





easYgen-3100/3200

Genset Control for Multiple Unit Operation

DESCRIPTION

The easYgen-3000 Series are control units for genset management applications. The numerous inputs and outputs, along with a modular software structure, permit you to use the easYgen-3000 Series for a wide range of applications with only a single part number. This includes stand-by, AMF, peak shaving, import-export, cogeneration or distributed generation, among others. Also the easYgen-3000 Series is compatible for island, island parallel, mains parallel and multiple unit mains parallel operations.

The easYgen-3000 Series is able to control up to 32 gensets connected in a network with automatic sequencing.

The easYgen-3000 Series is available in two variants, the easYgen-3100 for cabinet back panel installation, and the easYgen-3200 with graphical color display and soft keys for front panel mounting.

FlexApp™ – This feature provides the tools to easily configure the number of operated breakers: None, GCB, GCB and MCB.

LogicsManager[™] – Woodward's LogicsManager enables to change the operation sequences and adapt them to specific needs. The LogicsManager accomplishes this by monitoring a range of measuring values and internal states, which are combined logically with Boolean operators and programmable timers. This enables to create and/or modify control and relay functions.

FlexIn[™] – The analog inputs are configurable to operate with VDO, resistive, 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-3000 Series is capable of working with all common industrial interfaces, including CAN, RS-232, and RS-485. The multiple communication protocols permit the easYgen-3000 Series to communicate with a vast majority of engine control units (ECUs), external I/O boards, PLCs, and modems. CANopen, J1939, Modbus RTU, and Modem protocols are supported.

DynamicsLCD™ – The adaptive and interactive 5.7", 320x240 pixel color graphical LC display with soft keys and a clear menu structure ensures intuitive user operation and navigation.

FEATURES

- Operation modes: Auto, Stop, Manual, and Load/No Load test modes via discrete input possible
- · Breaker control: Slip frequency / phase matching synchronization, open-close control, breaker monitoring
- · Load transfer features: open / closed transition, interchange, soft loading / soft unloading, mains parallel
- Remote control via interface and 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, or pressure and/or other process values
- Special Scania S6, MTU ADEC ECU7/8, Volvo EMS2 & EDC4, Deutz EMR2, MAN MFR/EDC7, SISU EEM, Cummins and Woodward EGS02 ECU support
- · Clear text display and evaluation of up to 100 J1939 analog values
- · Discrete and analog I/O expansion board connectivity (Woodward IKD 1 or Phoenix Contact IL series)
- · Multi-lingual capability

- QV monitoring
- Adjustable vector groups for synchronization
- Time-dependent voltage monitoring
- Dynamic mains stabilization
- Peak shaving operation
- Stand-by operation
- AMF operation
- Cogeneration (CHP)
- Isolated & mains parallel operation
- Import/export control
- Soft loading features
- Open/closed transition
- Load sharing and loaddependent start/stop for up to 32 units
- CANopen / J1939 ECU Control
- Process control

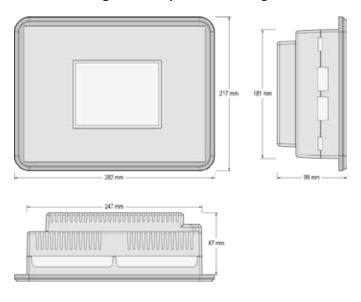
SPECIFICATIONS

Power supply	12/24 Vdc (8 to 40 Vdc)
Intrinsic consumption	max. 17 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	(\/D)
100 Vac [1] Rated (V _{rated})	
	86/150 Vac
Rated surge volt.(V _{surge})	
and 400 Vac [4] Rated (Vrated)	
· · · ·	346/600 Vac
Rated surge volt.(V _{surge})	
Accuracy	Class 1
Measurable alternator windings 3p-3w, 3p-4	
Setting range primary	
Linear measuring range	1.25×V _{rated}
Measuring frequency	50/60 Hz (40 to 85 Hz)
High Impedance Input; Resistance per path	
Max. power consumption per path	< 0.15 W
Current (Isolated) Rated (I _{rated})	
Linear measuring range	$I_{gen} = 3.0 \times I_{rated}$
	$I_{mains/ground} = 1.5 \times I_{rated}$
Setting range	
Burden	
Rated short-time current (1 s)	
Power	
Setting range	
Discrete inputs	
Input range	
Input resistance	approx. 20 kOhms

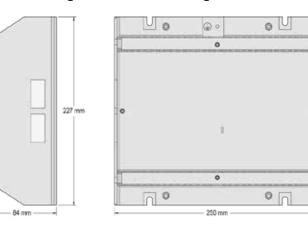
Relay outputsisolate
Contact material
Load (GP)
2.00 Adc@24 Vdc / 0.36 Adc@125 Vdc / 0.18 Adc@250 Vd
Pilot duty (PD)
1.00 Adc@24 Vdc / 0.22 Adc@125 Vdc / 0.10 Adc@250 Vd
Analog inputs (none isolated)freely scaleab Type
Resolution
Analog outputs (isolated)freely scaleab
Type± 10 V / ± 20 mA / PWI
Insulation voltage (continuously)
Insulation test voltage (1s)
Resolution
± 10 V (scaleable)internal resistance ≤1 kOhm
± 20 mA (scaleable) maximum load 500 Ohm
Housing Front panel flush mounting Plastic housing
Dimensions WxHxD
Front cutout WxH249 [+1.1] × 183 [+1.0] mi
Connectionscrew/plug terminals 2.5 mn
Frontinsulating surface
Sealing Front
FrontIP54 (with clamp fastening
BackIP2
Weightapprox. 1,850
Housing Switch cabinet back mountingSheet metal housing
Dimensions WxHxD
Connectionscrew/plug terminals 2.5 mn
Protection system
Weight approx. 2,150
Disturbance test (CE) tested according to applicable EN guideline
ListingsUL, cUL, GOST-R, CS
MarineLR (Type Approval), ABS (Design Assessmen

DIMENSIONS

Plastic housing for front panel mounting



Metal housing for cabinet mounting



			Serial #2 RS-485 isolated (Interface #2)	٥	Serial #1 RS_232 isolated (Interface #1)			
	0	20010-	(Internet PE)	M. WOODWAR	(member #1)		- E	
	39 40	480 Vac 120 Vac	Busbar voltage (system 1) L2 N Busbar voltage (system 1) L1		Relay [R 01] isolated " Fixed to "Ready for operation"	[R 01]	42 41	
	38	480 Vac			Relay [R 02] isolated " Preconfigured to "Centralized alarm"	ps 029	43	
	37	120 Vac			Relay [R 03] isolated " Preconfigured to "Starter"	[R 03]	4	
	36	480 Vac Generator voltag	(Constitution of the Constitution of the Const		Relay [R 04] isolated " Preconfigured to "Fuel sciencid / gas valve"	[R 04]	45	
	18		Gineralus Vollage N			-	46	
	35	480 Vac	Generator voltage L3		Relay (R 05) isolated 1	[R 05]	47	
	33	120 Vac			Preconfigured to "Preglow"	lic and	468	
	33	480 Vec	Generator voltage L2 Generator voltage L1		Rolay [R 06] isolated "	[R 00]	64	
	33	120 Vac			Preconfigured to "Command: close GCB"	1,500	20	
	30	480 Vec			Relay (R 07) isolated "	[R 07]	20	
	83	120 Vad	denomination consider an		Preconfigured to "Command: open GCB"	10.40	25	
	28	480 Vac	Mains voltage N		Relay [R 08] isolated "	IT ON	8	
	27	120 Vac	mans vortage N		Preconfigured to "Command: close MCB"	Is ost	52	
	58	480 Vac	520 A 52		Relay (R 09) isolated "		88	
	52	120 Vac	Mains voltage L3		Preconfigured to "Command: open MCB"	[R 09]	99	
	24	480 Vac			Relay [R 10] isolated " Preconfigured to "Auxiliary services"	[R 10]	25	
	22 23	120 Vac	Mains voltage L2		Relay [R 11] isolated "	(R 11)	88	
		480 Vac			Preconfigured to "Alarm class A or B" Relay (R 12) isolated "	[R 12]	29	
PVVM DC voltage DC ourrent	21 2	120 Vac	Mains voltage L1		Preconfigured to "Alarm class C, D, E or F*	(- N	8	
N TO NO TO N	88				Protective earth PE 13	(19	
PVM GND PVM GN	19 2	+/-10 Vdc +/-20 mA PW		Engine ground	ф.	62 6		
	90		Analog outputs +i-t0 vicc +4-20 mA PAMA isolated		TANAMAS AND THE STREET	12/24 Vdc	23	
	- 4				Power supply 8 to 40 Vdc	0 Vdc	29	
	9				Auxiliary excitation	D+	58	
E > L > Z	15				isolated Common (terminals 67 to 78)	9-4	98	
L; L; L;	4	*			Discrete input [DI 01] isolated	(D) 01) X-98	19	
	13	(A) 03)		gen-3100/3200	Emergency stop Discrete input [DI 02] isolated."	[DI 023 [3:98]	89	
	12	5 = =			Start in Auto Discrete input [DI 03] isolated ** Low of pressure	(D) 031 De 68	68	
	11	(ALO2) - * (ALO1)			Discrete input [DI 04] isolated *1	[Di 04] [2-68]	2	
	10				Coolant temp. Discrete input [DI 05] isolated.**	(D) OS) Dicks	12	
	1 60 80		L3 Generator current isolated.		Alarm acknowledge Discrete Input [DI 06] isolated '1	IDI DE TEM	72 7	
		s1			Enable MCB Discrete input [DI 07] isolated	pion Test	73	
	20	1.3			Reply MCB open Discrete input [DI 08] isolated	(D) DE DESA	74 7	
	98	31 L2 S2 S1 L1			Reply: GCB open Discrete input [DI 09] isolated "	(D) 000 (D) 000	75	
	Same.				PROCESSOR AND	direction.		
	90				Discrete input [Di 10] isolated "	[DI 10] [2:44]	78	
	a				Discrete input [DI 11] isolated "1	[Di 11] [R44]	11	
	83	12			Discrete input [Di 12] isolated "	[DI 12] X-94	28	
	05	81	Mains or ground current	e	MPU input		20	
	10	12	isolated	Yg				
	(mm)		CAN bus #2- Engline level isolated (Interface #4)	eas	CAN bus #1 Guidance/system level isolated (interface #3)		()	



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FEATURES OVERVIEW

IM	easYgen-3000 Series					
(EASY) GEN Model		00	3200			
3000 Package	P1	P2	P1	P2		
Measuring	-			-		
Generator voltage (3-phase/4-wire)	ü	ü	ü	ü		
Generator current (3x true r.m.s.)	ü	ü	ü	ü		
Mains voltage (3-phase/4-wire)	ü	ü	ü	ü		
Mains or ground current (1x true r.m.s.) #1	ü	ü	ü	ü		
Busbar voltage (1-phase/2-wire)	ü	ü	ü	ü		
Control						
Breaker control logic (open and closed transition) FlexApp™	2	2	2	2		
Automatic, Manual, Stop, and test operating modes	ü	ü	ü	ü		
Single and multiple-unit operation	ü	ü	ü	ü		
Mains parallel multiple-unit operation (up to 32 units)	ü	ü #2	ü	ü #2		
AMF (auto mains failure) and stand-by operation Critical mode operation	ü	ü	ü	ü ü		
GCB and MCB synchronization (slipping / phase matching)	ü	ü	ü	ü		
Interchange (import / export control)	ü	ü	ü	ü		
Load-dependent start/stop	ü	ü	ü	ü		
n/f, V, P, Q, and PF remote control via analog input or interface	ü	ü	ü	ü		
Load/var sharing for up to 32 gensets	ü	ü	ü	ü		
Freely configurable PID controllers	-	3	ū	3		
HMI						
Color Display with Softkey operation DynamicsLCD™	-	-	ü	ü		
Start/stop logic for diesel / gas engines	ü	ü	ü	ü		
Counters for operating hours / starts / maintenance / active/reactive energy	ü	ü	ü	ü		
Configuration via PC #3	ü	ü	ü	ü		
Event recorder entries with real time clock (battery backup)	300	300	300	300		
Protection ANSI#						
Generator: voltage / frequency 59 / 27 / 810 / 81U	ü	ü	ü	ü		
Generator: overload, reverse/reduced power 32 / 32R / 32F	ü	ü	ü	ü		
Generator: unbalanced load 46	ü	ü	ü	ü		
Generator: instantaneous overcurrent 50	ü	ü	ü	ü		
Generator: time-overcurrent (IEC 255 compliant) 51 Generator: ground fault #4 50G	üüü	ü	ü ü	ü ü		
Generator: ground radit ** 500 Generator: power factor 55	ü	ü	ü	ü		
Generator: rotation field	ü	ü	ü	ü		
Engine: overspeed / underspeed 12 / 14	ü	ü	ü	ü		
Engine: speed / frequency mismatch	ü	ü	ü	ü		
Engine: D+ auxiliary excitation failure	ü	ü	ü	ü		
Mains: voltage / frequency 59 / 27 / 810 / 81U	ü	ü	ü	ü		
Mains: phase shift / rotation field / ROCOF (df/dt) 78 /	ü	ü	ü	ü		
I/Os						
Speed input (magnetic / switching; Pickup)	ü	ü	ü	ü		
Discrete alarm inputs (configurable)	10	10	10	10		
Discrete outputs (configurable) LogicsManager™	max. 12	max. 12	max. 12	max. 12		
External discrete inputs / outputs via CANopen (maximum)	16 / 16	32 / 32	16 / 16	32 / 32		
Analog inputs ^{#5} (configurable) FlexIn [™] Analog outputs (+/- 10V, +/- 20mA, PWM; configurable)	3	3 2	3	2		
External analog inputs / outputs via CANopen (maximum)		16 / 4	-	16 / 4		
Display and evaluation of J1939 analog values (supported SPNs)	100	100	100	1074		
CAN bus communication interfaces #6 FlexCAN™	2	2	2	2		
RS-232/485 Modbus RTU Slave interface(s)	1/1	1/1	1/1	1/1		
Listings/Approvals						
UL / cUL Listing	ü	ü	ü	ü		
GOST-R & CSA	ü	ü	ü	ü		
LR & ABS Marine	ü	ü	ü	ü		
CE Marked	ü	ü	ü	ü		
Part Numbers						
1A CT inputs / front panel mounting with display #7 P/N 8440-	-	-	2049	2051		
5A CT inputs / front panel mounting with display #7 P/N 8440-	-	-	2050	2052		
1A CT inputs / cabinet back mounting w/o display P/N 8440-	2055	2057	-	-		
5A CT inputs / cabinet back mounting w/o display P/N 8440-	2054	2056	-	-		
Spare connector kit P/N 8923-	1314	1314	1314	1314		
#1 mains or ground current selectable #5 selectable during configuration betwee	V/DO (0.1. 400.4	01 01 51 1 10				

mains or ground current selectable

refer to the Application Manual 37471 for applications with more than 8 parallel gensets because of bus load limits

via serial connection and ToolKit software (included)

measured ground current

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) freely selectable during configuration between CANopen or J1939; request information

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