MEASUREMENT & CONTROL

CVM-C11

Compact power analyzer

Circutor

Information is power

By installing power analyzers, you can have real-time information on electrical parameters, such as voltage, current and harmonics. You can use all this information to determine the power quality and to know where, when and how much energy the different loads in your installation consume.

Having a record of your energy consumption (consumption habits) lets you quantify the energy demanded by the different systems or loads in your installation. This information is essential to assessing future energy improvement actions in order to optimize your consumption, avoid penalties, or quickly identify any abnormal or undesired consumption.

The analysis of electrical parameters provides reliable information on how the loads in your installation behave, letting you clearly identify where you need to install devices to improve the quality of your network, such as active or passive filters to reduce the number of harmonics, or capacitor banks to reduce reactive power and avoid surcharges on your electric bill.

CVM-C11

Compact power analyzer

The **CVM-C11** lets you analyze trends in electrical variables and consumption quality variables, such as the THD% for voltage and current, as well as individual harmonics for each phase up to the 31st.

The inclusion of neutral current measurement lets users detect any phase imbalance, as well as overloads in the neutral conductor, which can lead to insulation breakdown or other kinds of problems with the installation.

Designed to be part of any Energy Management System (EMS), measuring both the energy consumed and generated for installations with self-consumption systems. The **CVM-C11** calculates efficiency variables such as $kgCO_2$, and the energy cost in each of the 3 tariffs that can be set up on it.

- Single-phase or three-phase measurement
- 3 voltage channels
- 4 current channels (phases + neutral)
- 4 quadrants (consumption + generation)
- Harmonic distortion (THD%)
- Individual harmonics (up to 31st)
- RS-485 (Modbus RTU/BACnet)*
- Ethernet (Modbus TCP/BACnet IP)*
- 2 relay outputs + 2 transistor outputs
- 2 digital inputs
- Customizable display.

*According to model.

For any type of transformer:

Compatible with any Solid-core transformer.

.../1 A
.../5 A

Compatible with any Split-core transformer.

.../1 A
.../5 A

Compatible with flexible Rogowsky type sensors.

100 mV/KA

Compatible with Circutor's **MC** type efficient transformers.

.../250 mA

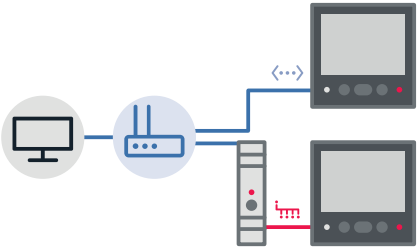
Monitors the quality of your electrical installation

The importance of the neutral current

Current flow through the neutral wire can cause problems in your installation, such as heating, overvoltages or even damage to equipment due to loss of insulation. The current measurement in the neutral lets you guarantee continuity of service in your installation and identify the loads that cause them.

Determine the quality of the network

Analyze the harmonic distortion rate (THD%) produced by the loads in your installation to avoid problems caused by harmonics. The analyzer displays up to the 31st voltage and current harmonic for each phase to help you detect internal problems, as well as to select the active filter that is best suited to the harmonic value measured.



Always Informed

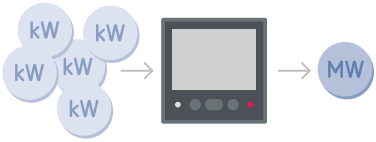
Connect to any SCADA system to record the electrical variables and to remotely manage any alarms or status. Available in RS-485 version (Modbus RTU and BACnet) or via Ethernet port (Modbus TCP and BACnet IP) to connect it to your own LAN network.

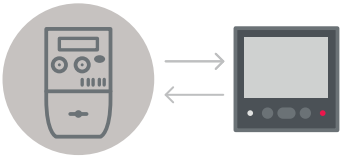
Designed for self-consumption systems

The analyzer measures the energy consumed and generated (4Q) in the installation and shows the active quadrant on the display. This way, you can know at all times whether you are consuming or generating energy and whether it is inductive or capacitive.

Full-scale adjustment

The Energy value automatically changes units (auto-scale) to ensure the energy values (active, reactive inductive/ capacitive and apparent) are correctly displayed, no matter how large they are.





Check the power of your installation

Quickly view the percentage of active power consumed to get real-time information on the demanded power and available power. You can check whether your installation exceeds the contracted power or is well below it, and thus adjust the contracted power to your actual needs.

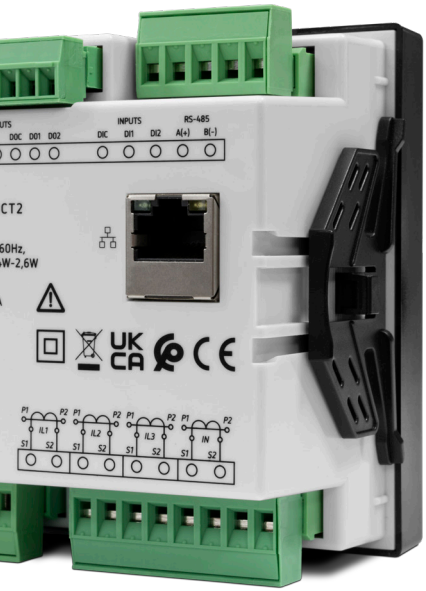
φ Track reactive energy

In addition to logging the inductive and capacitive reactive energy consumption of your installation, you can see the Power Factor (PF) or cosine phi (cos φ) value on the analyzer display.

You decide what to display

Customize the analyzer screens based on your needs: you can configure the analyzer to show only the screens of the electrical parameters that interest you most.

Better management and control of your installation



Configure the available inputs and outputs to fully manage your installation and monitor its status on the analyzer's display.

Discover all the things you can control:

- RS-485 communications with Modbus RTU and BACnet protocol, selectable on the device itself.*
- Ethernet communications with Modbus TCP and BACnet IP protocol, selectable on the device itself.*
- 2 digital inputs for status monitoring (open/closed), tariff change (up to 3 tariffs and dual source system) and maximum demand synchronization with the billing meter.
- 2 digital outputs to create alarms related to instantaneous variables or pulse emission proportional to incremental variables (energies, costs,...).
- 2 digital outputs to create alarms related to instantaneous variables.

*According to model.

Applications

Technical specifications

Power supply circuit	Nominal voltage	100... 270 VAC ± 10%, 100...270 VDC ± 10%		
	Installation category	Cat III 300V		
Voltage measurement circuit	Nominal voltage (U_n)	230 V L-N, 400 V L-L		
	Voltage measurement range	5 ...120% U_n		
	Frequency measurement range	45... 65 Hz		
	Installation category	Cat III 300V		
Current measurement circuit	Nominal current (I_n)	.../5 A , .../1 A		
	Current measurement margin	1... 120% I_n		
	Minimum current measurement (I_{start})	1 mA		
	Installation category	**Cat III 300V**		
Accuracy of the measurements	Type **CVM-C11**	**ITF**	**FLEX**	**MC**
	Phase voltage measurement	0.2%	0.2%	0.2%
	Phase current measurement	0.2%	2%	0.2%
	Active power measurement (kW)	0.5% ± 2 digits	2% ± 2 digits	0.5% ± 2 digits
	Reactive power measurement (kvar)	1% ± 2 digits	2% ± 2 digits	1% ± 2 digits
	Active energy measurement (kWh)	Class 0.5S	Class 0.5S	Class 0.5S
	Reactive energy measurement (kvarh)	Class 1	Class 1	Class 1
Output to relay	Quantity	2		
	Electrical life (at max. load)	60 x 10^3 cycles		
	Mechanical life	10x10^6 cycles		
	Maximum switching power	625 VA / 75 W (AC1)		
Output to transistor	Quantity	2		
	Type	NPN		
	Pulse width	30... 400 ms (Programmable)		
	Maximum frequency	16 pulses/s		
	Maximum current	50 mA		
	Maximum voltage	24 VDC		
Digital inputs	Quantity	2		
	Type	NPN		
	Insulation	2000 V		
Environmental characteristics	Protection rating	IP 54 (Front), IK 08		
	Operating temperature	-25 ... +70 °C		
	Storage temperature	-25 ... +75 °C		
	Relative humidity (without condensation)	5 ... 95%		
	Maximum altitude	2000 m		
Mechanical characteristics	Dimensions	96 x 96 x 67.2 (mm)		
	Weight	0.353 kg		
	Enclosure	Self-extinguishing V0 plastic		
	Attachment	Panel 96 x 96 mm		
Standards	**EN IEC 61326-1, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11, EN 61010-2-030, EN IEC 61557-12, EN 61010-1**			

References

Type	Code	Input current	Communication	Protocol
CVM C11-ITF-IN-485-ICT2	**M58541.**	.../5 A | .../1 A	RS-485	Modbus / BacNet
CVM C11-ITF-IN-ETH-ICT2	**M58531.**	.../5 A | .../1 A	Ethernet	Modbus TCP / BacNet IP
CVM C11-FLEX-IN-485-ICT2	**M58561.**	100 mV/KA (Rogowsky)	RS-485	Modbus / BacNet
CVM C11-MC-IN-485-ICT2	**M58581.**	.../ 250mA	RS-485	Modbus / BacNet

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