



easYgen Series Controls for Rental Genset Applications

DESCRIPTION

Woodward's easYgen paralleling genset controls for rental applications expand upon the versatility of the popular easYgen-2000 series and easYgen-3000 series genset controls by providing added flexibility for mobile applications.

The easYgen rental genset controllers include all the highly-valued features and functionality of the standard easYgen models, with the addition of 4 switchable parameter settings blocks that allow the user to quickly change the rated values of the system. Switchable parameter blocks make it easier to apply the genset in rental applications, without requiring the operator to reprogram the easYgen.

The easYgen series rental controls allow genset packagers to standardize on a single, affordable control to fit many different rental genset applications – from single, stand-alone emergency backup generators, to island or utility parallel operation of up to 32 gensets.

The easYgen rental genset application functionality is available in 3 models:

- **easYgen-2500P1 Rental “K33” model** – includes 4 switchable parameter settings blocks, plus all the features of the standard easYgen-2500 P1 model. Applications include isolated operation, parallel operation of a single genset with a utility or islanded load sharing of up to 16 gensets.
- **easYgen-3400P1/3500P1&P2 Rental “K32” models** – include 4 switchable parameter settings blocks, plus all the features of the standard easYgen-3400P1/3500 P1&P2 models. Applications include isolated operation or load sharing of up to 32 gensets in islanded or utility parallel operation. The “K32” versions are also compatible with Woodward LS-5 series circuit breaker controls, for complex distribution systems with multiple utility feeds and tie breakers.

FEATURES

- 4 setting blocks, each containing 16 configurable parameters
 - System rated frequency
 - Engine rated speed
 - Mains rated voltage
 - Bus bar 1 rated voltage
 - Gen. rated voltage
 - Gen. rated active power
 - Gen. rated reactive power
 - Gen. rated current
 - Gen. CT prim rated current
 - Setpoint frequency 1
 - Setpoint voltage
 - Setpoint active power
 - Setpoint power factor
 - Load control
 - Application mode
 - Breaker transition mode
- Switching parameter blocks either through the password-protected front display of the device itself or from a Remote Panel, or by changing the state of 2 discrete inputs or through ToolKit
- Operation modes: Auto, Stop, Manual, and Load/No Load test
- Breaker control: Slip frequency / phase matching / run-up synchronization, open-close control, breaker monitoring
- Load transfer features: open / closed transition, interchange, soft loading / soft unloading, mains parallel
- Active power and reactive power sharing including load-dependent start/stop
- Period of use / total operating hours / start / maintenance counters – Operating hours also available from a connected ECU via SAE-J1939
- Special Scania S6, MTU ADEC ECU7/8, Volvo EMS2 & EDC4, Deutz EMR2, MAN MFR/EDC7, SISU EEM, Cummins and Woodward E3 ECU support
- Discrete and analog I/O expansion board connectivity (Woodward IKD 1 or Phoenix Contact IL series)
- Event recorder (300 events, FIFO) with real time clock (battery backed; min. 5 years)
- Multi-level password protection
- Multi-lingual capability

- For rental or mobile genset applications
- Allows packagers to standardize on a single control platform for multiple uses
- Four switchable parameter sets with 16 tunable each
 - Quickly and easily switch system rated values without reprogramming
 - Select by external switch, PC equipped with ToolKit or via the front display
- Period of use counter
- Soft loading/unloading features
- Open/closed transition
- CANopen / J1939 ECU Control

easYgen-3400P1/ 3500P1&P2 Rental:

- Sophisticated control with load sharing and load-dependent start/stop of up to 32 units
- Provides full connectivity of up to 16 Woodward LS-5 circuit breaker controller
- Integrated Generator Group breaker control
- Run-up Synchronization

easYgen-2500P1 Rental:

- Economical option with load sharing and load-dependent start/stop for up to 16 units
- 4 configurable AI/AO
- Smaller footprint

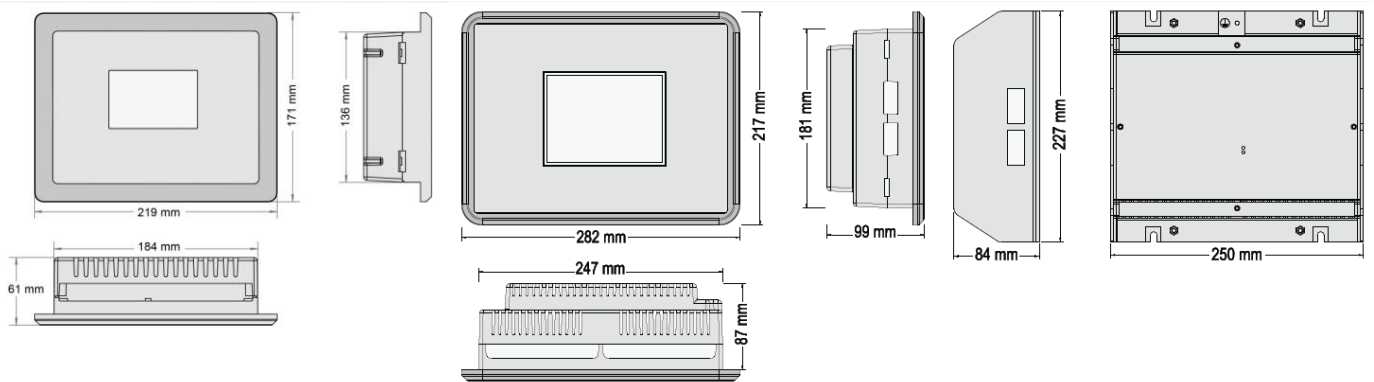
SPECIFICATIONS

Power supply 12/24 Vdc (8 to 40 Vdc)
 Intrinsic consumption max. ~ 12 W (easYgen-2500P1)
 max. 19 W (easYgen-3400P1/3500P1&P2)
 Ambient temperature (operation) -20 to 70 °C / -4 to 158 °F
 Ambient temperature (storage) -30 to 80 °C / -22 to 176 °F
 Ambient humidity 95 %, non-condensing
Voltage (Δ / Δ)
 120 Vac [1] Rated (V_{rated}) 69/120 Vac
 Max. value (V_{max}) 86/150 Vac
 Rated voltage phase – ground 150 Vac (easYgen-2500P1)
 Rated surge volt. (V_{surge}) 2.5 kV
and 480 Vac [4] Rated (V_{rated}) 277/480 Vac
 Max. value (V_{max}) 346/600 Vac
 Rated voltage phase – ground 150 Vac (easYgen-2500P1)
 Rated surge volt. (V_{surge}) 4.0 kV
 Accuracy Class 1
 Measurable alternator windings (easYgen-3400P1/3500P1&P2):
 3p-3w, 3p-4w, 3p-4w OD, 1p-2w, 1p-3w
 Setting range primary 50 to 650,000 Vac
 Linear measuring range 1.25 $\times V_{rated}$
 Measuring frequency 50/60 Hz (40 to 85 Hz)
 High Impedance Input; Resistance per path [1] 0.498 M Ω , [4] 2.0 M Ω
 Max. power consumption per path < 0.15 W
Current (Isolated) Rated (I_{rated}) [1]. /1 A or [5]. /5 A
 Linear measuring range $I_{gen} = 3.0 \times I_{rated}$
 $I_{mains/ground} = 1.5 \times I_{rated}$
 Setting range 1 to 32,000 A (easYgen-3400P1/3500P1&P2)
 Burden < 0.15 VA
 Rated short-time current (1 s) [1] 50 $\times I_{rated}$, [5] 10 $\times I_{rated}$
Power Setting range 0.5 to 99,999.9 kW/kvar
Discrete inputs isolated
 Input range 12/24 Vdc (8 to 40 Vdc)
 Input resistance approx. 20 kOhms
Relay outputs isolated/potential free
 Contact material AgCdO
 Load (GP) 2.00 Aac@250 Vac
 2.00 Adc@24 Vdc / 0.36 Adc@125 Vdc / 0.18 Adc@250 Vdc
 Pilot duty (PD) 1.00 Adc@24 Vdc / 0.22 Adc@125 Vdc / 0.10 Adc@250 Vdc
Analog inputs (none isolated) freely scalable

Type 1 0 to 500 Ohms / 0 to 20 mA (resolution 11 bits)
 Type 2 (in P2) 0 to 10V / 0 to 20 mA
 Type 3 (in P2) 0 to 250 Ohms / 0 to 2500 Ohms
 Type 2/3 resolution 12 bit
Analog outputs (isolated) freely scalable
 Type 1 ± 10 V / ± 20 mA / PWM
 Insulation voltage (continuously) 100 Vac
 Ins. test voltage ($\leq 5s$) 1000 Vac (easYgen-2500P1)
 (1s) 500 Vac (easYgen-3400P1/3500P1&P2)
 Resolution 11/12 Bit (depending on analog output)
 ± 10 V (scalable):
 internal resistance ~ 500 Ohms (easYgen-2500P1)
 ≤ 1 kOhms (easYgen-3400P1/3500P1&P2)
 ± 20 mA (scalable):
 maximum load 500 Ohms
 Type 2 (P2 only) 0/4 - 20 mA / 0 - 10 V_{dc}
 Insulation voltage (continuously) 100 V_{AC}
 Insulation test voltage (1s) 500 V_{AC}
 Resolution 12 Bit
 Output maximum load 500 Ohm
Housing Front panel flush mounting Plastic housing
 Back panel mounting Sheet metal housing
 Dimensions WxHxD 219 \times 171 \times 98 mm (easYgen-2500P1)
 WxHxD 250 \times 227 \times 84 mm (easYgen-3400P1)
 WxHxD 282 \times 217 \times 99 mm (easYgen-3500P1&P2)
 Front cutout WxH 186 [+1.1] \times 138 [+1.0] mm (easYgen-2500P1)
 WxH 249 [+1.1] \times 183 [+1.0] mm (easYgen-3500P1&P2)
 Connection screw/plug terminals 2.5 mm²
 Front insulating surface
 Sealing Front IP65 (with screw fastening, easYgen-2500P1)
 Front . IP66 (with screw fastening, easYgen-3500P1&P2)
 Front IP54 (with clamp fastening)
 Back IP20
 Weight approx. 1.1 kg (easYgen-2500P1)
 approx. 2.2 kg (easYgen-3400P1/3500P1&P2)
Disturbance test (CE) tested according to applicable EN guidelines
Listings UL, cUL, CSA
Marine LR (Type Approval), ABS (Design Assessment: easYgen-2500P1),
 ABS (Type Approval: easYgen-3400P1/3500P1&P2)

DIMENSIONS

Plastic housing for front panel mounting



easYgen-2500P1 Rental

easYgen-/3500P1&P2 Rental

easYgen-3400P1 Rental

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

Subject to alterations, errors excepted.
 Subject to technical modifications.

This document is distributed for informational purposes only. It is not to be construed as creating or becoming part of any Woodward Company contractual or warranty obligation unless expressly stated in a written sales contract.

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


© Woodward

All Rights Reserved

For more information contact:

37553D - 2017/03/Stuttgart

FEATURE OVERVIEW

		easYgen Rental		
		easYgen-2500P1 Rental	easYgen-3400/3500P1 Rental	easYgen-3500P2 Rental
		Model		
Measuring				
Generator voltage (3-phase/4-wire)		✓	✓	✓
Generator current (3x true r.m.s.)		✓	✓	✓
Mains voltage (3-phase/4-wire)		✓	✓	✓
Mains or ground current (selectable, 1 x true r.m.s.)		✓	✓	✓
Busbar voltage (1-phase/2-wire)		-	✓	✓
Control				
Breaker control logic (open and closed transition)		<i>FlexApp™</i>	2	3
Number of supported Woodward LS-5 units		-	16	16
Automatic, Manual, Stop, and test operating modes		✓	✓	✓
Single and multiple-unit operation		✓	✓	✓
Mains parallel multiple-unit operation (up to ...)		1	32 ^{#1} units	32 ^{#1} units
AMF (auto mains failure) and stand-by operation		✓	✓	✓
Critical mode operation		✓	✓	✓
GCB and MCB synchronization (slip synchronization / phase matching)		✓	✓	✓
Open (break-before-make) and closed (make-before-break) transition		✓	✓	✓
Run-up synchronization		-	✓	✓
Interchange (import / export control)		✓	✓	✓
Load-dependent start/stop		✓	✓	✓
n/f, V, P, Q, and PF remote control via analog input or interface		✓	✓	✓
Load/var sharing for up to ...		16 gensets	32 gensets	32 gensets
Freely configurable PID controllers		-	3	3
HMI				
Display with Softkey operation		<i>DynamicsLCD™</i>	Monochrome	No/Color ^{#6} Color
Start/stop logic for diesel / gas engines		✓	✓	✓
Counters for period of use / total operating hours / starts / maintenance		✓	✓	✓
Configuration via PC (ToolKit software included)		✓ (needs DPC cable)	✓	✓
Event recorder entries with real time clock (battery backup)		300	300	300
Protection		ANSI#		
Generator: voltage / frequency		59 / 27 / 810 / 81U	✓	✓
Generator: overload, reverse/reduced power		32 / 32R / 32F	✓	✓
Generator: unbalanced load		46	✓	✓
Generator: instantaneous overcurrent		50	✓	✓
Generator: time-overcurrent (IEC 255 compliant)		51	✓	✓
Generator: ground fault ^{#2}		50G	✓	✓
Generator: power factor		55	✓	✓
Generator: rotation field			✓	✓
Engine: overspeed / underspeed		12 / 14	✓	✓
Engine: speed / frequency mismatch			✓	✓
Engine: D+ auxiliary excitation failure			✓	✓
Mains: voltage / frequency		59 / 27 / 810 / 81U	✓	✓
Mains: rotation field			✓	✓
Mains: phase shift / df/dt (ROCOF)		78	✓	✓
I/Os				
External switch for parameter set selection (1 of 4)			✓	✓
Speed input (magnetic / switching; Pickup)			✓	✓
Discrete alarm and control inputs (configurable)			10	12 (9)
Discrete outputs (configurable)		<i>LogicsManager™</i>	11	max. 12
External discrete inputs / outputs via CANopen (maximum) ^{#3}			16 / 16	32 / 32
Analog inputs (configurable) ^{#4}		<i>FlexIn™</i>	4	3
Analog outputs (+/- 10V, +/- 20mA, PWM; configurable)			4	2
External analog inputs / outputs via CANopen (maximum)			-	16 / 4
Display and evaluation of J1939 analog values (supported SPNs)			100	100
CAN bus communication interfaces ^{#5}		<i>FlexCAN™</i>	2	3
RS-485 Modbus RTU Slave interface(s)			1	1
Service Port to connect via RS-232 DPC cable or DPC USB cable			✓	✓
Listings/Approvals				
CSA, UL / cUL Listing and CE Marked			✓	✓
LR & ABS Marine			✓	✓
BDEW / VDE-AR-N 4105			-	✓
Part Numbers				
easYgen Rental		With display	NO display / with display	With display
"With display" Plastic housing for front panel mounting (incl. mounting kit)		CT inputs: 1A	8440-2096	8440-2162 / -2095
"NO display" Metal housing for rear panel mounting		CT inputs: 5A	8440-2029	8440-2163 / -2030
Spare connector kit			8928-7297	8928-7371
DPC Service Port cable		RS-232 DPC cable	5417-557	-/-
		DPC USB cable	5417-1251	-/-

#1 Refer to the Manual for applications with more than 8 parallel gensets because of bus load limits
 #2 Measured ground current
 #3 Digital IO expansion boards (P/N 8440-2028) are connectable via CAN bus each providing 8 additional DIs and DOs each
 #4 Selectable during configuration between 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, Resistive input (one- or two-pole, 2pt. linear or 9pt. user defined), or 20 mA (0/4 to 20 mA, freely configurable)
 #5 Freely selectable during configuration between CANopen or J1939; request information
 #6 With Remote Panel only