WOODWARD

Product Specification
03240G

GCP-30 Series

Genset Control Package
Mains & Generator Protection & Control

APPLICATIONS

The GCP-30 Series genset control is designed to provide total control for multiple, medium to large sized applications.

A network of the compact, versatile GCP-30 controls is capable of controlling up to 14 gensets with automatic sequencing. Load management features include automatic base loading/peak shaving, import/export control and emergency power/back up power generation.

The GCP-31 has logic for one circuit breaker and the GCP-32 has logic for two circuit breakers including open/closed transition.

Fully integrated communication to engine ECUs including [via CAN bus] standard SAE J1939, Deutz EMR, Scania S6, Volvo EMS2, mtu ADEC, mtu MDEC; [via RS232] Caterpillar CCM to EMCP-II, and ECM.

DESCRIPTION

Features

- True RMS 8× voltage (generator/busbar/mains)
- True RMS 4× current (generator/mains)
- Start/stop sequence for Diesel/Gas engines
- Engine pre-glow or purge control
- Battery voltage monitoring
- Speed control with overspeed monitoring
- Idle speed mode operation
- kWh/operation hours/start/maintenance counter
- Load dependent start/stop for up to 14 generators
- Configurable trip/control set points
- Configurable delays for each protection/alarm
- Magnetic/switching Pickup input
- 16 configurable discrete alarm inputs
- 7 configurable/programmable relays
- Two-line LC display
- Synchroscope
- Push-buttons for direct control
- CAN bus communication
- Multi-level password protection
- Language manager (English/German switchable)

DESCRIPTION (continued)

Protection

	ANSI #
• 3/4-line measurements	
Mains	
• Over-/undervoltage	(59/27)
• Over-/underfrequency	(81O/U)
• Phase/vector shift	(78)
Generator	
• Over-/undervoltage	(59/27)
• Over-/underfrequency	(81O/U)
• Overload	(32)
• Reverse/reduced power	(32R/F)
• Unbalanced load	(46)
• Time-overcurrent (TOC)	(50)

Controller (all versions)

- Speed/frequency/real power
- Voltage/power factor cosphi
- Mains import/export power
- Load/var sharing for up to 14 generators

Controller (GCP-31)

Synchronizer for 1 CB
- Isolated operation
- Softloading
- Mains parallel operation

Controller (GCP-32)

Synchronizer for 2 CB
- same as GCP-31 plus following
- Open transition (break-before-make)
- Closed transition (make-before-break)

Special (Version dependent)

- 2 configurable analog outputs (0/4 to 20 mA)
- Generator real power setpoint via 0/4 to 20 mA
- Mains import/export power via 0/4 to 20 mA
- Discrete outputs raise/lower for n/f/V/P/Q
- Analog outputs raise/lower for n/f/V/P/Q
- PWM outputs raise/lower for n/f/P
- 7 conf. analog measuring inputs (0/4 to 20 mA, Pt100, VDO)
- Coupling to LS 4 (GCP-31 only; for details see product specification 37167)
- Event recorder with real time clock

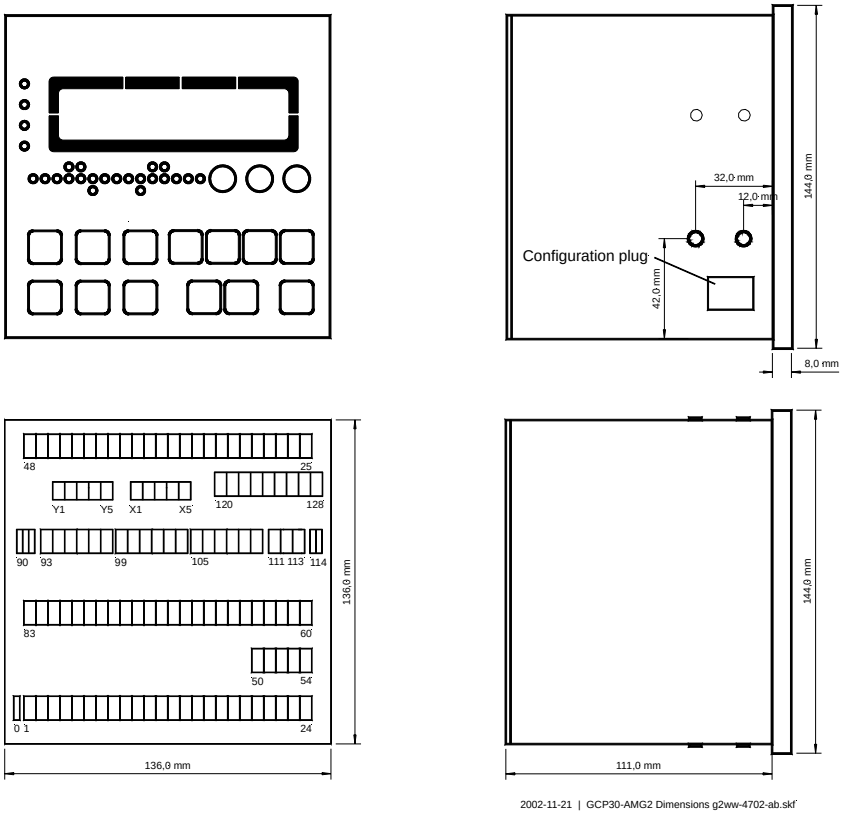
- J1939 (Volvo EMS2, mtu ADEC, Scania S6, Deutz EMR), mtu MDEC, and CAT CCM (EMCP-II, and ECM) coupling
- AMF auto start/stop
- Complete engine, generator, and mains protection and controller in one unit
- True RMS sensing of generator, busbar and mains voltage as well as generator and mains current
- Synchronization for one/two breakers
- Load management-automatic base load/peak shaving, import/export power control, automatic sequencing
- Load/var sharing for up to 14 generators incl. auto start/stop
- Counters for kWh, engine starts, operating hours, maintenance call
- Freely configurable discrete and analog alarm inputs
- Freely configurable relay and analog outputs
- Configurable via PC or front panel
- CAN bus based communication
- CE marked
- UL/cUL Listed

SPECIFICATIONS (for more see manual 37364)

Accuracy ..... Class 1
Power supply ..... 12/24 Vdc (9.5 to 32 Vdc)
Intrinsic consumption ..... max. 20 W
Ambient temperature Operation ..... -20 to 70 °C
Storage ..... -30 to 80 °C
Ambient humidity ..... 95 %, non-condensing
Voltage ..... Rated ⅄/Δ: [1] 66/115 Vac or [4] 230/400 Vac
$V_{ph\text{-}ph}$ max. (UL): [1] 150 Vac or [4] 300 Vac
Rated $V_{ph\text{-}ground}$: [1] 150 Vac or [4] 300 Vac
Rated surge voltage: [1] 2.5 kV or [4] 4.0 kV
Setting range (prim.): 0.050 to 65.000 kVac
Measuring frequency ..... 50/60 Hz (40 to 70 Hz)
Linear measuring range up to ..... $1.3 \times V_{rated}$
Input resistance ..... [1] 0.21 MΩ, [4] 0.7 MΩ
Max. power consumption per path ..... < 0.15 W
Current (rated values; I_{rated}) ..../5 A
Linear measuring range up to ..... $I_{gen} = 3.0 \times I_{rated}$
$I_{mains} = 1.5 \times I_{rated}$
Load ..... < 0.15 VA
Rated short-time current (1 s) ..... $10 \times I_{rated}$
Discrete inputs ..... isolated
Input range ..... 12/24 Vdc (6 to 32 Vdc)
Input resistance ..... approx. 6.8 kΩ
Analog inputs ..... freely scaleable
Type ..... 0/4 to 20 mA, Pt100, VDO
Resolution ..... 10 Bit

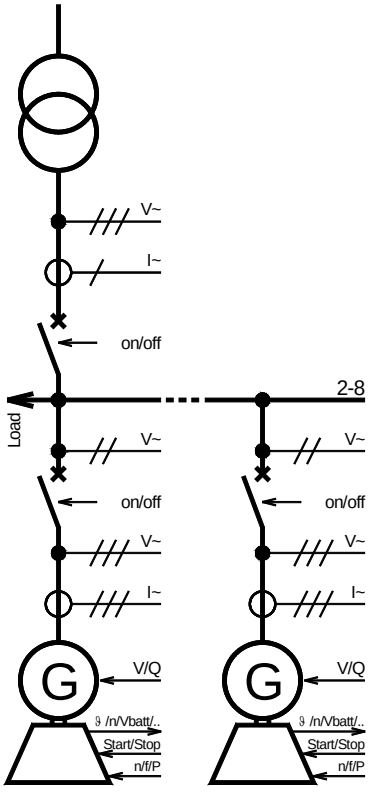
Relay outputs ..... potential free
Contact material ..... AgCdO
Load (GP) ..... 2.00 Aac@250 Vac
2.00 Adc@24 Vdc / 0.36 Adc@125 Vdc / 0.18 Adc@250 Vdc
Pilot duty (PD) .....
1.00 Adc@24 Vdc / 0.22 Adc@125 Vdc / 0.10 Adc@250 Vdc
Analog outputs ..... isolated
Type ..... 0/4 to 20 mA, freely scaleable
Resolution ..... 8/12 Bit (depending on model)
Max. load 0/4 to 20 mA ..... 500 Ω
Insulating voltage ..... 1,500 Vdc
Housing ..... Type APRANORM DIN 43 700
Dimensions ..... 144×144×118 mm
Front cutout ..... 138[+1.0]×138[+1.0] mm
Connection ..... screw/plug terminals depending on connector 1.5 mm² or 2.5 mm²
Front ..... insulating surface
Protection system ..... with correct installation
Front IP42
(sealed IP54; gasket kit = P/N 8923-1039)
Back IP21
Weight ..... depending on version, approx. 1,000 g
Disturbance test (CE) ..... tested according to applicable EN guidelines
Listings ..... UL/cUL listed (File No.: E231544)

DIMENSIONS

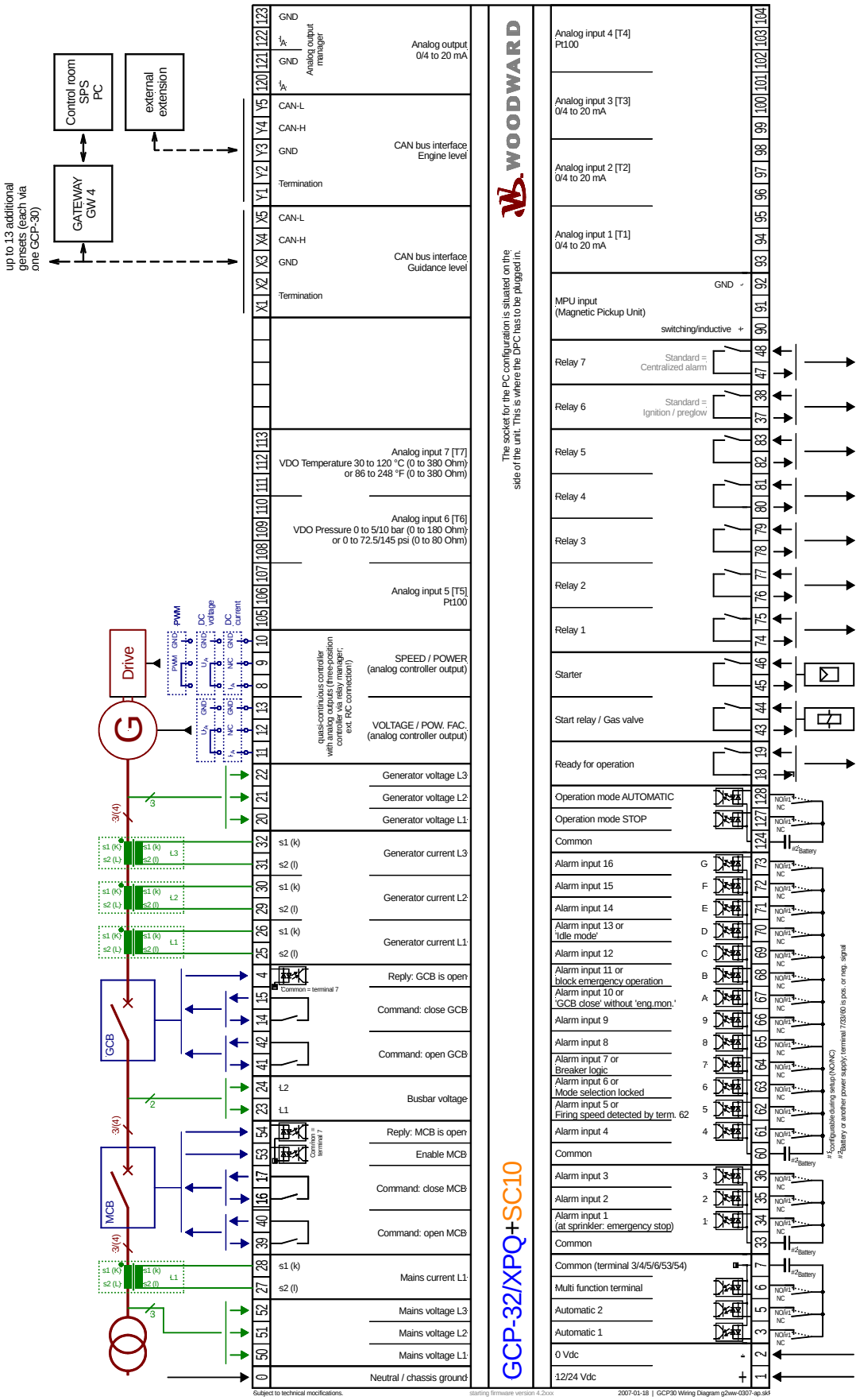


APPLICATIONS

Typical application for the GCP-32 (GCP-31 same but without MCB)



WIRING DIAGRAM (example: GCP-32/XPQ+SC10; for more see manual 37364)



WOODWARD

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

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:

FEATURES OVERVIEW

GCP-30 Series Genset Control	GCP-31					GCP-32				
Package	BPQ	XPD	XPQ	XPQ+SB03	XPQ+SC10	BPQ	XPD	XPQ	XPQ+SB03	XPQ+SC10
Control										
Breaker control logic	1	1	1	1	1	2	2	2	2	2
Synchronization	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Isolated single-unit operation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMF (auto mains failure operation)		✓ #1	✓ #1	✓ #1	✓ #1	✓	✓	✓	✓	✓
Stand-by operation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Peak load op. (auto start/stop)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mains parallel operation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Open transition (break-before-make)						✓	✓	✓	✓	✓
Closed transition (make-before-break)						✓	✓	✓	✓	✓
Softloading	✓ #2	✓ #2	✓ #2	✓ #2	✓ #2	✓	✓	✓	✓	✓
Accessories										
Start/stop logic for Diesel/Gas engines	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
kWh counter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Operating hours/start/maintenance counter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Configuration via PC #3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Event recorder, real time clock		50	50	50	50		50	50	50	50
Language manager (English/German)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Protection										
Generator: voltage/frequency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mains: volt./freq./phase shift	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Generator: overload/unbalanced load	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Generator: reverse/reduced power	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Generator: time-overcurrent (TOC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controller										
Discrete raise/lower: n/f & P #4	✓ #5	✓	✓ #5	✓ #5	✓ #5	✓ #5	✓	✓ #5	✓ #5	✓ #5
Discrete raise/lower: V & Q #4	✓ #5	✓	✓ #5	✓ #5	✓ #5	✓ #5	✓	✓ #5	✓ #5	✓ #5
Analog raise/lower: n/f & P #4 #5	✓		✓	✓	✓	✓		✓	✓	✓
Analog raise/lower: V & Q #4 #5	✓		✓	✓	✓	✓		✓	✓	✓
PWM raise/lower: n/f & P #4 #5	✓		✓	✓	✓	✓		✓	✓	✓
Mains import/export power via 20 mA		✓	✓	✓	✓		✓	✓	✓	✓
Mains import/export power control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Load-dependent start/stop	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Active power setpoint 0/4 to 20 mA #6		✓	✓	✓	✓		✓	✓	✓	✓
Load/var sharing for 14 generators	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
I/O's										
Magnetic/switching Pickup	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Discrete alarm inputs (configurable)	16	16	16	16	16	16	16	16	16	16
Relay outputs (configurable)	7	7	7	7	7	7	7	7	7	7
Analog inputs (configurable) #6		7	7	7	7		7	7	7	7
Analog outputs 0/4 to 20 mA (configurable)		2	2	2	2		2	2	2	2
External operation mode selection via DI		✓	✓	✓	✓		✓	✓	✓	✓
CAN bus comm., Guidance level #7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CAN bus comm., Engine level #8					✓					✓
RS-232 comm., Engine level #9				✓					✓	
LS 4 - Circuit Breaker Control #10		✓	✓	✓	✓					
Listings/Approvals										
CE Marked	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UL/cUL Listed	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Part numbers P/N										
Measuring inputs 100 Vac, ../5 A (8440-	-1609	-1554	-1558	-1562	-1560	-1613	-1570	-1574	-1578	-1576
Measuring inputs 400 Vac, ../5 A (8440-	-1610	-1555	-1559	-1563	-1561	-1614	-1571	-1575	-1579	-1577

#1 External unit LS 4 necessary
#2 In isolated parallel operation with min. 2 gensets in parallel
#3 Cable incl. software necessary (DPC; P/N 5417-557)
#4 n = speed; f = frequency; V = voltage, P = real power; Q = reactive power
#5 +/-20 mA and +/-10 Vdc and PWM signal (type and range configurable); bias/discrete setpoint via relay manager
#6 [T1]-[T3] = 0/4 to 20 mA, [T4]/[T5] = Pt100, [T6] = VDO 0 to 180ohm, [T7] = VDO 0 to 380ohm; function of 20 mA inputs is configurable between alarm input, remote setpoint value for generator real power, mains import/export real power measuring value; others upon request
#7 Remote monitoring, control, configuration (GW 4 could be used for several interfaces; refer to product specs 37170 / manual 37360)
#8 CAN bus connection to IKD1, mtu MDEC, mtu ADEC, Volvo EMS2, Scania EMS/S6, CAN SAE J1939 and/or ST3 (configurable; refer to manual 37382)
#9 RS-232 connection via Caterpillar CCM to Caterpillar EMCP-II, and ECM (configurable; refer to manual 37200)
#10 External unit LS 4 (refer to product specs 37167 / manual 37105)

03240G - 2007/2/Stuttgart