WOODWARD

EASYGEN 3000XT

Product Specification
37583

easYgen-3400XT/3500XT

Genset Control for Complex Paralleling Operation

New Features
- ✓ Built-In Redundant Ethernet
- ✓ Power Measurement Class 1
- ✓ Direct Connect Up to 690 V_{AC}
- ✓ AnalogManager & Editable Screens
- ✓ Multi-Interface ToolKit connectivity
- ✓ New face plate with tactile buttons
- ✓ Drop-In replacement

- **Premium genset control for complex paralleling applications of up to 32 gensets and up to 16 MCB/GGB/Tie Breakers in**
  - **Prime Power & Cogeneration (CHP)**
  - **Peak shaving operation**
  - **Emergency operation**
  - **Import/Export operation**
  - **Islanded & Utility parallel operation**
- **Integrated Generator Group Breaker (GGB) control**
- **Run-Up Synchronization**
- **Master or Slave control capability**
- **Complete engine, generator and utility protection**
- **Up to 9 communication ports: 3xEthernet, 3xCAN (CANOpen and J1939), RS-485, USB, Interface expansion card**
- **Customizable logic, HMI screens, and alarms**
- **Dedicated low temperature display variants**
- **UL61010, UL6200, RoHS2 and marine (ABS, LR) compliance**

DESCRIPTION

Woodward raised the standard in genset paralleling control and power management system with the easYgen-3000XT Series controllers. These controllers come with standardized software that is simple to configure, yet easily customized for individual applications. Enhanced connectivity enables fast, reliable and secure interfacing to other controls and communications systems while the enhanced hardware is a drop-in replacement for previous generation easYgen-3000 Series Controls.

The easYgen-3500XT with a dedicated CANopen network for connectivity to up to 16 LS-5 Circuit Breaker Controls, enables control of complex distribution systems having multiple utility feeds and tie breakers, and parallel load sharing of up to 32 generators on up to 32 different bus segments. Redundant load sharing is selectable using both Ethernet B and C networks for improved reliability. The control combines complete engine-generator control and protection with advanced, peer-to-peer paralleling functionality and innovative features in a robust, attractive, user-friendly and all-in-one package. The easYgen-3500 XT controls are designed to direct connect up to 690Vac and operate to 4000m above sea level without derating.

The easYgen-3500XT is available in two packages. P1, focused at complex paralleling applications provides redundant Ethernet communication, LS-5 connectivity, and standard I/O set, while P2, Co-Gen/CHP model offers expanded onboard I/O set, 3-ph busbar voltage measurement capability and an interface expansion card slot for an additional interface/protocol. These packages also come without a display in a rugged metal housing suitable for back panel installations (easYgen-3400XT-P1 and easYgen-3400XT-P2 respectively). A sophisticated touch screen remote panel (RP-3000XT) complements them as operator control panel.
A version of easYgen-3500XT (easYgen-3500XT-P1-LT and easYgen-3500XT-P2-LT) is designed to operate down to -40^0 C for outdoor applications.

FEATURES

- Full connectivity of up to 32 Generators and 16 LS-5 circuit breaker controls in one application
- Run-up synchronization / Dead Field Paralleling to quickly get several synchronous generators onto the load
- Three-phase true RMS power sensing with Class I accuracy
- Operation modes: AUTO, STOP, MANUAL, and TEST - accessible through face plate or discrete input
- Breaker control: Slip frequency / phase matching synchronization, open / close control, breaker monitoring
- Load transfer: open / closed transition, interchange, soft loading / unloading, Utility parallel
- Load share and device to device communication over CAN or Ethernet (Redundant possible)
- Remote control via interface (Modbus TCP, Modbus RTU) and via discrete/analog inputs for adjusting speed, frequency, voltage, power, reactive power, and power factor set points
- Freely configurable PID controllers for various control purposes, such as heating circuit control (CHP applications), water level, fuel level, pressure and / or other process variables
- Direct support to several ECUs: Scania S6, MTU ADEC ECU7/8/9, Volvo EMS2 & EDC4, Deutz EMR2 & EMR3, MAN MFR / EDC7, SISU EEM, Cummins and Woodward EGS02 ECU
- Field ECU support and additional I/O expansion board connectivity through sequencer files
- “System Update” function for online troubleshooting and adding / removing generator sets
- Time / Date synchronization over Simple Network Time Protocol (SNTP)
- Cylinder head / exhaust temperature monitoring (Temperatures come from J1939 or CANopen devices)
- Woodward ToolKit™ software for flexible setup from a single connection to the network. The ToolKit can be accessed either via USB, or Ethernet or CAN ports.
- Multi-lingual capability: English, German, Spanish, French, Italian, Portuguese, Japanese, Chinese, Russian, Turkish, Polish, Slovakian, Finnish, Swedish

SPECIFICATIONS

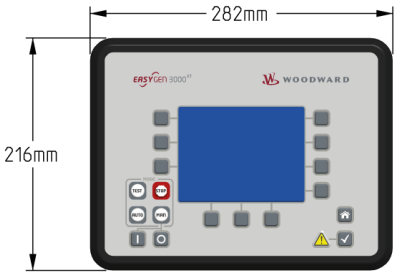
Power supply ..... 12/24 V_{DC} (8 to 40 V_{DC})
Intrinsic consumption ..... max. 22 W (LT: max.32 W)
Ambient temperature (operation) ..... -20 to 70 °C (LT: -40 to 70 °C)
Ambient temperature (storage) ..... -30 to 80 °C / -22 to 176 °F
Ambient humidity ..... 95%, non-condensing
Voltage (software configurable) ..... (⅄/Δ)
100 V_{AC} Rated (V_{rated}) ..... 69/120 V_{AC}
Max. value (V_{max}) ..... 86/150 V_{AC}
***and** 400 /600 V_{AC}* Rated (V_{rated})* ..... 400/690 V_{AC}
Max. value (V_{max}) ..... 520/897 V_{AC}
Rated surge volt. (V_{surge}) ..... 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 V_{AC}
Linear measuring range ..... 1.25×V_{rated}
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 (I_{rated}) ..... 1A or 5A
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
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 kOhms
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 ..... AgCdO
Load (GP) ..... 2.00 A_{AC}@250 V_{AC}
2.00 A_{DC}@24 V_{DC} / 0.36 A_{DC}@125 V_{DC} / 0.18 A_{DC}@250 V_{DC}

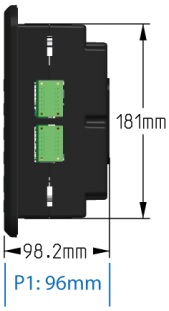
* 3 phase 3 wire Δ constellations are limited to 600 V_{AC} system

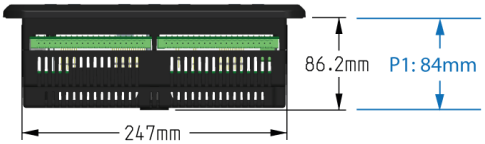
Analog inputs (isolated) ..... freely scalable
Type 1 ..... 0 to 1 V / 0 to 2000 Ohms / 0 to 20 mA
Resolution ..... 16 Bit
Maximum permissible voltage against genset Ground ..... 9 V
Maximum permissible voltage between genset Ground & PE ..... 100 V
Type 2 (P2 only) ..... 0 to 10 V / 0 to 20 mA
Resolution ..... 14 Bit
Maximum permissible voltage against PE (Ground) ..... 100 V
Maximum differential voltage to other DC Analog Inputs ..... 15 V
Type 3 (P2 only) ..... 0 to 250 Ohms / 0 to 2500 Ohms
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}
Resolution ..... 12 Bit
Output ± 10 V (scalable) ..... internal resistance
Output ± 20 mA (scalable) ..... maximum load 500 Ohms
Type 2 (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 Ohms
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
Listings ..... CE, UL, EAC, VDE, BDEW; pending: CSA
Marine ..... LR (Type Approval), pending: ABS (Type Approval)

DIMENSIONS

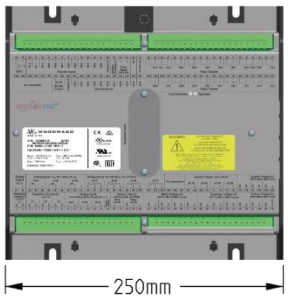
Plastic housing for front panel mounting

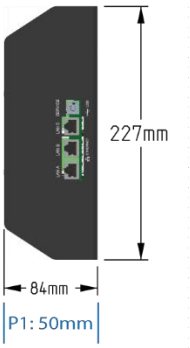






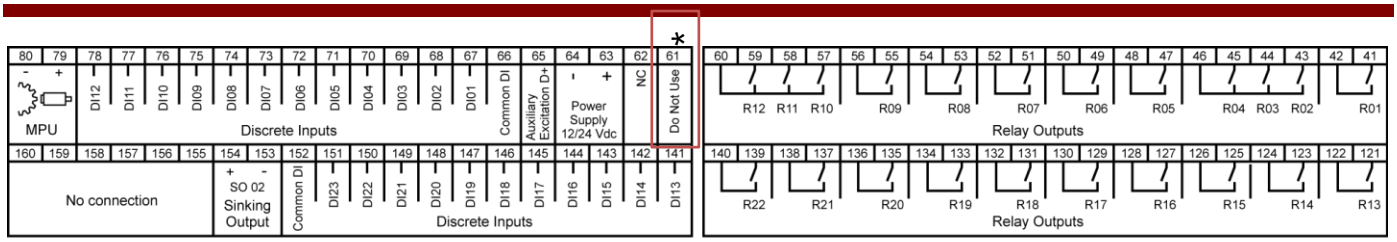
Metal housing for cabinet mounting

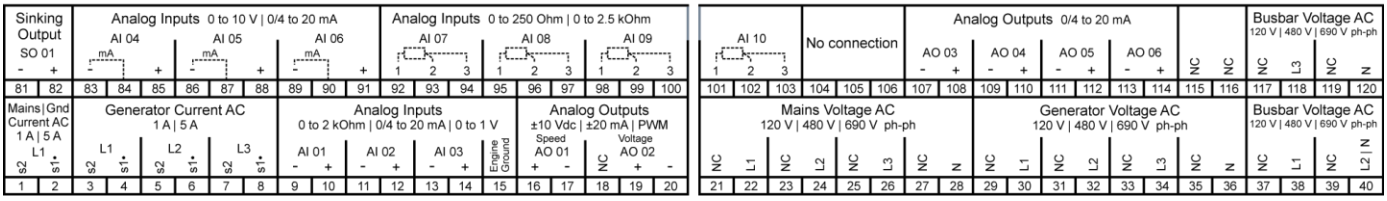




P1 is more compact (note depth/height **in blue**)

TERMINAL DIAGRAM





P2: pins 01-160 as shown above; P1: pins 01-80 only!

* pin 61
easYgen-3400XT: No connection
easYgen-3500XT: Protective earth

RELATED PRODUCTS

- Circuit Breaker Controller **LS-511/521** (Product Specification # 37522)
- Remote Panel **RP-3000XT** (Product Specification # 37592)
- **ToolKit** (Product Specification # 03366)
- I/O Expansion Board **IKD1** (Product Specification # 37171)
- Engine Speed Control **actiVgen** (Product Specification # 03419): P/N 8440-2100
- Load Share Gateway **LSG** (Product Specification # 37451)
- Electronic Pickup Unit **EPU-100** (Product Specification # 37562)
- CANbus based Remote Annunciator (Product Specification # 37279): **easYlite 100** P/N 8446-1023
- **Power Gen**eration **Learning Module** (Product Specification # 03412): P/N 8447-1012
- Profibus Gateway (Application Note # 37577): **ESEPRO** P/N 8445-1046
- Ethernet (Modbus/TCP) Gateway (Application Note # 37576): **ESENET** P/N 8445-1044
- CANbus to Fiber Optic Converters (Application Note # 37598):
  DL-CAN P/N 8445-1049 and **DL-CAN-R** P/N 8445-1048
- Remote Access Gateway (with HMS Netbiter **EasyConnect EC250** and **EC350**)
- Thermocouple Scanner (**AXIOMATIC AXTC20**)
- WAGO expansion CAN Couplers

WOODWARD

CONTACT

North & Central America
Tel.: +1 970 962 7331
✉ SalesPGD_NAandCA@woodward.com

South America
Tel.: +55 19 3708 4800
✉ SalesPGD_SA@woodward.com

Europe
Tel. Stuttgart: +49 711 78954 510
Tel. Kempen: +49 2152 145 331
✉ SalesPGD_EUROPE@woodward.com

Middle East & Africa
Tel.: +971 2 6275185
✉ SalesPGD_MEA@woodward.com

Russia
Tel.: +7 812 319 3007
✉ SalesPGD_RUSSIA@woodward.com

China
Tel.: +86 512 8818 5515
✉ SalesPGD_CHINA@woodward.com

India
Tel.: +91 124 4399 500
✉ SalesPGD_INDIA@woodward.com

ASEAN & Oceania
Tel.: +49 711 78954 510
✉ SalesPGD_ASEAN@woodward.com

www.woodward.com

For more information contact:

37583 - 2016/06/Stuttgart

EASYGEN 3000XT

easYgen-3000XT Series

	Model	3400XT		3500XT	
	Package	P1	P2	P1(-LT)	P2(-LT)
Measuring					
Generator voltage	(up to 690 V_{AC})	3-ph			
Generator current	(1 A or 5 A software selectable)	3-ph			
Mains voltage	(up to 690 V_{AC})	3-ph			
Mains or ground current	(1 A or 5 A software selectable)	1-ph			
Busbar voltage	(up to 690 V_{AC})	1-ph	3-ph	1-ph	3-ph
Control					
Breaker control logic (open and closed transition)	***FlexApp™***	3			
Number of supported Woodward LS-5 unit		16			
Automatic, Manual, Stop, and test operating modes					
Single and multiple-unit operation					
Mains parallel multiple-unit operation (up to 32 units)					
AMF (auto mains failure) and stand-by operation					
Critical mode operation					
GCB and MCB synchronization (slipping / phase matching)		✓			
GGB (Generator Group Breaker) Control					
Import / export control (kW and kvar)					
Load-dependent start/stop					
n/f, V, P, Q, and PF control via analog input or interface					
Load/var sharing for up to 32 gensets					
Freely configurable PID controllers		3			
HMI					
Color Display with Softkey operation	***DynamicsLCD™***	-		✓	
Start/stop logic for diesel / gas engines					
Counters for operating hours / starts / maintenance / active/reactive energy		✓			
Configuration via PC (USB serial connection & ToolKit software (included))					
Event recorder entries with real time clock (battery backup)		300			
Operating Temperature		-40 to 70 °C		(-40/)-20 to 70 °C	
Protection	ANSI#				
Generator: voltage / frequency	59 / 27 / 81O / 81U				
Generator: overload, reverse/reduced power	32 / 32R / 32F				
Generator: Synch Check	25				
Generator: unbalanced load	46				
Generator: instantaneous overcurrent	50				
Generator: time-overcurrent (IEC 255 compliant)	51 / 51 V				
Generator: ground fault (measured ground current)	50G				
Generator: power factor	55				
Generator: rotation field					
Engine: overspeed / underspeed	12 / 14				
Engine: speed / frequency mismatch					
Engine: D+ auxiliary excitation failure					
Engine: Cylinder temperature					
Mains: voltage / frequency / synch check	59 / 27 / 81O / 81U / 25				
Mains: phase shift / rotation field / ROCOF (df/dt)	78				
Busbar: voltage / frequency / Phase Rotation		✓ / ✓ / -	✓ / ✓ / ✓	✓ / ✓ / -	✓ / ✓ / ✓
I/Os					
Speed input: magnetic / switching; Pickup		✓			
Discrete alarm inputs (configurable)		12 (9)	23 (20)	12 (9)	23 (20)
Discrete outputs, configurable	***LogicsManager™***	max. 12	max. 22	max. 12	max. 22
External discrete inputs / outputs via CANopen		32 / 32			
Analog inputs [#1] configurable	***FlexIn™***	3	10	3	10
Analog outputs: ± 10V, ± 20mA, PWM; configurable	***AnalogManager™***	2	2	2	2
Analog outputs: 0 to 20 mA (0 to 10 V with external 500 Ω resistor)		-	4	-	4
External analog inputs / outputs via CANopen		16/4			
Display and evaluation of J1939 analog values, "supported SPNs"		100			
CAN bus communication interfaces [#2]	***FlexCAN™***	3			
Ethernet Modbus TCP Slave interface		3			
USB Serial interface		1			
RS-485 Modbus RTU Slave interface		1			
Interface Expansion Capability		-	✓	-	✓
Listings/Approvals					
UL / cUL Listing (61010 ,6200), pending: CSA (USA and Canada),					
BDEW, VDE, EAC; CE Marked		✓			
LR, pending: ABS (TA)					
Part Numbers					
Front panel mounting with display [#3] (… and enhanced operating temperature range)		-	-	**8440-2085 (8440-2086)**	**8440-2088 (8440-2089)**
Cabinet back mounting w/o display		**8440-2084**	**8440-2087**	-	-

#1 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)

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

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