GENSYS COMPACT PRIME is one controller of a complete range for energy sources and power plant management : generators, mains, PV/wind, batteries storage, tie breakers. This controller is dedicated for generators used in power plant applications requiring synchronizing, active and reactive load sharing and electrical/mechanical protections. It offers flexibility and time saving thanks to its simple wiring, and easy programming.

Hardware display

The controller is available in both switchboard panel mounted version with display, or core base mounted version and compatible with i4Gen touchscreen color display range.

Software

The controller is configurable from its front panel display, from i4Gen HMI, or through the free i4Gen Suite software.

Core base din rail mounted version

Switchboard mounted version with display

PART NUMBERS	DESCRIPTION
A56-PRIME-00	Switchboard mounted version with display
A56-PRIME-10	Core base mounted version
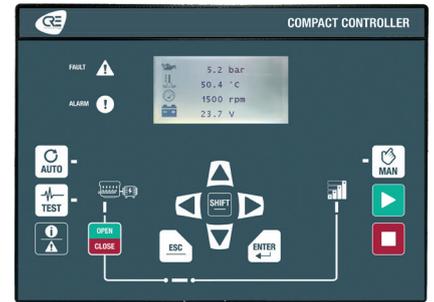
KEY FEATURES

Single line power plant overview
An interactive and adaptative single-line diagram is generated automatically from the configuration. It provides a global view of the power plant and the possibility to switch between controllers in one click.

Easy connection to controllers
Automatic detection of controllers on the Ethernet network for fast and easy connection.

Voltage and speed outputs automatic calibration
Consistancy and stability check and automatic adjustment of the voltage and speed setpoints and excursion thanks to EasyCalib feature.

J1939 ECU addresses automatic detection
Automatic detection of all J1939 devices on the same CANbus network.

Compatibility with microgrid controllers
Compability with HYBRID, BAT, MASTER 1B and BTB controllers of the COMPACT range to manage complete hybrid power plants.

Guided experience
- Built-in documentation in i4Gen
- Dynamic display of the mimic diagram and the control buttons.

Enchanced graphical display
Important information are displayed on easy-to-read graphical widgets: numerical values, bar graphs, gauges, curves, animated synchroscope....

User friendly equations programming
Easily program your own equations using the drag & drop Easyflex feature.

Remote access (optional)
- Supervise, configure and control your power plant from anywhere through a reliable and secured remote communication provided by Zoho Assist
- Receive E-mails from i4Gen when an event, an alarm or a fault is triggered.

On-board modbus TCP client and server for integration with other devices
- Client (master): create custom frames in reception or transmission to read or write datas
- Server (slave): allow other devices to read/write the controller registers (with 300 registers available for custom mapping).

Product redundancy
Each controller can be duplicated with a backup controller (master/slave principle). If the master fails, the slave automatically takes over.

Enhanced access security
Password management compliant with cybersecurity standards (complexity, expiration, etc.).

Automatic versions update
Automatic update of controller firmware and PC software versions.

OTHER FEATURES

Power control and management

- Datas shared between the controllers through CANbus for optimised control of the power plant: load sharing, clock synchronization, generator start/stop, sharing of electrical measures...
- Start/stop of the generator(s) according to load reserve power, PV/Wind reserve power or BESS state.
- Frequency/Voltage and active/reactive power control using various modes:
  - Configurable +/-10VDC analog outputs
  - Pulses outputs
  - J1939 (only for frequency)
- Optimized PID loop with exceptional performance for synchronization and active/reactive power control & Dynamic curves to make PID configuration easier.
- Synchronization management of frequency, phase, voltage and phase sequence (dynamic or static).
- Active/Reactive load sharing.
- Slave mode: for synchronization and load sharing management only.

- Generators base load control.
- Load shedding management to ensure that priority loads are supplied in case of mains failure.
- Automatic or manual control of circuit breakers with malfunction alarms management.
- Override mode (protections inhibition + dedicated hour meter) following NFE 37-312 certification.
- Management of complex power plants with multiple generators, grids, BESS, PV/wind systems, tie breakers (up to 40 of them in one power plant).

Enhanced ECU support through J1939

- Enhanced ECU support:
  - Automatic management of the standard frames
  - Possibility to create and configure up to 10 customised J1939 frames (reception and transmission)
  - Management of DTC and DPF/SCR frames (Tier 4 final and Stage 5 engines)
  - Sniffer/Spy feature to analyse CAN J1939 frames

Displayed information

- Alarms and events logging: Detailed history log with timestamps of the 500 last events, alarms and faults for easy and fast troubleshooting.
- Electrical measures supervision.
- Synchronization measures supervision.
- Engine mechanical measures supervision.
- Inputs/Outputs status.

Programming

- Scheduler: Periodic or one-off execution of specific functions and modes can be scheduled.
- Alternative parameters values configurable and switchable using digital inputs or through modbus TCP.

Options

- Compatibility with MTU MDEC engines.
- Phase offset for D/Y transformers.

CRE TECHNOLOGY - 130, allée Charles-Victor Naudin - Zone des Templiers - SOPHIA ANTIPOLIS - 06410 BIOT - FRANCE
Phone : + 33 (0)4 .92.38.86.82 - www.cretechnology.com - info@cretechnology.com
DOCUMENT INDEX: I2025

APPLICATION EXAMPLES

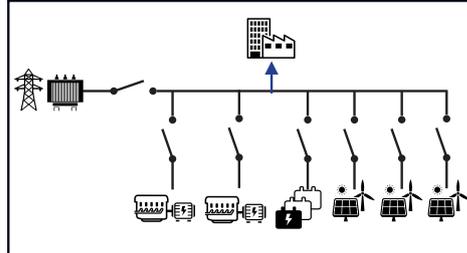### Standby gensets with paralleling mode (production or emergency)
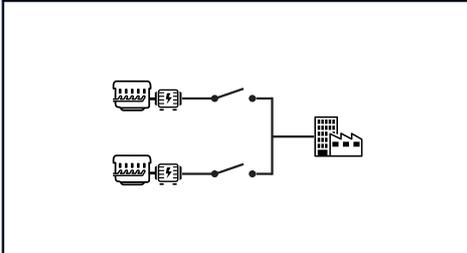
Features
- Start/Stop control
- Genset mechanical & electrical protections
- Breakers management
- Synchronization
- Load sharing

Products required
- 2 GENSYS COMPACT PRIME

Hybrid application with gensets, PV/wind systems and BESS

Features
- Start/Stop control
- Genset mechanical & electrical protections
- Breakers management
- Synchronization
- Generator load sharing
- Mains power management
- Load shedding
- Mains paralleling
- Communication ModBus & Spec
- Control PV/wind & battery inverter
- Control of the reactive power kVAR batteries & PV

Products required
- 2 GENSYS COMPACT PRIME
- 1 MASTER COMPACT 1B
- 3 HYBRID COMPACT + 1 BAT COMPACT

Multiple gensets paralleled with 2 mains breakers

Features
- Start/Stop control
- Genset mechanical & electrical protections
- Breakers management
- Synchronization
- Generator load sharing
- Mains paralleling and power management
- Load shedding

Products required
- 3 GENSYS COMPACT PRIME
- 1 MASTER COMPACT

H Configuration with bus Tie Breaker and 2 Mains Breakers
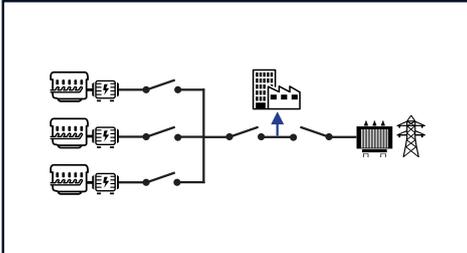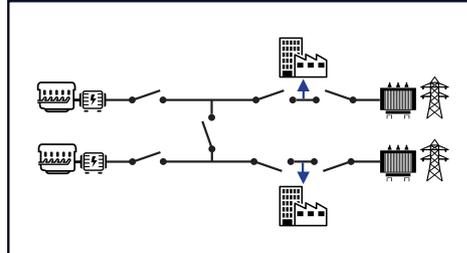

Features
- Start/Stop control
- Genset mechanical & electrical protections
- Breakers management
- Synchronization
- Generator load sharing
- Mains power management
- Load shedding
- Mains paralleling
- Bus & Tie breaker management

Products required
- 2 GENSYS COMPACT PRIME
- 2 MASTER COMPACT + 1 BTB COMPACT

WIRING DIAGRAM

Top connections:
8 — DIG IN
6 — DIG OUT
3 — ANA IN
1 — EMERG STOP
+/- 10V$_{DC}$ ISOLATED — ANA SPEED CONTROL
+/- 10V$_{DC}$ ISOLATED — ANA AVR CONTROL
1 x NO RELAY — SPARE RELAY
7-38V$_{DC}$ — DC POWER SUPPLY
CAN 1 PORT — CRE CAN bus
CAN 2 PORT — I/O EXTENSION (64 DI/64 DO/16 AI /J1939/MTU MDEC
ETHERNET PORT — PC CONNECTION MODBUS TCP REMOTE MONITORING

GENSYS COMPACT PRIME
Ref A56-PRIME
CE

Bottom connections:
PICKUP INPUT — 1
V GEN — 3PH +N
I GEN — 3PH 4 WIRES
GEN BREAKER CONTROL
I GROUND — 1PH 2 WIRES
V BUS — 3PH +N

GENSYS COMPACT PRIME

All-in-one synchronizing and paralleling controller

SPECIFICATIONS

ELECTRICAL SYSTEM

Electrical system	Compatible with 3 or 4 wires three-phase, or two-phase or single phase systems

DC POWER SUPPLY

Power supply range	7...38 VDC
Maximum voltage	45 VDC during 15mn
Current consumption (at 24 VDC)	130 mA + the sum of maximum consumption of each digital ouput

AC VOLTAGE MEASUREMENT

Generator measurement inputs	3ph + N (Neutral optional)
Bus measurement inputs	3ph + N (Neutral optional)
Measurement range	80...500VAC
Current consumption	100 mA max
Accuracy	1%
Frequency range	35...75 Hz, 15VAC minimum between phase and neutral

AC CURRENT MEASUREMENT

Generator measurement inputs	4 wires (3ph)
Earth measurement inputs	2 wires (1ph)
Measurement range	0...5A; 1VA
Overload	Overload 15A during 10s
Accuracy	0.5%

INPUTS

Digital inputs	9 : NO or NC to ground. Adjustable timer On and Off
Digital inputs expansion	64 : via CANopen
Analog inputs	3 : Resistive (0...500Ω) or 0...20mA (with external resistor). Could be used as digital input. Library of sensors available. Configuration curve with up to 31 points
Analog inputs expansion	16 : via CANopen (0-20mA, 0-10VDC, PT100, Thermocouple, ...)

OUTPUTS

Digital outputs	6 : NE or ND. 1.8A, over-current protected. Adjustable timer.
Digital outputs expansion	64 : via CANopen
Relay outputs (breaker control)	2 : 5A, 240VAC
Analog outputs	2 : +/-10VDC: isolated output with adjustable gain and offset. One is dedicated to speed governor, the other to AVR

MAGNETIC PICK-UP

Voltage input range	0.5...40VAC
Frequency input range	50Hz...10KHz

COMMUNICATION PORTS

CAN	2 isolated port: - CAN 1: CRE protocol for communication between all COMPACT controllers, I/O extensions (optional) - CAN 2: J1939, I/O extensions or MTU MDEC
Ethernet	Isolated port: PC communication/ModBus TCP

ENVIRONMENT

Operating temperature	-30...70°C (-22...158°F)
Storage temperature	-40...70°C (-40...158°F)
Humidity	95% non-condensing
Altitude	Up to 4000m for 480VAC. Up to 5000m for 400VAC
IP Front	IP65/NEMA rating 4 for HMI version IP20/NEMA rating 1 for core version
IP Rear	IP20/NEMA rating 1

DIRECTIVES

EMC Directive 2014/30/UE - EMC General Requirements EN 61326-1	Immunity according with EN 61000-6-2 and Emission according with EN 61000-6-4
Electrical Safety Directive 2014/35/UE	According with EN 60950-1
Vibrations and shocks	According with EN(IEC) 60068-2-6 and IEC 60068-2-27
Temperature	EN (IEC) 60068-2-30; EN (IEC) 60068-2-1; EN (IEC) 60068-2-2; EN 60068-2-78

DIMENSIONS - SWITCHBOARD MOUNTED VERSION WITH DISPLAY

Overall (W x H x D)	245 x 182 x 40mm (9.64 x 7.16 x 1.57in)
Panel cut out (W x H)	220 x 160mm (8.7 x 6.3in)

DIMENSIONS - CORE BASED MOUNTED VERSION

Overall (W x H x D)	260 x 157 x 44mm (10.24 x 6.18 x 1.73in) (depth with connectors)
Fixing dimensions (W x H)	238 x 129mm (9.37 x 5.08in) (4 screws)
Fixing hole	Ø5.24mm (0.21in)
Mounting	DIN rail

WEIGHT

Controller	0.7kg (1.54lb)

LCD DISPLAY CHARACTERISTICS

Size	40x70mm (1.50x2.75in)
Pixels	1024x512. Back light: 50cd/m² typical, configurable
Contrast	Configurable

LANGUAGES

Supported languages	English, French, Spanish in standard. Italian, Portuguese, Russian, German and other custom languages are available on request

GENSYS COMPACT PRIME

All-in-one synchronizing and paralleling controller

PROTECTIONS

GENERATOR ELECTRICAL PROTECTIONS

DESCRIPTION	ANSI CODE
Under frequency	81L
Over frequency	81H
Under voltage	27
Over voltage	59
Unbalance voltage	47
Over current	50
Over current IDMTL (Inverse Definite Minimum Time Lag)	51
Neutral over current	50N
Earth over current	51G
Unbalance current	46
Minimum active power	37P
Maximum active power	32P
Reverse active power	32RP
Minimum reactive power	37Q
Maximum reactive power	32Q
Reverse reactive power	32RQ

BUS ELECTRICAL PROTECTIONS

DESCRIPTION	ANSI CODE
Under frequency	81L
Over frequency	81H
Under voltage	27
Over voltage	59
Unbalance voltage	47

SYNCHRONIZATION PROTECTIONS

DESCRIPTION	ANSI CODE
Synch check	25
Phase sequence	47

RELATED PRODUCTS

CONTROLLERS

A56-MAST	MASTER COMPACT
A56-MAS1B	MASTER COMPACT 1B
A56-BTB	BTB COMPACT
A56-PV	HYBRID COMPACT
A56-BAT	BAT COMPACT

ADDITIONAL INPUTS/OUTPUTS

BK5150	CANopen bus coupler
KL9010	End connection terminal
KL1488	8 digital inputs - 0 VDC
KL1889	16 digital inputs - 0 VDC
KL2408	8 digital outputs - 24VDC 0.5A

ADDITIONAL INPUTS/OUTPUTS

KL2809	16 digital outputs - 24VDC 0.5A
KL3044	4 analog inputs (0-20mA)

REMOTE DISPLAYS

A60P0	RDM 1.0 alarm reporting module
A58Txx/A56Vxx	i4Gen Touchscreen color display range

BATTERY CHARGERS

BPXX	3A, 5A, 10A, 20A, 40A. 12VDC, 24VDC

ACCESSORIES

A58Ux	I4Gen Box - Remote monitoring and geolocation module