



APPLICATIONS

The easYgen-2000 Series are versatile genset controllers, including complete control, monitor and protection features.

FlexApp™ - This feature provides the tools to easily configure the easYgen-2000 Series. Different operating modes may be selected by simple configuration:

- Multiple unit island parallel operation up to 16 units (load sharing with automatic process and load sequencing)
- Single unit mains parallel operation
- Different breaker control modes (including close/open/synch commands):
 - None breaker control for application w/ external breaker control or no breaker.
 - Generator breaker control for e.g. stand by application or mains parallel applications.
 - Generator and mains breaker control for e.g. AMF, open/closed transitions, parallel, interchange and soft loading programs

FlexIn™ - The units provide three multitype analog inputs that can be freely configured for different type of sender either as a resistive or as current input:

- **Resistive input:** 0-500 Ohm, for Pt100, linear 2-point, user-defined 9-point and **VDO:** 0 to 180Ohm [0 to 5bar/0 to 10bar]; 0 to 380Ohm [40 to 120°C/50 to 150°C],

- **0/4 to 20 mA:** linear 2-point, user-defined 9-point

The senders can be isolated (2-pole) or can offer a ground return (1 pole)

Flexible Outputs - Free configurable speed- and voltage bias outputs for all speed governors and voltage regulators. The outputs can also be used as freely scalable outputs.

FlexCAN™ - Flexible and isolated CAN bus providing different protocols: CANopen protocols; coupling of IKD 1 expansion cards (up to 16DI/16DOs) as well as of 3rd party expansion cards (request more detailed information from our sales department). ECU 1939 communication with start/stop and alarm management.

Supported ECU: Scania EMS/S6, Deutz EMR2, Volvo EMS2, MTU ADEC, Woodward EGS, MAN EDC7, SISU EEM2/3, Cummins and J1939 Standard messages.

LogicsManager™ - The **LogicsManager** enables you to change the internal operation sequences of the control.

The various measuring values, inputs and internal states or constant values may be combined logically by Boolean operators and programmable timers. This enables you to create and/or modify monitoring and control functions.

* Depends on easYgen-2000 Package (P1/P2). Check last page for details.

Genset Control for Multiple Unit Operation

DESCRIPTION

I/Os

- **FlexRange™** - Two separate sets of 3-phase true r.m.s. voltage measuring inputs for the generator and mains:
 - 120 Vac rated (max. 150 Vac)
 - 480 Vac rated (max. 600 Vac)
- 3-phase true r.m.s. generator current/power
- 1-phase true r.m.s. current input freely configurable either as mains current measurement or ground current measurement (ground fault protection)
- 1 speed input (magnetic/switching) *
- 10 configurable discrete alarm inputs *
- **LogicsManager™** - up to 11 programmable relay outputs *
- **FlexIn™** - up to 4 configurable analog inputs *
- **Flexible Outputs** - up to 4 configurable analog outputs *
- **FlexCAN™** - up to 2 CAN bus communication networks *

Protection (ANSI #)

Generator: Over-/undervoltage (59/27), over-/underfrequency (81O/U), unbalanced voltage, dead bus detection, overload (32), unbalanced load (46), reverse/reduced power (32R/F), definite overcurrent and time-overcurrent (50/51), inverse time-overcurrent (IEC255), measured ground fault (50N/51N), phase rotation, breaker failure monitoring

Engine: Over-/underspeed (12), battery over-/undervoltage, auxiliary excitation, speed/frequency mismatch

Mains: Over-/undervoltage (59/27), over-/underfrequency (81O/U), phase shift, rotation field

Features

- 128x64 dot graphical interactive LC display with soft keys
- Start/stop logic for Diesel/Gas engines
- Engine pre-glow or purge control
- Warm-up control via timer or coolant temperature
- Speed, frequency, voltage, power, reactive power, and power factor set points (auto or remote controlled)
- Power and reactive power load sharing with up to 16 units including load-dependent start/stop
- kWh, kvarh
- Operating hours/start/maintenance counters - Operating hours also available from a connected ECU via J1939/CAN
- Configurable trip levels/delays/alarm classes
- PC and/or front panel configurable (ToolKit software)
- Multi-level password protection
- Multi-lingual capability (11 languages in 1 unit configurable: English, German, French, Spanish, Chinese, Japanese, Italian, Portuguese, Turkish, Russian, Polish)
- Event recorder (300 events, FIFO) with real time clock (battery backed; min. 5 years)
- Remote control via interface / discrete inputs
- Control of asynchronous generators

- Isolated & mains parallel operation
- Load transfer programs
- Softload features
- Open/closed transition
- Synchronization with phase matching and slip frequency
- AMF
- Up to 16 units for load sharing and load-dependent start/stop
- 120V-480V true r.m.s. voltage sensing
- True r.m.s. current sensing
- Generator kWh meter
- Support of asynchronous generators
- Counters for engine starts, operating hours, maintenance call
- Freely configurable discrete & analog I/Os
- Multi-lingual display
- CANopen / J1939 ECU
- Modbus RTU Protocol
- CE marked
- UL/cUL Listing
- GL/LR Marine Approval (pending)

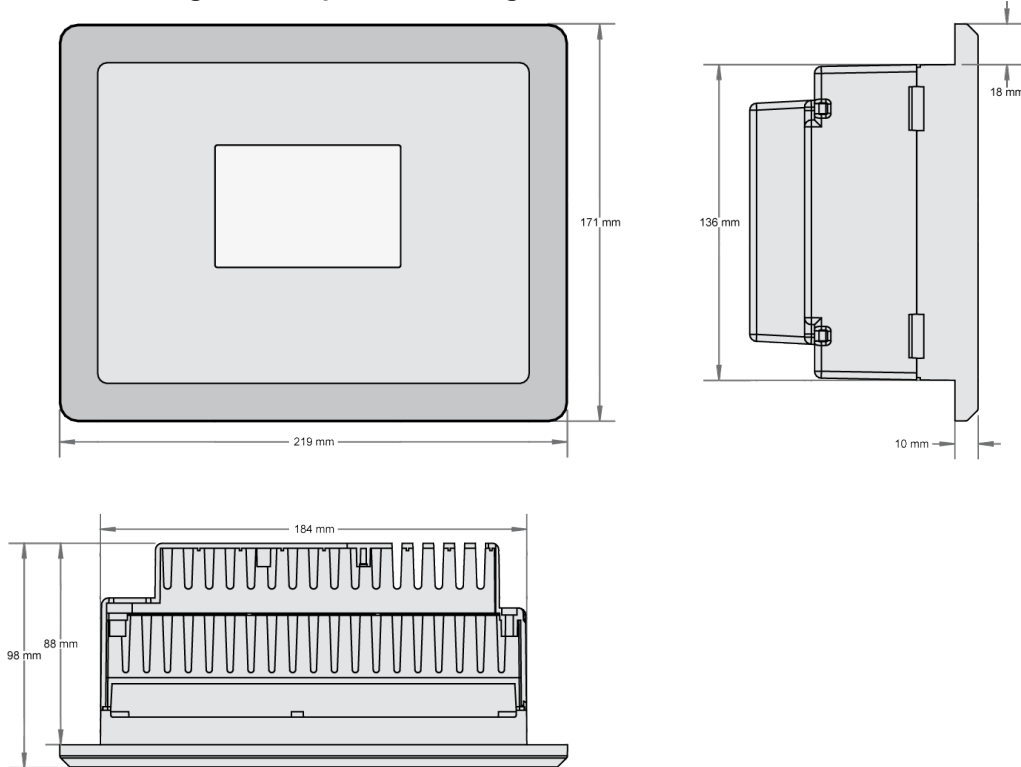
SPECIFICATIONS

Power supply 12/24 Vdc (8 to 40 Vdc)
 Intrinsic consumption max. ~ 8 W (easYgen-2200)
 max. ~ 12 W (easYgen-2500)
 Ambient temperature (operation) -20 to 70 °C / -4 to 158 °F
 Ambient temperature (storage) -30 to 85 °C / -22 to 185 °F
 Ambient humidity 95 %, non-condensing
Voltage (λ/Δ)
 120 Vac [1] Rated (V_{rated}) 69/120 Vac
 Max. value (V_{max}) 86/150 Vac
 Rated voltage phase – ground 150 Vac
 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 300 Vac
 Surge volt. (V_{surge}) 4.0 kV
 Accuracy Class 1
 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] ..15 A
 Linear measuring range $I_{gen} = 3.0 \times I_{rated}$
 $I_{mains/ground} = 1.5 \times I_{rated}$
 Burden < 0.15 VA
 Rated short-time current (1 s) [1] 50 \times I_{rated} , [5] 10 \times I_{rated}
Discrete inputs isolated
 Input range 12/24 Vdc (8 to 40 Vdc)
 Input resistance approx. 20 kOhms

Relay outputs 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 scaleable
 Type 0 to 500/2500 Ohms / 0 to 20 mA
 Resolution 11 Bit
Analog outputs (isolated) freely scaleable
 Type ± 10 V / ± 20 mA / PWM
 Insulation voltage (continuously) 100 Vac
 Insulation test voltage (≤ 5 s) 1000 Vac
 Resolution 11/12 Bit (depending on output)
 ± 10 V (scaleable) internal resistance ~ 500 Ohms
 ± 20 mA (scaleable) maximum load 500 Ohms
Housing Front panel flush mounting Plastic housing
 Dimensions WxHxD 219 \times 171 \times 61 mm (easYgen-2200)
 219 \times 171 \times 98 mm (easYgen-2500)
 Front cutout WxH 186 [+1.1] \times 138 [+1.0] mm
 Connection screw/plug terminals 2.5 mm²
 Front insulating surface
 Sealing Front IP65 (with screw fastening)
 Front IP54 (with clamp fastening)
 Back IP20
 Weight approx. 800 g (easYgen-2200)
 approx. 1,100 g (easYgen-2500)
Disturbance test (CE) tested according to applicable EN guidelines
Listings UL/cUL
Marine Approvals GL/LR (pending), others upon request

DIMENSIONS

Plastic housing for front panel mounting



easYgen-2500 P1 – dimensions

FEATURES OVERVIEW

International
 Woodward
 PO Box 1519
 Fort Collins CO, USA
 80522-1519
 1000 East Drake Road
 Fort Collins CO 80525
 Ph: +1 (970) 482-5811
 Fax: +1 (970) 498-3058

Europe
 Woodward GmbH
 Handwerkstrasse 29
 70565 Stuttgart, Germany
 Ph: +49 (0) 711 789 54-0
 Fax: +49 (0) 711 789 54-100
 email: stgt-info@woodward.com

Distributors & Service
 Woodward has an international network of distributors and service facilities. For your nearest representative, call the Fort Collins plant or see the Worldwide Directory on our website.

www.woodward.com/power

For more information contact:

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 Governor 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

37448B - 2010/1/Stuttgart

		easYgen-2000 Series			
		Model / Package	2200 P1	2200 P2	2500 P1
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.) #1		✓	✓	✓	
Control					
Different Breaker Operation modes <i>FlexApp™</i>		✓	✓	✓	
Automatic, Manual, and Stop operating modes		✓	✓	✓	
Single unit mains parallel operation		✓	✓	✓	
Multiple-unit island parallel operation (up to 16 units)		✓	✓	✓	
AMF (auto mains failure operation)		✓	✓	✓	
Stand-by operation		✓	✓	✓	
Critical mode operation		✓	✓	✓	
GCB and MCB synchronization (slip synchronization / phase matching)		✓	✓	✓	
Open (break-before-make) and closed (make-before-break) transition		✓	✓	✓	
Interchange		✓	✓	✓	
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		✓	✓	✓	
HMI					
Soft keys (advanced LC display)		✓	✓	✓	
Start/stop logic for Diesel/Gas engines		✓	✓	✓	
Generator kWh meter		✓	✓	✓	
Operating hours/start/maintenance counter		✓	✓	✓	
Configuration via PC #2		✓	✓	✓	
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 #3		50G	✓	✓	
Generator: power factor		55	✓	✓	
Generator: rotation field			✓	✓	
Engine: overspeed/underspeed		12/14	via Speed input	via ECU [CAN/J1939] via Speed input or ECU [CAN/J1939]	
Genset: speed/frequency mismatch			✓	✓	
Engine: D+ auxiliary excitation failure			✓	✓	
Mains: voltage/frequency/phase shift		59/27/810/81U/78	✓	✓	
Mains: rotation field			✓	✓	
I/Os					
Speed input (magnetic/switching; Pickup)			✓	✓	
Discrete alarm and control inputs (configurable) #4			8	10	
Discrete outputs (configurable) <i>LogicsManager™</i>			6	11	
External discrete inputs / outputs via CANopen (maximum)			16 / 16	16 / 16	
Analog inputs (configurable) <i>FlexIn™</i>			3	4	
Analog outputs (+/- 10V, +/- 20mA, PWM; configurable)			1	4	
CAN bus communication interfaces <i>FlexCAN™</i>			1	2	
RS-485Modbus RTU Slave interface			-	1	
Service Port (RS-232) - Woodward DPC cable required			✓	✓	
Listings/Approvals					
UL/cUL Listing			✓	✓	
LR Marine Approval (pending)			✓	✓	
CE Marked			✓	✓	
P/Ns			2200 P1	2200 P2	2500 P1
Plastic Housing					
1A CT inputs / front panel mounting with display #7		P/N	8440-1856	8440-1858	8440-1860
5A CT inputs / front panel mounting with display #7		P/N	8440-1855	8440-1857	8440-1884

#1 mains or ground current selectable

#2 via serial (external Woodward DPC cable required - P/N 5417-557) or CAN connection by ToolKit software

#3 measured ground current

#4 it is possible to connect up to two digital IO expansion boards (P/N 8440-1041), which provide 8 additional DIs and DOs each

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