



GENSYS

Complete generating set controller

- Compact module "All in one"
- Fully compatible with all speed governors and AVR's
- 4 serial ports: RS232, 485, Canbus
- Multi-functions large graphic screen
- Internal logic sequence programmable by equations
- Embedded web site

The Gensys controller is configurable through its front panel or through a PC without a dedicated software (Gensys has an embedded web site and is exploitable with Internet explorer). It is password protected.

The Gensys is also a real PLC unit where equations and sequence could be programmed directly by the user. There is no limitation with inputs and outputs: Extension modules (DIN rail mounting) could be added on the Canbus port dedicated to options. The type of inputs outputs are:

- Digital inputs
- Digital outputs (relay or transistor)
- Analog inputs (PT100, Thermocouple, 0-10VDC, 4-20mA...)
- Analog outputs (0-10VDC, 0-20mA, 4-20mA)
- ...

The Gensys controller has an analog load sharing line to be compatible with Woodward and Barber Colman analog load sharing.

APPLICATIONS

- Synchronization and power management module (without engine control).
- 1 generator in change over mode with mains.
- 2 to 16 generators in parallel and change over with mains.
- 2 to 16 generators set in parallel and paralleled with mains for load transfer

AUTO STOP SEQUENCE

- Mains paralleling
- Connection to electronic engine governor (J1939 + MTU)
- No engine start/stop and control.
- No paralleling capability (emergency genset)



A40Z0

FUNCTIONS

- **Manual & automatic engine control.**
- **Engine parameters display:** Oil pressure, water temp, speed, hour run meter....
- **Generator electrical parameters display:**
 - Voltage phase-phase (3 phases RMS)
 - Voltage phase-neutral (3 phases RMS)
 - Current (3 phases RMS)
 - Frequency
 - Active power (3 phases + total)
 - Reactive power (3 phases + total)
 - Power factor (3 phases+ total)
 - Active power energy (KWh)
 - Reactive power energy (KVARh)
- **Mains electrical parameters display (option):**
 - Voltage phase-phase (1 phase)
 - Current (1 phase)
 - Frequency
 - Active power
 - Reactive power
 - Power factor
 - Import active power energy (KWh)
 - Import reactive power energy (KVARh)
- **Manual & automatic frequency & phase synchronization** (differential frequency meter + synchroscope available on screen).
- **Manual & automatic voltage synchronization** (differential voltmeter available on screen).
- **Isochronous KW load sharing control** (by Canbus serial port, up to 16 generators)
- **Iso-voltage KVAR load sharing control** (by Canbus serial port, up to 16 generators)
- **Power factor control** when paralleling with mains.
- **KW control** (base load or peak shaving) when paralleling with mains.
- **Automatic start/stop control** according with load demand.
- **Dead bus bar management.**
- **Generator electrical protections:** <F, >F, <U, >U, >I, >In, >P, <P, <-P, >Q, <Q, <-Q
- **Mains electrical protections (option) :** <F, >F, <U, >U, >P, <P, <-P, >Q, <Q, <-Q, vector jump, df/dt.
- **20 last alarms and 20 last shutdowns** are recorded with time and hour.

GENSYS



MARINE POWER MANAGEMENT

- BV & LR certification.
- Bow Thruster management
- Tie breaker control
- Heavy consumer
- Non essential load tripping



SPECIFICATIONS

- **Operating temperature:** -20 to +70°C
- **Storage temperature:** -30 to +70°C
- **Humidity:** 5 to 95%. Tropic-proof circuits for normal operation in humid conditions. Front panel IP54 protection. Back panel IP20 protection.
- **Altitude:** 2000m
- **Size:** 248x197x57mm (9.76x7.76x2.24in)
- **Panel cut out:** 177x228mm (6.97x8.98in)
- **Mounting:** Attitude at any position, but consideration of the display orientation should be considered.
- **Weight:** 1.9kg (4.2oz)
- **European Union Directive CE:** EN 50081-2, EN 50082-2, 73/23EEC
- **DC supply power voltage input:** 8 to 35VDC, 600mA at 12VDC & 300mA at 24VDC.
- **AC voltage inputs:** 100 to 480Vac, 100mA max. Neutral terminal could be or not could be connected.
- **AC current inputs:** 0 to 5A, 1VA. Each phase is isolated from the others.
- **AC current overload:** 15A during 10s.
- **Frequency measurement:** 35 to 65 Hz – 15Vac minimum between phase and neutral.
- **Magnetic pick up input:** 100 to 10.000Hz, 2Vac minimum.
- **Digital inputs:** NO or NC to ground.
- **Emergency stop input:** Norm. Closed 24V.
- **Relays outputs (crank & fuel):** 16A. The 24V is provided through the emergency push button.
- **Relays outputs (breakers):** 5A, 230VAC max. NO + NC available.
- **Transistors outputs:** 350mA, Over current protected.
- **Analogue inputs (oil press & water temp):** 0 to 400 Ohms. Calibration is configurable.
- **Analogue inputs (spare 1 & spare 2):** 0 to 10KOhms. Calibration is configurable.
- **Analogue input (+/-20mA or +/-10V):** 50 Ohms (current) or 20KOhms (voltage).
- **Analogue load sharing line:** 0 to 3VDC (5Vmax).
- **Speed control signal:** The speed and frequency control is made either by a +/-10VDC output with adjustable span and offset or by 2 contacts +speed/-speed.
- **Voltage control signal:** The voltage control (AVR) is made either by a +/-10VDC output with adjustable span and offset or by 2 contacts +voltage/-voltage.
- **Serial ports:** 4 serial ports are available.
 - RS232 for PC connection – Sub-D 9 pins female.
 - RS485 for Modbus RTU (read and write) – Sub-D 9 pins male.
 - Canbus for inter-Gensys connection – Sub-D 9 pins male.
 - Canbus for options – Sub-D 9 pins male.
- **LCD characteristics:** 114x64mm, back light 60 cd/m², 3 character sizes.
- **Terminals:** 2 pieces connectors, 2,5mm².
- **Languages:** English, Spanish, French, German

PROGRAMMING BY EQUATIONS

The Gensys controller allows the user to program equations without any software tool needed. The programming is written with a basic text editor software.

The logical and arithmetic operators available are:
AND, OR, XOR, ! (not), +, -, *, /, \$ (hexadecimal value with letter in capital).

The comparators operators available are:
EQ (equal), NE (not equal), GT (greater than), LT (lower than), GE (greater or equal), LE (lower or equal).

Example of equation bloc:

```
BLOC
TEST E2202 EQ 1 THEN
    TEST E2440 GT 600 THEN          E2020:=1
    ELSE INC E2440
    TEND
ELSE E2440:=0
TEND;
TEST E2069 OR E2205 EQ 1 THEN
E2020:=0 TEND
BEND
```

Note: The equations are executed every 100ms.

GENSYS WITH GCR & C2S

When more than 2 generators are paralleled with mains, a load commander (GPR) and a synchronizer (C2S) is used for voltage, frequency and phase synchronization with mains and power management (peak shaving or base load) with mains.

GPR Ref: A09T5 (100 VAC), A09T4 (230 VAC), A09T8 (400 VAC).

C2S Ref: A25W0.

GENSYS WITH BSM II

When more inputs/outputs are needed, a BSMII is used. It offers 16 configurable analogue inputs (0-1V, 0-10V, 4-20mA, Thermocouple K, PT100,...), 10 digital inputs and 6 digital outputs.

The BSMII also provide a 512Kbytes memory to record generators data.

BSMII Ref: A43Z0.

CABLES & CONNECTORS

The following cables and connectors are available:

- A40W0: GENSYS to PC cable - DB9/DB9 - 3m.
- A40W1: CAN© inter GENSYS cable for 2 generators - DB9/DB9 - 120 Ohms end resistor included on both side - 7m.
- A40W2: CAN© inter GENSYS cable for more than 2 generators or CanOpen© I/O modules - DB9/free wires - 120 Ohms end resistor included on DB9 side - 7m.
- A40W3: DB9/Terminals connector to be used with more than 2 generators for double connection (with screws).
- A40W4: Communication cable (RS485, CAN, RS232) - per meter.
- A40W5: DB9 end resistor connector.



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