

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

- 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/genet 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 easYview) and alarms
- Modbus Master and Interconnect Mapper support
- Expandable I/Os over CAN interface (IKD support)

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 easYview visualization panels are supported over a separate Ethernet network that works as remote operator control panel.

Features

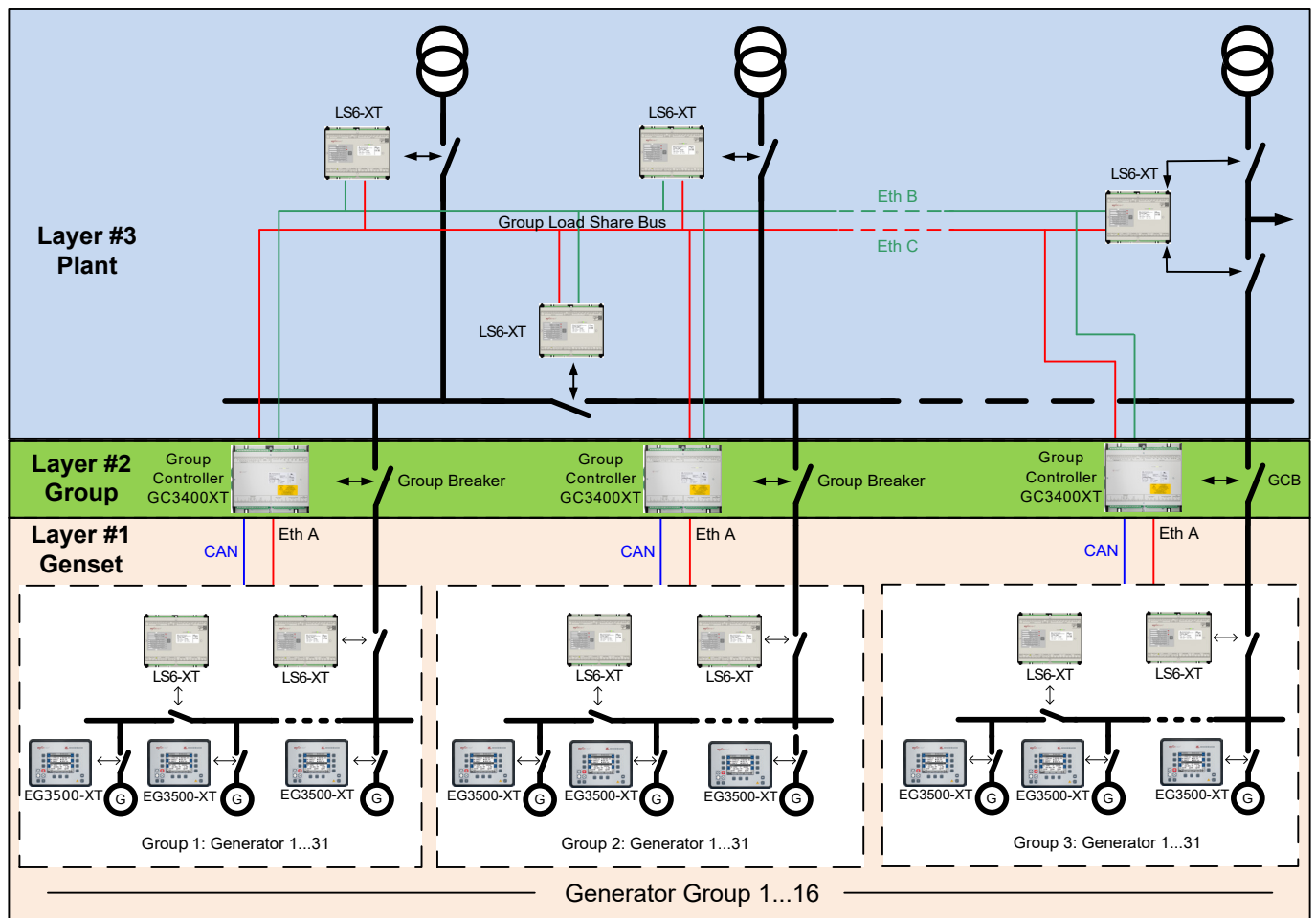
- Up to 32 LS-6XT controls are supported with up to 32 easYgen-3400XT/3500XT.
- Up to 64 LS-6XT are supported in one network with up to 16 GC-3400XT, each group consisting up to 31 gensets.
- Purpose-built software to support single bus or redundant bus communications.
- Three independent true RMS AC 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 and reactive 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
- Ethernet interconnectivity and Modbus master functions for enhanced communication flexibility.

Specifications

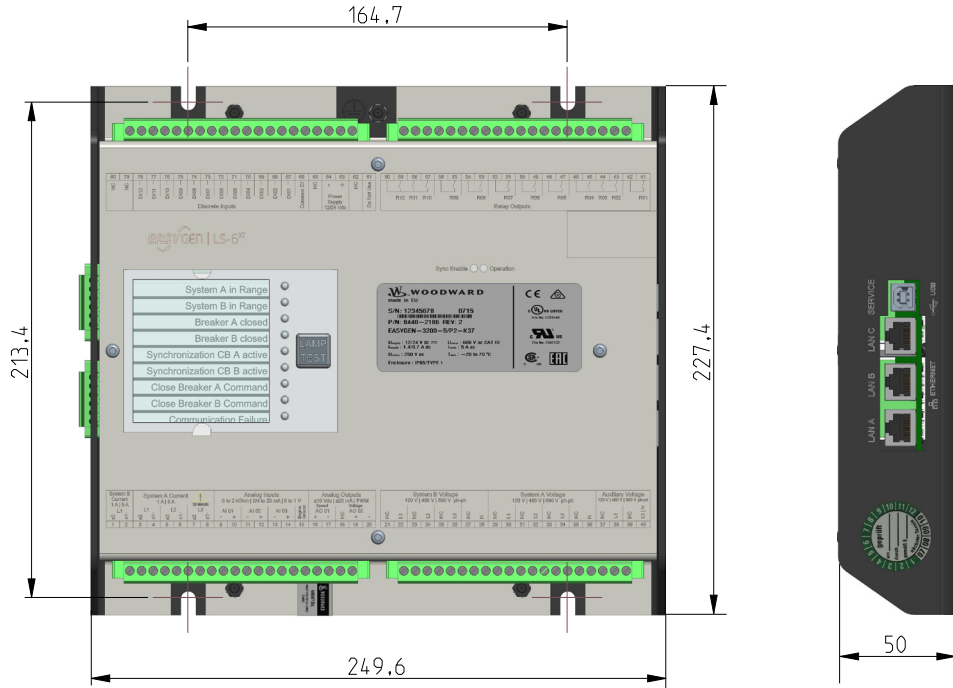
Power supply	12/24 Vdc (8 to 40 Vdc)
Intrinsic consumption.....	max. 22 W
Ambient temp. (operation)	-40 to 70 °C / -40 to 158 °F
Ambient temp. (storage).....	-40 to 80 °C / -40 to 176 °F
Ambient humidity.....	95 %, non-condensing
Voltage (software configurable)	(Y / Δ)
100Vac Rated (Vrated).....	.69 / 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.....	.I _{systemA} = 3.0×I _{rated}
	.I _{systemB} = 1.5×I _{rated}
Setting range1 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

Power	
Setting range.....	.0.5 to 99,999.9 kW/kvar
Accuracy.....	Class 1.0
Discrete inputsisolated
Input range.....	.12/24 VDC (8 to 40 VDC)
Input resistance.....	.approx. 20 kΩ
Relay outputsisolated
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
Maximum permissible 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
HousingBack 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 ²
Protection system.....	.IP 20
Weight.....	.approx. 1,750 g
Listings.....	.CE, UL, cUL, LR/ABS

APPLICATION



DIMENSIONS



TERMINAL DIAGRAM

Screw terminals	Terminal Description	Ethernet		
		#C	#B	#A
41	Relay (R01) Isolated ¹ Fixed to Relay for operation Preconfigured to Alarm (I1 02) Logic Manager			
42	Relay (R02) Isolated ¹ Preconfigured to Alarm (I1 02) Logic Manager			
43	Relay (R03) Isolated ¹ Preconfigured to System B WCC (I2 01) Logic Manager			
44	Relay (R04) Isolated ¹ Preconfigured to System B WCC (I2 01) Logic Manager			
45	Relay (R05) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
46	Relay (R06) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
47	Relay (R07) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
48	Relay (R08) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
49	Relay (R09) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
50	Relay (R10) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
51	Relay (R11) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
52	Relay (R12) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
53	Relay (R13) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
54	Relay (R14) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
55	Relay (R15) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
56	Relay (R16) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
57	Relay (R17) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
58	Relay (R18) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
59	Relay (R19) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
60	Relay (R20) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
61	Relay (R21) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
62	Relay (R22) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
63	Relay (R23) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
64	Relay (R24) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
65	Relay (R25) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
66	Relay (R26) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
67	Relay (R27) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
68	Relay (R28) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
69	Relay (R29) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
70	Relay (R30) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
71	Relay (R31) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
72	Relay (R32) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
73	Relay (R33) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
74	Relay (R34) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
75	Relay (R35) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
76	Relay (R36) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
77	Relay (R37) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
78	Relay (R38) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
79	Relay (R39) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
80	Relay (R40) Isolated ¹ Preconfigured to System A WCC (I2 11) Logic Manager			
System A current (isolated) 1A/5A compatible		L1	S1	S2
System B current (isolated) 1A/5A compatible		L2	S1	S2
System A voltage (isolated) 1A/5A compatible		L3	S1	S2
System B voltage (isolated) 1A/5A compatible		L4	S1	S2
System A voltage L1		L1	S1	S2
System B voltage L1		L2	S1	S2
System A voltage L2		L3	S1	S2
System B voltage L2		L4	S1	S2
System A voltage L3		L5	S1	S2
System B voltage L3		L6	S1	S2
System A voltage N		L7	S1	S2
System B voltage N		L8	S1	S2
System A voltage L1		L9	S1	S2
System B voltage L1		L10	S1	S2
System A voltage L2		L11	S1	S2
System B voltage L2		L12	S1	S2
System A voltage L3		L13	S1	S2
System B voltage L3		L14	S1	S2
System A voltage L1		L15	S1	S2
System B voltage L1		L16	S1	S2
System A voltage L2		L17	S1	S2
System B voltage L2		L18	S1	S2
System A voltage L3		L19	S1	S2
System B voltage L3		L20	S1	S2
System A voltage N		L21	S1	S2
System B voltage N		L22	S1	S2
System A voltage L1		L23	S1	S2
System B voltage L1		L24	S1	S2
System A voltage L2		L25	S1	S2
System B voltage L2		L26	S1	S2
System A voltage L3		L27	S1	S2
System B voltage L3		L28	S1	S2
System A voltage N		L29	S1	S2
System B voltage N		L30	S1	S2
System A voltage L1		L31	S1	S2
System B voltage L1		L32	S1	S2
System A voltage L2		L33	S1	S2
System B voltage L2		L34	S1	S2
System A voltage L3		L35	S1	S2
System B voltage L3		L36	S1	S2
System A voltage N		L37	S1	S2
System B voltage N		L38	S1	S2
System A voltage L1		L39	S1	S2
System B voltage L1		L40	S1	S2
System A voltage L2		L41	S1	S2
System B voltage L2		L42	S1	S2
System A voltage L3		L43	S1	S2
System B voltage L3		L44	S1	S2
System A voltage N		L45	S1	S2
System B voltage N		L46	S1	S2
System A voltage L1		L47	S1	S2
System B voltage L1		L48	S1	S2
System A voltage L2		L49	S1	S2
System B voltage L2		L50	S1	S2
System A voltage L3		L51	S1	S2
System B voltage L3		L52	S1	S2
System A voltage N		L53	S1	S2
System B voltage N		L54	S1	S2
System A voltage L1		L55	S1	S2
System B voltage L1		L56	S1	S2
System A voltage L2		L57	S1	S2
System B voltage L2		L58	S1	S2
System A voltage L3		L59	S1	S2
System B voltage L3		L60	S1	S2
System A voltage N		L61	S1	S2
System B voltage N		L62	S1	S2
System A voltage L1		L63	S1	S2
System B voltage L1		L64	S1	S2
System A voltage L2		L65	S1	S2
System B voltage L2		L66	S1	S2
System A voltage L3		L67	S1	S2
System B voltage L3		L68	S1	S2
System A voltage N		L69	S1	S2
System B voltage N		L70	S1	S2
System A voltage L1		L71	S1	S2
System B voltage L1		L72	S1	S2
System A voltage L2		L73	S1	S2
System B voltage L2		L74	S1	S2
System A voltage L3		L75	S1	S2
System B voltage L3		L76	S1	S2
System A voltage N		L77	S1	S2
System B voltage N		L78	S1	S2
System A voltage L1		L79	S1	S2
System B voltage L1		L80	S1	S2

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)
- easYview (Product Specification #37951)
- DataTelegramMapper Tool (Application Note #37684)
- Localization tool (P/N: 10-011-569)
- Modbus master tool (Application Note #37919)
- Ethernet Interconnect Mapper tool (P/N: 10-031-249)
- I/O Expansion Board IKD1 (Product spec. #37171, #37984, #37985)
- Remote Annunciator easYlite-200 (Product spec.#37907)



FEATURES OVERVIEW

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For more information contact:

EASyGEN LS-6^{XT}		easYgen LS-6XT	easYgen LS-6XT
Model		LS-612	LS-612
Package		P1	P2
Measuring			
System A voltage	(up to 690 VAC)	3-ph	3-ph
System A current	(1 A or 5 A software selectable)	3-ph	3-ph
System B voltage	(up to 690 VAC)	3-ph	3-ph
System B current	(1 A or 5 A software selectable)	1-ph	1-ph
Auxiliary voltage	(up to 690 VAC)	1-ph	1-ph
Control			
Breaker control logic (open and closed transition <100 ms) FlexApp™		1 / 2	1 / 2
Number of supported Woodward LS-6 units (Layer 1 / Layer 3)		32 / 64	32 / 64
Single and multiple-unit operation		✓	✓
Auto, Manual 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)		✓	✓
Active synchronization (frequency and voltage control)		-	✓
HMI			
easYview support		✓	✓
Configuration via PC		✓	✓
Event recorder with real time clock (battery backup)		✓	✓
Date & Time Sync. between LS-6XT, easYgen-3400XT/3500XT and GC-3400XT		✓	✓
Configurable LEDs on Faceplate, x8		✓	✓
Protection (Equivalent ANSI #)			
Voltage / frequency (59/27/810/81U)		✓	✓
Voltage asymmetry (47)		✓	✓
Phase shift / df/dt (ROCOF) (78/81)		✓	✓
QV monitoring and Time-dependent voltage		✓	✓
Mains voltage increase and Synch-Check (25)		✓	✓
Import / export power (32R)		-	✓
Instantaneous overcurrent (50)		-	✓
Time-overcurrent (IEC 255 compliant) (51/51V)		-	✓
Unbalanced load (46)		-	✓
Monitoring			
Breaker open/close monitoring		✓	✓
Synchronization time out monitoring		✓	✓
Voltage and System Plausibility		✓	✓
Freely configurable alarms		✓	✓
Flexible Limits		✓	✓
I/Os			
Discrete alarm inputs (configurable)	LogicsManager™	12 (11)	12 (11)
Discrete outputs (configurable)	LogicsManager™	12 (11)	12 (11)
External discrete inputs / outputs via CANopen		16/16	32/32
easYlite -200 via CAN1 or CAN2		-	2
Analog inputs configurable	FlexIn™	3	3
Analog outputs: ±10V, ±20mA, PWM; configurable	AnalogManager™	2	2
CAN bus communication interfaces	FlexCAN™	1	2
Ethernet Modbus TCP Slave interface		3	3
USB Serial interface		1	1
RS-485 Modbus RTU Slave interface		1	1
Listings/Approvals			
CE declaration, UL / cUL Listing (61010 ,6200)		✓	✓
Marine (LR/ABS)		✓	✓
Part Numbers P/N			
Cabinet back mounting w / o display		8440-2222	8440-2317
Spare connector KIT		8923-2319	8923-2319