



# GC 500<sup>Plus</sup> GC 500<sup>Mains</sup>

## Gen-set controller for synchro/parallel applications

- Comprehensive gen-set controller for single and multiple synchro/parallel applications working for production or emergency plants
  - GC500 is available in two versions:
    - GC500<sup>Plus</sup> is particularly recommended for those plants comprising several gensets working in synchro/parallel in island mode (it is able to manage up to 16 gensets connected on the same bus), or in case of a single production gen-set working in synchro/parallel with the mains;
    - GC500<sup>Mains</sup> is recommended for those plants where the management of both gen-set and mains circuit breakers is required.
  - Internal Load sharing, Synchronizer (via CAN or PWM) and VAR regulation for Mains applications
  - PWM (500Hz) direct interface with CATERPILLAR, PERKINS and gensets with similar regulation system
  - Mains and Gen-set circuit breaker management. With GC500<sup>Mains</sup> there is a proper MCB push button available
  - J1939 and MTU MDEC CAN interface and Interface with traditional sensors engines
  - True RMS readings on generator and mains voltages and currents with additional current measurement for neutral or ground fault protection (51N)
  - Active, Reactive and Apparent power measurement
  - Frequency and power measurement on Mains input
  - 18+3 fully programmable digital Inputs
  - 16 digital Outputs + 2 Fixed
  - N.2 Serial ports MODBUS RTU
  - Remote monitoring systems
- **Great performances**
  - **Several communication ports on board**
  - **RI.NA. version for marine applications**
  - **User-friendly and intuitive**
    - **Italian design**



## General info

**GC500 is a comprehensive genset controller for synchro/parallel applications.**

It is available in two versions: **GC500<sup>Plus</sup>**, particularly suggested for managing multiple gensets working in synchro/parallel and in island mode or for single and production genset working in synchro/parallel with the mains, and **GC500<sup>Mains</sup>**, useful when the management of both genset and mains circuit breakers is required (e.g. in case of a single genset with the back synchro requirement).

Both versions are able to manage the synchronization up to **16 gensets** connected on the same bus.

**GC500<sup>Plus</sup>** and **GC500<sup>Mains</sup>** are designed to allow an easy installation, thanks to the **internal Load Sharing, Synchronizer** (via CAN or PWM) and **VAR regulation**.

**GC500<sup>Plus</sup>** and **GC500<sup>Mains</sup>** have a direct interface via **CAN J1939** with a wide range of electronic engines (Volvo Penta, Scania, Perkins, MTU, Deutz, Cummins, John Deere, Caterpillar and others) and they can be used also with standard and traditional engines, whose measurements are carried out by the embedded analogue sensors.

Using the **embedded PWM output (500Hz)** it is possible to connect directly with Caterpillar or Perkins engines, which are not equipped with the THROTTLE module for the speed adjustment.

**GC500<sup>Plus</sup>** and **GC500<sup>Mains</sup>** can be used with several SICES controllers like GC400, DST4602 and DST4601/PX.

In case of multiple gensets in parallel with the mains with a back synchro requirement, **GC500<sup>Plus</sup>** can be interfaced with the common parallel management controller MC100. In that way, any voltage lack is avoided.

The adjustable parameters of the device allow the use of this controller for standard and customized tasks. The parameters are programmed using the **free software tool (BoardPrg)**, which can be downloaded from Sices website, or directly using the keyboard of **GC500<sup>Plus</sup>** and **GC500<sup>Mains</sup>**.

The **graphic display** is a user-friendly human interface useful for an immediate visualization of measures and alarms coming from the genset.

**Events and DTC logs** can be accessed from the front panel and read on the display.

**GC500<sup>Plus</sup>** and **GC500<sup>Mains</sup>** support **several communication devices/tools** for the local or remote control, using **Sices Supervisor, SI.MO.NE.** or an own supervision system.

Controller GC500 with **R.I.N.A. naval certification** is also available

## Measures

### Mains Voltages:

L1-L2, L2-L3, L3-L1 True RMS measure  
Lx-N max. voltage < 300Vac cat. IV

### Generator Voltages:

L1-L2, L2-L3, L3-L1, True RMS measure  
Lx-N max. voltage < 300Vac cat. IV

### Generator Currents:

L1, L2, L3, N True RMS measure

Nominal max. current: /5A and 1A

Overload measurable current: 4x 5Aac (sinusoidal, max. 3 s)

(\*) Neutral generator current as alternative to ground fault protection or to be used for measure mains power.

### Battery Voltmeter:

Resolution = 0.1V

### Oil Pressure Gauge:

VDO 0-10 Bar, VDO 0-5 Bar, Veglia 0-8 Bar or Settable curve based on sensors available

### Coolant Temperature sensors:

VDO, Veglia, BERU or Settable curve based on sensors available

### Fuel Level:

VDO, Veglia, Generic max. 380 ohm or Settable curve based on sensors available

### Engine revolution counter:

By W. Programmable frequency/revolution ratio

Same Input can be used for pick-up signal

### Additional measures available by J1939 bus.

**Linear Synchronoscope for synchronizing operations.**

## Computed Measures

Active power

Reactive power

Apparent power

Power factor (Cosφ): Total and phase by phase

Active and reactive energy counter

Hour counter

Hour counter for maintenance/rental

Start Counter

## Engine Protections

Overspeed (12)

Coolant temperature by ON/OFF and by analogue (warning and block)

Oil pressure by ON/OFF and by analogue (warning and block),

Fuel level ON/OFF by ON/OFF and by analogue (warning and block)

Belt break

Maximum power

Overcrank and start failure

## Generator Protections

Underfrequency (81U)

Overfrequency (81O)

Undervoltage (27)

Overvoltage (59)

Power direction (32)

Loss of excitation (Reverse reactive 32RQ)

Time dependent overcurrent (51)

Instantaneous overcurrent (50)

Synchro-check (25)

Phase sequence (47)

Current and Voltage unbalance (46/47)

Ground Fault Protection (51N or 51G) as alternative to Neutral measurement

Phase overcurrent with voltage restraint/control (51V)

## Mains Protections

Underfrequency (81U)  
Overfrequency (81O)  
Undervoltage (27)  
Overvoltage (59)  
Rate of change of frequency (df/dt, RoCoF, 81R)  
Vector surge/jump

## Inputs, outputs and aux. functions

- N. 18 Programmable digital Inputs
- N. 3 Analogue Inputs, if not used, can be used as not isolated digital Inputs
- N. 2 Analogue Inputs (0...5V - 0...10V)
- N. 1 Analogue isolated voltage Output (potentiometer adjustable from  $\pm 1V$  to  $\pm 10V$  DC) for SPEED GOVERNOR
- N. 1 Analogue isolated voltage Output (potentiometer adjustable from  $\pm 1V$  to  $\pm 10V$  DC) for AVR
- N. 1 Relay (3A) fuel solenoid
- N. 3 Relay (3A) programmable Outputs
- N. 2 Relay (1A) programmable Outputs
- N. 2 SPDT (10A) relays for power changeover management
- N. 8 Programmable Outputs (280 mA/36V@50°C)
- N. 2 Micro-Relay (280 mA negative Output) programmable Outputs
- N. 2 PWM analogue Outputs spare
- N. 16 Additional virtual and digital Inputs with AND/OR logics
- N. 8 Additional virtual and analogue Inputs with AND/OR logics

### As option:

- N. 16 Additional digital and programmable Inputs and N. 16 additional digital and programmable Outputs by means of DITEL module.
- N. 10 Additional analogue and programmable Inputs for reading PT100 (DIGRIN), thermoresistance (DITHERM) or signals 0...10 - 0...20mA (DIVIT).
- N. 10 Additional analogue Inputs based on CANBUS J1939 list.
- N. 4 Additional analogue and programmable Outputs by means of the DANOUT module.

## Communication

- N. 1 RS232 Serial port Modbus RTU
- N. 1 Additional RS232 or RS485 serial port
- GSM and PSTN modem management
- CANJ1939 Interface
- Sices Supervisor

### As option:

- Converter for RS232/485 Modbus RTU
- REWIND - GPRS/GSM/GPS Device
- DANCE - Ethernet Interface Modbus TCP/IP

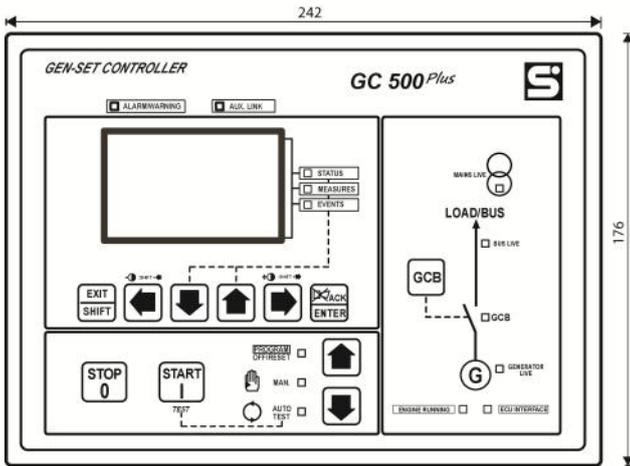
## Embedded functions

- Internal active and reactive Load-sharing
- Power regulation
- Power factor regulation
- Synchronization
- Load Management
- CAN interface for ECU interface (J1939 and MTU MDEC)
- Insulated CAN interface for PMCBUS application (LOAD- SHARING and parallel management)
- Programmable output for speed governor PWM - 500Hz
- UP/DOWN digital commands for speed governor and AVR
- Up to 16 gensets connected together
- Engine diagnostic code
- Periodical test
- Real Time Clock
- Fuel pump management
- Pre-glow and coolant heater management
- Remote start and stop
- Embedded alarm horn
- Engine speed measurement by pick-up or W
- **Multilingual device.** The languages available are: English, Italian, French, Russian, Spanish and Portuguese.

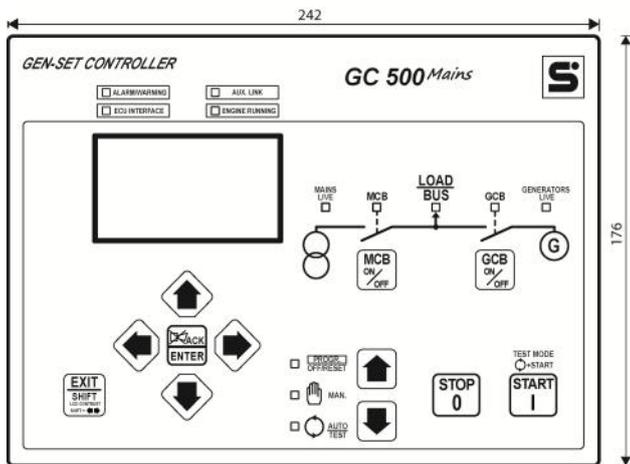
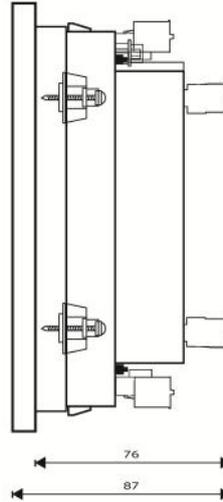
## Additional technical data

Supply voltage: 7...32 Vdc  
Power consumption: typical less than 2W (Auto mode, Stand-by, AMF active, LCD Lamp Saving active)  
Nominal Gen-Set frequency: 50 or 60 Hz  
LCD: transfective with LED backlight.  
Operating temperature: -25 °C to 70 °C  
Protection degree: IP65 (gasket included)  
Weight: 1100g  
Overall dimension: 244 (W) x 178 (H) x 85 (D) mm  
Panel cut-out: 218 (W) x 159 (H) mm  
Graphic display: 70 x 38mm - 128 x 64 pixel  
Specific function for French market EJP / EJP-T  
EMC: conform to EN61326-1  
Safety: built in conformity to EN61010-1

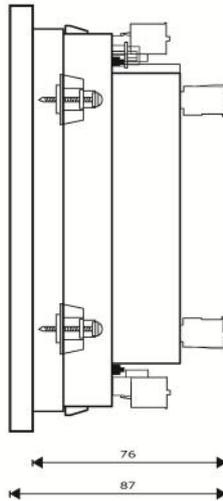
*A tropicalized version for harsh environment is available on demand.*



Panel cutout: 218x159 (LxH)



Panel cutout: 218x159 (LxH)



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