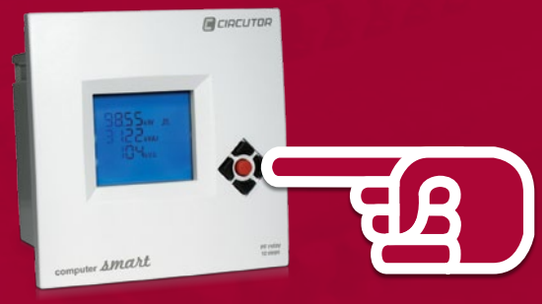
Built-in power analyzer

smart has a built in power analyzer allowing the measurement of main electrical parameters (voltage, current, harmonics, active and reactive power, apparent power, etc.). The device gives a detailed information on both, voltage and current harmonic components. *smart* measures also ambient temperature and keeps a record of maximum and minimum values of all measured parameters. All these values can be read on the device display or can be sent and displayed in a master PC, equipped with **PowerStudio SCADA** software . The data link between the *smart* and the PC is performed by means of an RS-485 communications channel.

Plug&Play function

smart is a friendly programmable device. The setup, adapting the PF regulator to the installation site, is fully automatic by simply selecting the plug&play menu option and pushing **a key**.



Technical features

Supply circuit		
Power supply voltage	480, 400, 230, 110 V a.c. depending on model	
Tolerance	+15 % -10 %	
Consumptions	8,2 VA (0 relays connected) 9,3 VA (6 relays connected) 11 VA (12 relays connected)	
Frequency	45 ... 65 Hz	
Measuring circuits		
Voltage measurement range	480, 400, 230, 110 V a.c. depending on model	
Current measurement	By means of a current transformer I_n /5 A	
Leakage current		
Leakage current range	$I_{\Delta prim}$: 10 mA ... 1 A a.c.	
Transformers type	**WGC** (*)	
Full scale at secondary side	$I_{\Delta sec}$ = 20 mA	
Measuring circuits accuracy		
Voltage and current	1 %	cos φ : 2 % ± 1 digit
Temperature measurement		
Range	0 ... +80 °C ± 3 °C	
Output		
Contact type	Change over contact	
Contact ratings	V_{max} 250 V a.c., 4 A a.c., AC1	
Alarms		
No Alarm	14, totally configurables	
Communications		
Hardware	RS-485	
Protocol	Modbus	
Baud rate	9600, 19200, 38400 Bd, configurable	
Operating conditions		
Temperature	-20 ... +60 °C	
Relative humidity	Max. 95 %	
Maximum altitude	2000 m	
Control system		
FCP (a programme that minimises the number of operations)		
Safety		
Insulation	Category III Class II **EN 61010-1**	
Degree of protection	IP 40 / IP 30 **EN-60529**	
Standards		
IEC 62053-23 (2003-01) Ed. 1.0, **IEC 61326-1**, **EN61010-1, UL 508**		

Code	Model
R13831	**computer smart 6** 400 V a.c.
R13842	**computer smart 12** 400 V a.c.

(*) Optional

CIRCUTOR

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Código: C2R163-01

Designed by: communication dept. - **CIRCUTOR**, SA

computer *smart*

Power Factor Regulator

"PF correction, measuring and protection at your reach"

CIRCUTOR
Technology for energy efficiency

Power factor regulator

- Computer *smart* is a leading edge power factor regulator, providing in a single device the functions of power factor correction, power analyzer and leakage current protection.

The *smart* regulator is equipped with the latest world technology, which allows **CIRCUTOR** offering to the market a simple regulator, but capable of performing many advanced functions as: Capacitors status monitoring, earth leakage current monitoring, capacitors failure prevention, overheating detection, etc.. All these functions contribute to a longer life and a better power quality, and avoid intempestive supply interruptions.

Because all the above features, the *smart* becomes one of the PF regulators with the best performance, while still offering users an easy use and intuitive programming.

Serial communications

The *smart* regulators are equipped with RS-485 communication with MODBUS protocol. This allows the integration of the PF regulator in a data network driven by a computer (PC) equipped with **CIRCUTOR**'s **Power Studio SCADA**.

The integration of the PF regulator in a communications network enables data recording, remote control, supervision and preventive maintenance of the PF correction equipment itself and of the whole LV network. The main parameters of the network which can be monitored and recorded are: voltage and current at the three phases, active and reactive power at the three phases, cos φ, leakage current, general status of the PF correction equipment, temperature, etc.

AUTO-ON-OFF function

This function allows to define the operating mode of each individual capacitor step:

- Automatic mode (auto)
- Fixed mode (on): capacitor is always ON
- Disconnected mode (off). capacitor is always OFF

Open programming

smart allow to combine capacitor steps of different powers (kvar). Over 150 different programming combinations can be selected in the setup menu.

Built-in leakage control

The *smart* PF regulators have a built in circuit to measure the earth leakage current through a **WGC** transformer.

The regulator is able to measure the individual leakage of each capacitor. This allows to disable a damaged capacitor if an excess of leakage current is detected without interrupting the supply service.

Safety and maintenance

- Computer *smart* perform a capacitor test every time that a capacitor step is switched ON. The real power and the leakage current of each step can be displayed.
- Up to 14 different alarm conditions can be programmed. This are related with maximum or minimum values of different electrical or thermal parameters measured or calculated by the regulator. The alarms can be associated with a built-in relay tripping.
- Internal counter register which counts the number of operations of each individual capacitor step.

(*) An external CT, type **WGC**, must be provided in order to measure the earth leakage current (Optional).