MIAENERGY
CONSUMPTION

SMART SELF-CONSUMPTION
Maximum gain from photovoltaic system

**Mia Energy Autoconsumo** is a professional system, scalable and complete.
It offers five configurations for the intelligent management of the self-consumption of energy generated by PV systems and the consumption reduction of that taken from the network. It can be mounted on any existing PV system up to 6 kW single-phase.

Why it is convenient
- Measures the produced, input and consumed energy by means of 2 Openable Current Transformer.
- You can visualize it directly on board of the device display, or from Tablet, Smartphone or PC.
- Maximizes self-consumption by turning on or off wired and remote-controlled loads, and by modulating resistive loads.
- Saves data in a log for the last year, for every hour of the day, and annual for 64 years.

Top Kit
(complete configuration)
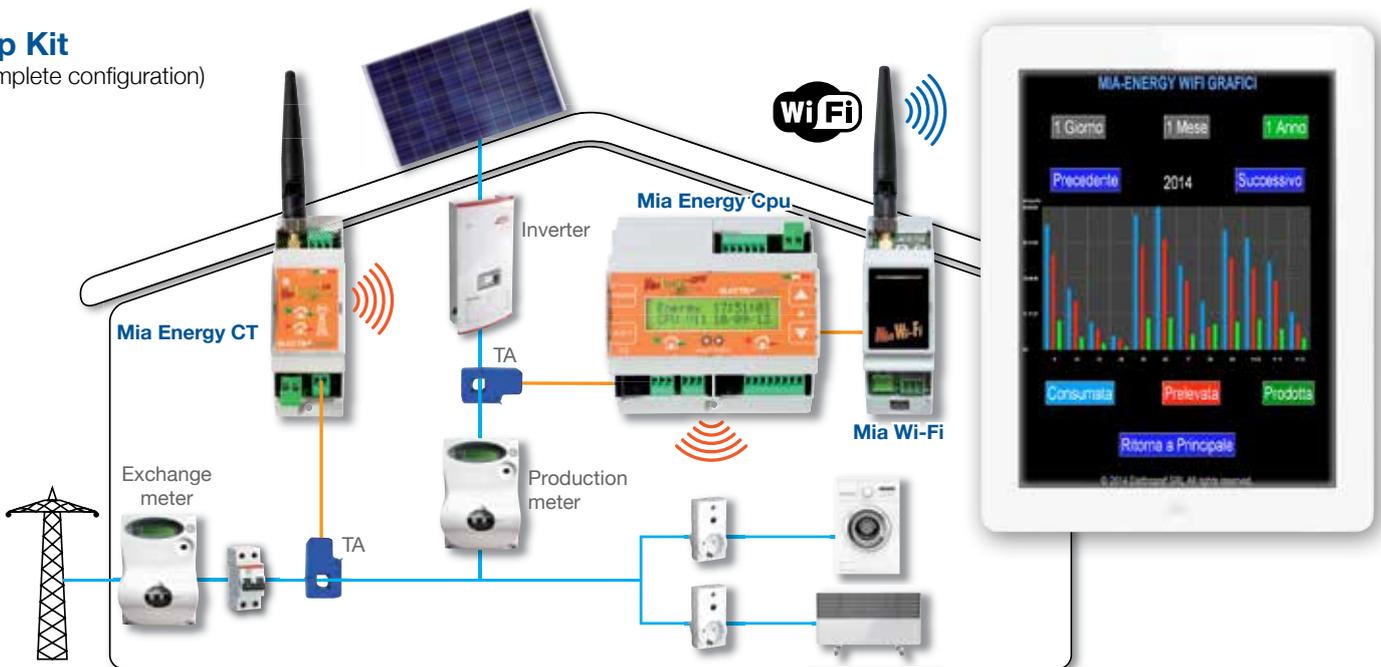
EASY: Can be installed on any existing PV system up to 6 kW single-phase.

FREE HOT WATER: powering electric boilers will save gas.

ESSENTIAL: STOP overload Blackout.

GRID BALANCE: STOP inverter shutdown because of line overload.

SAVING: up to 6 times by immediate consumption of produced energy.

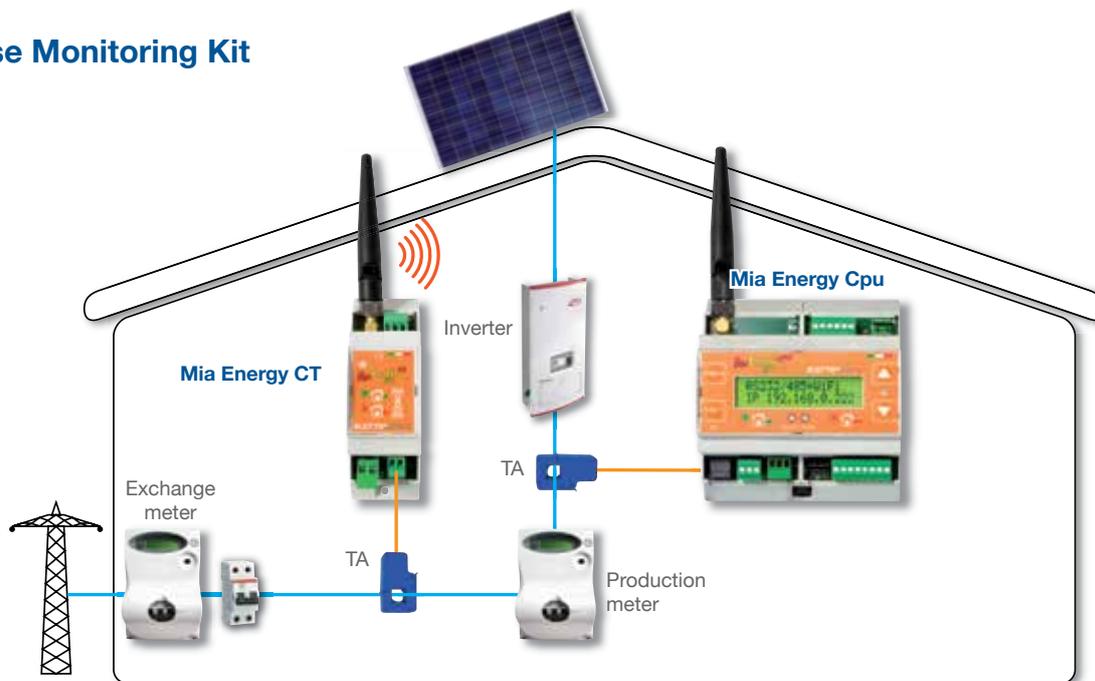**FREE HEATING:** powers radiant walls and electrical heaters.

AUTOMATIC: powers up to 4 loads via radio or cable.

MEASURES: the input, consumed and produced energy[1] by the PV system.

Mia Energy Autoconsumo available in 5 different configurations

Base Monitoring Kit

nstant measurement of the produced, input and consumed energy, visualized through the on board LCD display.

Creation of a log of the last year (for each hour of the day, and annual for 64 years) and generating of a downloadable .csv file.

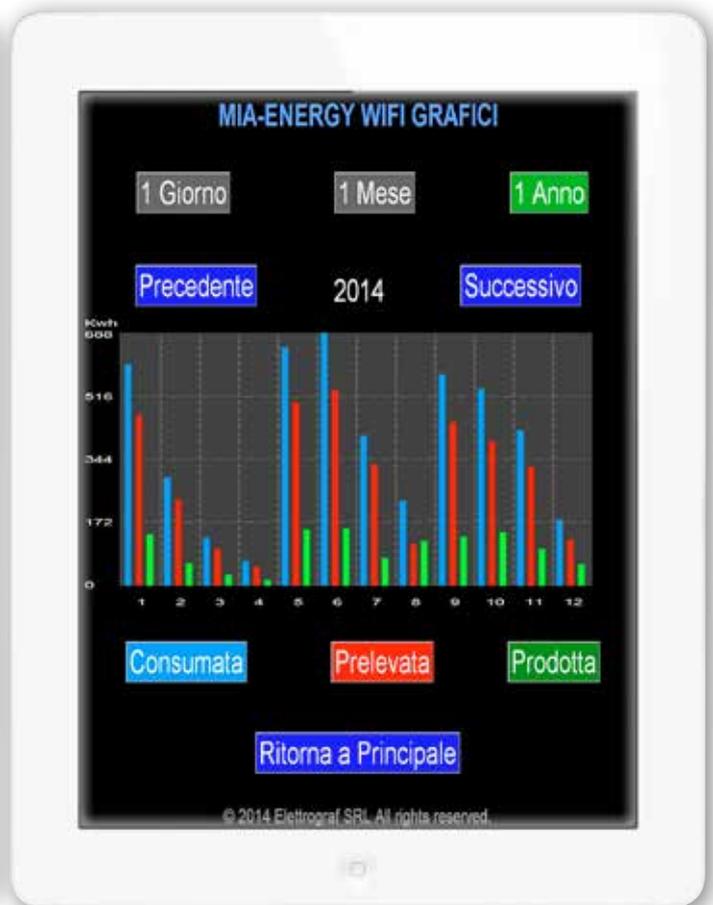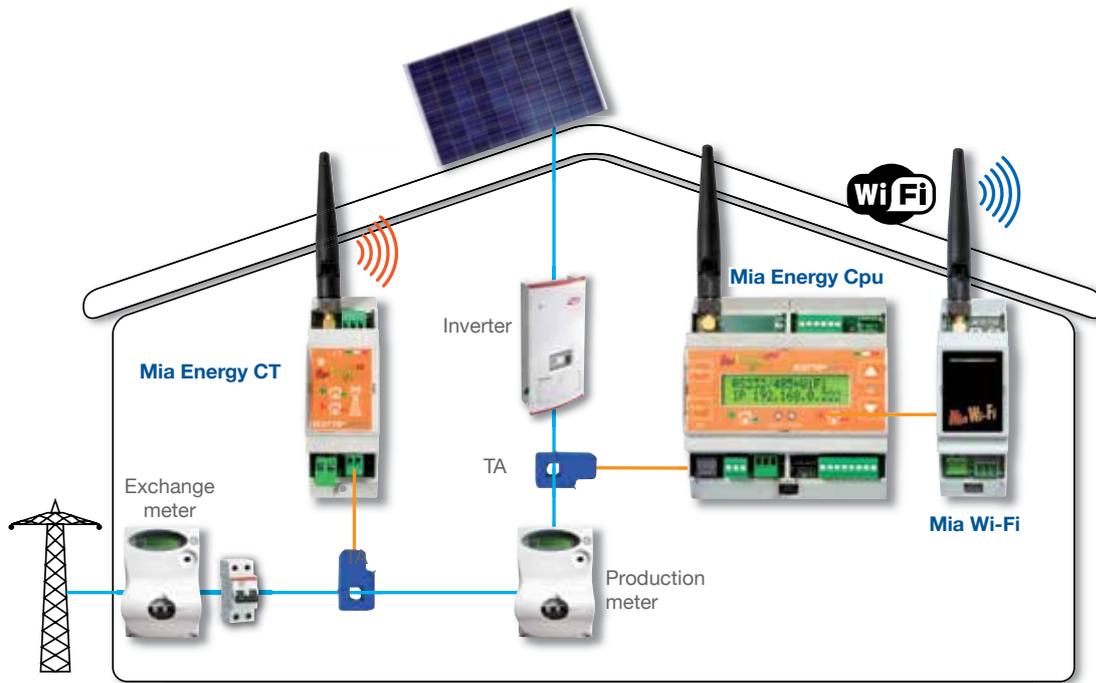It has all the predispositions * to be expanded to all other configurations described in other kits.

Radio Controlled Load Kit
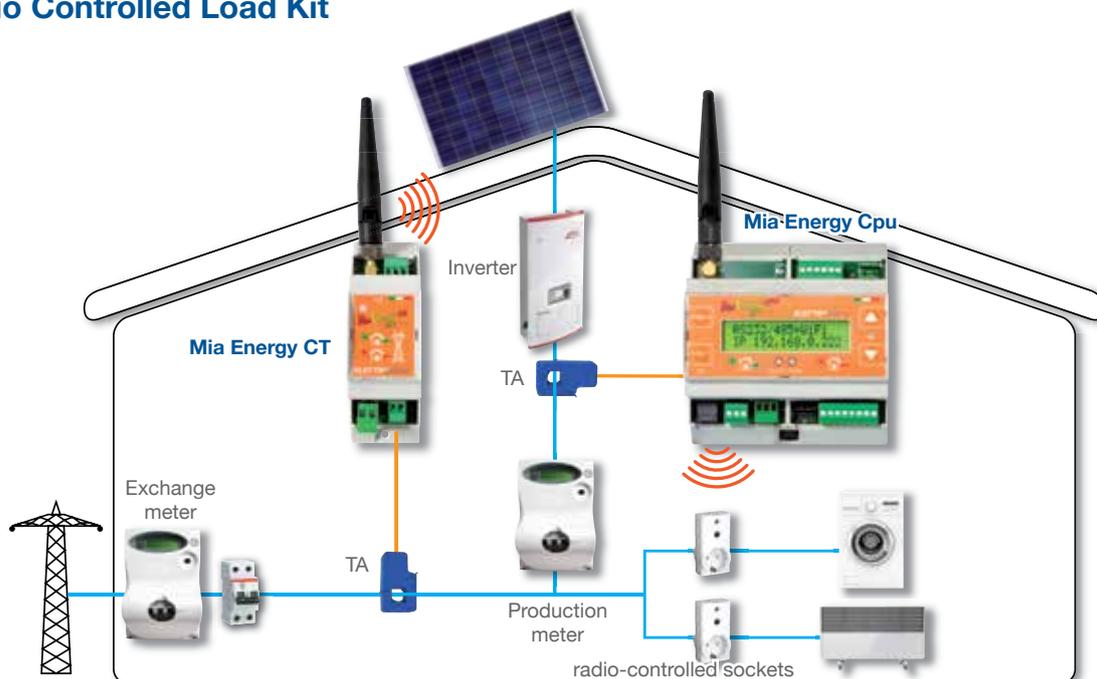
This configuration allows you to manage the self-consumption through automatic control of maximum 4 wireless sockets (2 included in the kit), to which can be connected as many preferential loads, to turn on or off depending on the priorities and programmable thresholds set and based on availability of energy from the PV system.

The intelligent loads management allows you to use 2 exclusive features of **Mia Energy Autoconsumo**:

1) **Grid Balance**, prevents inverted shutdown because of line overvoltage, a common condition in areas with a high density of photovoltaic installations. This function, in case of overvoltage, turns on a priority load to lower the network voltage and to prevent the inverter to turn off; the detachment of the load takes place automatically at the return of the optimal voltage levels. The intervention thresholds are programmable.

2) **Black out Stop**, this function allows, in case of excessive absorption from the power network, to disconnect automatically a preference load, to avoid magneto thermic breaker release and the subsequent blackout.

Wi-Fi Monitoring Kit

Mia Energy CT

Mia Energy Cpu

Mia Wi-Fi

Inverter

Exchange meter

TA

Production meter

Wi-Fi

MIA-ENERGY WIFI HOME

ENERGIA ISTANTANEA
Assorbita dalla CASA : 3.00 kW
di cui prelevata dalla RETE : 2.10 kW
e prodotta dai pannelli FV : 0.90 kW

RISPARMIO
GIORNALIERO : 5.0 kW/h pari a 1.0 Euro
MENSILE : 238 kW/h pari a 47 Euro
ANNUALE : 2856 kW/h pari a 571 Euro

COMANDO CARICHI PRIVILEGIATI
OUT1   OUT2   OUT3   OUT4

vai al MONITOR   vai ai GRAFICI

MIA-ENERGY WIFI GRAFICI

1 Giorno   1 Mese   1 Anno

Precedente   2014   Successivo

Consumata   Prelevata   Prodotta

Ritorna a Principale

Evolution of the Basic Kit, **il Kit Monitoraggio Wi-Fi** acts as a Web server, generating HTML pages that can be viewed locally on the Smartphone, iPad and PC, exactly as if you were accessing a Web page of the Internet. By means of this mode, you can view the various parameters related to the used, collected and produced energy, as well as the graphics of the day, month and year.
For remote viewing, you need a fixed IP or alternatively you can use a dynamic IP service such as www.dyndns.it or www.noip.com. This kit has all the predispositions * to expand its use to all other configurations described in the other KIT.

💧 Hot Water Kit from the PV system
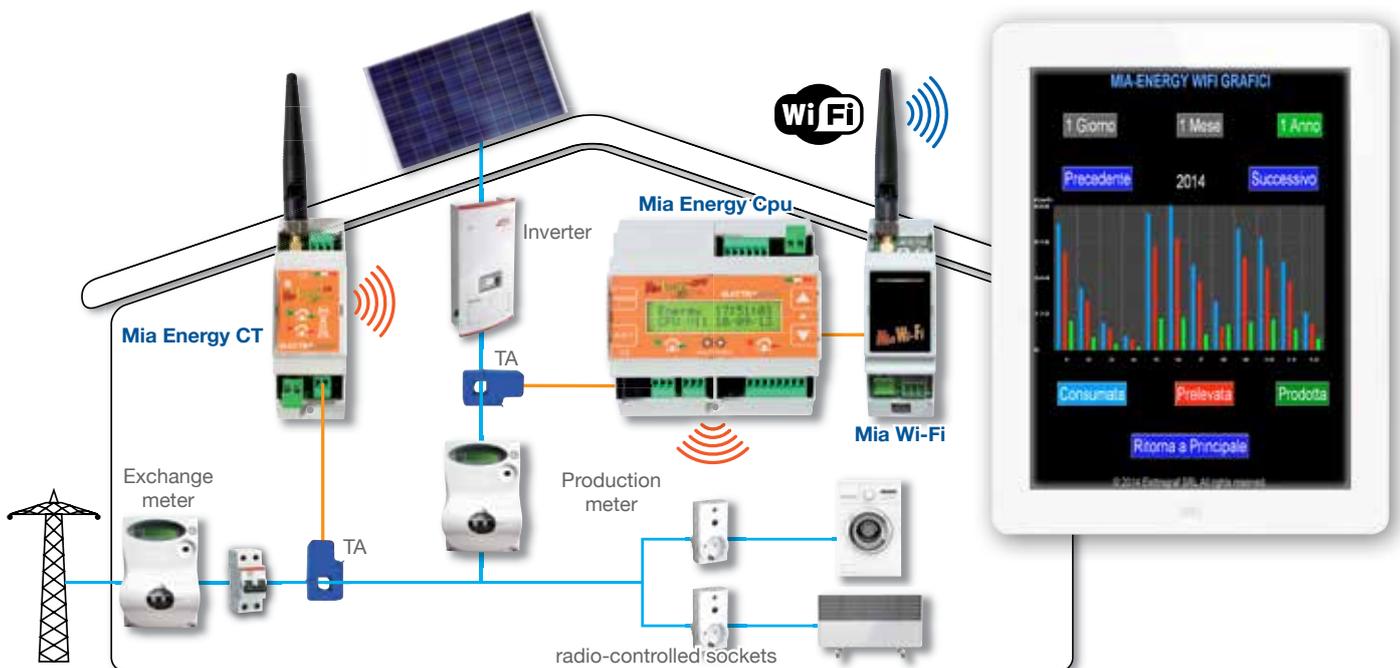

Mia Energy Cpu

Inverter

Electric boiler

Mia Energy CT

TA

Temperature sensor

Exchange meter

TA

Production meter

Static relay
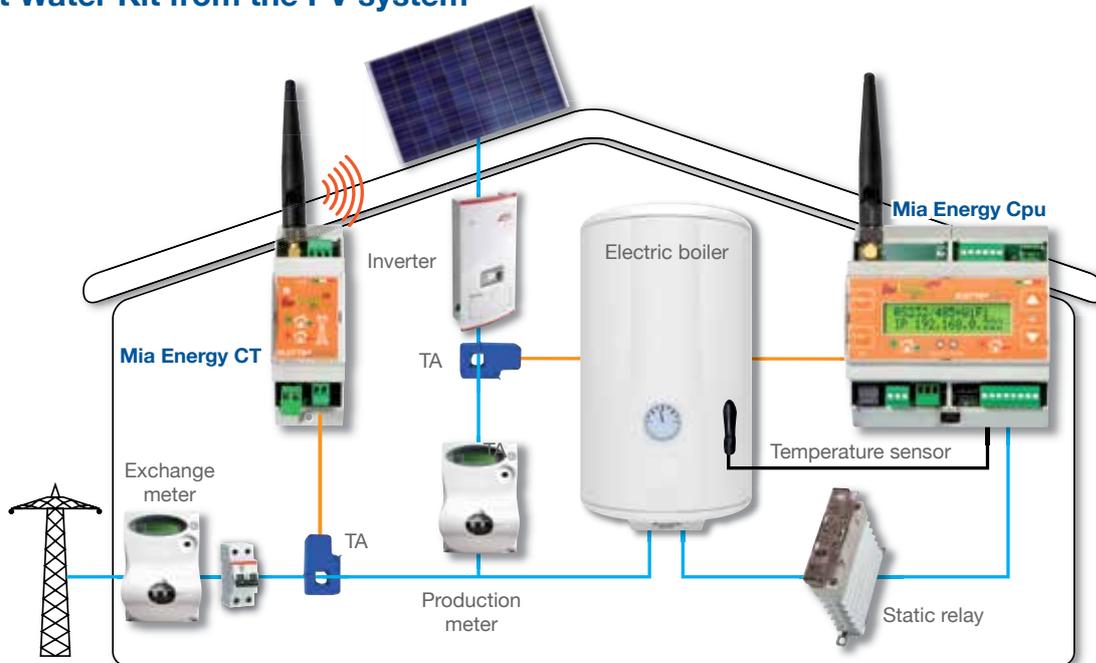
This configuration allows supplying, in total autonomy, an electric water heater for sanitary water heating.
The NTC sensor measures the water temperature; **Mia Energy CPU** controls the internal electrical resistance of the boiler via output proportional to 0 to 100% with the use of static relay AF1.G3PE215B (3000W). With this system, it is possible to operate the electric water heater to heat water in a progressive manner, in a linear mode, based on the amount of electrical energy available from the PV.
The water temperature can be displayed and controlled directly by **Mia Energy CPU**.

To avoid that, in the absence of sun and therefore of energy from the PV system the water remains cold, it is possible to ensure that when the NTC temperature sensor detects a too low temperature (adjustable threshold), the state relay activates and starts to pick up energy from the network, until it reaches the set temperature, above which, it returns to prioritize the self-consumption of energy from PV.

🌐 Top Kit

Wi-Fi

Mia Energy Cpu

Inverter

Mia Energy CT

TA

Exchange meter

TA

Production meter

Mia Wi-Fi

radio-controlled sockets

This kit unites the potential of the **Mia Wi-Fi Energy Monitoring Kit** + that of **Mia Energy radio-controlled loads Kit**, allows to turn on and off remotely (Smartphone, Tablet, PC) the 4 loads, for example: turn on the garden irrigation system or access and modify the main parameters of the device.

Predispositions of 5 Kit

Each of the 5 configurations has various adaptations, for possible future integrations, that makes **Mia Energy Autoconsumo** a complete tool:

- Turning on and off of 4 wireless outlets for preferential loads activation.
- no. 4 NPN digital outputs for control of a max. of 4 external relays for activation of the same number of wired loads.
- no. 2 analog outputs 0..10V for partialization of intelligent loads such as heat pumps with 0-10V input. These 2 analog outputs are converted into PWM outputs 1 Hz/PWM 100Hz with variable Duty Cycle, for the partialization of resistive loads such as: electric water heaters, radiant walls.
- n.1 analog input NTC temperature sensor.
- n.2 analog inputs 0 ... 60 V, for customizations on request.
- Instant measurement and historical log of produced, consumed and introduced energy during the last year, for every hour of the day, and year for 64 years - available from the on board LCD display - Stop Black Out and Grid Balance Functions.

In addition to the five configurations described, simply by varying the type and number of accessories, it is possible to obtain new sets, depending on the needs of the system.
Elettrograf is available to identify your ideal configuration.

Components of Mia Energy Autoconsumo

Mia Energy CPU
(cod. AF1.MIAENERGCPR)
Is the main device of **Mia Energy Autoconsumo** system for each of the 5 configurations. It collects energy data from the 2 CTs (one is supplied with a cable connection, measures the energy produced by the PV) and decides, according to the set priorities, the activation or deactivation of the loads, both by cable and wireless. It manages the communication with the Wi-Fi module, the measures log, alongside with all the functions of this system.

Mia Energy CT
(cod. AF1.MIAENERGYTR)
It is the CT reading device, measures the energy withdrawn or input from / into the power network.
It connects to **Mia Energy CPU** which transmits data both via cable and wireless.
This last option is useful where, for the design of the PV system, the cable connection is problematic.

Rated power supply	230+/- 20% (184..276V)
Absorption	1,5W Min 6 W Max
Secondary power supply with integrated charger	External backup battery 12V 1,2A Pb (not supplied)
Clock / Calendar	With proper maintenance of time without power supply for at least 6 months
Internal memory	Consumed, produced and introduced energy log
Digital outputs	no.4 NPN outputs for controlling of 4 external relays, the maximum permissible total consumption for 4 relays: 1,6W
Analog outputs	n.2 analog outputs 0..12v, convertible into PWM outputs 1Hz/PWM 100Hz with variable Duty Cycle.
Analog inputs	2 analog inputs 0...60V 1 entry NTC temperature sensor 1 input 0..26A 7KVA via external CT
Possible settings	From 0 to 6 kW in input and output
RS232/RS485 port	For communication with a PC or other devices
RS485 port	For cable communication with Mia Energy-TA
Wireless module	at 434 MHz for communication with Mia Energy-TA
Radio-controlled sockets	Ability to manage up to 4
Radio transmission range	10mW
Radio transmission range	150 mt. outside - 40 mt. inside
Container	6 modules, fastening DIN or wall guide
Operating temperature	from -10 a +50°
Dimensions	105 x 110 x 65 mm
Weight	310 gr.

Rated power supply	230+/- 20% (184..276V)
Absorption	0,5W
Led	1 two-color LED for indication of energy input or output
Measured Sizes	Voltage, current and power of the power network
Detection system	CT without cable interruption
Maximum measurable instantaneous power	7 Kw 25 A
Resolution reading voltage	1 Volt
Current resolution	0,1 Ampere
Resolution read power	1W
RS485 port	For cable communication with Mia Energy-CPU
Wireless module	At 434 MHz for communication with Mia Energy-Cpu-R
Antenna	External with SMA screw connector
Power of radio transmission	10mW
*Capacity of radio transmission	150 mt. outside - 40 mt. inside
Operating temperature	from -10 a +50°
Container	2 modules, fastening DIN guide
Dimensions	36 x 110 x 65 mm
Weight	180 gr.

Mia WiFi
(cod. AF1.MIAWIFI)

This device acts as a Web Server, allows the connection between the on-site Wi-Fi, and devices such as smartphones, iPad, PC.

Through HTML pages, it is possible to access the various parameters related to the production and consumption of energy, view graphics, turn on and off remotely connected loads, access and modify the main parameters of the machine.

Static relay
(cod. 011.G3PE215B)

Allows controlling resistive loads up to 3kW proportionally in relation to the available energy from the PV plant.

Rated power supply	230VAC
Absorption	2W
Output Power	12dBm
Frequency	2,4Ghz
Security	WEP128-WPA PSK- WPA2 PSK
Setup	WPS
Supported protocols	802.11b – 802.11g
Based on	RN171 MicroChip
Communication port	RS232
Operating temperature	from -10 a +50°
Container	2 modules, fastening DIN guide
Dimensions	36 x 110 x 65 mm
Weight	175 gr.

Driving voltage	12/24VDC
Load voltage	from 100 a 240V
Rated current	15A
Applicable Resistive load	3kW
Assembly	DIN guide
Dimensions	H 100, L 100 ,P 23mm
Model	with the zero passage suitable only to the setting PWM 1 Hz.
Compliant	UL,CSA, standard EN (certified TUV)

Relay 12V 16A, Din socket
(cod. AF1.RELE12V16AZ)

It is used to control preferential cabled loads, when the Wireless connection is not possible.

Radio Controlled socket with remote control
(cod. AF1.PR2900WT)

Remote-controlled Socket
(cod. AF1.PR2900W)

Used to turn on or off wirelessly preferential loads, in this case every system needs a socket with the remote control.

Supply	12VDC nominal
Maximum switching power CA	4kVA
Socket	with DIN connection and sealing clip

Voltage	220Vac/50Hz
Power	2900W
Receiving frequency	433,92Mhz
Reception distance	20mt. (obout)

CE In accordance with 2004/108/CEE directive and CEI EN 61000-6-3 2007-11; CEI EN 61000-6-1 2007-10 regulations.

Designed and produced in Italy.