



## APPLICATIONS

The 2<sup>nd</sup> Generation of genset controls is designed to provide a maximum of flexibility in a user friendly and intuitive design with a large graphical display for various applications. This controller is one of a series of new and powerful genset controls (**easYgen**). This trend-setting technology offers a maximum of flexibility for each user. New technologies included are:

- FlexApp™** - This intelligent and flexible feature provides the tools to easily configure for multiple applications. The user can configure the easYgen-1000 Series for use as
- Measuring transducer/engine control [0-CB-Mode {0}] for start/stop and measuring conversion
  - 1-breaker-control [GCB open, {1o}] above plus engine/generator protection
  - 1-breaker-control [GCB open/close, {1oc}] above plus stand-by power applications
  - 2-breaker-control [GCB/MCB open/close, {2oc}] above plus AMF, and open transition applications

**DynamicsLCD™** - The graphical LCD provides softkeys that vary depending on application and operation.

- FlexIn™** - The two analog inputs can be freely configured (adaptable for each type of sensor) by the user as:
- VDO (0 to 180Ohm [0 to 5bar/0 to 10bar]; 0 to 380Ohm [40 to 120°C/50 to 150°C]; 0 to 180 Ohm [0 to 100% level]; isolated (2-pole) and non-isolated (1-pole) ground senders only)
  - Resistive input (Pt100 / linear 2point / user-defined 9point)
  - 0/4 to 20 mA (linear 2point / user-defined 9point)

**FlexCAN™** - Flexible isolated CAN bus for multiple use. Selectable during configuration: CANopen, or CAN (CAL); coupling of easYlite remote annunciator; coupling of 3<sup>rd</sup> party expansion cards supported (request detailed information from our sales department). J1939 protocol for ECU coupling and alarm management, remote start/stop with ECU possible (Scania, Volvo, Deutz, mtu).

**LogicsManager™** - A large number of measuring values, inputs, internal states or constant values can be combined logically to operate a relay contact or an internal function.

## Genset Control for Single Unit Operation

### DESCRIPTION

#### I/Os

- **FlexRange™** - true RMS 3phase generator and mains voltage, measuring inputs:
  - Rated 120 Vac (max. 150 Vac) **and**
  - Rated 480 Vac (max. 600 Vac) **in 1 unit**
- True rms 3phase generator current/power
- True rms 1phase current input alternatively and freely configurable for
  - Mains current
  - Ground current (ground fault protection)
- 1 speed input (magnetic/switching)
- up to 8 configurable discrete alarm inputs
- **LogicsManager™** - up to 9 program. relays
- **FlexIn™** - 2 configurable analog inputs
- **FlexCAN™** - CAN bus communication (32 participants, isolated)

#### Protection (ANSI #)

**Generator / Engine:** Battery voltage, overspeed (12), over-/undervoltage (59/27), over-/underfrequency (81O/U), overload (32), reverse/reduced power (32R/F), unbalanced load (46), definite time-overcur. (50/51), inverse time-overcurrent (IEC255), calculated + measured ground fault

#### Features

- **FlexApp™** Technology (4 application modes)
- **DynamicsLCD™** - 128×64 pixel graphical interactive LC display with softkeys
- Start/stop logic for Diesel/Gas engines
- Engine pre-glow or purge control
- kWh meter, kvarh meter
- Operating hours/start/maintenance counters
- Configurable trip levels/delays/alarm classes
- Push-buttons (softkeys) for direct control
- PC and/or front panel configurable
- Multi-level password protection
- Multi-lingual capability (10 languages in 1 unit configurable: English, German, French, Italian, Spanish, Portuguese, Russian, Turkish, Chinese, Japanese)
- Event recorder (300 events, FIFO) with real time clock (battery backed; min. 6 years)
- Modem connectivity with DPC
- easYlite annunciator support via CAN bus
- Remote control via interface / digital signals

#### Differentiation

- Current input as ..5 A (standard) or ../1 A

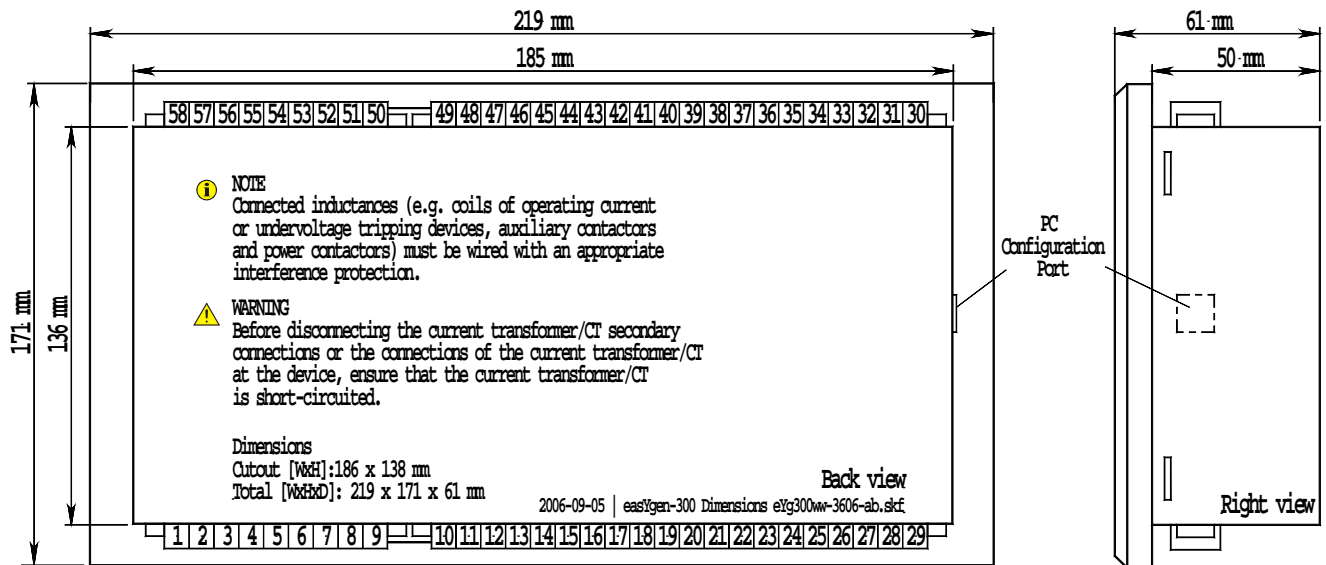
- **FlexApp™** Technology
- Flexible and multifunctional **DynamicsLCD™**
- AMF/loss of mains auto start/stop
- Complete engine, generator, and mains protection in one unit
- True rms voltage sensing with **FlexRange™**
- True rms current/power sensing
- kWh meter
- Counters for engine starts, operating hours, maintenance call
- Freely configurable discrete inputs
- Freely configurable analog **FlexIn™** inputs
- Freely programmable relay outputs with **LogicsManager™**
- PC and/or front panel configurable
- Multi-lingual capability 10 languages in 1 unit
- **FlexCAN™** communication (32 participants, isolated)
- Modbus RTU Slave
- 6.5 to 40.0 Vdc power supply
- Flush-mounting
- CE marked
- UL/cUL Listed
- GL, LR Marine Approval

# SPECIFICATIONS

Power supply ..... 12/24 Vdc (6.5 to 40.0 Vdc)  
 Intrinsic consumption ..... max. 15 W  
 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** ..... (both ranges within one unit on different terminals,  $\sqrt{D}$ )  
     100 Vac [1] Rated ( $V_{rated}$ ) ..... 69/120 Vac  
         Max. value ( $V_{max}$ ) ..... 86/150 Vac  
         Rated ( $V_{phase-ground}$ ) ..... 150 Vac  
     Rated surge volt. ( $V_{surge}$ ) ..... 2.5 kV  
**and** 400 Vac [4] Rated ( $V_{rated}$ ) ..... 277/480 Vac  
         Max. value ( $V_{max}$ ) ..... 346/600 Vac  
         Rated ( $V_{phase-ground}$ ) ..... 300 Vac  
     Rated surge volt. ( $V_{surge}$ ) ..... 4.0 kV  
 Accuracy ..... Class 1  
 Measurable alternator windings ..... 3p-3w, 3p-4w, 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 70 Hz)  
 Input resistance per path ..... [1] 0.498 MW, [5] 2.0 MW  
 Max. power consumption per path ..... < 0.15 W  
**Current** Rated ( $I_{rated}$ ) ..... [1] ..1 A or [5] ..15 A  
 Linear measuring range .....  $I_{gen} = 3.0 \times I_{rated}$ ,  $I_{mains} = 1.5 \times I_{rated}$   
 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 (6.5 to 40.0 Vdc)  
 Input resistance ..... approx. 6.7 kW  
**Relay outputs** ..... isolated  
 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 input** ..... freely scaleable  
 Type ..... variable  
 Resolution ..... 10 Bit  
**Housing** Flush ..... Type easYpack  
 Dimensions Flush ..... 219x171x61 mm  
 Front cutout Flush ..... 186 [+1.1]x138 [+1.0] mm  
 Connection ..... screw/plug terminals 2.5 mm<sup>2</sup>  
 Front ..... insulating surface  
 Protection system ..... with professional installation  
     Front ..... IP54 (with clamp fastening)  
     Front ..... IP65 (with screw fastening)  
     Back ..... IP20  
 Weight ..... approx. 800 g  
**Disturbance test (CE)** ..... tested according to applicable EN guidelines  
**Listings** ..... UL/cUL listed  
**Marine Approvals** ..... GL, LR, others upon request

# DIMENSIONS



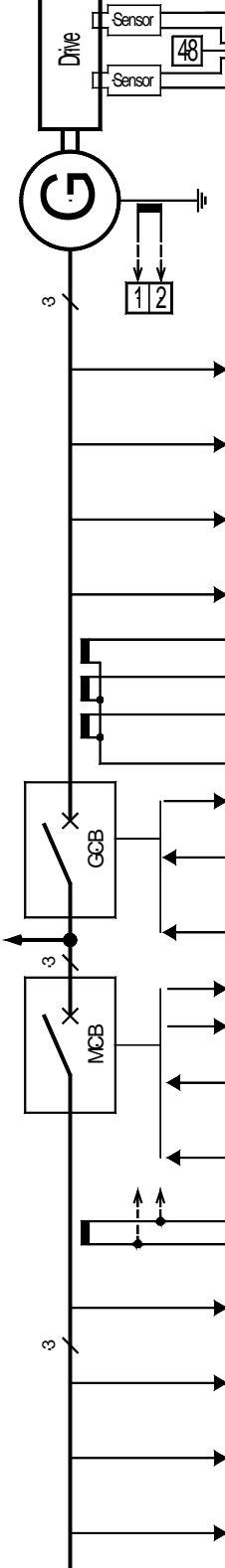
# PART NUMBERS AND ORDER CODES

Model Mounting	Rated PT secondary <i>FlexRange™</i>	Rated CT secondary	Part Number (P/N)	Description
1500	69/120 Vac	..15 A	8440-1809	EASYGEN-1500-55B
	<b>and</b> 277/480 Vac	..1 A	8440-1810	EASYGEN-1500-51B

# WIRING DIAGRAM



only connection for two-pole sensors is shown below.



4	CAN-H	FlexCAN	CAN bus
3	CAN-L	FlexCAN	CAN bus
10	—		Pickup
9	—		switching inductive
13	—		Analog input 1 [T1]
12	—	FlexIn	VDO & resistive & 0.4 to 20 mA
11	—		Battery ground/common or genset chassis ground
12	—		Analog input 2 [T2]
13	—		VDO & resistive & 0.4 to 20 mA
29	480 Vac	FlexRange	Generator voltage L1
28	120 Vac		Generator voltage L1
27	480 Vac		Generator voltage L2
26	120 Vac		Generator voltage L2
25	480 Vac	FlexRange	Generator voltage L3
24	120 Vac		Generator voltage L3
23	480 Vac		Generator voltage N
22	120 Vac		Generator voltage N
8	..1 A or ..5 A	FlexApp	Generator current L1
7	..1 A or ..5 A		Generator current L2
6	..1 A or ..5 A		Generator current L3
5	GND	FlexApp	Common
4	—		Reply: GCB is open => use discrete input [D8]
3	—		Command: close GCB => use relay [R10]
2	—	FlexApp	Command: open GCB => use relay [R7]
1	..1 A or ..5 A		Reply: MCB is open => use discrete input [D7]
2	GND		Enable MCB => use discrete input [D6]
21	480 Vac	FlexRange	Command: open MCB => use relay [R9]
20	120 Vac		Command: close MCB => use relay [R8]
19	480 Vac		Reply: MCB is open => use discrete input [D7]
18	120 Vac		Enable MCB => use discrete input [D6]
17	480 Vac	FlexRange	Command: open MCB => use relay [R9]
16	120 Vac		Command: close MCB => use relay [R8]
15	480 Vac		Reply: MCB is open => use discrete input [D7]
14	120 Vac		Enable MCB => use discrete input [D6]
21	480 Vac	FlexRange	Mains current L1 or Ground current
20	120 Vac		(2oc)
19	480 Vac		Mains voltage L1
18	120 Vac		(2oc)
17	480 Vac	FlexRange	Mains voltage L2
16	120 Vac		(2oc)
15	480 Vac		Mains voltage L3
14	120 Vac		(2oc)
13	480 Vac	FlexRange	Mains voltage N
12	120 Vac		(2oc)
11	480 Vac		Mains voltage L1
10	120 Vac		(2oc)

Subject to technical modifications.



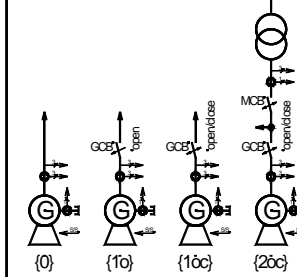
## easYgen-1500 V2.1xxx (Genset Control)

### FlexApp / DynamicsLCD

The Mode of the control can be configured alternatively as an:  
 (0) - Measuring transducer/engine control [OCB]  
 (1o) - 1-CB-control [GCB open]  
 (1oc) - 1-CB-control [GCB open/close]  
 (2oc) - 2-CB-control [GCB/OCB open/close]

Depending on the setting you have different I/Os available, respectively the control can operate the breakers for protection/closing or not.

Model easYgen-1500  
 - P/N 8440-1750 = ..5 A  
 - P/N 8440-1751 = ..1 A



47	Relay [R11]	LogicsManager	—
46	- LogicsManager or - Ready for operation		—
45	Relay [R10]	LogicsManager	—
44	- LogicsManager or - "Command: close GCB"		—
43	Relay [R9]	LogicsManager	—
42	- LogicsManager or - "Command: open MCB"		—
41	Relay [R8]	LogicsManager	—
40	- LogicsManager or - "Command: close MCB"		—
39	Relay [R7]	LogicsManager	—
38	- LogicsManager or - "Command: open GCB"		—
37	Relay [R6] (LogicsManager)	LogicsManager	—
36	- Auxiliary services		—
35	Common (terminals 30-34)	LogicsManager	—
34	Relay [R5] (LogicsManager)		—
33	- Diesel: Preglow; Gas: Ignition ON	LogicsManager	—
32	Relay [R4]		—
31	- Diesel: Fuel relay; Gas: Gas valve	LogicsManager	—
30	Relay [R3]		—
29	- Crank	LogicsManager	—
28	Relay [R2] (LogicsManager)		—
27	- Alarm class C/D/E/F active	LogicsManager	—
26	Relay [R1] (LogicsManager)		—
25	- Centralized alarm	LogicsManager	—
24	Discrete input [D8] - Alarm input (LogVar) or "Reply: GCB is open"		—
23	Discrete input [D7] - Alarm input (LogVar) or "Reply: MCB is open"	LogicsManager	—
22	Discrete input [D6] - Alarm input (LogVar) or "Enable MCB"		—
21	Discrete input [D5]	LogicsManager	—
20	- Alarm input (LogicsManager)		—
19	Discrete input [D4]	LogicsManager	—
18	- Alarm input (LogicsManager)		—
17	Discrete input [D3]	LogicsManager	—
16	- Alarm input (LogicsManager)		—
15	Discrete input [D2]	LogicsManager	—
14	- Start in Auto (LogicsManager)		—
13	Discrete input [D1]	LogicsManager	—
12	- Emergency stop (LogicsManager)		—
11	Common (terminals 51 to 58)	LogicsManager	—
10	-12/24 Vdc		—
9	0 Vdc	LogicsManager	—
8	Battery		—

The socket for the PC configuration is situated on the back of the item. This is where the DPC has to be plugged in.

# FEATURES OVERVIEW

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Configured as ...		easYgen-1500			
		{0}	{10}	{10c}	{20c}
		No CB control	1 CB control (GCB open)	1 CB control (GCB open / close)	2 CB control (GCB / MCB open / close)
<b>Measuring</b>					
Generator voltage (3phase/4-wire)	rated 69/120 Vac	ü	ü	ü	ü
- true rms	max. 86/150 Vac	ü	ü	ü	ü
- FlexRange™	rated 277/480 Vac	ü	ü	ü	ü
	max. 346/600 Vac	ü	ü	ü	ü
Generator current #1 (3phase/4-wire, true RMS)	..1 A or ..15 A	ü	ü	ü	ü
Mains voltage (3phase/4-wire)	rated 69/120 Vac	(ü)#2	(ü)#2	(ü)#2	ü
- true rms	max. 86/150 Vac	(ü)#2	(ü)#2	(ü)#2	ü
- FlexRange™	rated 277/480 Vac	(ü)#2	(ü)#2	(ü)#2	ü
	max. 346/600 Vac	(ü)#2	(ü)#2	(ü)#2	ü
Mains current #1 (1phase/2-wire, true RMS)	..1 A or ..15 A	(ü)#2	(ü)#2	(ü)#2	ü
<b>Control</b>					
Breaker control logic	FlexApp™	0	0	1	2
	GCB open#3		ü	ü	ü
Number of controlled power circuit breakers can be user configured depending on application needs out of 4 Modes	GCB open/close#3			ü	ü
	GCB/ MCB open/close#3				ü
Isolated single-unit operation				ü	ü
AMF (auto mains failure operation)					ü
Stand-by operation					ü
Open transition (break-before-make)					ü
ATS (automatic transfer switching)					ü
<b>Accessories</b>					
Softkeys (advanced LC display)	DynamicsLCD™	ü	ü	ü	ü
Start/stop logic for Diesel/Gas engines		ü	ü	ü	ü
kWh meter, kvarh meter		ü	ü	ü	ü
Operating hours/start/maintenance counter		ü	ü	ü	ü
Configuration via PC #4		ü	ü	ü	ü
Event recorder with real time clock (battery backup)		300	300	300	300
Flush-mounting		ü	ü	ü	ü
<b>Protection</b> ANSI#					
Generator: voltage/frequency	59/27/810/81U	(ü)#6	ü	ü	ü
Generator: overload, reverse/reduced power	32/32R/32F	(ü)#6	ü	ü	ü
Generator: unbalanced load	46	(ü)#6	ü	ü	ü
Generator: definite time-overcurrent	50/51	(ü)#6	ü	ü	ü
Generator: inverse time-overcurrent	IEC255	(ü)#6	ü	ü	ü
Generator: ground fault #5		(ü)#6	ü	ü	ü
<b>I/Os</b>					
Speed input (magnetic/switching; Pickup)		ü	ü	ü	ü
Discrete alarm inputs (configurable)		8	8	7	5
Relay outputs (configurable)	LogicsManager™	8	7	6	4
Analog inputs #7 (configurable)	FlexIn™	2	2	2	2
CAN bus communication #8	FlexCAN™	ü	ü	ü	ü
RS-232 Modbus RTU Slave #9		ü	ü	ü	ü
<b>Listings/Approvals #10</b>					
UL/cUL Listed		ü	ü	ü	ü
LR, GL Marine Approval		ü	ü	ü	ü
CE Marked		ü	ü	ü	ü

- #1 Selection during order; both ..15 A (standard) or both ..1 A (alternatively);
- #2 the mains are measured and may be displayed, but they will not be evaluated
- #3 dedicated to a fixed relay
- #4 Cable incl. software necessary (DPC = Part Number P/N 5417-557)
- #5 calculated + measured ground current
- #6 possible (not dedicated to a fixed relay)
- #7 selectable during configuration  
 VDO (0 to 180 Ohm, 0 to 5 bar, 2-pole)  
 VDO (0 to 180 Ohm, 0 to 10 bar, 2-pole)  
 VDO (0 to 380 Ohm, 40 to 120°C, 2-pole)  
 VDO (0 to 380 Ohm, 50 to 150°C, 2-pole)  
 Pt100  
 Resistive input (linear 2pt. or free chart 9pt.)  
 20 mA (0/4 to 20 mA, freely configurable)
- #8 freely selectable during configuration  
 CANopen, CAN (CAL), or J1939; request info
- #9 external electrical isolation required (e.g. DPC cable P/N 5417-557)
- #10 contact your sales rep to find out whether your desired unit has the required approval

Example of the **LogicsManager**

