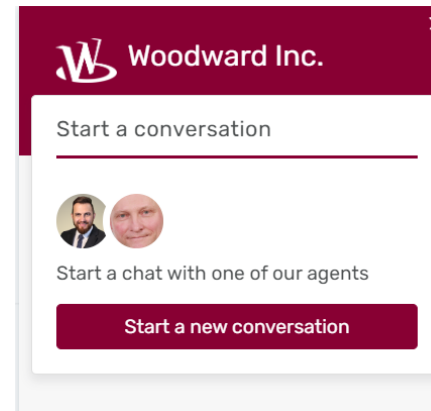
Contact us



Legacy server

- product support statements
- old device documentation

replacing old devices



scan to learn more
<http://easYgen.org/download>



quick introduction clip

Which easYgen-3000XT for which application?

easYgen-3100XT/3200XT

> 8440-2081



> 8440-2082



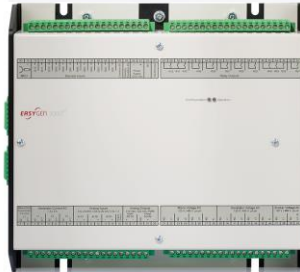
> 8440-2085



> 8440-2088

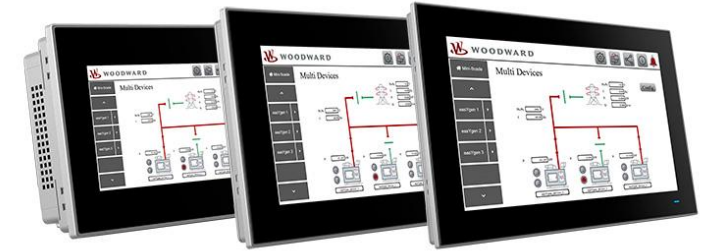
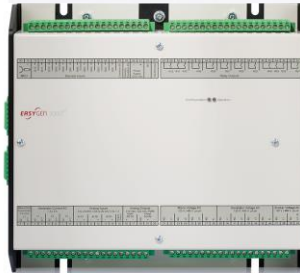
easYgen-3400XT/3500XT-P1

> 8440-2084



easYgen-3400XT/3500XT-P2

> 8440-2087



> 8446-1071/-72/-73

> easYview (7", 10", 15")

> Remote Touch panel

Main differences of different versions

easYgen-3100XT/3200XT

- › Synchronization GCB, MCB, Generator/Engine/Mains protection
- › 2 x CANBus, 1 x RS485 & 1xE-Net Modbus TCP
- › 3 x flexible PID's for speed & voltage bias
- › 2 PT bus sensing Mains sensing
- › Loadsharing via E-Net and/or CANopen, ModbusMaster, redundant control 2.17

easYgen-3400XT/3500XT-P1

- › Synchronization GCB, MCB, +GGB, +Run-up Synch, +LS-6XT, GC3400XT Support +690VAC sensing, +inbuilt AVR Regulation
- › 3 x CANBus, 1 x RS485 & 3 x E-Net Modbus TCP
- › 3 x flexible PID's for speed and voltage bias
- › 2 PT bus sensing Mains sensing
- › Loadsharing via **redundant** E-Net or CANopen, ModbusMaster, redundant control 2.17

easYgen-3400XT/3500XT-P2

- › Synchronization GCB, MCB, +GGB, +Run-up Synch, +LS-6XT, GC3400XT Support +690VAC sensing, + inbuilt AVR Regulation
- › 3 x CANBus, 1 x RS485 & 3 x E-Net Modbus TCP
- › 3 x flexible PID's for speed and voltage bias
- › 3 PT bus sensing for rotation check, Mains sensing
- › Second board with additional digital/analog I/Os, pulse outputs for kWh & kVArh
- › Loadsharing via **redundant** E-Net or CANopen, ModbusMaster, redundant control 2.17

easYgen-3000XT redundant control solution

Upcoming software Release 2.17 (March 2025) now supports all easYgen-3000XT catalog packages (8440-2081 to 8440-2088), allowing for the use of two controls for a single genset.

› Cold Redundancy

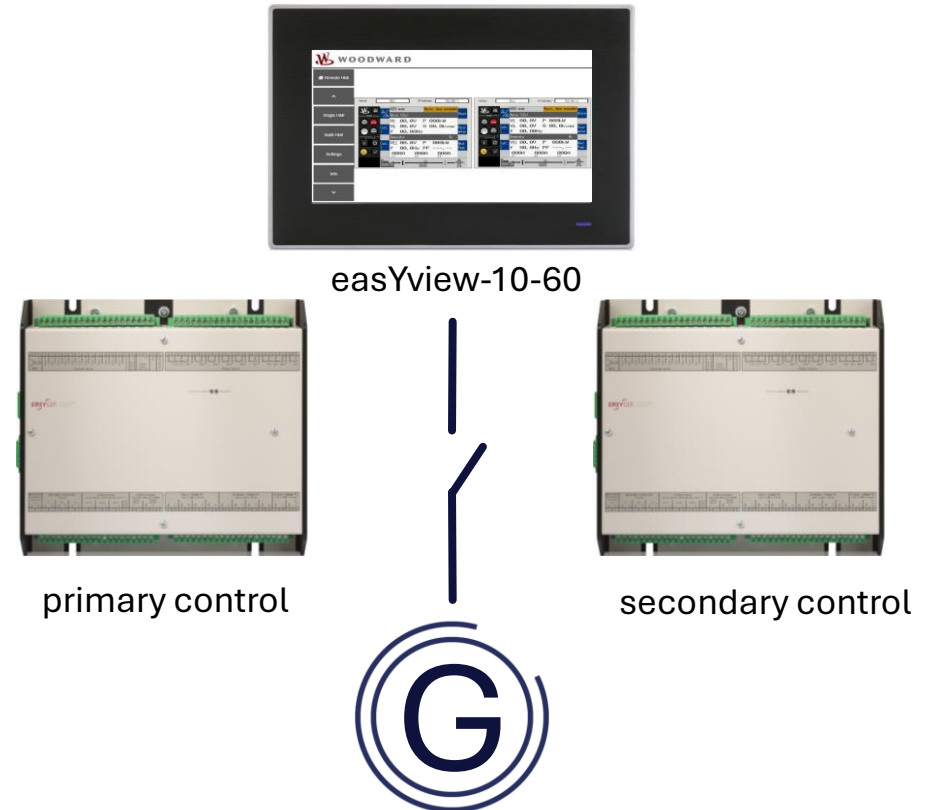
- › Backup system is off and inactive
- › Requires manual or automated start-up

› Warm Redundancy

- › Backup system is on but in standby mode
- › Faster switch-over than cold redundancy

› Hot Redundancy

- › Backup system runs in parallel with the primary system
- › Immediate failover with minimal downtime

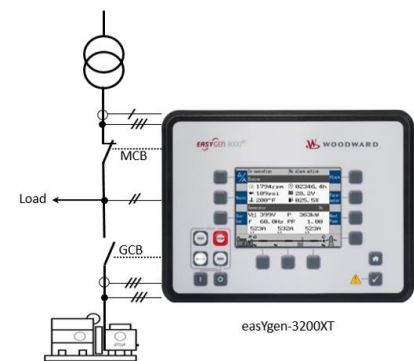


Typical easYgen-3200XT Use Cases

one part number fits all

easYgen-3200XT use cases

easYgen-3200XT Single Set grid tied with island mode

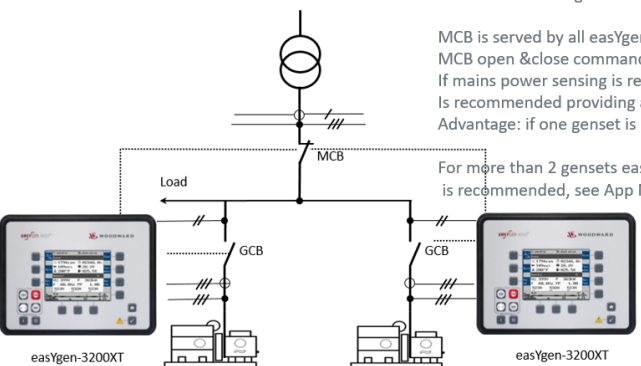


Single genset AMF&ATS
Open/closed transition (<100ms)/ soft power transfer
Import/export/baseload control
Interconnected to grid

easYgen App Mode A04 GCB/MCB

easYgen-3200XT Multiple Sets Mains & Island Parallel

kW/kVAR Load sharing via CAN open



2 or more gensets AMF&ATS
Open/closed transition/ soft power transfer
Import/export/baseload control
Interconnected to grid and island parallel operation

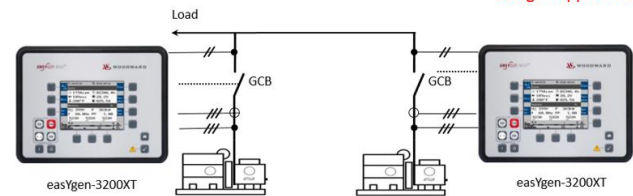
MCB is served by all easYgen,
MCB open & close command wired in parallel
If mains power sensing is required a 3 phase Transducer
Is recommended providing a 0/4-20mA Setpoint to all easYgens
Advantage: if one genset is in service second genset is still available

For more than 2 gensets easYgen3500XT & LS-6XT
is recommended, see App Mode A08

easYgen App Mode A04 GCB/MCB

easYgen-3200XT Multiple Sets island parallel

kW/kVAR Load sharing via CAN open



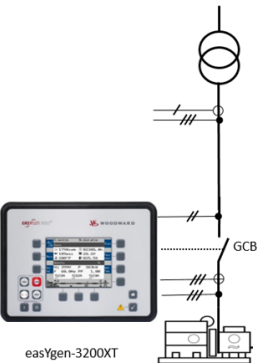
Up to 32 gensets can paralleled on one bus
kW and kVAR sharing via CAN bus and/or E-Net
Load dependent starts& stop

If you have more than 32 gensets on one bus, go for
easYgen-3500XT and GC3400XT

easYgen App Mode A03 GCB

Up to 32 gensets

easYgen-3200 Sets Mains parallel

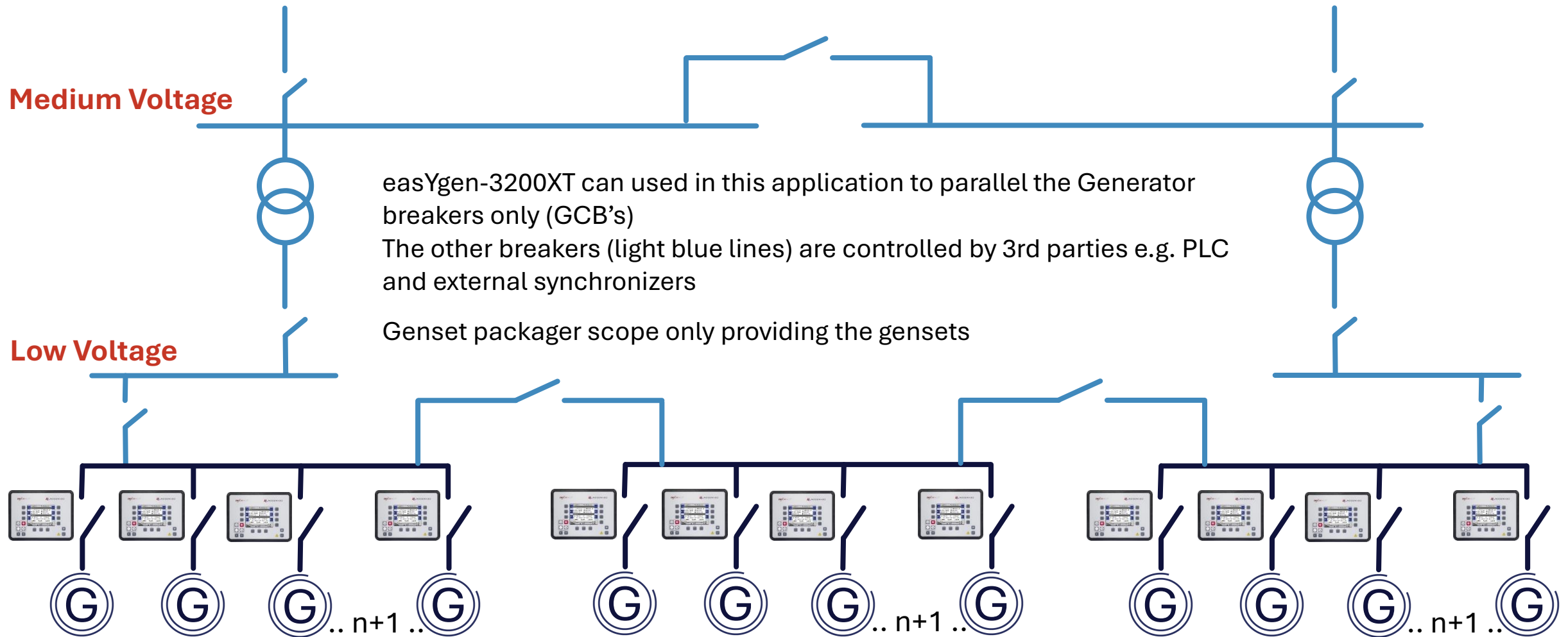


Import/export control
Load dependent starts& stop
Continuous mains parallel operation

Typical application: CHP, prime power generation

easYgen App Mode A03 GCB

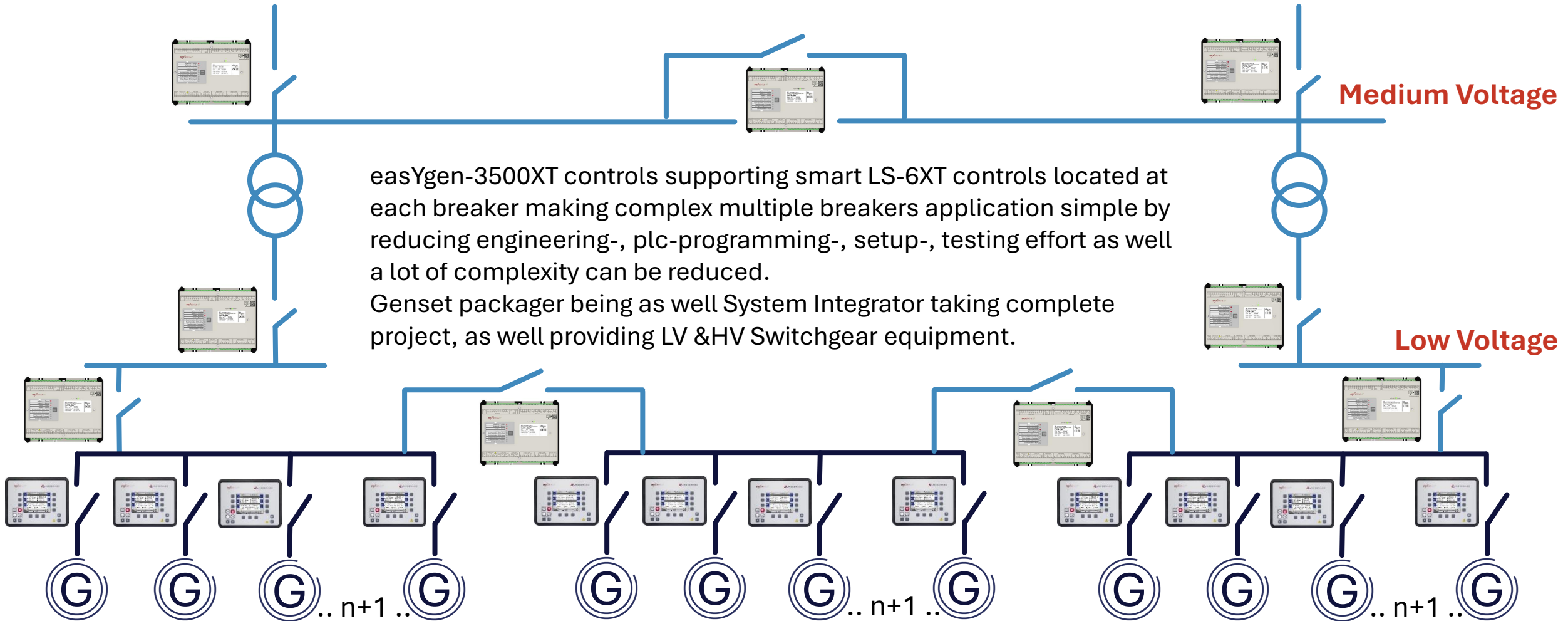
Typical Datacenter Application



Typical easYgen-3500XT Use Cases

one part number fits all

Executed Datacenter Project



LS612-XT-P1

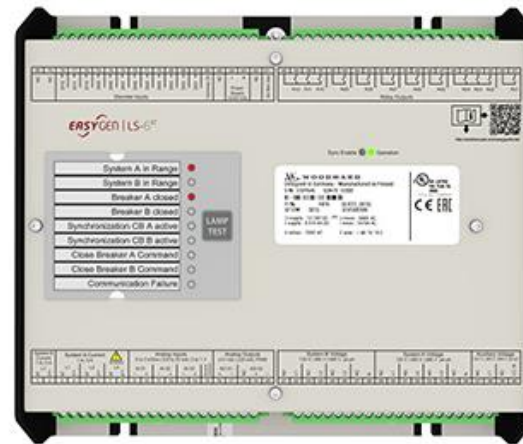
A LS6XT controller is a smart Synchronizer transferring U+/- and f+/- commands via redundant E-net to the easYgen-3400/3500XT genset controllers taking care of GCB and providing this information then to engine and generator controls to parallel other circuit breakers (MCB's, GGB's-T-couplers) within the application.

As well LS6XT's and easYgen controllers taking care of segmentation.

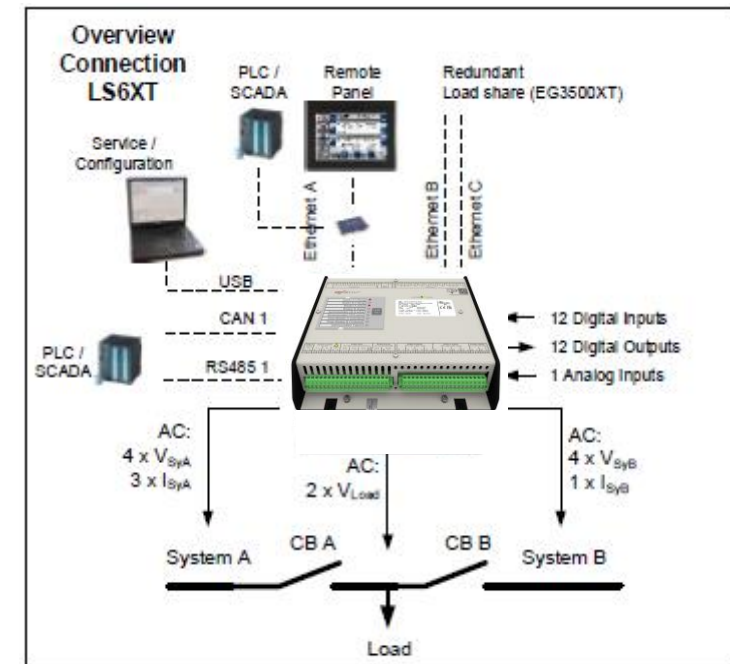
LS6XT has three measurement system: System A, auxiliary voltage and System B capable to serve one or two breakers.



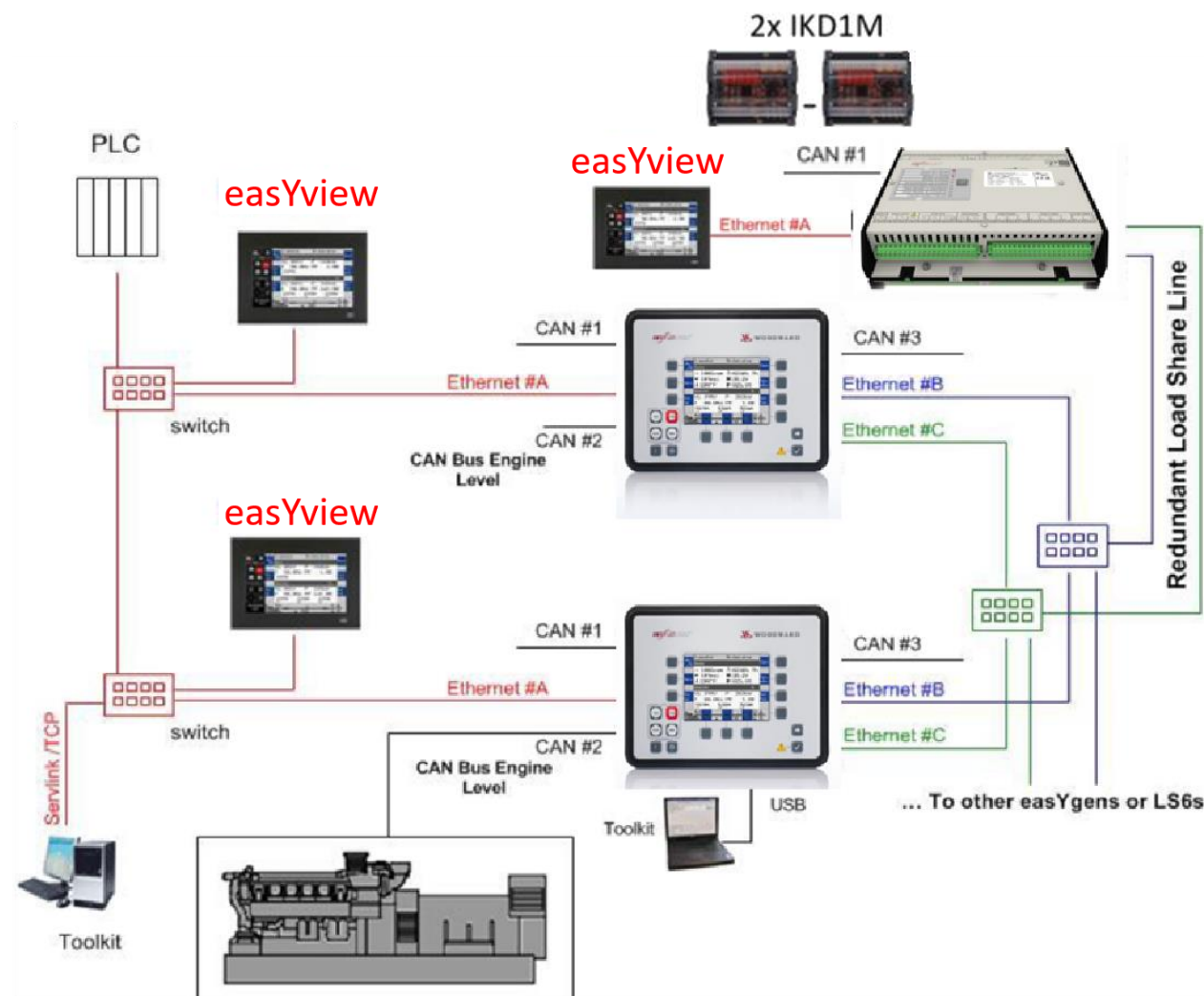
- 8446-1071/-72/-73
- easYview (7", 10", 15")



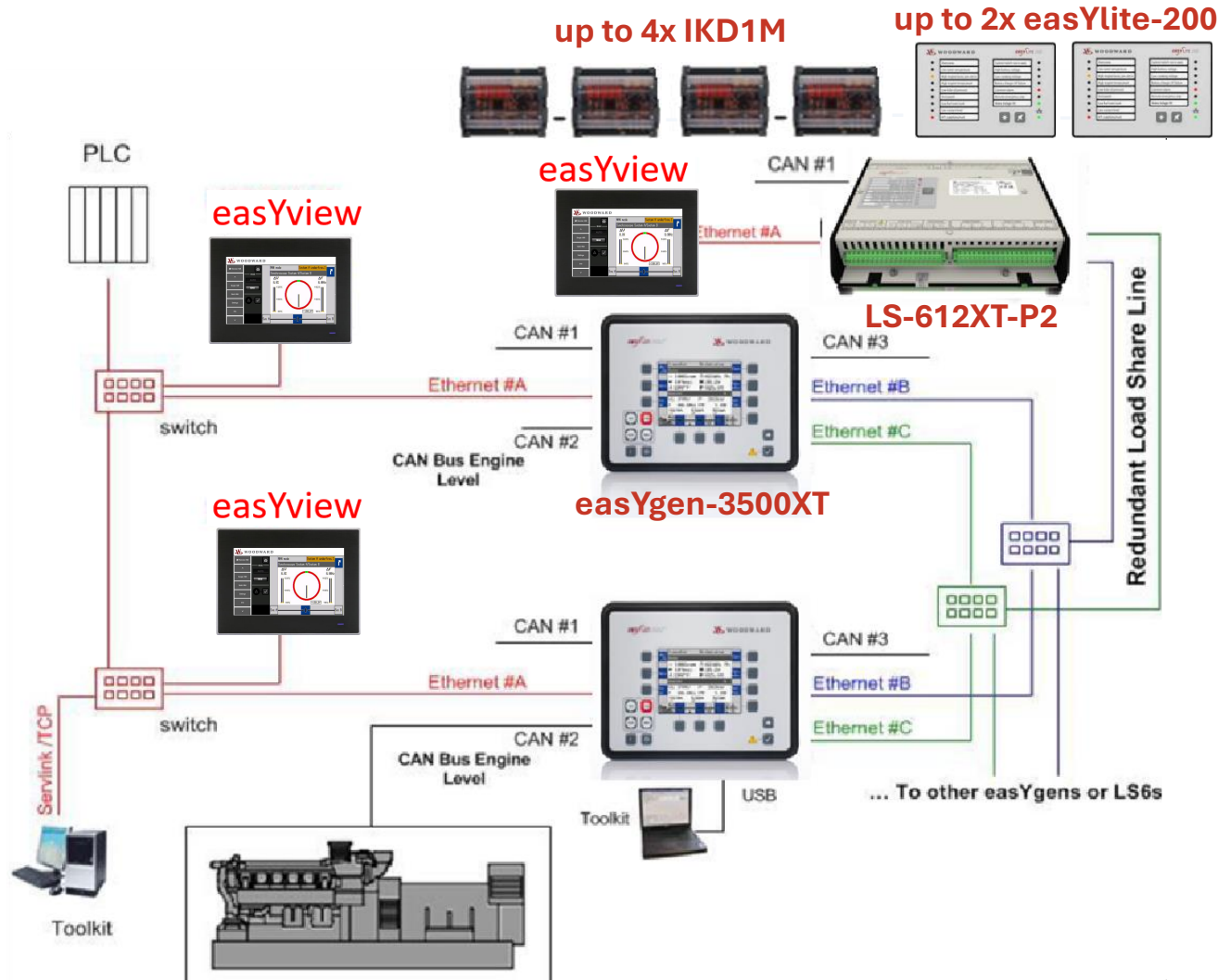
- 8440-2222
- LS-612XT-P1



8440-2222 LS612-XT-P1 Application Overview



8440-2317 LS612-XT-P2 Application Overview

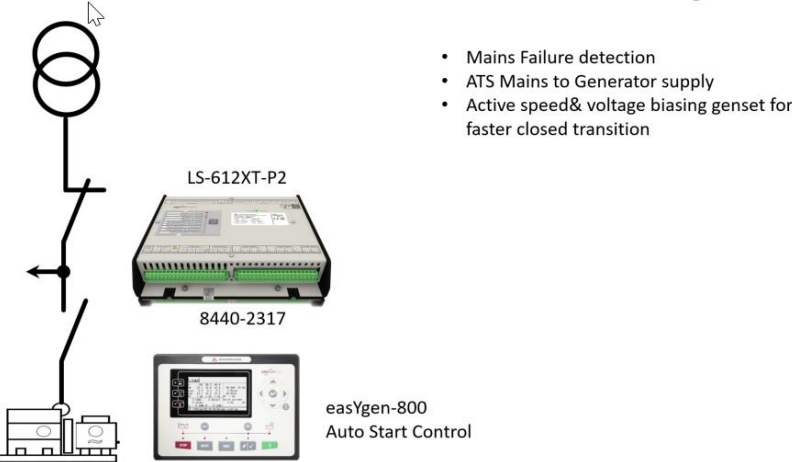


Additional to LS6XT-P1

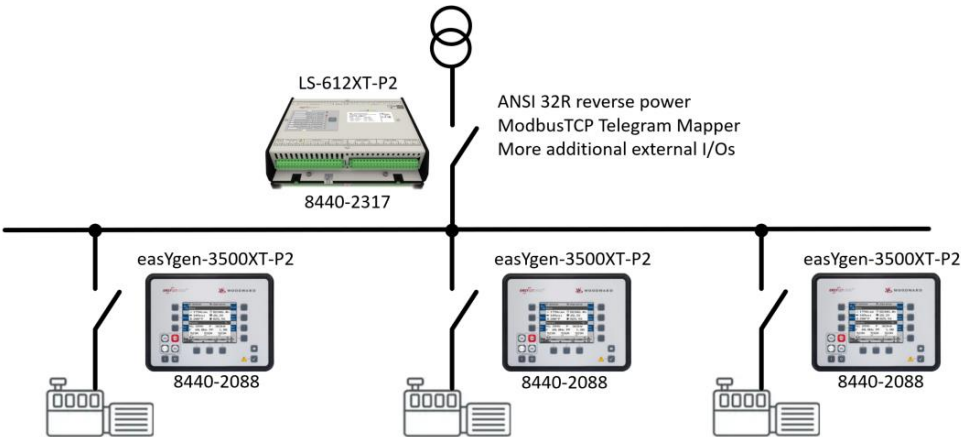
- › up to 4 IKD1M (32DI/32DO)
- › up to 2 easYlite-200
- › Comfortable Current protection
 - › overcurrent 1/2/3
 - › inverse time/voltage restraint overcurrent
- › Load Protection
 - › overload import level 1/2
 - › overload export level 1/2
- › Active synchronization to be used as independent paralleling control
- › With ABS & LR marine approval

Other LS6XT-P2 use cases

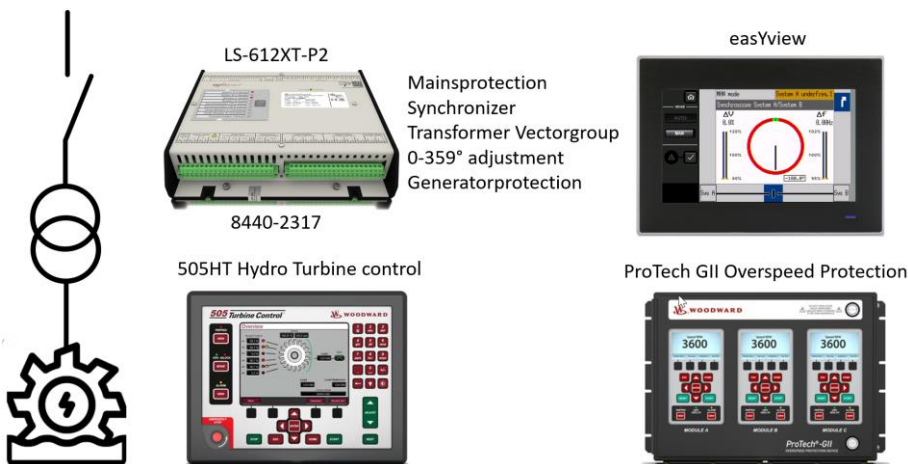
ATS closed transition active back synch



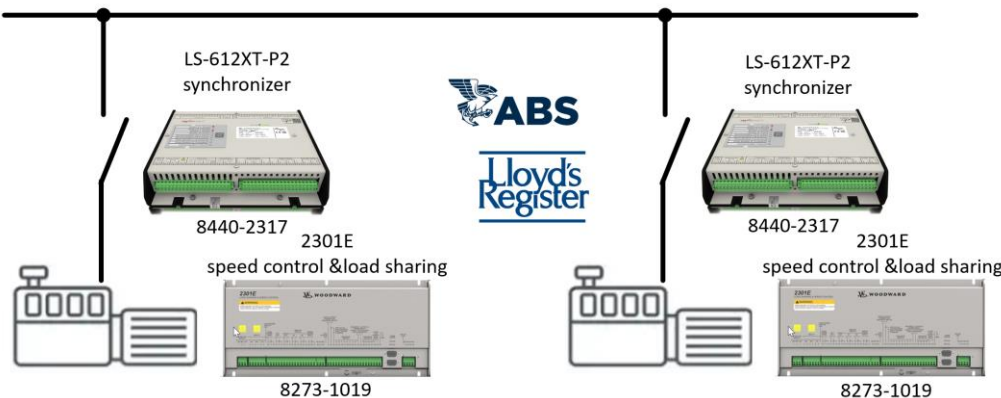
LS-612XT-P2 for vessel shore connection



LS-612XT-P2 for Hydro Application



LS-612XT-P2 use case marine paralleling



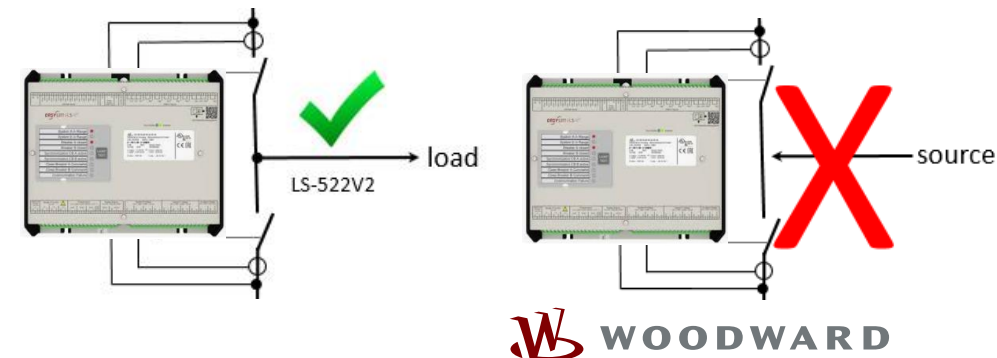
Pre-Defined LS-6XT Application Modes

A05 GCB/GGB	n+1 generators	island operation only	GCB & GGB operation
A06 GCB/GGB/MCB	n+1 generators	island/one mains operation	GCB & GGB & MCB operation
A08 GCB/L-MCB	n+1 generators	island/one mains operation	GCB L-MCB with LS511/521
A09 GCB/GGB/L-MCB	n+1 generators	island/one mains	GCB, GGB, L-MCB with LS511/521
A10 GCB/L-GGB	n+1 generators	island operation only	GCB, L-GGB with LS511/521
A11 GCB/L-GGB/L-MCB	n+1 generators	island/one mains only	GCB, L-GGB and L-MCB with LS511/521
A12 GCB/L-GGBMCB	n+1 generators	island/one mains operation	GCB, L-GGBMCB with LS512/522

In above App Modes all the segmenting is already pre-configured

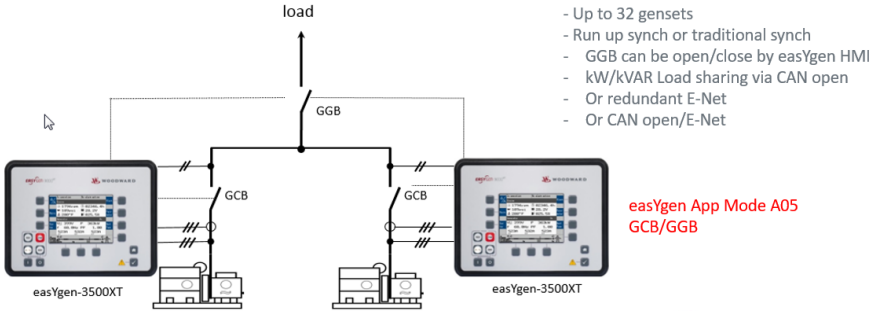
A07 GCB/LSx	n+1 generators	island and/or n+1 mains operation	LS511/512/521/522/LS6XT
A13 GCB/GC	GC-3400XTP1		

- Segmenting must be done individual according the application
- Every breaker which must be synchronized requires a LS-6XT controller
- When using 2 breaker mode in LS-6XT, the load must be always between the two LS-612XT breakers, it is not allowed to receive power (source) between the two breakers

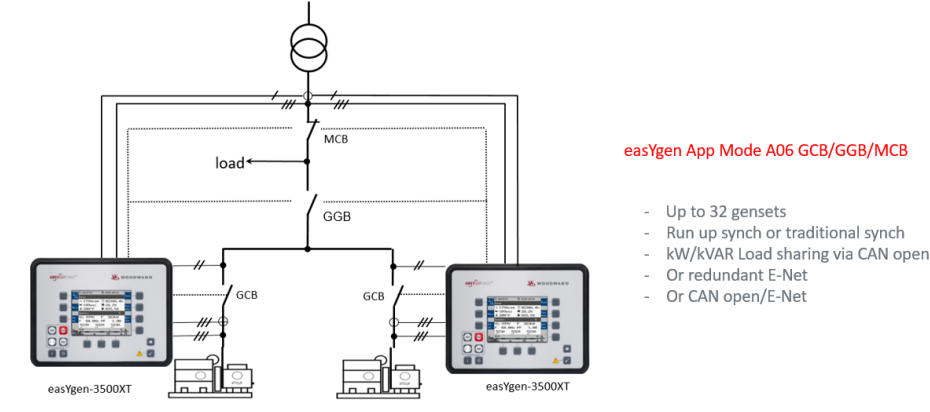


easYgen-3500XT use cases

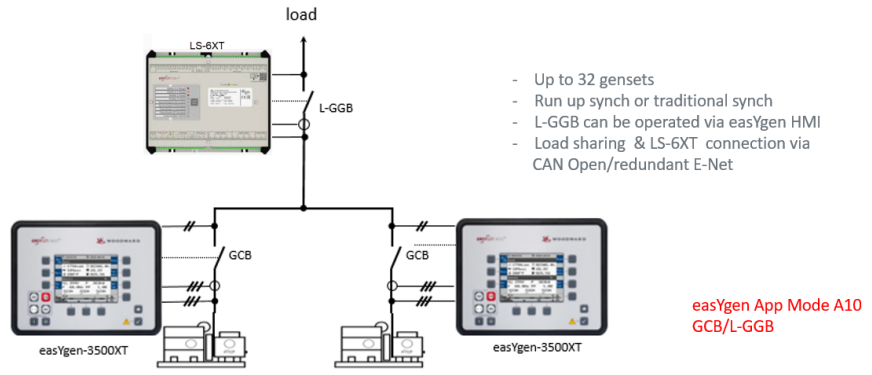
easYgen-3500XT GGB Support Island Mode



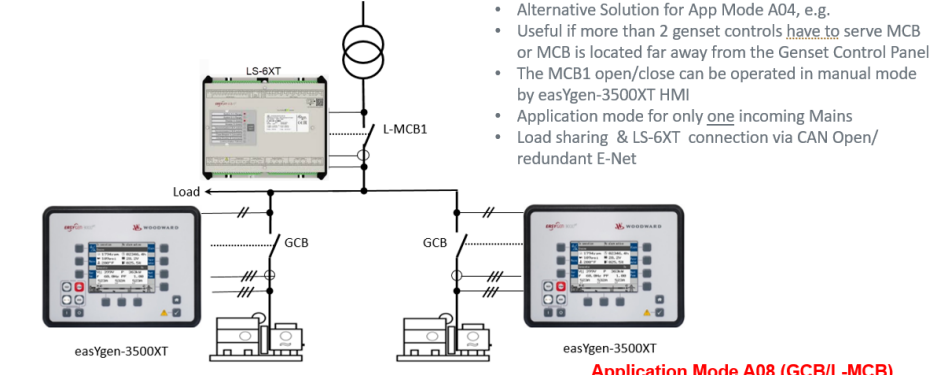
easYgen-3500XT GGB Support Island & Mains Mode



Multiple gensets island mode GGB

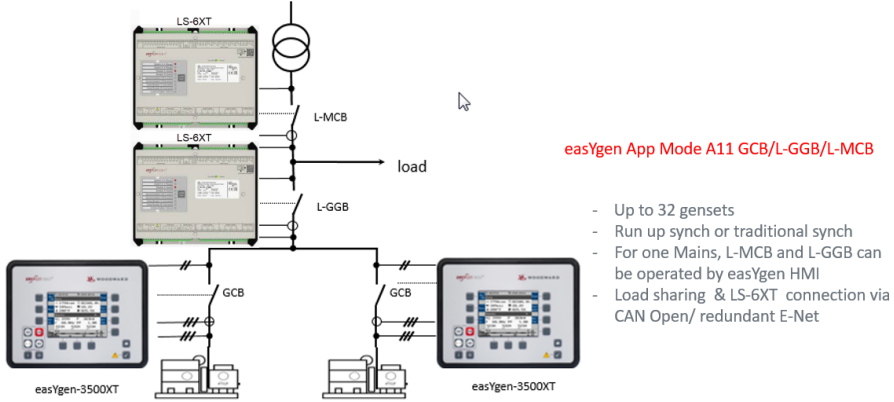


Multiple Gensets only one MCB

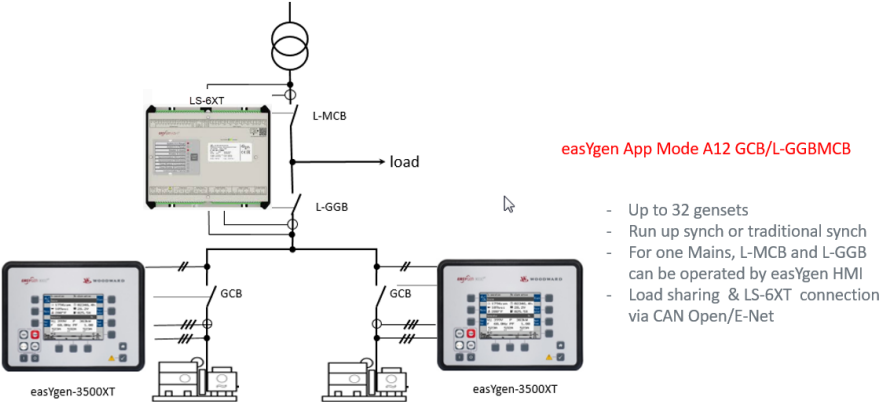


easYgen-3500XT use cases

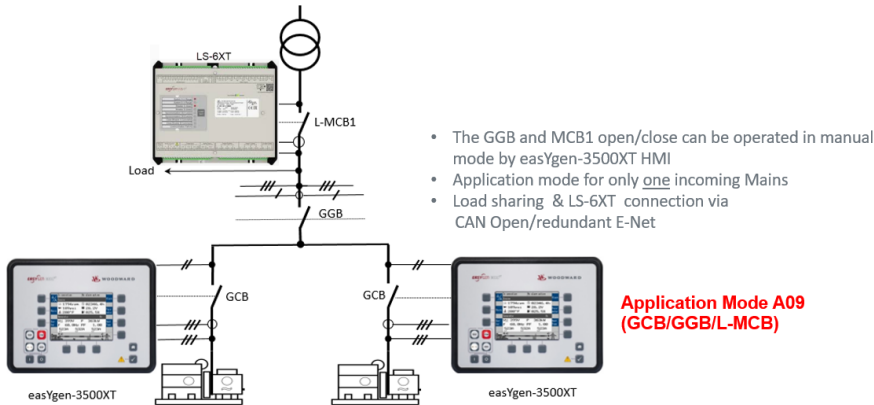
easYgen-3500XT GGB Support Island & Mains Mode



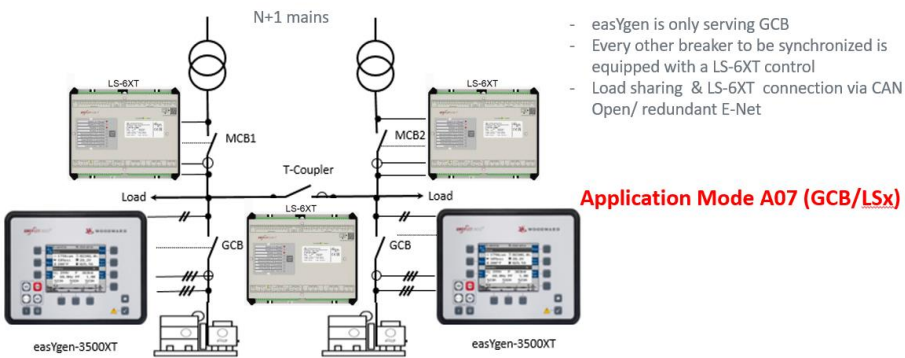
easYgen-3500XT GGB Support Island & Mains Mode



Multiple Gensets only one MCB & one GGB



easYgen-3500XT Multiple breaker application

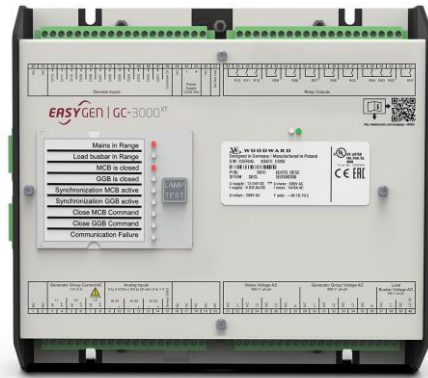


You have requirement to control and manage

- › more than 32 generators
- › more than 32 breakers
- › more than 64 Segments?

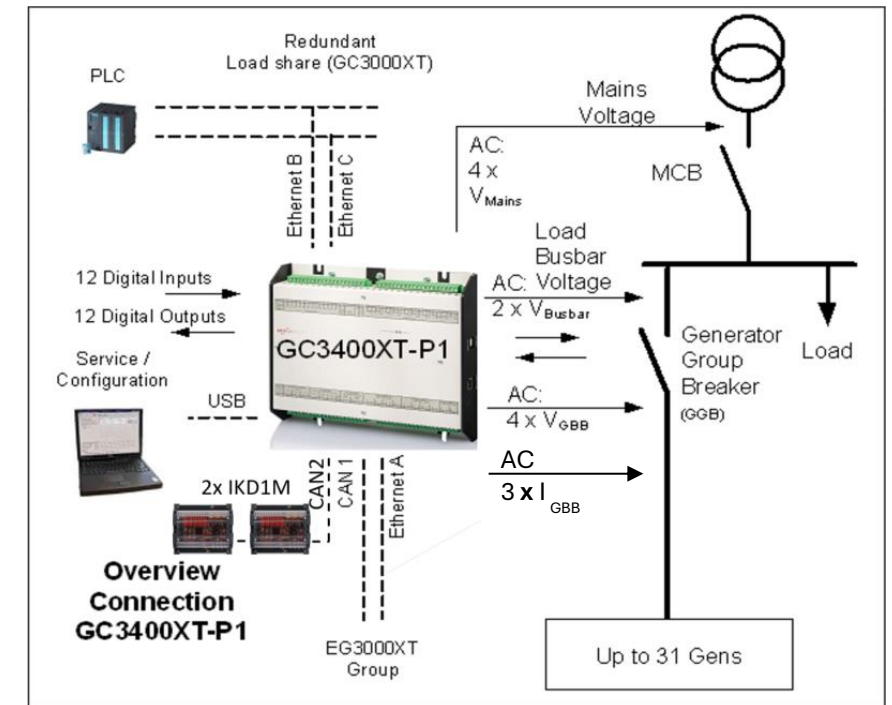
Then Group Controller GC3400XT is a solution

GC3400XT-P1 Group Controller

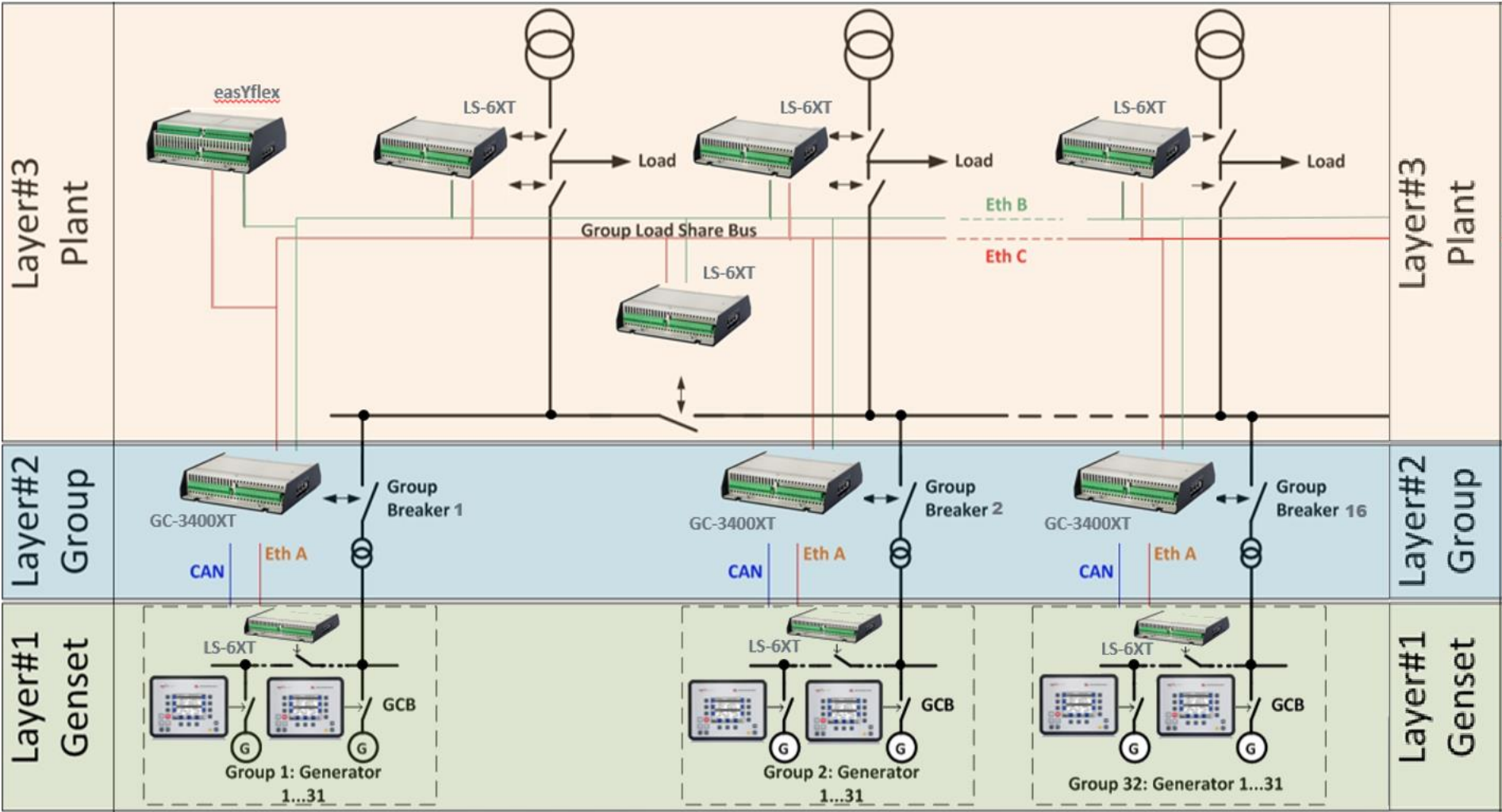


➤ 8440-2267

- Allows you to **standardize** on one solution to fit a multitude of applications
- Runup-Sync and E-Net Modbus Master supported
- Proven system for managing **large** power generation systems
 - multiple generators (>2.0) up to 496 generators supported in 16 groups each up to 31 generators)
 - In a group of (up to 31) or less for modularity
 - Redundant load share communication at each level, 2 x IKD1M can connected to CAN2
- Purpose-built to **minimize your effort** commanding your power generation assets
- **Reduced** point-to-point wiring CAN/ETH communication line between all units

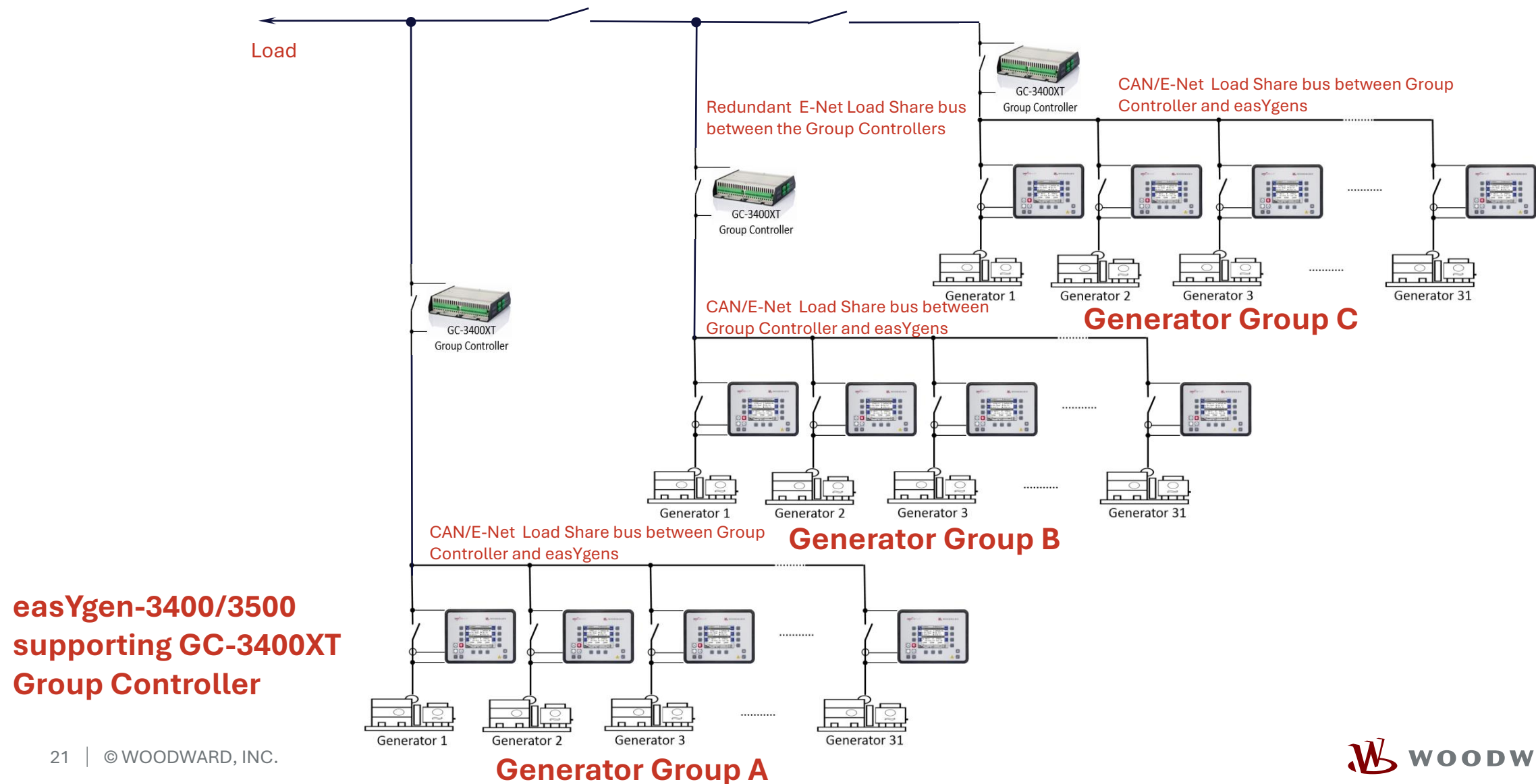


System Architecture

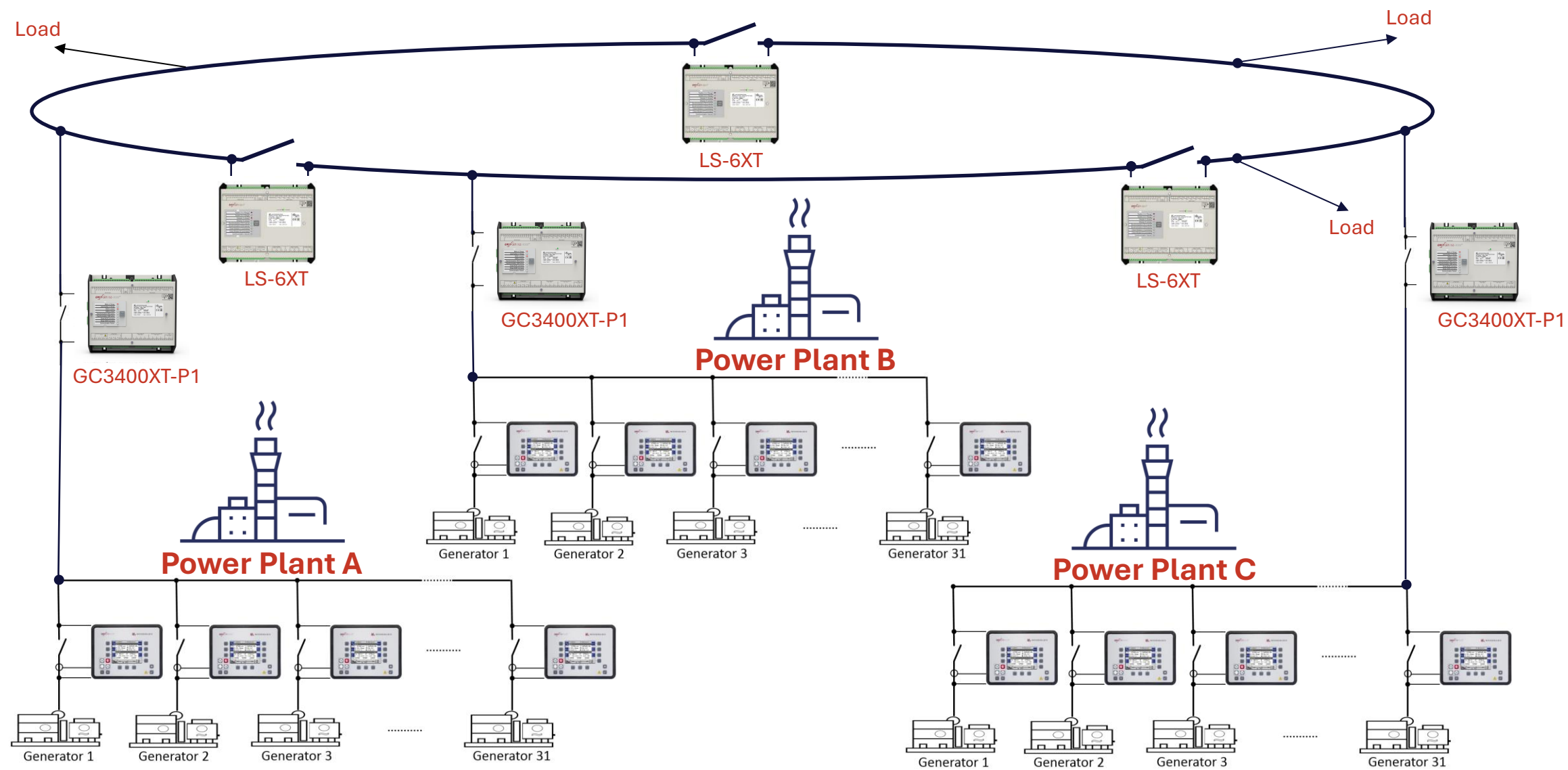


- > up to
 - > 128 Segments on Layer 3
 - > 64 LS6XT's total Layer 3
- > up to
 - > 16 GC-3400XT's
- > up to
 - > 64 Segments on Layer 1
 - > 31 LS6XT's in each GC-3400XT Group

Use Case Critical Power Application



Group Controllers balancing 3 HFO power plants



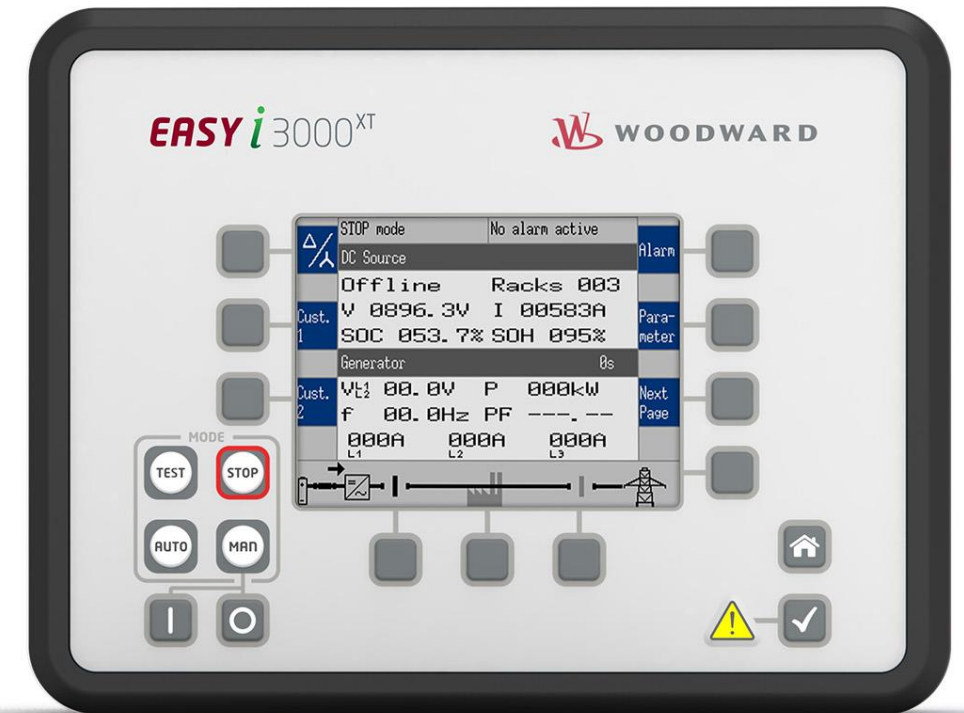
easY-I for inverter based sources

The easY-I-3000XT series takes care about a DC/AC Inverter and connected DC source. The control units can be used in island/mains parallel operation in conjunction with some gensets and is also applicable for stand-by, AMF, peak shaving, import/export or DC charging. Of course, these functions must also be supported by the inverter used.

Seamless integration of easY-I with other easYgen-3000XT platform controls like easYgen-3500XT, LS-6XT and GC-3400XT controls via integral redundant E-Net communication.

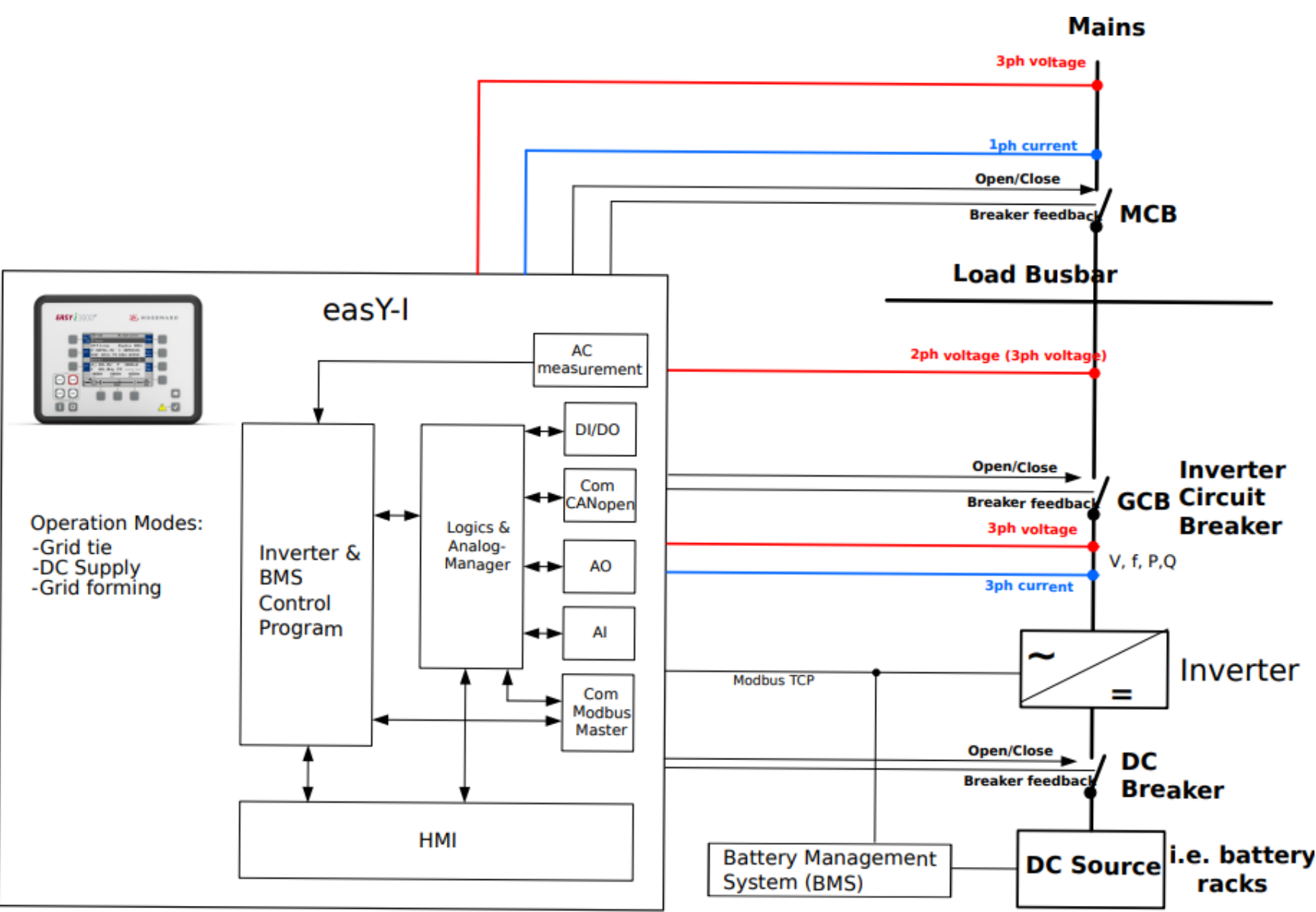


scan to learn more
www.easYgen.org/easYI

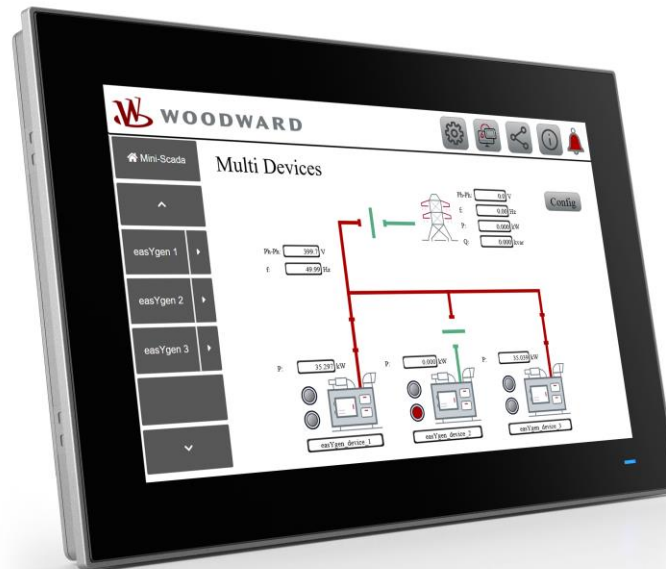
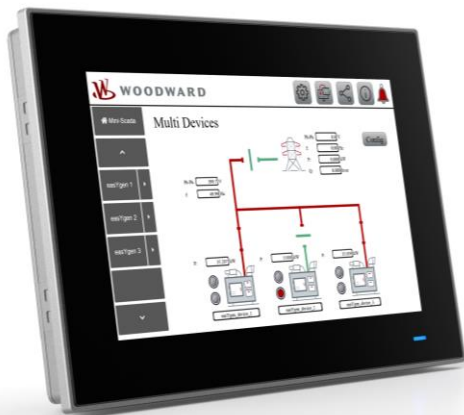


Woodward easY-I part numbers:
8440-2292 easY-I-3500XT-P1 and 8440-2293 easY-I-3400XT-P1

easY-I



easYview SCADA



Part number	description	Screen size	Data points*
8446-1071	easYview-07-030	7"	30
8446-1072	easYview-10-060	10"	60
8446-1073	easYview-15-150	15"	150

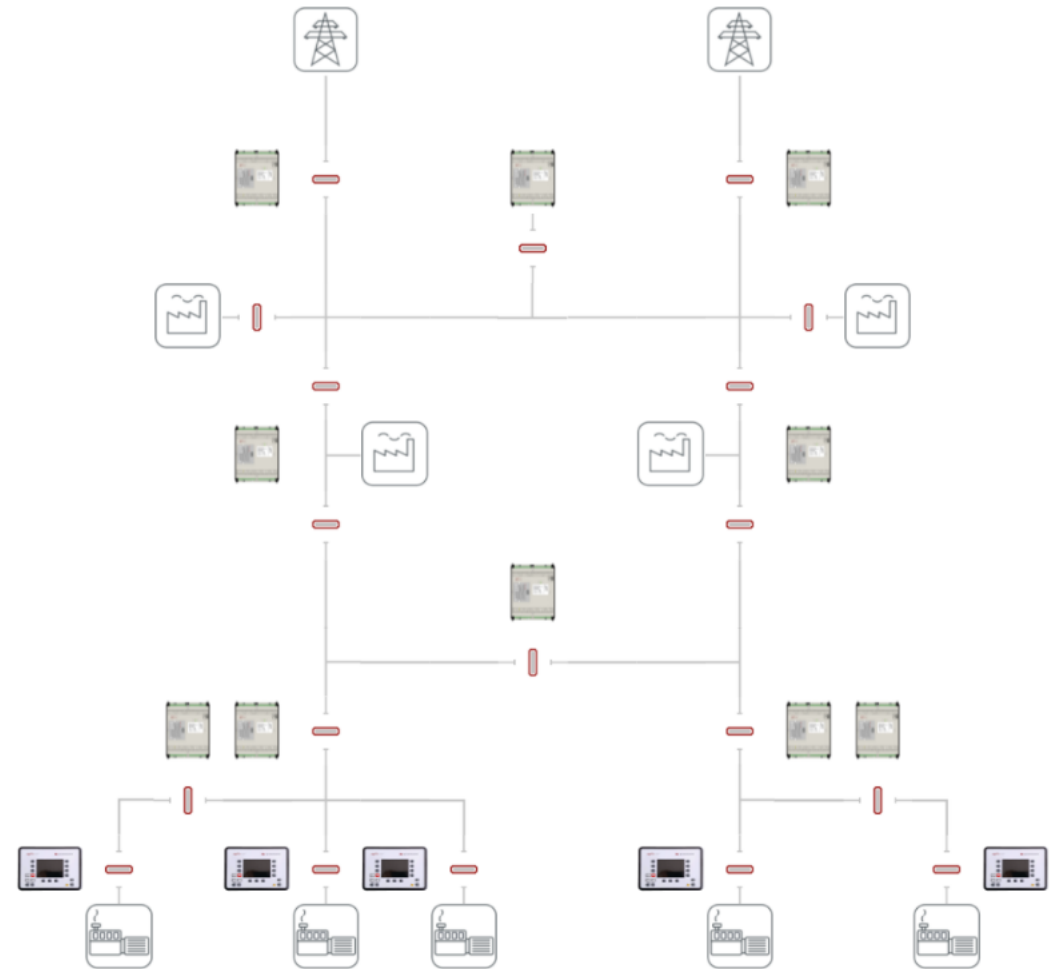
*used at the same time in one page



scan to learn more
www.easYgen.org/easYview

easYsim – Power Systems Simulation

- › Cloudbased Simulation with 7 training models
- › 3-month License P/N 10-059-783 easYsim
- › Customized Simulation according your project needs based on a Industrial PC to be connected to your PLC
- › easYgen-3000XT platform controls (easYgen-3000XT's, LS-6XT's, GC-3400XT-P1, DSLC-2XT and MSLC-2XT) digital twins can be added into power systems simulation



scan to learn more
www.easYgen.org/simulation



Powering a clean future

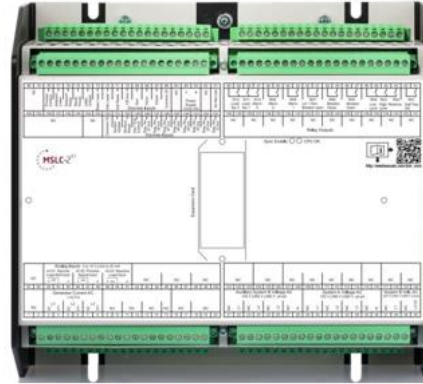


Helpful Backup Slides

Why switch to new DSLC-2XT/MSLC-2XT?



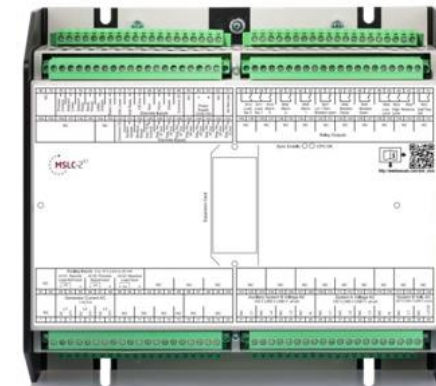
› 8440-1878 DSLC-2-5 & 8440-1978 DSLC-2-1



› 8440-2299 DSLC-2XT



› 8440-1877 MSLC-2-5 & 8440-1977 MSLC-2-1



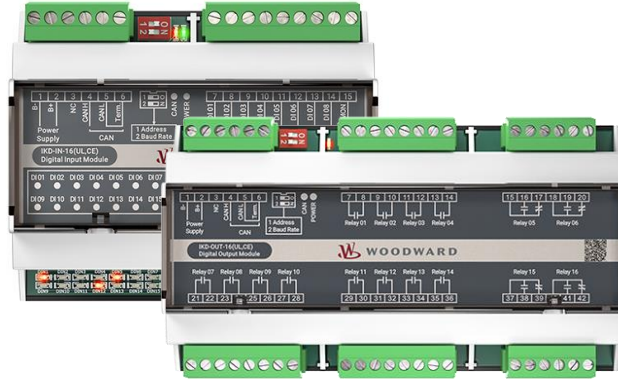
› 8440-2298 MSLC-2XT

- › Same form factor
- › Same mounting dimensions
- › Only one P/N for DSLC-2/ MSLC-2XT
- › Up to 690VAC direct sensing
- › ../1A & ../5A current sensing
- › Drop-in Replacement
- › Class 1 kW sensing
- › Higher galvanic isolation of PID outputs
- › One additional ETH-C port
- › Interoperable with old DSLC-2/MSLC2
- › Manuals & configuration files stored on control
- › USB configuration

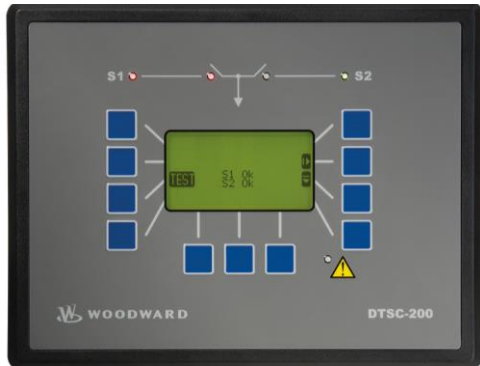
Why switch to new DTSC-200A ATS control?



> 8440-2297 DTSC-200A



> 8440-2307 IKD-IN-16 &
8440-2306 IKD-OUT-16



> 8440-1868 DTSC-200-5



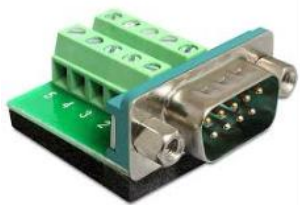
> 8440-2116 IKD1M



> 5417-1251 DPC-USB cable

- > Same known Toolkit calibration tool
- > Same DTSC-200 configuration & HMI
- > Same CANopen & Modbus Protocols
- > Re-use of DTSC-200 setting files in DTSC-200A
- > Easier navigation by clear named push-buttons
- > Larger, brighter graphical Display
- > No battery inside to replace
- > Add up to 2 IKD's or 1 IKD-IN-16 & OUT-16 I/O expansion cards
- > Standard USB cable required
- > Available from stock!

Why switching to easYgen-3500XT P2?



SubD terminal Adapter



PLC



690/110 VAC PT's



Bus Rotation Field relays



External Button



CAN/E-Net Converters



easYgen-3500-5 P2



Galvanic Isolator for AVR



Class 1 Transducer

../1 or ../5A CT Version?

PROPRIETARY



What to consider when upgrading old to new easYgen-3000/XT DSL-2/2XT MSL-2/2XT

Check out our FAQ knowledgebase

- › <https://support.easygen.org/en/kb>
- › <https://support.easygen.org/en-US/kb/articles/wiring-deltas-easygen-3100-3200-p1-p2-versus-easygen-3100xt-3200xt>
- › <https://support.easygen.org/en-US/kb/articles/wiring-deltas-of-easygen-3400-3500-p1-p2-versus-easygen-3400xt-3500xt-p1-p2>
- › <https://support.easygen.org/en-US/kb/articles/wiring-terminal-differences-dsl-2-dsl-2xt>
- › <https://support.easygen.org/en-US/kb/articles/wiring-terminal-differences-msl-2-msl-2xt>



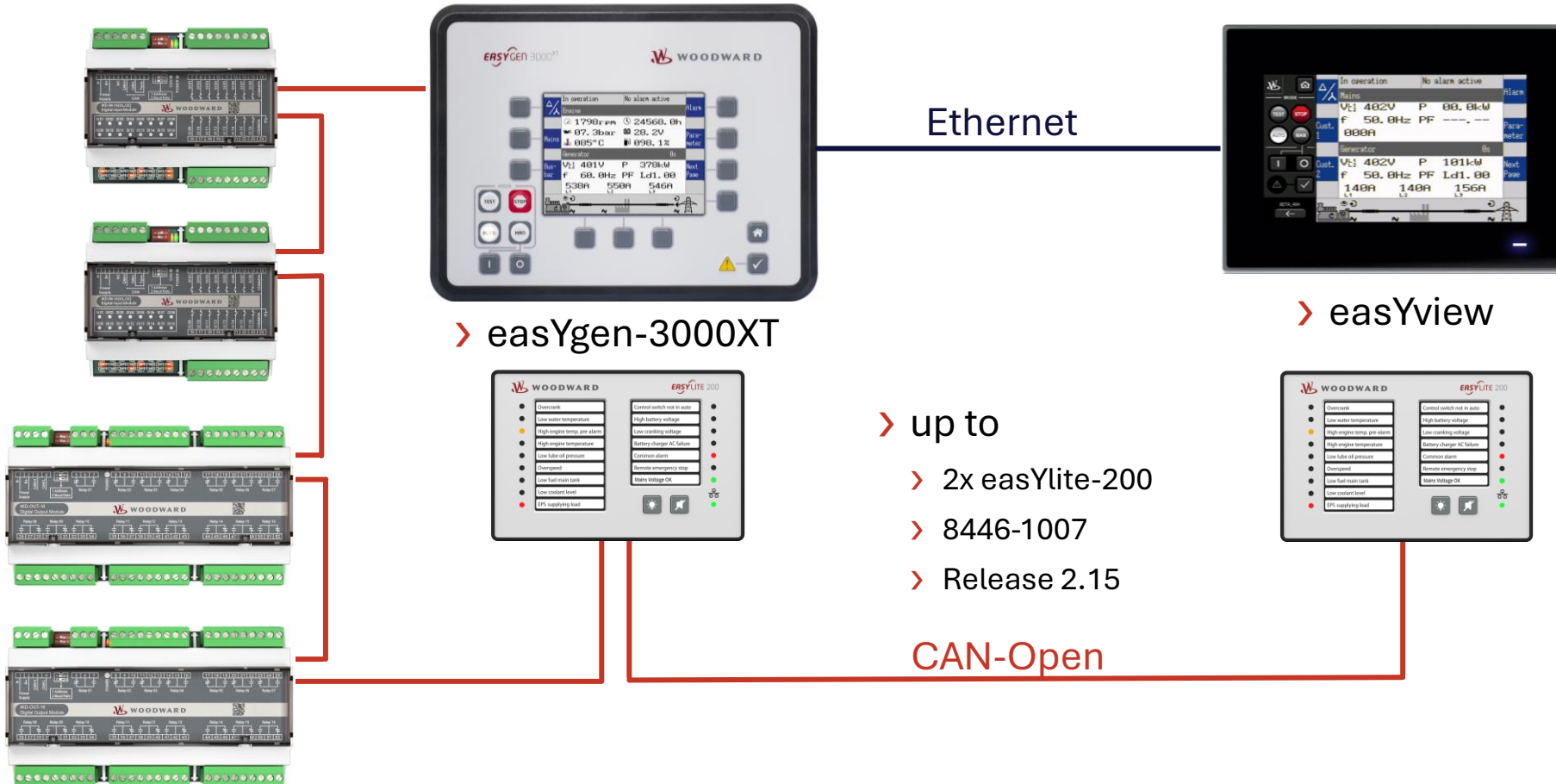
scan for more information about legacy, obsolete power management
<https://wss.woodward.com/manuals/Legacy/Forms/AllItems.aspx>

Accessories for easYgen-3000XT

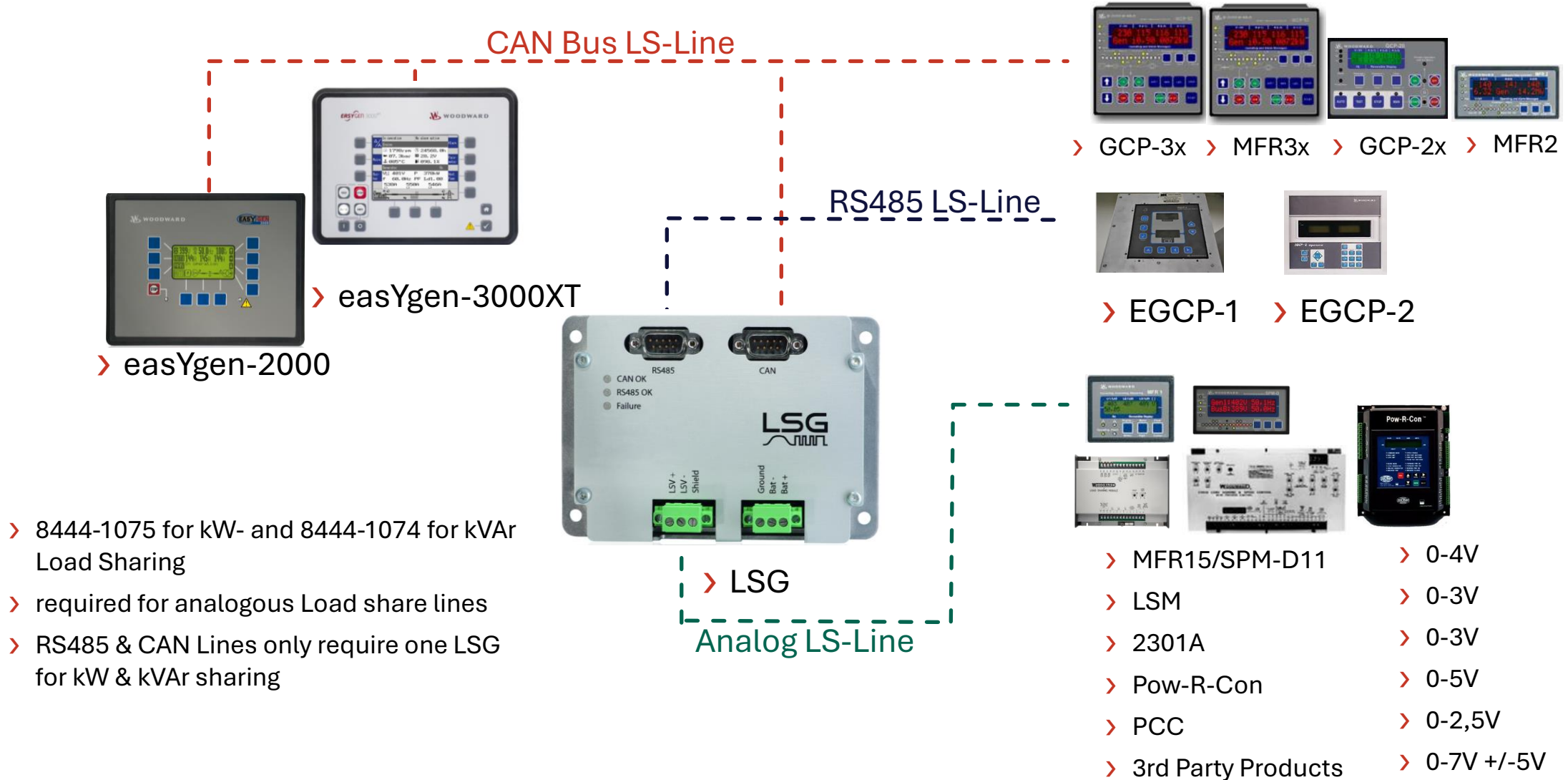
Engine-/Switchgear Room

- › up to
- › 2x IKD-IN-16
- › 8440-2304

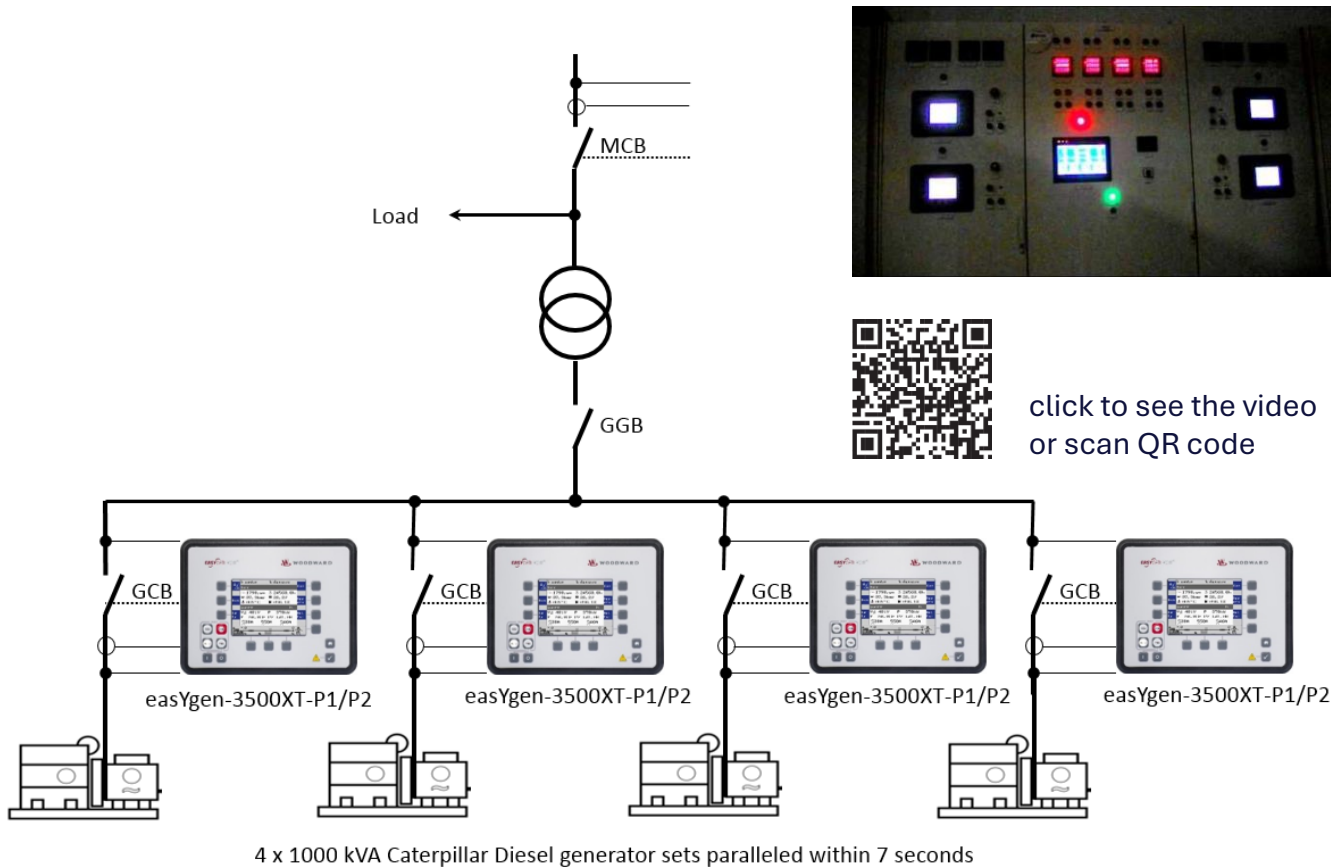
- › up to
- › 2x IKD-OUT-16
- › 8440-2305



LSG Load Share Gateway



Run-up Synch Fast Paralleling



Customer problem

Want to parallel $n+1$ backup gensets together in shortest possible time within only some seconds, to shrink Battery UPS backup system, to be able to provide suddenly power for heavy load one genset alone cannot provide or be able to provide total genset load beyond 10 or 15 seconds which is a requirement in many critical applications like Datacenters, Hospitals, Airport, Chemical & Process Industry.

Solution – Run-Up Synch

All the generators are paralleled together by closing their circuit breakers during the engine start sequence. Then after a certain speed is achieved the voltage regulators are enabled and the generators will produce voltage. The run-up synchronization method is used to get several synchronous generators onto load in a very short time. This time is determined by the engine start time and the AVR on-excitation.

- Run-Up Synch can be done in various App Modes depending on the application, only easYgen-3400/3500XT is required

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News

DEC 20
2022

easY-I controller for inverter based sources

Clemens Grosskinsky

0

Product Release

NOV 21
2022

Product Support Statement DSLC-2 & MSLC-2

Clemens Grosskinsky

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Product Discontinuation

NOV 14
2022

Do you need compact remote I/O modules that are readily ...

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UKCA required for UK market now available fo...

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- Can I change the internal Battery on my own?
- Why switch to new DSLC-2XT & MSLC-2XT ?

easYview (2)

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Power Generation Controls

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✓	📁	Name	Modified	PGC Update Title and Modifier WF
	📁	Compliance_Certificates	... March 15, 2021	
	📁	DSLC_MSLC_series	... December 7, 2021	Completed
	📁	DTSC_series	... March 15, 2021	
	📁	easYgen-100_series	... March 15, 2021	
	📁	easYgen-1000_series	... March 15, 2021	
	📁	easYgen-2000_series	... March 15, 2021	
	📁	easYgen-3000XT_series	... March 15, 2021	
	📁	easYlite-200	... March 15, 2021	
	📁	easYprotec_series	... June 23, 2021	
	📁	Legacy_Controllers	... March 15, 2021	
	📁	LS-5_series	... October 19, 2021	
	📁	MFR-x00_series	... June 23, 2021	
	📁	SW_Tools	... March 15, 2021	



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[https://wss.woodward.com/
manuals/PGC/Forms/AllItems.aspx](https://wss.woodward.com/manuals/PGC/Forms/AllItems.aspx)

Legacy controls replacement data base

Please search for your item number or the item description:

search

egcp

ITEM NUMBER	ITEM DESCRIPTION	ITEM NUMBER	ITEM DESCRIPTION	COMMENTS	PRODUCT DOCUMENTATION	EXTERNAL LINK
8406-020	EGCP-1, 24VDC, 90-277 VAC PT'S	8440-2082	easYgen-3200XT	Loadshare Gateway LSG required if n+1 gens	»	»
8406-021	EGCP-1, 24VDC, 90-277 VAC PT'S	8440-2082	easYgen-3200XT	Loadshare Gateway LSG required if n+1 gens	»	»
8406-113	EGCP-3 "I LS"	8440-2088	easYgen-3500XT-P2	LON not supported in easYgen!	»	
8406-114	EGCP-3 "MC"	8440-2222	LS-6XT	LON not supported in LS-6XT	»	




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Power Management Controls Channel



easygen power management







EASYGEN 3000^{XT}

TUTORIAL
Getting started with
easYgen-3000XT and ToolKit

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