WOODWARD

PRODUCT SPECIFICATION

37582B

 easYgen-3100XT/3200XT

Genset Control for Multiple Unit Operation

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 and secure interfacing to other controls and communications systems while the improved hardware is a drop-in replacement for previous generation easYgen-3000 Series Controls.

The easYgen-3000XT Series controllers operate gen-sets of all sizes and applications. These controllers include specifically designed algorithms and logic to start, stop, control, and protect the genset, circuit breaker and the utility, where applicable. It allows standardizing on a single, affordable genset controller for distributed power generation applications. The applications can range from single stand-alone emergency backup power to parallel load sharing of multiple gen-sets in complex, segmented distribution systems with multiple utility feeds and tie breakers. Woodward's easYgen-3000XT Series paralleling genset controllers provide exceptional versatility and value for OEM switchgear builders, generator packagers, and system integrators.

The easYgen-3200XT is suitable for isolated operation of a single genset or load sharing of up to 32 gen-sets in islanded and/or parallel operation with a single utility. It 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. Its integrated LogicsManager™ and AnalogManager programmable logic functionalities provide outstanding application flexibility and can often eliminate the need of an additional PLC control, yet can easily integrate with SCADA or PLC-based control systems where desired.

The easYgen-3200XT also comes without a display in a rugged metal housing suitable for back panel installations. A sophisticated touch screen remote panel (RP-3000XT) complements it as operator control panel. A version of easYgen-3200XT (easYgen-3200XT-P1-LT) is designed to operate down to -40°C for outdoor applications.

Easy-to-use software tools simplify configuring the easYgen-3000XT Series controllers while making it easy to customize the unit for specific applications. These tools include:

FlexApp™ – This feature provides the tools to easily configure the number of operated breakers: None, Generator Circuit Breaker (GCB), and Mains Circuit Breaker (MCB).
LogicsManager™ & AnalogManager™ (LM & AM) – Woodward’s LM/AM enables to customize the operation sequences and adapt them to specific needs. The LM/AM accomplishes this by handling a range of measuring values and internal states, which are combined logically with operators and programmable timers and can be cascaded through. This enables to create and/or modify control and relay functions.
Flexln™ – The analog inputs are configurable to operate with variable resistance sensors (0 to 2000 Ω), (0 to 1V) and/or 0 to 20 mA senders.
Flexible Outputs – Speed and voltage bias outputs are configurable to function with all speed governors and voltage regulators. The outputs can also be used as freely scalable outputs (e.g. for driving external meters).
FlexCAN™ – Advanced network interfaces ensure unsurpassed control performance – from engine control up to total plant operation. The easYgen-3000XT Series is capable of working with common industrial interfaces, including Ethernet, CAN, USB, and RS-485. The multiple communication protocols permit the easYgen-3000XT Series controllers to communicate with a vast majority of engine control units (ECUs), external I/O boards, and PLCs. Modbus TCP, CANopen, SAE J1939, and Modbus RTU are supported.
DynamicsLCD™ – The adaptive and interactive 5.7”, 320x240 pixel sharp color graphical LCD display with soft keys and a clear menu structure ensures intuitive user operation and navigation. Customizable screens provide flexibility to program and visualize frequently used data at the press of a button. The face plate with special technology and illuminated buttons enhances the aesthetics and ergonomics of push button operation.

New Features
- Ethernet Connectivity
- AnalogManager
- Power Measurement Class 1
- Editable Screens
- Multiple interface ToolKit connectivity
- New face plate with dedicated buttons
- Drop-In replacement

- Standard paralleling applications for up to 32 generators in
- Peak shaving operation
- Stand-by operation
- AMF (Automatic Mains Failure) operation
- Emergency operation
- Import/Export operation
- Islanded & Utility parallel operation
- Easy to set up and commission
- Master or Slave control capability
- Complete engine, generator and utility protection
- Open/Closed Transition
- Five communication ports: Ethernet, 2xCAN (CANopen and J1939), RS-485, USB
- Customizable logic, HMI screens, and alarms
- Dedicated low temperature display variants
- RoHS2 and marine (ABS, LR) compliance
**FEATURES**

- Three-phase true RMS power sensing with Class I accuracy
- Operation modes: AUTO, STOP, MANUAL, and TEST modes 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 Ethernet or CAN
- 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 values
- Direct support to several ECUs: Scania S6, MTU ADEC ECUT7/8, Volvo EMS2 & EDC4, Deutz EMR2 & EMR3, MAN MFR/EDC7, SISU EEM, Cummins and Woodward EGSO2 ECU
- Field ECU support and additional I/O expansion board connectivity through sequencer files
- "System Update" function for removing or adding generator sets online
- Time/Date synchronization over Simple Network Time Protocol (SNTP)
- Cylinder head/exhaust temperature monitoring (Temperatures c
- Remote control via interface
- Load transfer: open/unloading, Utility parallel
- 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 port.
- 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. 14 W (LT: max. 22W)
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)**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Rated (Vac)</th>
<th>Max. value (Vac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 Vac</td>
<td>69/120 VAC</td>
<td>86/150 VAC</td>
</tr>
<tr>
<td>400 Vac</td>
<td>277/480 VAC</td>
<td>346/600 VAC</td>
</tr>
</tbody>
</table>

Rated surge volt. (Vsurge) ..................................4.0 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 ........................................1.25x/Vrated
Measuring frequency ..............................................50/60 Hz (40 to 85 Hz)
High Impedance Input; Resistance per path ....................2.0 MΩ
Max. power consumption per path ................................< 0.15 W

**Current (isolated, software configurable)**

<table>
<thead>
<tr>
<th>Current</th>
<th>Rated (Irated)</th>
<th>Max. value (Irated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A or 5A</td>
<td>1.5x/Irated</td>
<td>3.0x/Irated</td>
</tr>
<tr>
<td>Ims/ground</td>
<td>1.5x/Irated</td>
<td>3.0x/Irated</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Power</th>
<th>Setting range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.5 to 9,999.9 kWvar</td>
<td>Class 0.5</td>
</tr>
</tbody>
</table>

**Discrete inputs** ..........................................................isolated
Input range ..........................................................12/24 V DC (8 to 40 V DC)
Input resistance ......................................................approx. 20 kOhms

**Relay outputs** ..........................................................isolated
Contact material .........................................................AgCdO
Load (GP) .................................................................1.25x/Vrated, Gov out = 346/600 VAC
Load (LP) .................................................................2.00 A, IP@250 VAC

**Analog inputs (isolated)** .............................................freely scalable
Type .................................................................0 to 1V / 0 to 2000 Ohms / 0 to 20 ma
Resolution .............................................................16 Bit

**Analog outputs (isolated)** .............................................freely scalable
Type .................................................................± 10 V / ± 20 mA / PWM
Resolution .............................................................12 Bit

**Insulation voltage (continuously, AVR out)** ..................300 VAC
Insulation voltage (continuously, Gov out) ....................100 VAC

**Resolution** .............................................................12 Bit

**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

**Sealing** .................................................................insulating surface
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 .....................................................250 × 227 × 50 mm
Connection ..............................................................screw/plug terminals 2.5 mm²

**Protection system** .....................................................IP 20
Weight .................................................................approx. 2,150 g

**Disturbance test (CE)** ..............................................tested according to applicable IEC standards
Listings .................................................................CE, UL, EAC, VDE; pending: CSA, BDEW

**Marine (Pending)** .....................................................LR (Type Approval), ABS (Type Approval)
DIMENSIONS

Plastic housing for front panel mounting

Metal housing for cabinet mounting

TERMINAL DIAGRAM

RELATED PRODUCTS

- Engine Speed Control actiVgen (Product Specification # 03419): P/N 8440-2108
- Remote Panel RP-3000XT (Product Specification # 37592)
- ToolKit (Product Specification # 03366)
- I/O Expansion Board IKD1 (Product Specification # 37171)
- 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 Generation 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)
# FEATURES OVERVIEW

<table>
<thead>
<tr>
<th>easYgen-3000XT Series</th>
<th></th>
<th>3100XT</th>
<th>3200XT</th>
<th>3200XT-LT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td></td>
<td>P1</td>
<td>P1</td>
<td>P1-LT</td>
</tr>
<tr>
<td><strong>Package</strong></td>
<td></td>
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</tbody>
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## Measuring

- Generator voltage (3-phase/4-wire)
- Generator current (3x true r.m.s.)
- Mains voltage (3-phase/4-wire)
- Mains or ground current (1x true r.m.s.; Mains or ground current selectable)
- Busbar voltage (1-phase/2-wire)

## Control

- Breaker control logic (open and closed transition)
- 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)
- Import / export control (kW and kvar)
- Load-dependent start/stop
- Mains, V, P, Q, and PF control via analog input or interface
- Load/var sharing for up to 32 gensets
- Freely configurable PID controllers

## 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 (serial connection and ToolKit software (included))
- Event recorder entries with real time clock (battery backup)
- Operating Temperature: -40 to 70 °C

## Protection

- Generator: voltage / frequency
- Generator: overload, reverse/reduced power
- Generator: Synch Check
- Generator: unbalanced load
- Generator: instantaneous overcurrent
- Generator: time-overcurrent (IEC 225 compliant)
- Generator: ground fault (measured ground current)
- Generator: power factor
- Generator: rotation field
- Engine: overspeed / underspeed
- Engine: speed / frequency mismatch
- Engine: U+ auxiliary excitation failure
- Engine: Cylinder temperature
- Mains: voltage / frequency / synch check
- Mains: phase shift / rotation field / ROCOF (df/dt)

## IOs

- Speed input: magnetic / switching: Pickup
- Discrete alarm inputs (configurable)
- Discrete outputs, configurable
- External discrete inputs / outputs via CANopen
- Analog inputs 1x, configurable
- Analog outputs: +/- 10V, +/- 20mA, PWM, configurable
- External analog inputs / outputs via CANopen
- Display and evaluation of J1939 analog values, “supported SPNs”
- CAN bus communication interfaces
- Ethernet Modbus TCP Slave interface
- USB Serial interface
- RS-485 Modbus RTU Slave interface

## Listings/Approvals

- UL / cUL Listing (61010, 61200), VDE, EAC
- CSA (USA and Canada), BDEW (Pending)
- LR & ABS Marine (Pending)
- CE Marked

## Part Numbers

- Front panel mounting with display
- Cabinet back mounting w/o display
- Spare connector kit

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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), P1000, P1100, relative input (one- or two-pole, 2p. linear or 3p. user defined)
2. CAN#1 is 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