

GENSYS 2.0 MARINE



All-in-one paralleling unit for marine applications : PMS

- Compact «All-in-one» module
- 4 isolated serial ports: RS485, 2 CAN bus, Ethernet + SD card reader
- I/O flexibility
- Multi-function graphic display
- Internal logic sequences, programmable by equations
- Predefined sequences dedicated to marine applications
- Fully compatible with all speed governors and AVRs
- J1939 communications with electronic engines
- Marine approval: DNV



The GENSYS 2.0 MARINE is a control unit designed for marine generator switchboards panels.

This Power Management System unit combines all necessary functions:

- Engine start/stop and protections
- Alternator control and protections
- Mechanical parameters display
- Electrical parameters display
- Genset synchronization
- Load sharing and kW control
- Load sharing and kVAR control
- Breaker control
- Synchronization with bus bar
- kW and kVAR Load/ Unload Management
- Tie breaker control
- Non essential
- Modbus TCP
- Load sharing redundancy
- Heavy consumer fonction

GENSYS 2.0 MARINE is configurable via its front panel or via a PC with CRE Config software (cf p64).

PROGRAMMING BY EQUATIONS

The GENSYS 2.0 MARINE controller is a real PLC unit where equations and sequences can be programmed directly by the user with a Easy PLC software (cf p 66) or a simple text editor software.

INPUTS / OUTPUTS WITH NO LIMIT

The number of inputs/outputs that can be added is one of the most important on the market. Extension modules (DIN rail mounting) can be added on the standard CANopen bus. This extends the inputs/outputs up to 128 digital inputs, 64 digital outputs, 44 analog inputs and 8 analog outputs.

MINIMUM OPTIONS

GENSYS 2.0 MARINE is offered full features with a minimum of options to fit all types of application without expensive add-on packages. The unit is recommended for all types of marine projects, from 1 to 32 generators.

INTER-UNIT ISOLATED CAN BUS

The GENSYS 2.0 MARINE features an isolated CAN bus dedicated to inter-module communication (dead busbar management, static paralleling, kW and kVAR load sharing...). CAN bus technology provides high reliability communication while maintaining low wiring cost and complexity.

HEAVY CONSUMER MANAGEMENT AND NON ESSENTIAL LOAD TRIPPING

These functions are used in Marine applications such as using a crane in a harbour, manoeuvring a ship in/out of harbour using bow thrusters, etc.

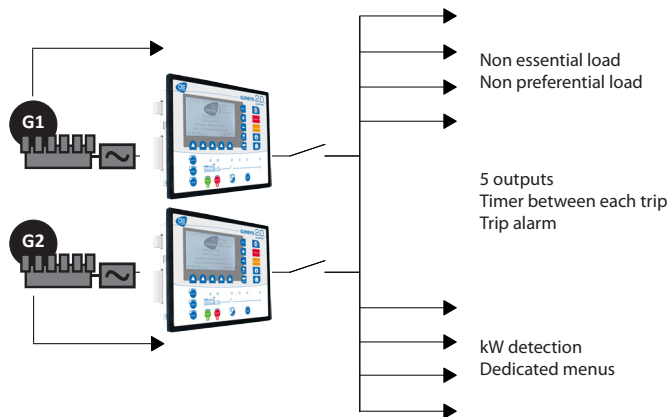
Non essential load tripping

If the generator reaches the overload or under frequency threshold, the GENSYS 2.0 MARINE triggers outputs to trip non essential loads.

Heavy consumer management

Some parameters must be checked by the GENSYS 2.0 MARINE units before accepting heavy consumer load:

- If the Power Plant can accept the load, each GENSYS 2.0 MARINE accepts load.
- If the Power Plant cannot accept the load, another engine is started.
- Analysis of available kW, number of generators on Busbar, or both.



APPLICATIONS

- Synchronization and power management module (without engine control).
- 1 generator in parallel with shore: Base load or Peak shaving.
- Gensets in parallel and change over with shore.
- Gensets in parallel and paralleled with shore for load transfer.
- Unbalance power management
- Uneven load sharing protection

CRE TECHNOLOGY SERVICES

Like every CRE Technology product, the unit also benefits from our technical support. CRE Technology and their distributors can also provide pre-programmed GENSYS 2.0 MARINE according to customer requirements.

The company offers specific trainings to control the large GENSYS 2.0 MARINE applications and program the module.



GENSYS 2.0 MARINE



FEATURES

Control and management

- Manual and automatic engine control.
- J1939 compatibility (Cummins, Volvo, Scania, MTU, CAT...)
- Automatic start/stop control depending on load demand.
- Dead busbar management.
- Isochronous or droop kW load sharing control (up to 32 generators via CAN bus port,)
- Constant voltage or droop kVAR load sharing control (via CAN bus serial port, up to 32 generators)
- Shore paralleling (1 generator).
- Power factor control when paralleling with shore.
- kW control (base load or peak shaving) when paralleling with shore

Protections

- Generator electrical protections: <F, >F, <U, >U, >I, >In, >P, <P, <-P, >Q, <Q, <-Q
- Phase sequence protection, phase shift compensation.

Synchronization

- Manual and automatic frequency and phase synchronization (differential frequency meter + synchroscope available on screen).
- Manual and automatic voltage synchronization (differential voltmeter available on screen).

Information display

- Engine parameters display: oil pressure, water temp, speed, hours run meter....
- Generator electrical parameters display:
- Phase-phase voltage (3 phase RMS)
- Phase-neutral voltage (3 phase RMS)
- Current (3 phase RMS)

- Frequency
- Active power (3 phase + total)
- Reactive power (3 phase + total)
- Power factor (3 phase + total)
- Active power energy (kWh)
- Reactive power energy (kVARh)
- Shore electrical parameters display:
- Phase-phase voltage (3 phase RMS)
- Frequency
- Import active power energy (kWh)
- Import reactive power energy (kVARh)

Alarms and events logging

- The last 50 alarms and last 50 faults are recorded in non volatile memory.
- User selectable data logging.

Other

- "Watchdog" digital output for microprocessor life signal. Ask CRE sales team

CHARACTERISTICS

Current, voltage and frequency

- 8 to 40V_{DC} power supply input: 750mA at 12V_{DC}, 400mA at 24V_{DC}.
- AC voltage inputs: 100 to 480V_{AC}. Neutral terminal does not need to be connected.
- AC current inputs: 0 to 5A, 1VA. Each phase is isolated from the others.
- AC current overload: 15A during 10s.
- Frequency measurement: 45 to 70 Hz – 15V_{AC} minimum between phase and neutral.
- Voltage control signal: AVR is controlled either by a +/-10V_{DC} output (adjustable span and offset) or by voltage+/voltage- contacts.

Environment

- Operating temperature: -20 to +70°C
- Storage temperature: -30 to +80°C
- Humidity: 5 to 95%. Tropic-proof circuits for normal operation in humid conditions.
- IP65: front panel / IP20: rear panel

Inputs, outputs

- Digital inputs: NO or NC to ground.
- Emergency stop input: Norm. closed 24V.
- Relay outputs (crank and fuel): 5A/24V is provided through the emergency push button.
- Relay outputs (breakers): 5A, 230V_{AC} max. NO + NC available.
- Transistor outputs: 350mA, over-current protected.
- Analog inputs (oil pressure and water temp): 0 to 400 Ω. Calibration is configurable.
- Analog inputs (spare 1 and spare 2): 0 to 10kΩ.
- Speed and frequency control, either by a +/-10V_{DC} output with adjustable span and offset or by speed+/speed- contacts.
- Magnetic pick up input: 100 to 10.000Hz, 2V_{AC} minimum.

Compatibility

- PWM output for CAT and Perkins engines 500Hz
- Fully compatible with all speed governors and AVRs
- Pulse output to control speed and AVRs

Ports

- Isolated communication ports are available:
 - RS485 for Modbus RTU (read and write)/ Integrated 120Ω termination resistors selected by micro-switch.
 - CAN bus for inter-GENSYS communication: Integrated 120Ω termination resistors selected by micro-switch

- CAN bus dedicated to options J1939,2 CANopen I/O extensions:
120 Ω resistors selected by micro-switch
- Ethernet: PC communication/ Modbus TCP
- SD card reader

Size and weight

- Size: 248x197x57mm (9.76x7.76x2.24in)
- Panel cut out: 177x228mm (6.97x8.98in)
- Weight: 1.9kg (4.2lb)

Certifications

- European Union Directives: EN 50081-2, EN 50082-2, 73/23EEC
- DNV Marine Certification

Other

- LCD characteristics: 114x64mm, 60 cd/m² backlight, 3 character sizes.
- Terminals: 2 piece connectors, 2,5mm².
- Languages: English, Spanish, French, Italian
- Other custom languages: downloadable on request

PART NUMBER
A53Z3
SOFTWARE
CRE Config / Easy PLC
CABLE
A53W1

