
**Salient Features**

- ✓ Redundant communication (CAN-Eth, Eth-Eth)
- ✓ Connects to easYgenXT and group controller
- ✓ Manage one or two breakers
- ✓ Touch screen remote operator panel
- ✓ Power measurement class 1
- ✓ Direct connect up to 690 Vac

## 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 system with multiple utility feeds, bus tie breakers and group breakers in combination with Woodward's easYgen-3400XT/3500XT equipped genset controllers and/or easYgen | GC-3400XT equipped genset groups. Redundant 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 transducer.
- 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 connected 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.

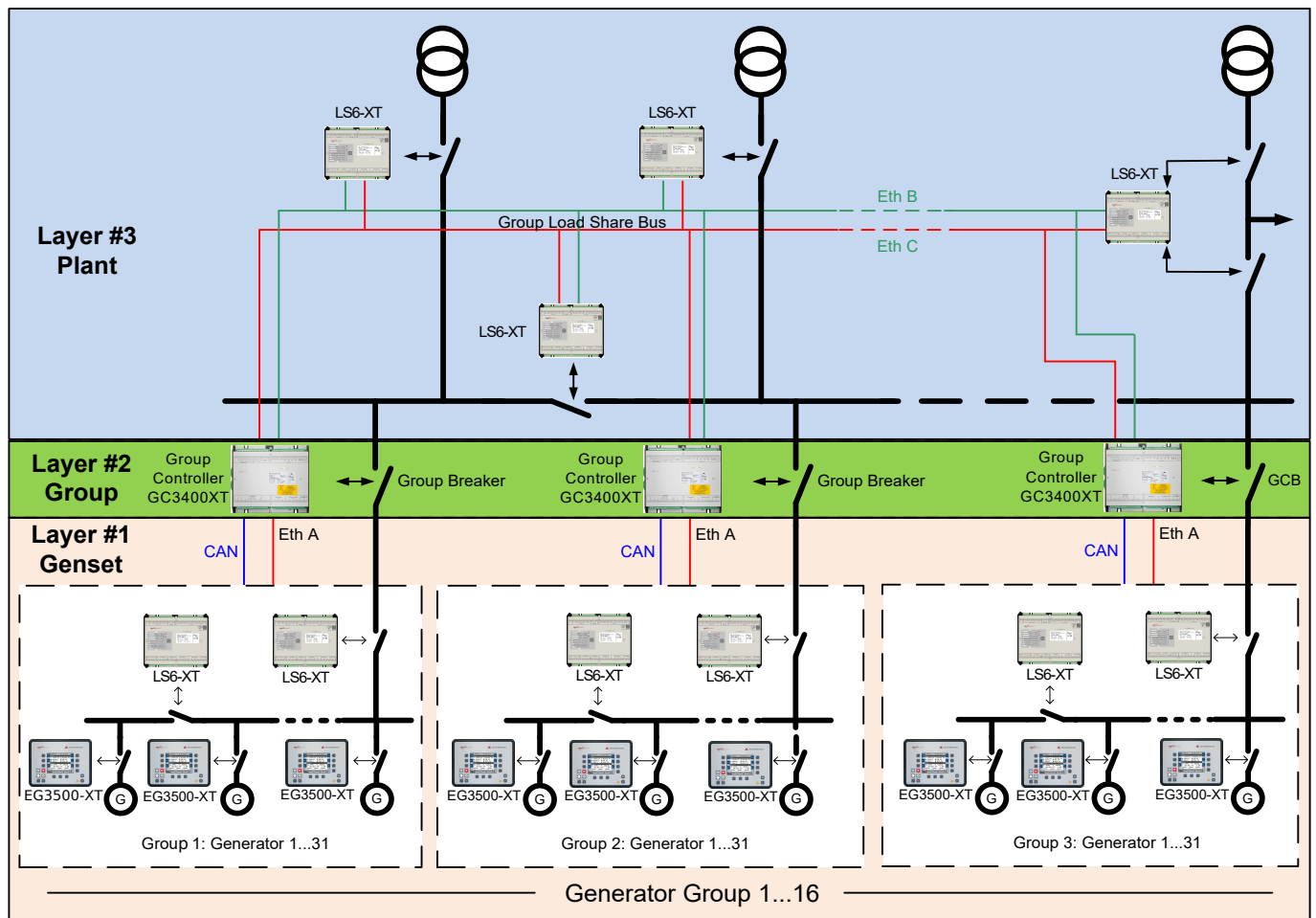
- Premium circuit breaker control for reliability demanding complex power management applications
  - Peak shaving operation
  - Import/Export operation
  - Islanded & Utility parallel operation
- Control up to 64 breakers on up to 128 bus segments in an application
- Purpose built application schemes
  - One/two breaker control
  - Gensets/genset groups handling
  - Stand-alone/multi-unit operation
- Forward and reverse synchronization between 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 synchronization

## Specifications

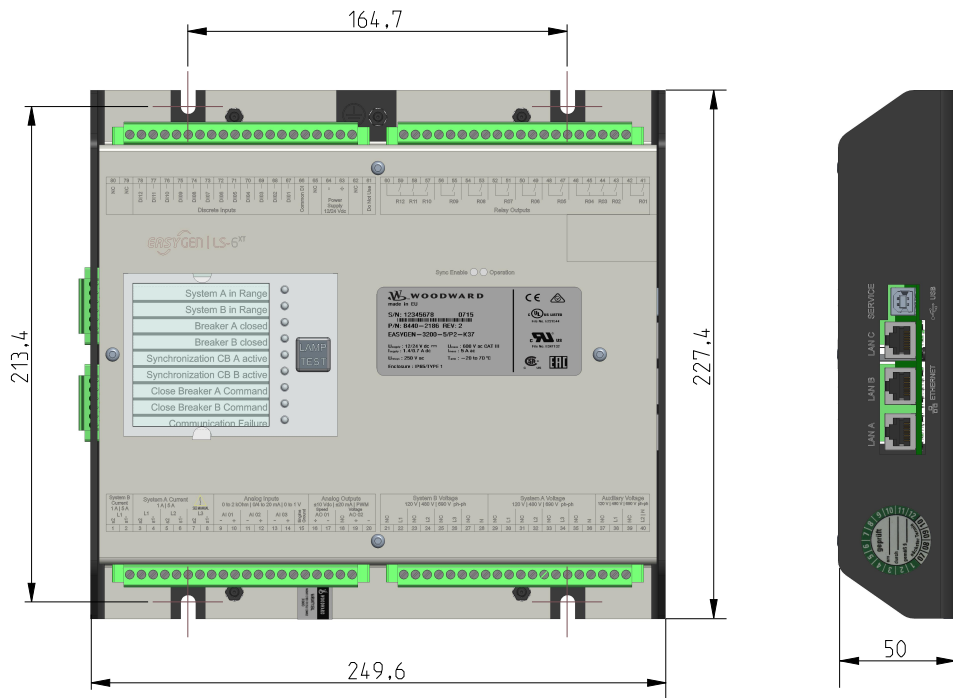
<b>Power supply</b> .....	12/24 Vdc (8 to 40 Vdc)
Intrinsic consumption.....	max. 22 W
<b>Ambient temp. (operation)</b> .....	-40 to 70 °C / -40 to 158 °F
Ambient temp. (storage).....	-40 to 80 °C / -40 to 176 °F
Ambient humidity.....	95 %, non-condensing
<b>Voltage (software configurable)</b> .....	(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
<b>Current (Isolated, software configurable)</b>	
Rated (Irated) .....	.1 A or 5 A
Linear measuring range.....	.I <sub>systemA</sub> = 3.0×I <sub>rated</sub>
	.I <sub>systemB</sub> = 1.5×I <sub>rated</sub>
Setting range .....	.1 to 32,000 A
Burden .....	< .0.10 VA
Rated short-time overcurrent (1 s).....	[1] 50×I <sub>rated</sub> ,
	[5] 10×I <sub>rated</sub>
Accuracy.....	Class 0.5

<b>Power</b>	
Setting range.....	.0.5 to 99,999.9 kW/kvar
Accuracy.....	Class 1.0
<b>Discrete inputs</b> .....	.isolated
Input range.....	.12/24 VDC (8 to 40 VDC)
Input resistance.....	.approx. 20 kΩ
<b>Relay outputs</b> .....	.isolated
Contact material.....	.AgNi
Load (GP).....	.2.00 Aac@250 Vac 2.00 Adc@24 VDC
<b>Analog inputs (isolated)</b> .....	.freely scalable
Type 1.....	.0 to 1 V / 0 to 2000 Ohms / 0 to 20 mA
Resolution.....	.16 Bit
Maximum permissible voltage against genset Ground.....	.9 V
Maximum permissible voltage genset Ground to PE.....	.100 V
<b>Analog outputs (isolated) freely scalable</b>	
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
<b>Housing</b> .....	.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 mm <sup>2</sup>
Protection system.....	.IP 20
Weight.....	.approx. 1,750 g
Listings.....	.CE, UL, cUL, EAC (pending)

## APPLICATION



# DIMENSIONS



# TERMINAL DIAGRAM

Screw terminals	CAN#1	Description	Signal	Ethernet			Screw terminals
				#C	#B	#A	
80		Power supply					1
79		Earth					2
78		Relay IR 01	Relay IR 01				3
77		Relay IR 02	Relay IR 02				4
76		Relay IR 03	Relay IR 03				5
75		Relay IR 04	Relay IR 04				6
74		Relay IR 05	Relay IR 05				7
73		Relay IR 06	Relay IR 06				8
72		Relay IR 07	Relay IR 07				9
71		Relay IR 08	Relay IR 08				10
70		Relay IR 09	Relay IR 09				11
69		Relay IR 10	Relay IR 10				12
68		Relay IR 11	Relay IR 11				13
67		Relay IR 12	Relay IR 12				14
66		Relay IR 13	Relay IR 13				15
65		Relay IR 14	Relay IR 14				16
64		Relay IR 15	Relay IR 15				17
63		Relay IR 16	Relay IR 16				18
62		Relay IR 17	Relay IR 17				19
61		Relay IR 18	Relay IR 18				20
60		Relay IR 19	Relay IR 19				21
59		Relay IR 20	Relay IR 20				22
58		Relay IR 21	Relay IR 21				23
57		Relay IR 22	Relay IR 22				24
56		Relay IR 23	Relay IR 23				25
55		Relay IR 24	Relay IR 24				26
54		Relay IR 25	Relay IR 25				27
53		Relay IR 26	Relay IR 26				28
52		Relay IR 27	Relay IR 27				29
51		Relay IR 28	Relay IR 28				30
50		Relay IR 29	Relay IR 29				31
49		Relay IR 30	Relay IR 30				32
48		Relay IR 31	Relay IR 31				33
47		Relay IR 32	Relay IR 32				34
46		Relay IR 33	Relay IR 33				35
45		Relay IR 34	Relay IR 34				36
44		Relay IR 35	Relay IR 35				37
43		Relay IR 36	Relay IR 36				38
42		Relay IR 37	Relay IR 37				39
41		Relay IR 38	Relay IR 38				40
40		Relay IR 39	Relay IR 39				41
39		Relay IR 40	Relay IR 40				42
38		Relay IR 41	Relay IR 41				43
37		Relay IR 42	Relay IR 42				44
36		Relay IR 43	Relay IR 43				45
35		Relay IR 44	Relay IR 44				46
34		Relay IR 45	Relay IR 45				47
33		Relay IR 46	Relay IR 46				48
32		Relay IR 47	Relay IR 47				49
31		Relay IR 48	Relay IR 48				50
30		Relay IR 49	Relay IR 49				51
29		Relay IR 50	Relay IR 50				52
28		Relay IR 51	Relay IR 51				53
27		Relay IR 52	Relay IR 52				54
26		Relay IR 53	Relay IR 53				55
25		Relay IR 54	Relay IR 54				56
24		Relay IR 55	Relay IR 55				57
23		Relay IR 56	Relay IR 56				58
22		Relay IR 57	Relay IR 57				59
21		Relay IR 58	Relay IR 58				60
20		Relay IR 59	Relay IR 59				61
19		Relay IR 60	Relay IR 60				62
18		Relay IR 61	Relay IR 61				63
17		Relay IR 62	Relay IR 62				64
16		Relay IR 63	Relay IR 63				65
15		Relay IR 64	Relay IR 64				66
14		Relay IR 65	Relay IR 65				67
13		Relay IR 66	Relay IR 66				68
12		Relay IR 67	Relay IR 67				69
11		Relay IR 68	Relay IR 68				70
10		Relay IR 69	Relay IR 69				71
9		Relay IR 70	Relay IR 70				72
8		Relay IR 71	Relay IR 71				73
7		Relay IR 72	Relay IR 72				74
6		Relay IR 73	Relay IR 73				75
5		Relay IR 74	Relay IR 74				76
4		Relay IR 75	Relay IR 75				77
3		Relay IR 76	Relay IR 76				78
2		Relay IR 77	Relay IR 77				79
1		Relay IR 78	Relay IR 78				80

# 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)

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For more information please contact:

**FEATURES OVERVIEW**

		easYgen   LS-6XT
Model		LS-612
Package		P1
<b>Measuring</b>		
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
<b>Control</b>		
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)		✓
<b>HMI</b>		
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		✓
<b>Protection (Equivalent ANSI #)</b>		
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)		✓
<b>Monitoring</b>		
Breaker open/close monitoring		✓
Synchronization time out monitoring		✓
Voltage Plausibility		✓
Freely configurable alarms		✓
Flexible Limits		✓
<b>I/Os</b>		
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
<b>Listings/Approvals</b>		
UL / cUL Listing (61010 ,6200)		✓
CE		✓
EAC		Pending
<b>Part Numbers P/N</b>		
Cabinet back mounting w / o display		8440-2222
Spare connector KIT		8923-2319