

Reactive power regulators and protections

The reactive power regulator is, together with the capacitors and reactors (in detuned filter cabinets), the key component of the automatic power factor correction system. It is in fact the "intelligent" element, responsible for the verification of the power factor of the load, in function of which controls the switching on and off of the capacitors/batteries in order to maintain the power factor of the system beyond the target. The reactive power regulators RPC are designed to provide the desired power factor while minimizing the wearing on the banks of capacitors, accurate and reliable in measuring and control functions are simple and intuitive in installation and consultation. The flexibility of ICAR regulators allows you to modify all the parameters to customize its operation to fit the actual characteristics of the system to be corrected (threshold power factor, sensitivity of step switching, reconnecting time of the steps, presence of photovoltaics, etc.).

Reactive power regulators 5LGA RPC and RPC 8LGA

The new reactive power regulator RPC 5LGA equips Micromatic and Minimatic automatic power factor correction systems, while the new regulator RPC 8LGA equips MIDmatic. Both are managed by a microprocessor and offer many features maintaining a simple user interface locally or from a PC. They are characterized by a large LCD display with text messages (in 6 languages: ITA, ENG, FRA, SPA, POR, GER) and icons for quick and intuitive navigation.

The regulators are very flexible: they are in fact able to adjust the power factor between 0,8 inductive and 0,8 capacitive, to operating with power from 100 to 440 VAC, to run on the 4 quadrants for cogeneration installations, to accept in Input CT secondary 5A or 1A.

The regulators have standard temperature control and the ability to configure one of the available relays for activating visual alarms sound at a distance; also control the distortion of current and voltage.

Regulators RPC 5LGA-8LGA can operate in automatic or manual mode: in the first case in complete autonomy by switching batteries available up to the desired power factor; in the second case it will be the operator to force the insertion and disconnection of the battery: the regulator still oversee operations to prevent potential damage to the capacitors (for example by assessing compliance of discharge times before a subsequent insertion).

The slot allows you to add additional functions:

- OUT2NO for two additional digital outputs
- COM485 communication module for connection to network RS485 (Modbus)
- COM232 communication module for connection to network RS232 (Modbus)
- WEBETH communication module for connection to the Ethernet network (Modbus), available only for RPC 8LGA

Measurement functions

Regulators RPC 5LGA and 8LGA provide many standard measurements in order to check and monitor the correct electrical and temperature conditions of the power factor correction system. Display shows the following values: power factor, voltage, current, delta kvar (reactive power missing to reach the target power factor), average weekly power factor, total harmonic distortion of the current system (THDI_R%) with detailed harmonic for harmonic from 2nd to 15th, total harmonic distortion of the voltage (THDV%) with detail for harmonic from 2nd to 15th, total harmonic distortion in the current% (THDI%) capacitor, temperature. The controller stores and makes available for consultation the maximum value of each of these variables, to evaluate the most severe stress suffered by the automatic power factor correction since the last reset: the temperature, the voltage and the total harmonic distortion have a strong impact on the capacitors as if they hold more than the nominal values can drastically reduce the service life.



Alarms

Regulators RPC ICAR show many different alarms:

- Under-compensation: the alarm is activated if, with all the steps of power factor correction switched on, the power factor is lower than the desired value
- Over-compensation: the alarm is activated if, with all the steps of power factor correction switched off, the power factor is greater than the desired value.
- Minimum and maximum current: to assess the condition of the system load
- Minimum and maximum voltage: to evaluate the stresses due to the variations of the supply voltage
- Maximum THD%: to assess the pollution of network as regards to harmonic current.
- Maximum temperature in the enclosure: to monitor the capacitor climatic conditions
- Short voltage interruptions.

Alarms are programmable (enable, threshold, time on / off).

Display Indications

The LCD display icons and text provides the following information for quick identification of the state of the system:

- Operating mode automatic/manual
- Status of each battery (on / off)
- Recognition power factor inductive / capacitive
- Type of value displayed
- Active alarm code, and explanatory text (in a language of choice among the 6 available: ITA, ENG, FRA, SPA, POR, GER)

Contacts

The regulators RPC 5LGA and 8LGA have power contacts for controlling the steps, to control the eventual cooling fan and for the activation of alarms to distance; contacts are NO and have a range of 1.5A to 5A at 250Vac or 440Vac. A contact is in exchange for alarm functions (NO or NC).

Technical characteristics

- Microprocessor control
- Auxiliary supply voltage: 100 to 440 VAC
- Frequency: 50Hz / 60Hz
- Voltage measuring input : 100 to 600V
- Current measuring input : 5A (1A programmable)
- Current reading range: from 25mA to 6A (from 25mA to 1.2A)
- Automatic current way sensing: yes
- Operation in systems with cogeneration: yes
- Power consumption: 9.5 VA
- Output relay : 5A - 250Vac
- Cos ϕ adjustment: from 0.5 ind to 0.5 cap
- Step Switching Time: 1s ÷ 1000s
- Alarm relay: yes
- Degree of protection: IP54 on front and IP20 at terminals
- Operating temperature: -20 ° C to + 60 ° C
- Storage temperature: -30 ° C to + 80 ° C
- Optical port Front: for communication USB or WIFI with dedicated accessories
- Compliance with the standards: IEC EN 61010-1; IEC / EN 61000-6-2; IEC / EN 61000-6-4; UL508; CSA C22-2 n ° 14

	RPC 5LGA	RPC 8LGA
Output relays:	5 (up to 7)	8 (up to 12)
Dimensions:	96x96mm	144x144mm
Weight:	0,35kg	0,65kg

Additional modules

The regulator RPC 5LGA has the ability to accommodate, in the back slot, an additional module.

The regulator RPC 8LGA has two rear slots to accommodate up to two additional modules. Once installed an additional module, the controller recognizes and activates the menu for its programming. Additional modules can be installed even in the bank already in service.

Slots for additional module may be already used by ICAR to implement necessary functions to the context in which the controller is mounted. If you decide to add a module to an already operating, ensure that there is an available slot.

- OUT2NO two digital outputs device to control additional steps (two relays 5A 250Vac)
- COM232 interface RS232 isolated
- COM485 interface RS485 isolated
- WEBETH communication module for connection to the Ethernet network, available only for RPC 8LGA



RPC 5LGA



RPC 8LGA

LCD display with icons and text

Selection keys, parameters editing and confirmation

Communication optical port USB-WIFI