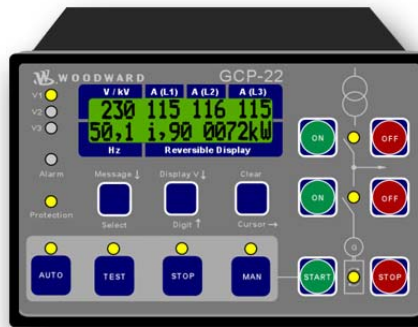


# GCP series 20 LS

## Gen-set Control Package



### APPLICATIONS

The GCP Series 20 LS is designed to provide total control for small to medium size generators in multiple unit applications.

There are three GCP Series 20 LS products available for applications with multiple gensets ranging from open transition (Automatic Transfer Switch, ATS) to continuous utility parallel.

The GCP-20 LS is designed for applications with multiple stand-by gensets. The automatic power transfer functions include Open- and Closed transition. The GCP 20 LS has two circuit breaker logic.

The GCP-21 LS is designed for applications with multiple gensets continuous parallel with the mains. The GCP 21 LS has control logic for one circuit breaker.

The GCP-22 LS adds a second CB logic to the functionality of the GCP 21 LS. The added 2<sup>nd</sup> CB logic enables automated power transfers like ATS (open transition), No-Break transfer (closed transition) and soft power transfer.

### DESCRIPTION

The GCP series 20 LS features & functions include:

#### Engine Control

- Automatic start / stop logic for gas and diesel engines.
- Manual start / stop
- Engine Pre-glow or purge control
- Battery voltage monitoring
- Speed monitoring with over speed protection

#### Mains Failure Recognition

- 3 phase mains Over-/Under voltage monitoring
- 2 phase Over-/Under frequency monitoring
- Phase shift monitoring (GCP 21&22)

#### Generator Protective Features

- Generator Over/Under Voltage relay (27,59)
- Generator Over/Under frequency (81)
- Reverse power (32) / GCP 21&22
- Generator load Imbalance (46)
- Generator over-current (50/51)
- Generator overload (32)

#### GCP 20 LS

- Stand-by operation
- AMF control logic
- Two CB logic
- Automated power transfers
  - ATS
  - No Break

#### GCP 21 LS

- Utility parallel operation
- One CB logic
- Soft loading / unloading

#### GCP 22 LS

- Utility parallel operation
- Two CB logic
- Automated power transfers
  - ATS
  - No break
  - Soft power transfer
- AMF control logic

- Load sharing between up to 8 units
- Automatic sequencing between gensets
- Applications ranging from closed transition power transfer to Continuous Utility parallel with 2 CB logic
- Automatic mains failure recognition
- Automatic start / Stop Control
- Black bus synchronization
- Engine and generator monitoring, protection & control
- Load management – Automatic base load / peak shaving, import-export control.
- Counter – kWh, Operating hours, number of starts

## kW Load Monitoring & Control

- Isochronous kW Load Sharing up to 8 units
- Automatic sequencing of multiple gensets
- Utility kW monitoring for import-export control or automated base load / peak shaving
- Adjustable load/unload ramp rates
- Soft Utility Transfer Function
- Speed control bias signals available as:
  - Discrete raise/lower outputs
  - +/- 3VDC (option Qf)

## kVAR Monitoring & Control

- VAR sharing up to 8 units
- Power factor control when parallel with utility
- AVR bias signals available as :
  - Discrete raise/lower outputs
  - +/- 5VDC (option Qu)

## Synchronization

- Selectable contactor or breaker output
- Selectable synchronization logic
- Black bus synchronization of GCB and MCB
- Rapid reclosing relay function (switch ON the MCB to black bus after the mains returns)

## Communications

- PC interface for configuring, calibrating, trending
- Remote configuration, monitoring and control with the use of a GW4 gateway
- Available interfaces & protocols using a GW 4
  - RS 232, 422, 485
  - Modbus RTU
  - Profibus DP
  - CAN
  - Modem

## PART NUMBERS AND OPTION PACKAGES

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### Stand-by Control with logic for 2 circuit breakers

5448- GCP-20 45 LSX Options Sf, W, O

### Single unit parallel with Control logic for 1 circuit breakers

5448- GCP-21 45 LSX Options Sf, Qf, T4, W, O

5448- GCP-21 45 LS Options Sf, W, O

### Single unit parallel with Control logic for 2 circuit breakers

5448- GCP-22 45 LSX Options Sf, Qf, T4, W, O

5448- GCP-22 45 LS Options Sf, W, O

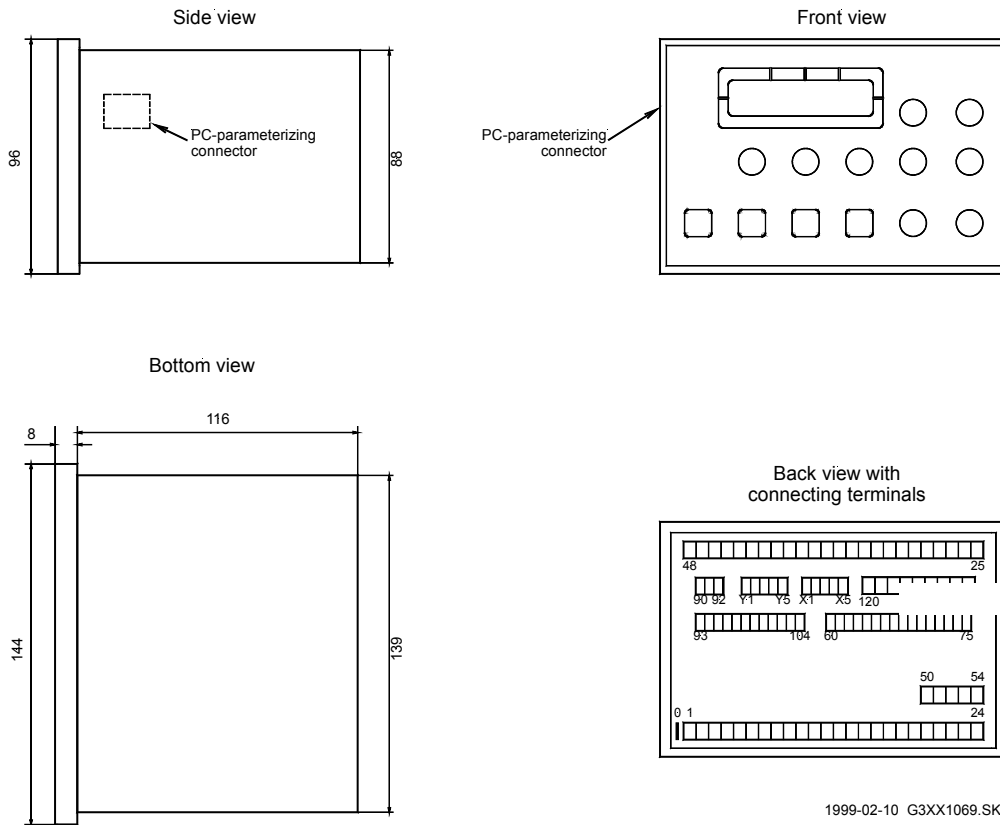
## OPTION DESCRIPTIONS

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### Option Description

Sf	Remote monitoring / control / configuration
Qf	Bias signal to speed control (+/- 3 VDC — Check for availability on 5 VDC/500Hz PWM)
T4	Analog inputs: 2 x 4–20 mA; 2 x VDO sensor (1x 0–180 Ohm, 0–10bar; plus 1x 0–380 Ohm, 40–120°C)
W	Load sharing of active power (kW) up to eight generator sets
O	Load sharing of reactive power (kVAR) up to eight generator sets

# DIMENSIONS



1999-02-10 G3XX1069.SKD

# SPECIFICATIONS

Measuring voltage ..... 400 Vac  
 Measuring current ..... 5A  
 Measuring frequency ..... 40-70 Hz  
 Accuracy ..... Class 1  
 Power supply ..... 9.5-32 Vdc  
 ..... nominal consumption max. 15 W  
 Ambient Temperature ..... -20 — 70°C  
 Ambient humidity ..... 95%, not condensing

**Measuring inputs voltage** ..... resistance 0.1%  
 Voltage carrying capacity ..... 2.0 x Un  
 Linear measuring range up to ..... 1.3 x Un  
 Input resistance ..... 100 V: 0.21 MΩ  
 Max. power consumption per path ..... 0.15 W

**Measuring inputs current** ... consumption <0.15 VA  
 Current carrying capacity ..... I<sub>gen</sub> = 3.0 x I<sub>n</sub>,  
 ..... I<sub>mains</sub> = 1.5 x I<sub>n</sub>  
 Rated short-time current (1s) ..... 10.0 x I<sub>n</sub>

**Analog Inputs** ..... freely scalable, resolution 10 bit  
 Potentiometer ..... 100-200 Ω  
 Input 0-20 mA, load ..... 150 Ω  
**VDO sensor** ..... 0-180Ωhm, 0-380 Ωhm

**Protection type** ..... IP 21, front IP 54

**Weight (depending upon model)** ..... approx. 1000 g

**Analog Outputs** ..... freely scalable for actual value output, metallically separated, insulation voltage 3000 V<sub>eff</sub>  
 Output 0/4—20 mA, max. load ..... 500Ω  
 Output +/- 5VDC, internal resistance ..... 10 kΩhm

**Digital Inputs** ..... metallically separated  
 Input range ..... 4-40 Vdc  
 Input resistance ..... ca. 6.8 kΩ

**Disturbance test (CE)** tested according to applicable EN guidelines, CE marked.

**Potential-free outputs** ..... metallically separated  
 Contact material ..... AgCdO  
 Electric life cycle (ohmic load) min. 100,000 switching cycles at 2 A/250 Vac  
 Load ..... max. 2 A at 250 Vac or 24 Vdc  
 Max. switching voltage ..... 250 Vac  
 Switching capacity (24 Vdc) ..... 45 W

**Housing** ..... type APRANORM DIN 43 700  
 Dimensions ..... 144 x 144 x 118 mm  
 Front cutout ..... 138 x 136 mm  
 Connection ..... screw terminals 1.5 mm<sup>2</sup> or 2.5 mm<sup>2</sup>  
 ..... (depending upon terminal connector)  
**Front foil** ..... insulated surface

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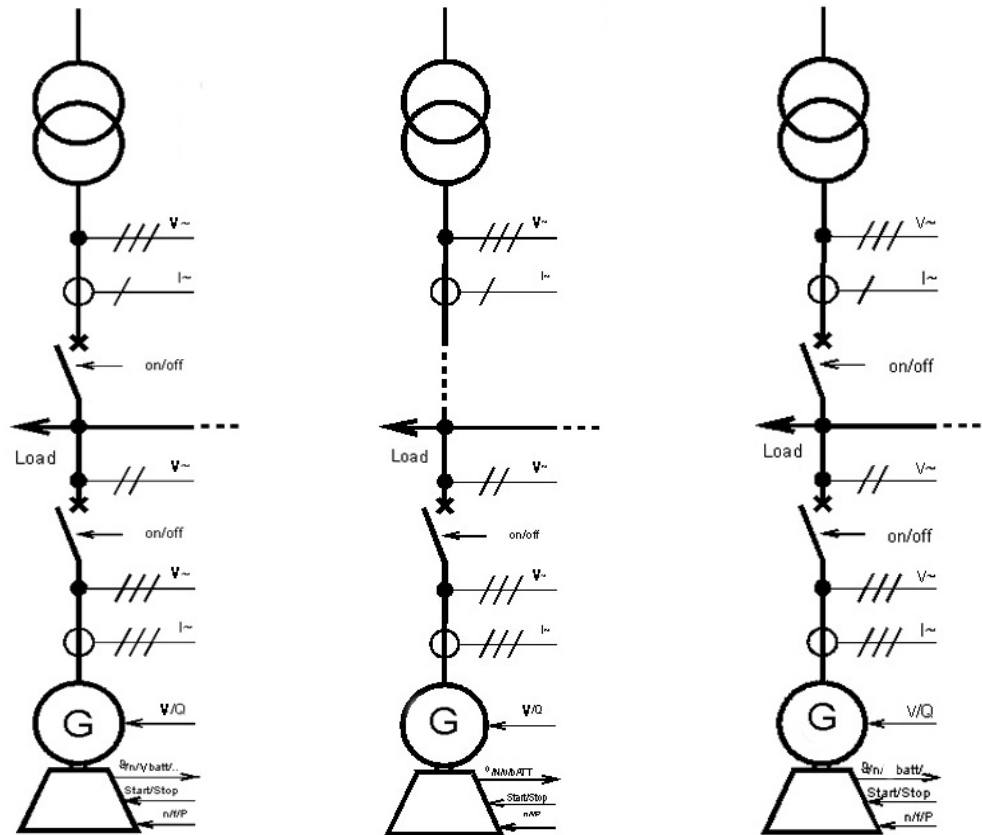
## TYPICAL APPLICATIONS

Applications that require load sharing (KW & KVAR) between up to eight gensets.

Remote monitoring, control and configuration of multiple gensets applications can be achieved with the use of a GW 4 gateway. The GW 4 gateway converts the CAN signal to a range of industry communication protocols.

Available GW 4 gateways

Woodward P/N	Name	Description
5448-895	GW4 - 232 MOD	Gateway from CAN to RS 232 Modbus
5448-910	GW4 - 232 LDP	Gateway from CAN to RS 232 LeoPC
5448-901	GW4 - 485 MOD	Gateway from CAN to RS 485 Modbus
5448-902	GW4 - PRO	Gateway from CAN to Profibus
5448-903	GW4 - MDM	Gateway from CAN to Modem



GCP 20 LS  
 1..8 gensets

GCP 21 LS  
 1..8 gensets

GCP 22 LS  
 1..8 gensets

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