PV COMPACT

All-in-one photovoltaics inverters control

The **PV COMPACT** is one controller of a complete range for Energy sources and power plant management: Generators, main, Photovoltaic, Batteries storage, Tie breakers.

It controls photovoltaic inverters in grid-connected applications and/or one/several generators and/or batteries storage. The **PV COMPACT** offers flexibility and time saving thanks to its simple wiring and easy programming.

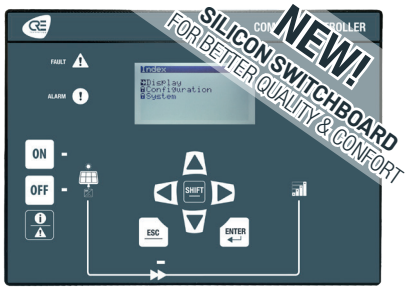
HARDWARE AND DISPLAY

The **PV COMPACT** 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 **PV COMPACT** is configurable from its front panel display, from **i4Gen** HMI, or through the free **i4Gen Suite** PC software.

CORE BASE DIN RAIL MOUNTED VERSION



SWITCHBOARD MOUNTED VERSION WITH DISPLAY

FEATURES

CONTROL AND MANAGEMENT

(DEPENDING ON THE PARAMETERS AVAILABLE IN THE INVERTER)

- ModBus TCP Sunspec « Plug & Play" communication with all the inverters on the market with the ability to create and configure additional custom read and write frames.
- Control of the max power KWc solar such a way as to keep a minimal power on the generator(s), while maintaining a fixed frequency (isochronous mode).
- Control of the reactive power KVAR solar: either by imposing a configurable fixed cosphi, or by sharing KVARs between solar energy and other sources, while maintaining a fixed tension (iso-tension mode).
- Manual and automatic control of the closing and opening of the PV generation relay. Immediate stop of the solar production in case of power return on the generator(s) (so as to keep the installation undervoltage).
- Start/stop of the generator(s) depending on the solar energy produced and the desired power reserve.
- Acquisition of the inverter's electrical parameters via ModBus TCP SUNSPEC or via traditional current/voltage inputs (optional).
- Non-essential load shedding management in case of overload or underfrequency.
- Simple, intuitive and free PC display and configuration software.
- Compatible and communicating with GENSYS COMPACT (generators), MASTER COMACT (network), BTB COMPACT (Tie-Breakers) and BAT COMPACT (battery inverters). Compatible with the i4Gen range of color touchscreen IHM for display and control of solar energy among all available energy sources.
- 10 configurable maintenance cycles (on energy meter or on number of calendar days).
- 3 passwords levels: user, technician, advanced technician.

DISPLAYED INFORMATION

(DEPENDING ON THE PARAMETERS AVAILABLE IN THE INVERTER)

- Photovoltaic inverter electrical parameters
  - Voltage (3 phases RMS, L-L and L-N)
  - Frequency
  - Current (3 phases RMS)
  - Active power (3 phases + total)
  - Reactive power (3 phases + total)
  - Power factor (3 phases + total)
  - Active energy (KWh)
  - Reactive energy (KVARh)
- Record of 500 events/defaults/alarms with timestamps. Displayed on controller screen and i4Gen with advanced filter
- Configurable event logger and info pages
- Values and production curves of the different energy sources displayed on the i4Gen

CONFIGURABLE EVENTS LOGGER

- Configurable list of parameters needed
- Configurable frequency record
- 1350 logged events with timestamps and real-time value available on non-volatile memory.

ELECTRICAL PROTECTION OF THE PV INVERTER

(DEPENDING ON THE PARAMETERS AVAILABLE IN THE INVERTER)

- <F, >F : ANSI Code 81L, 81H
- <U, >U : ANSI Code 27, 59
- >I, >>I, >In, >Ig : ANSI Code 50, 51, 50N, 51G
- <KW, >KW, -KW : ANSI Code 37P, 32P, 32RP
- <KVAR, >KVAR, -KVAR : ANSI Code 37Q, 32Q, 32RQ
- Unbalance I and V

PROGRAMTION FEATURES

- Alternative selection: up to 16 parameters values can be modified by triggering any digital input or Modbus TCP variable.
- Scheduler: specific functions or modes can be programmed on scheduled operation (cyclic or one-time).
- Easy Flex :
  - 50 lines of programming with logic and arithmetic operators, and execution conditions.
  - All the input/output and variables available.
  - **New:** Debug mode displaying in real time the status or value of all variables in the programming lines.
- Generic threshold management functions with hysteresis.
  - High and low set point from digital or analog input.
  - Up or down direction configurable.
- User variables
  - 100 user variables are available for programming
  - Each variable has its own label + unit + accuracy.

AUTOMATIC FIRMWARE UPDATE

When module is connected to **i4Gen Suite** software, you will automatically be proposed for a firmware update to the latest version if applicable.

MODBUS TCP SLAVE & MASTER COMMUNICATION PORT

In Slave application :

- All data are accessible by ModBus TCP locally or remotely (web, GPRS).
- Read and write functions + 300 free ModBus TCP addresses available for custom mapping.

In Master application :

- Reading PV inverter parameters
- Control of the PV inverter with SUNSPEC protocol
- Possibility to create and configure customized frames

REMOTE SUPERVISION WITH I4GEN (7, 10 OR 15 INCHES)

- Internet connection: Wan port or Wifi hotspot or 4G modem or Smartphone Access point.
- Visualization - configuration - programming - remote power plant control.
- Up to 10,000 power plants with a single Zoho Assist account. (Zoho Assist PC, MAC, Smartphone application).
- **New :** Monitoring and control of the complete power plant (generators, mains, photovoltaic, batteries storage,..) through a single line diagram generated automatically.
- 1 single i4Gen can monitor the entire power plant.
- Sending emails to events.

Part numbers:
A56-PV-10 Core base mounted version
A56-PV-00 Switchboard mounted version with display

RELATED PRODUCT AND CABLES

Controllers: A56-PRIME, A56-MAST, A56-MAST1, A56-BTB, A56-BAT
I4GEN Touchscreen color display range – Ref A56Vxx
Additional Input/Output – Ref BK5150 + KL1488 + KL2408…
PC Connection Ethernet cable – Ref A53W1
CANbus J1939/CRE/CANopen communication cable – Ref A40xx

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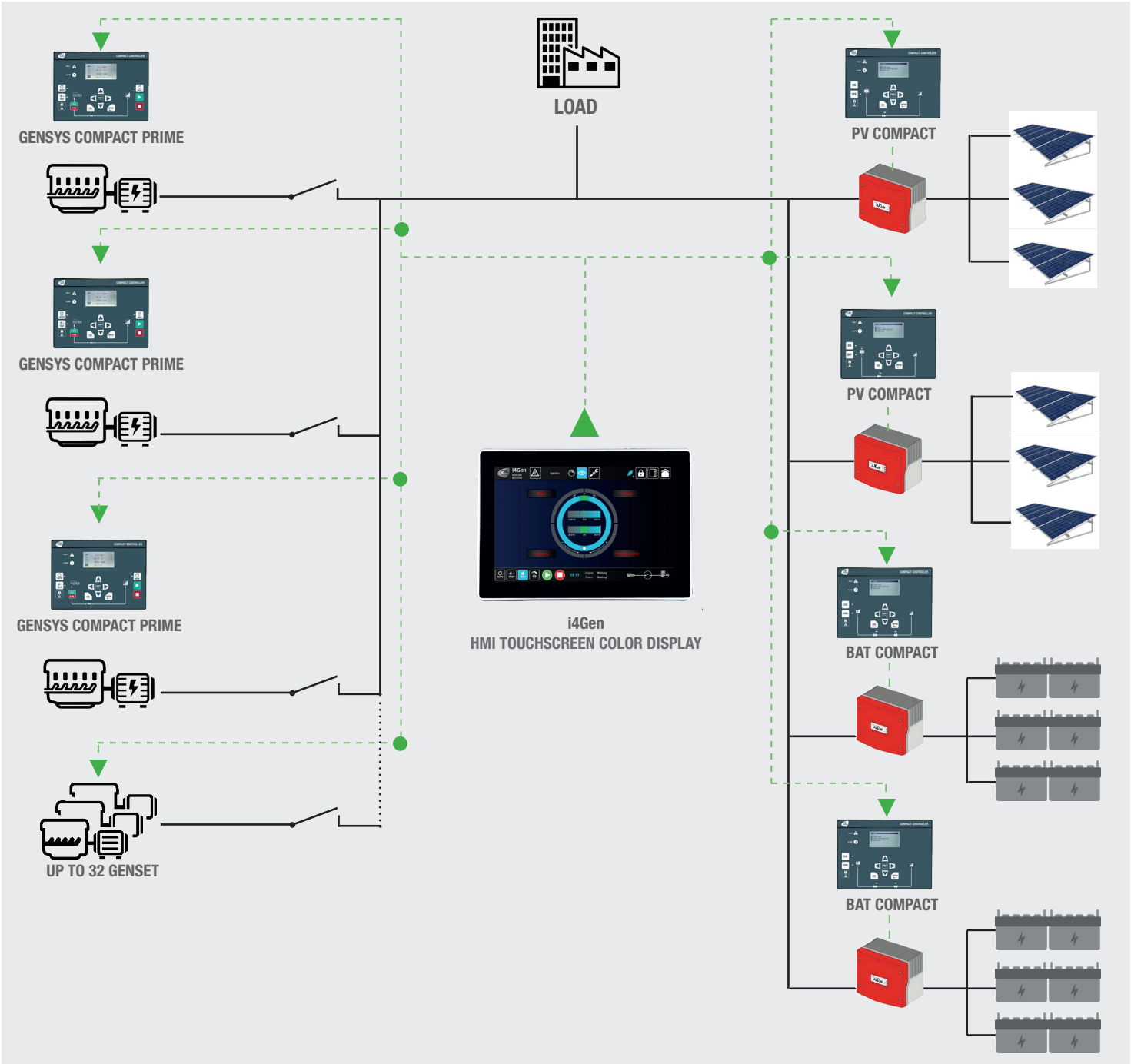
APPLICATIONS

- The **PV COMPACT** is suitable for stand-alone (off-grid) applications with generator(s) and/or battery storage, and for grid-connected applications, with the possibility of also having generator(s) and/or battery storage.
- The **PV COMPACT** controls PV inverters in “Grid Following” mode, meaning the inverters do not manage the control of the voltage and frequency which are imposed by the additional source (Generator or Grid or Batteries).
- The **PV COMPACT** can be combined with GENSYS COMPACT PRIME modules (up to 32) if there are one or more generators, with MASTER COMPACT or MASTER COMPACT 1B modules if there are one or more grids, with the BTB COMPACT modules if there are one or more tie-breakers and with BAT COMPACT modules if there are storage batteries.
- One **PV COMPACT** module is required per photovoltaic inverter when using multiple inverters, allowing the solar energy production of all operational inverters to be maintained in case of failure of one inverter.

In the case of grid coupling, the **PV COMPACT** will manage the amount of solar energy exported to the grid or imported from the grid according to the contract with the grid operator.



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SPECIFICATIONS

ELECTRICAL SYSTEM
Compatible with 3 or 4 wires three-phase, or two-phase or single-phase systems.

CURRENT, VOLTAGE AND FREQUENCY
- DC Power supply: 7...38VDC, Max voltage 45VDC during 15mn, current consumption at 24VDC = 130mA + the sum of maximum consumption of each logic output.

Optional:
- AC Voltage inputs: 80...500VAC. Consumption = 100mA max. Accuracy: 1%.
- AC Current inputs: 4 wires. 0...5A. 1VA. Overload 15A during 10s. Accuracy: 0,5%.
- AC Frequency measurement: 35...75 Hz; 15VAC minimum between phase and neutral.

INPUTS, OUTPUTS
- 9 x Digital inputs: NO or NC to ground. Adjustable timer On and Off.
- 32 x Digital inputs expansion via CANopen.
- 3 x Analog inputs: 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.
- 16 Analog inputs expansion via CANopen (0-20mA, 0-10VDC, PT100, Thermocouple).
- 6 x Digital outputs: NE or ND. 1.8A, over-current protected. Adjustable timer.
- 32 x Digital outputs expansion via CANopen.
- 2 x Relay outputs (breaker control): 5A, 240VAC.
- 2 x Analog outputs +/-10VDC with adjustable gain and offset

COMMUNICATION PORTS
3 isolated com ports are available:
- 1 CANbus: I/O extensions
- 1 CANbus: CRE protocol for communication between all Compact controllers.
- 1 Ethernet: PC communication/ModBus TCP SUNSPEC.

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 - IP20/NEMA rating 1 for core base version.
- IP Rear: IP20/NEMA rating 1.

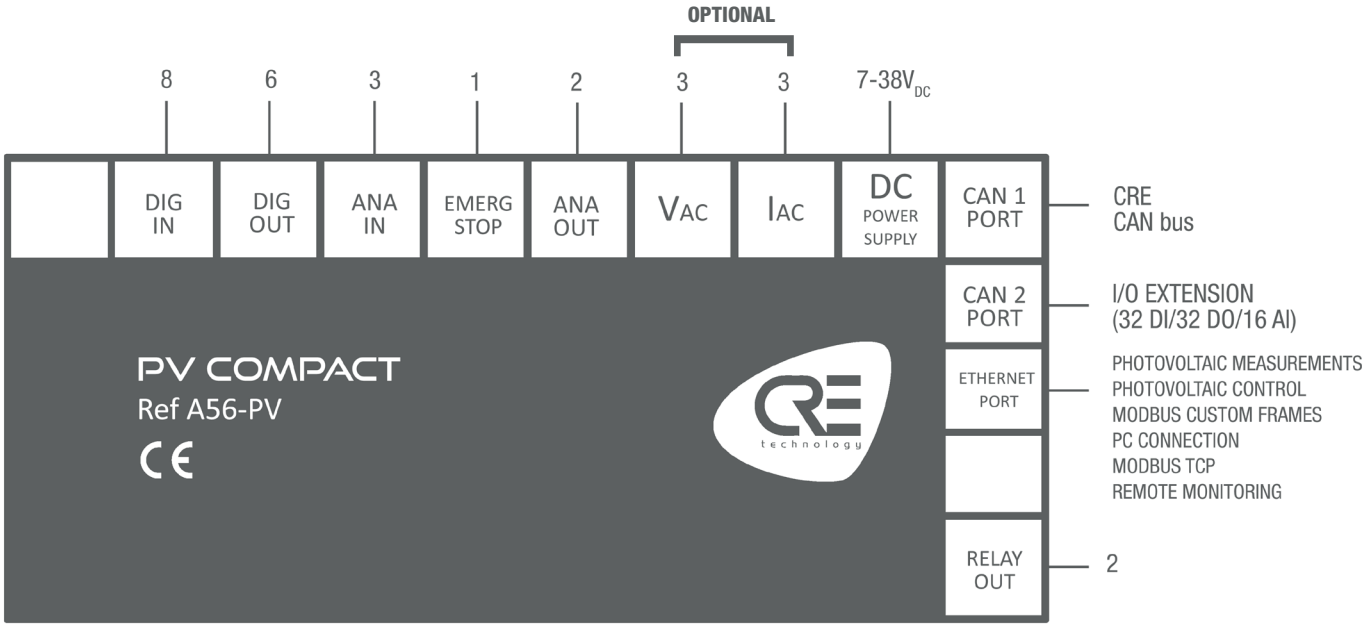
DIRECTIVES
- EMC Directive 2014/30/UE - EMC General Requirements EN 61326-1: Immunity according with EN 61000-6-2 and Emission according with EN 61000-6-4.
- Electrical Safety Directive 2014/35/UE: According with EN 60950-1.
- Vibrations and shocks: According with EN(IEC) 60068-2-6 and IEC 60068-2-27.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

SIZE AND WEIGHT
- Switchboard mounted version with display:
  - Dimensions: 245x182x40mm (9.64x7.16x1.57in).
  - Panel cut out: 220x160mm (8.7x6.3 in).
- Core base mounted version:
  - Dimensions: 260x157x44mm (10.24x6.18x1.73in) (depth with connectors).
  - Fixing dimensions (4 screws): 238x129mm (9.37x5.08in). Fixing hole: Ø5.24mm (0.21in).
  - Optional DIN rail mounting.
- Weight: 0.7Kg (1.54lb).

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

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

WIRING DIAGRAM



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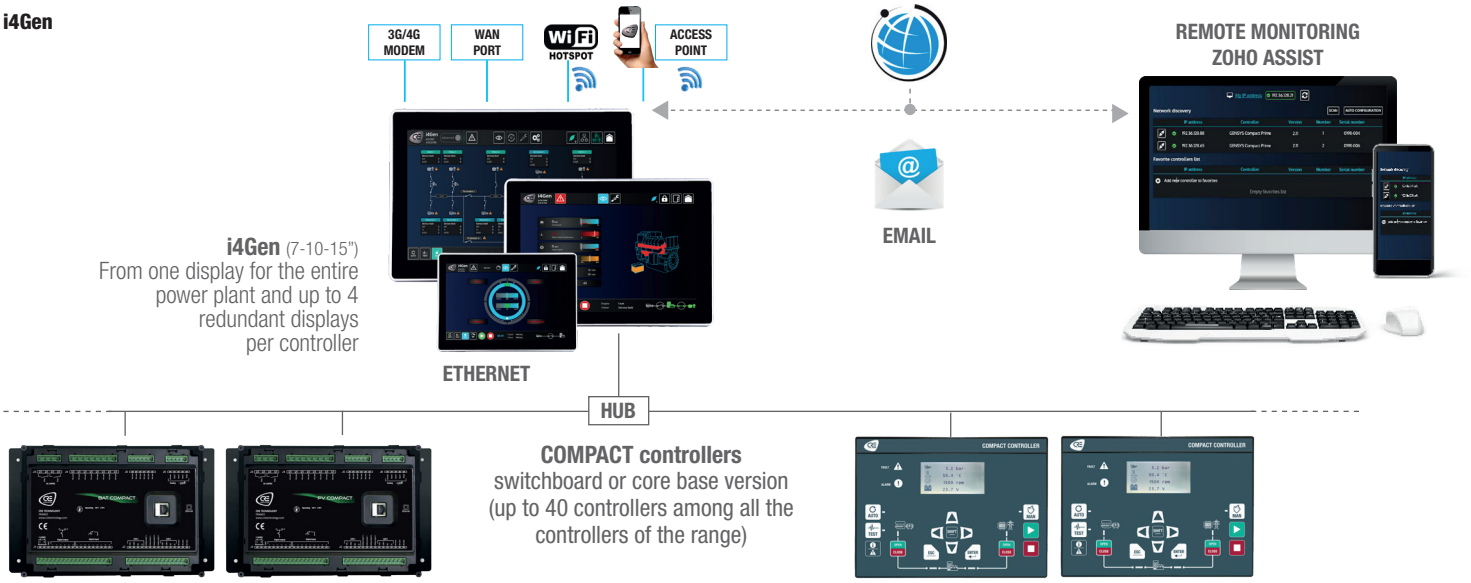
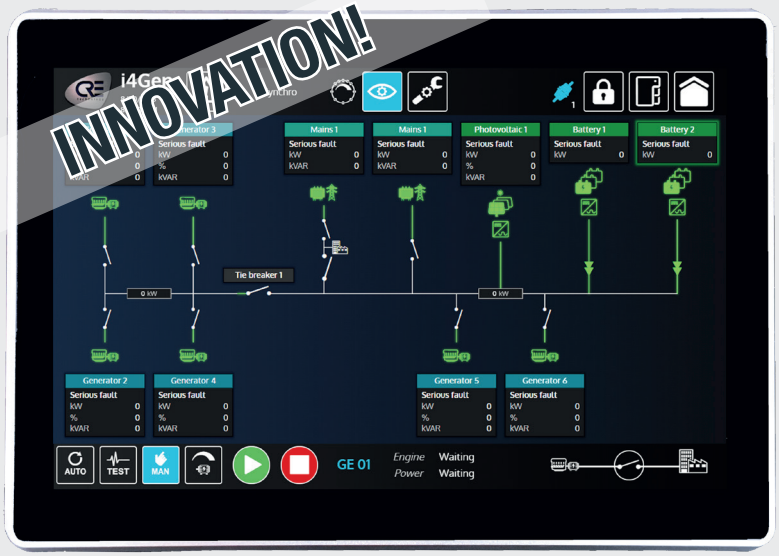
ASSOCIATED I4GEN MULTI-TOUCHSCREEN RANGE & MAIN FUNCTIONS





- **The i4Gen touchscreen and color display range (7, 10 and 15 inches) is available for the COMPACT controllers.**
- **i4Gen offers configuration, control, monitoring and logging (parameters, measures, events) of COMPACT controllers.**
- **i4Gen display can be duplicated on computer locally by LAN or remotely by internet or GPRS**
- **Thanks to its WIFI function, i4Gen offers also the capability of remote service and support by connecting your smartphone in connection sharing.**

NEW - SINGLE LINE DIAGRAM AUTOMATICALLY GENERATED FROM EACH COMPACT CONTROLLER CONFIGURATION

In addition to its very advanced functions, the i4Gen now offers you the display of the single-line diagram of your complete power plant, as well as the production curves of each source.

EASY FLEX PROGRAMMING EXAMPLE

It is possible to customize your application by programming specific features with **Easy Flex**, available directly from **i4Gen Suite** PC software. **Easy Flex** allows user to write up to 50 lines of equation trough an intuitive editor, giving the opportunity to fit with any specific application and to extend standard features. Ex: Programmable relays, timers, sensor treatment, dynamic modification of the power supply…

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