WOODWARD

EASYGEN | LS-6ˣᵀ

Multi-Breaker control for complex power management applications

Description

Woodward's easYgen | LS-6XT control is synchronizer controller with integrated mains decoupling and protection features. It enables several redundant communication schemes with peer controls. The applications range from independent synch check relay to complex power management sys-tem with multiple utility feeds, bus tie break-ers and group breakers in combination with Wood-ward's easYgen-3400XT/3500XT equipped genset controllers and/or easYgen | GC-3400XT equipped genset groups. Re-dundant busses running among the peer controls ensure that availability of your power generation asset is not compromised to a single point of failure.

The LS-6XT control together with easYgen-3000XT controls are designed to support OEM switch-gear builders, generator packagers, and system integrators standardize on a single hardware for a multitude of utility parallel or island operations. Off-the-shelf LS-6XT control is software configurable for one/two breaker control, gensets / genset groups handling, and stand-alone/multi-unit application.

The LS-6XT controller is available in a rugged aluminum powder coated housing. An LED Annunciator plate is integrated to the front for local annunciation of alarms that are customizable on-site. Woodward RP-3000XT is supported over a separate Ethernet network that works as remote operator control panel.

Features

- 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.
- In group controller applications that require the LS-6XT to work inside the group (with easYgens) AND outside the group (with group controllers), up to 32 LS-6XT can be used with easYgens and up to 64 LS-6XT can be used with group controllers.
- Purpose-built software to support single bus or redundant bus communications.
- Three independent true RMS AC measurement (system A, system B and auxiliary voltage).
- Remotely selectable breaker transition modes: Open, Closed (short parallel <100ms), Inter-change, Indefinite parallel.
- Internal power calculation with option to feed-in active power from external trans-ducer.
- Phase match or slip frequency synchronization with voltage matching.
- Several built-in protection elements (including ROCOF, phase shift and flexible limits for custom protection).
- Segment control for the load sharing.
- Automatic date and time synchronization between the LS-6XT units and the con-nected easYgen-3400XT/3500XT controls.
- Detailed interface communication diagnostics to monitor, visualize and troubleshoot all the connected controls in the network.
- LS-6XT "Stand alone" mode without the easYgen-3400XT/3500XT is possible.
- Custom logic and configurable I/Os driven by LogicsManager and AnalogManger.
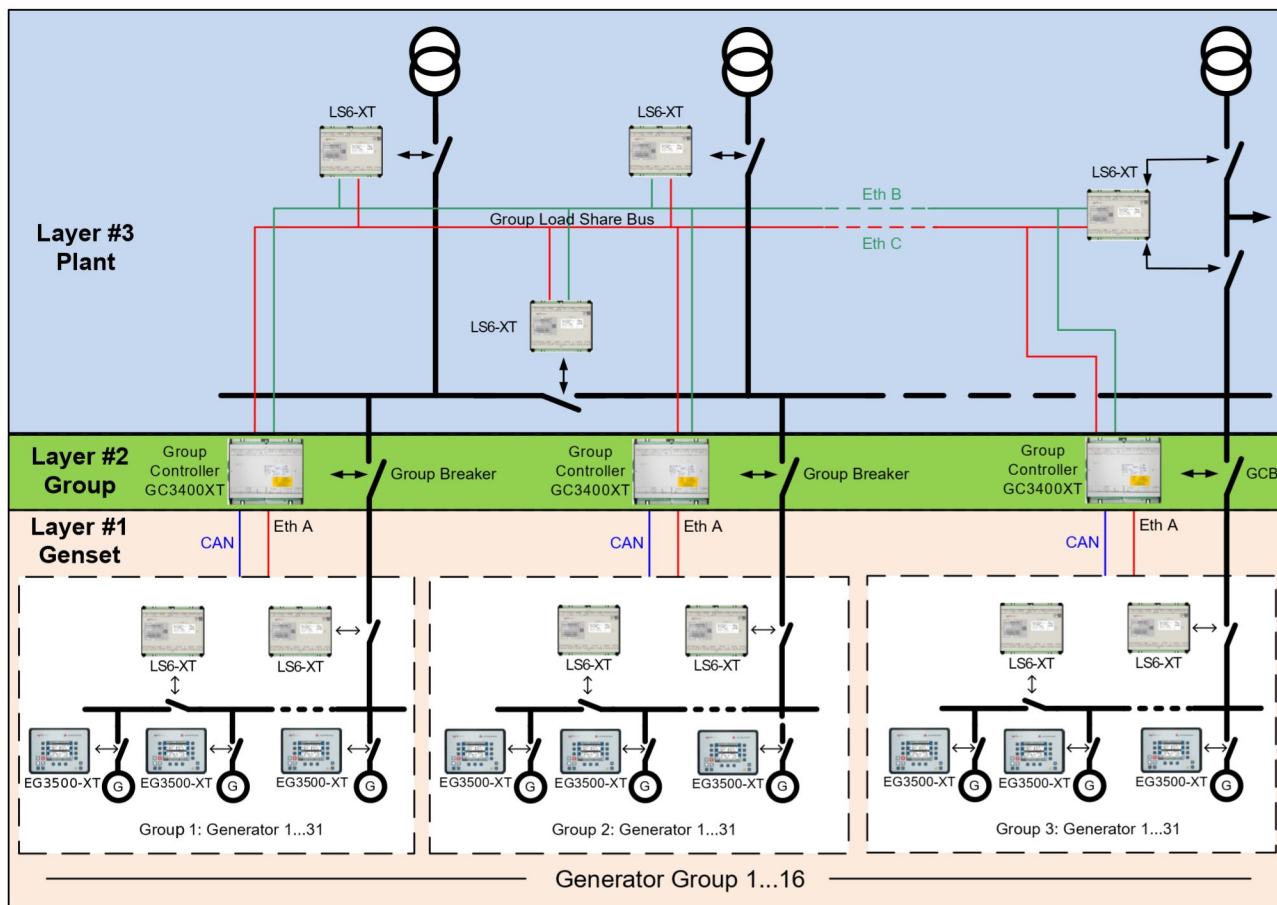- HMI supported with RP-3000XT offering standard and customizable screens.

- Premium circuit break-er control for reliability demanding complex power management applications
  - Peak shaving operation
  - Import/Export operation
  - Islanded & Utility paral-lel operation
- Control up to 64 break-ers on up to 128 bus segments in an applica-tion
- Purpose built applica-tion schemes
  - One/two breaker con-trol
  - Gensets/genset groups handling
  - Stand-alone/multi-unit operation
- Forward and reverse synchronization be-tween utility and genset group
- Redundant Ethernet communication
- Ethernet and RS-485 interfaces for remote control and visualization
- Customizable logic, HMI screens (with RP-3000XT) and alarms
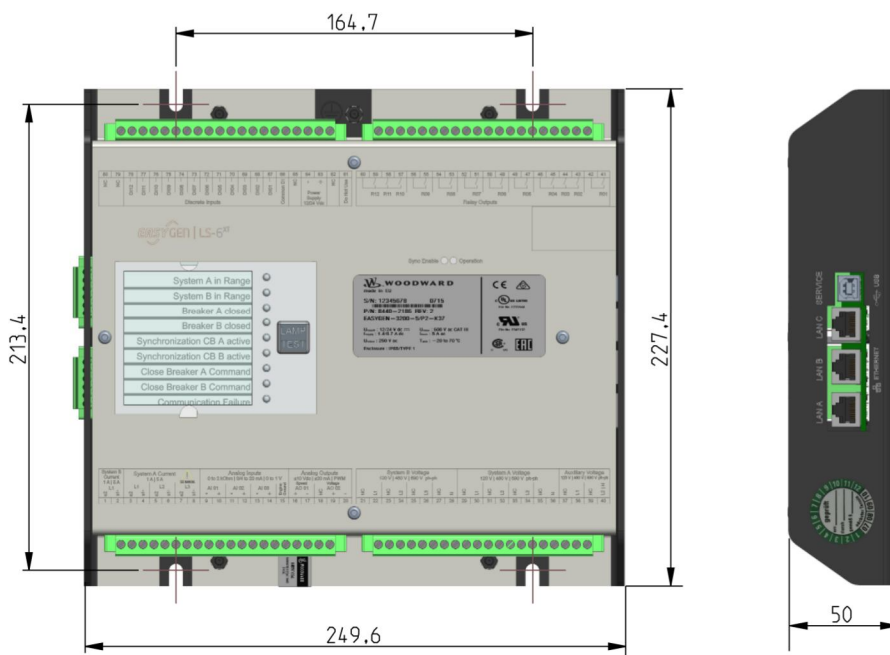- Adjustable vector groups for synchroniza-tion

Specifications

Power supply..................................12/24 Vdc (8 to 40 Vdc)
Intrinsic consumption..max. 22 W
Ambient temp. (operation)...........-40 to 70 °C / -40 to 158 °F
Ambient temp. (storage)................-40 to 80 °C / -40 to 176 °F
Ambient humidity.................................95 %, non-condensing
Voltage (software configurable) ....(Y / Δ)
100Vac   Rated (Vrated)..........................69 / 120 Vac
                Max value (Vmax).....................86 / 150 Vac
400 / 600 VAC   Rated (Vrated)..........400 / 690 VAC
                Max. value (Vmax)..................520 / 897 VAC
                Rated surge Volt. (Vsurge)..................6.0 kV
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 Vac
Linear measuring range.....................................1.25×Vrated
Measuring frequency...........................50/60 Hz (30 to 85 Hz)
High Impedance Input; Resistance per path.................2.5 MΩ
Max. power consumption per path...........................< 0.15 W
Current (Isolated, software configurable)
Rated (Irated) ....1 A or 5 A
Linear measuring range.....................IsystemA = 3.0×Irated
                IsystemB = 1.5×Irated
Setting range ....1 to 32,000 A
Burden ....< 0.10 VA
Rated short-time overcurrent (1 s)....................[1] 50×Irated,
                [5] 10×Irated
Accuracy...Class 0.5

Power
Setting range.............................0.5 to 99,999.9 kW/kvar
Accuracy..Class 1.0
Discrete inputs..isolated
Input range....................12/24 VDC (8 to 40 VDC)
Input resistance.....................................approx. 20 kΩ
Relay outputs...isolated
Contact material..AgNi
Load (GP)................2.00 Aac@250 Vac 2.00 Adc@24 VDC
Analog inputs (isolated).........................freely scalable
Type 1....................0 to 1 V / 0 to 2000 Ohms / 0 to 20 mA
Resolution...16 Bit
Maximumpermissible voltage against genset Ground.....9 V
Maximum permissible voltage genset Ground to PE ...100 V
Analog outputs (isolated) freely scalable
Type 1..± 10 V / ± 20 mA / PWM
Basic insulation voltage (AO#2)...........................500 Vac
Reinforced insulation voltage (AO#2)....................300 Vac
Insulation voltage (AO#1)...................................100 Vac
Resolution...12 Bit
Output ± 10 V (scalable).....................Internal resistance
Output ± 20 mA (scalable)...............Maximum load 500 Ω
Housing....................................... Back panel mounting,
                Powder Coated Sheet metal housing
Dimensions W x H x D (P1):...............250 × 228 × 50 mm
Connection.........................screw/plug terminals 2.5 mm²
Protection system...IP 20
Weight..approx. 1,750 g
Listings................................CE, UL, cUL, EAC (pending)

APPLICATION

DIMENSIONS

TERMINAL DIAGRAM

LS6-XT

RELATED PRODUCTS

- Genset Controller easYgen-3400/3500XT (Product Specification # 37583)
- Group Controller easYgen | GC-3400XT-P1 (Product Specification # 37896)
- ToolKit (Product Specification # 03366)
- LDSS Emulation Tool (Product Specification #37897)
- RP-3000XT (Product Specification #37594, P/N: 8446-1061)
- DataTelegramMapper Tool (Application Note #37684)
- Localization tool (P/N: 10-011-569)

WOODWARD

We appreciate your comments about the content of our publications. Please send comments including the document number below to stgt-doc@woodward.com

For more information please contact:

FEATURES OVERVIEW

easYgen | LS-6XT	easYgen | LS-6XT
Model	LS-612
Package	P1
Measuring	
System A voltage (up to 690 VAC)	3-ph
System A current (1 A or 5 A software selectable)	3-ph
System B voltage (up to 690 VAC)	3-ph
System B current (1 A or 5 A software selectable)	1-ph
Auxiliary voltage (up to 690 VAC)	1-ph
Control	
Breaker control logic (open and closed transition <100 ms) FlexApp™	1 / 2
Number of supported Woodward LS-6 units with easYgen-3400/3500XT	32
Number of supported Woodward LS-6 units with easYgen | GC-3400XT	64
Single and multiple-unit operation	✔
Auto, Manual and test operating modes	✔
Breaker synchronization (+/- slip frequency / phase matching)	✔
Vector group adjustment for synchronization	✔
Configurable dead bus closure direction	✔
GGB (Generator Group Breaker) Control	✔
Import / export control (kW and kvar)	✔
HMI	
RP-3000XT support DynamicsLCD™	✔
Configuration via PC	✔
Event recorder with real time clock (battery backup)	✔
Date and Time Sync. between LS-6XT, easYgen-3400XT/3500XT and GC-3400XT	✔
Configurable LEDs on Faceplate, x8	✔
Protection (Equivalent ANSI #)	
Over-/undervoltage (59/27)	✔
Over-/underfrequency (81O/U)	✔
Voltage asymmetry (47)	✔
Phase shift (78)	✔
df/dt (ROCOF) (81)	✔
QV monitoring	✔
Time-dependent voltage	✔
Mains voltage increase (accord. to VDE-AR-N-4105)	✔
Synch-Check (25)	✔
Monitoring	
Breaker open/close monitoring	✔
Synchronization time out monitoring	✔
Voltage Plausibility	✔
Freely configurable alarms	✔
Flexible Limits	✔
I/Os	
Discrete alarm inputs (configurable) LogicsManager™	12 (11)
Discrete outputs (configurable) LogicsManager™	12 (11)
Analog inputs configurable FlexIn™	3
Analog outputs: ± 10V, ± 20mA, PWM; configurable AnalogManager™	2
CAN bus communication interfaces FlexCAN™	1
Ethernet Modbus TCP Slave interface	3
USB Serial interface	1
RS-485 Modbus RTU Slave interface	1
Listings/Approvals	
UL / cUL Listing (61010 ,6200)	✔
CE	✔
EAC	Pending
Part Numbers P/N	
Cabinet back mounting w / o display	8440-2222
Spare connector KIT	8923-2319