

## AC/DC meter with Modbus communications

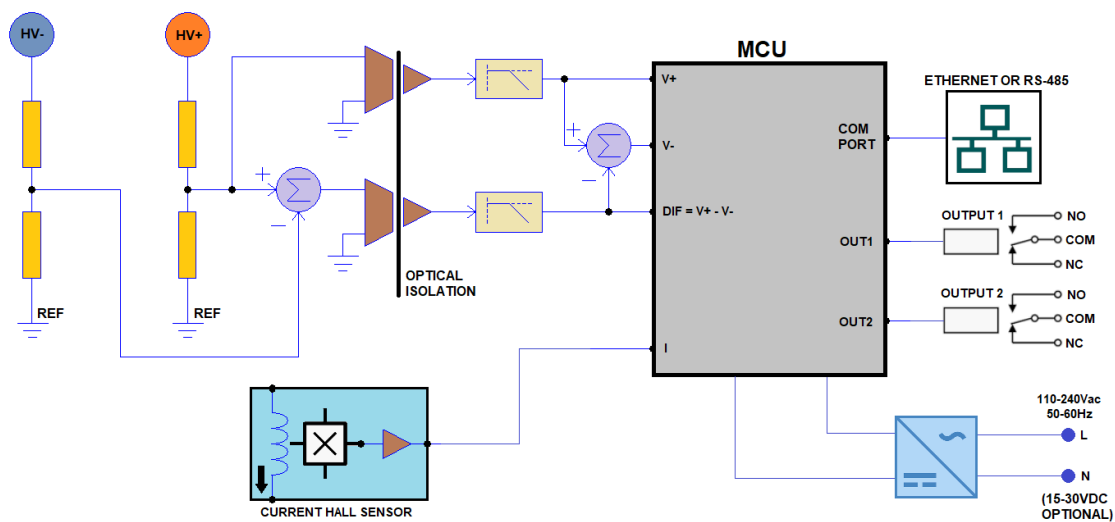
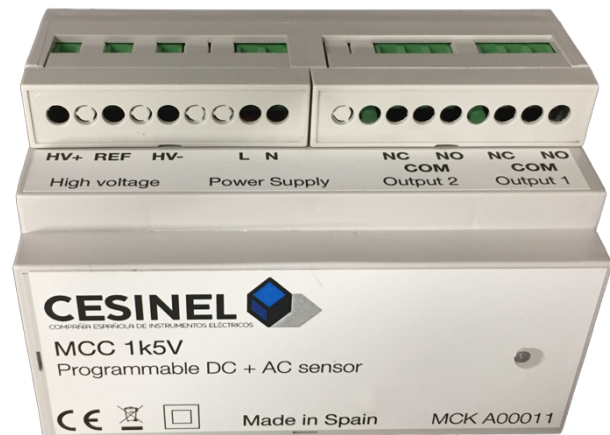
The new MMC1k5V is a compact monitoring system for mixed AC/DC systems. It provides simultaneous DC and AC values for voltage, current and power. For AC component, reactive and apparent power are also provided.

Voltage is directly measured by the MCC device with a optoelectronic 4kV isolation barrier and current is measured by means of an optional external current sensor with ranges from 100 to 1100 A (DC), or 50 to 600 A (AC).

It includes a communication interface (Ethernet-based Modbus TCP or RS-485-based Modbus RTU) and optional current sensors for current and power measurement.

Additionally, the MCC1k5V system includes 2 programmable dry-type digital outputs, each with a NO and a NC contact. The operation of the contacts can be individually programmed for any of the measured magnitudes with respect to an adjustable threshold. Hysteresis settings are also provided in order to prevent oscillations and unstable operation.

The main device is housed in a standard 6-module DIN rail enclosure (106 mm wide) for easier installation in existing cabinets.



Internal schematic with isolated voltage and current measurement

## Ordering codes

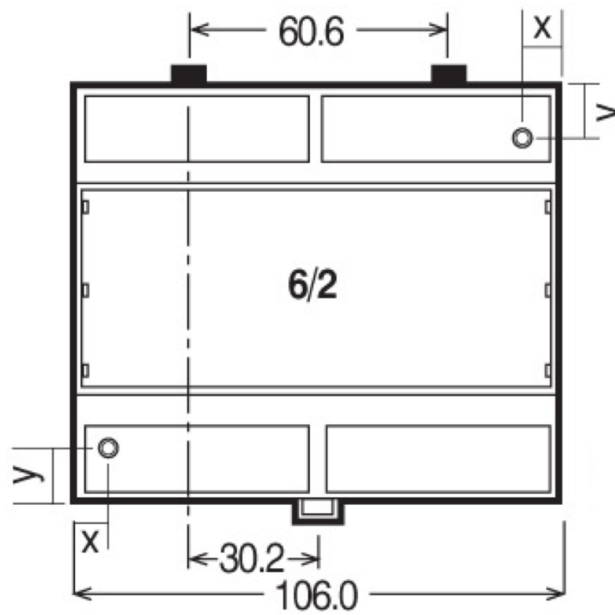
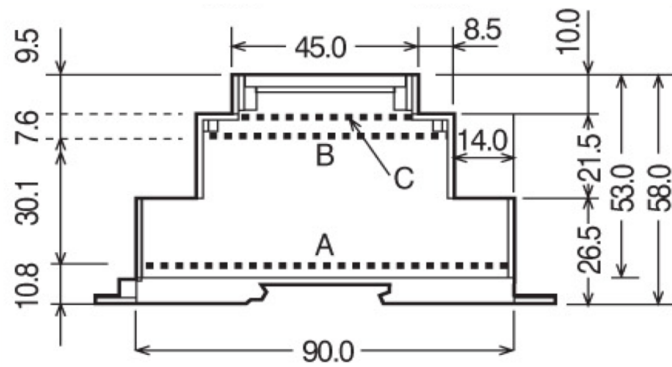
CODE	Description
MCC1k5VMbRTU-230	MCC1k5V device with Modbus RTU (RS-485) communication and 230 Vac power supply
MCC1k5-MbTCP-230	MCC1k5V device with Modbus TCP (Ethernet) communication and 230 Vac power supply
MCC1k5VMbRTU-24	MCC1k5V device with Modbus RTU (RS-485) communication and 24 Vdc power supply
MCC1k5-MbTCP-24	MCC1k5V device with Modbus TCP (Ethernet) communication and 24 Vdc power supply
SCEH-50	50 A (AC) / 150 A (DC) current sensor
SCEH-100	100 A (AC) / 300 A (DC) current sensor
SCEH-200	200 A (AC) / 600 A (DC) current sensor
SCEH-300	300 A (AC) / 900 A (DC) current sensor
SCEH-400	400 A (AC) / 1100 A (DC) current sensor
SCEH-500	500 A (AC) / 1100 A (DC) current sensor
SCEH-600	600 A (AC) / 1100 A (DC) current sensor

# Technical Specifications

Measured magnitudes	Range	Measurement quantization	Max. measurement error	Sampling rate
DC Voltage	0 to $\pm 1750$ Vdc	100 mV	$\pm 3$ V	12.8 kHz
DC Current (Optional)	150 / 300 Adc 600 Adc 900 / 1100 Adc	10 mA 20 mA 50 mA	$\pm 3$ A $\pm 6$ A $\pm 10$ A	12.8 kHz
DC Power (Optional)	600 kW 1.200 kW 2.000 kW	10 W 20 W 50 W	$\pm 20$ W $\pm 50$ W $\pm 100$ W	12.8 kHz
AC Voltage	0 to 900 Vrms	20 mV	$\pm 3$ V	12.8 kHz
AC Current (Optional)	50 / 100 / 200 Arms 300 / 400 Arms 500 / 600 Arms	5 mA 10 mA 20 mA	$\pm 3$ A $\pm 6$ A $\pm 10$ A	12.8 kHz
AC Active Power (Optional)	200 kW 400 kW 800 kW	5 W 10 W 20 W	$\pm 20$ W $\pm 50$ W $\pm 100$ W	12.8 kHz
AC Reactive Power (Optional)	200 kvar 400 kvar 800 kvar	5 var 10 var 20 var	$\pm 20$ var $\pm 50$ var $\pm 100$ var	12.8 kHz
AC Apparent Power (Optional)	200 kVA 400 kVA 800 kVA	5 VA 10 VA 20 VA	$\pm 20$ VA $\pm 50$ VA $\pm 100$ VA	12.8 kHz
<b>Signal Processing rate</b>				
Averaging window (AC and DC)	8,33 / 10 / 16,66 / 20 / 100 / 200 ms			
<b>Communication</b>				
Logical protocol	Modbus RTU	Modbus TCP	Please specify when ordering	
Physical medium	RS/485	Ethernet		
Serial port bits	8 bits			
Serial port parity	No parity			
Serial port stop bit	1 stop bit			
Serial port speed	9 600 to 115 200			
<b>Digital Outputs</b>				
Number of outputs	2			
Type of contact	Dry contact: NO+NC			
Contact Un	250 V			
Contact breaking current	5 A			
Contact operation	Programmable on U, I or P			
Operation time	5 ms			
<b>Miscellanea</b>				
External dimensions	106 x 90 x 58 mm			
Weigh	260 gr			
Mounting	DIN Rail			
IP rating	IP54			
Power consumption	1.5 W (max)			
Power Supply	15 to 30 Vdc	Please specify when ordering		
	or	90 to 230 Vac		
Conformance	CE-compliant			
Electro-magnetic compatibility	EMC directive 2004/108/EC			
Noise emission	EN61000-6-4			
Noise immunity	EN61000-6-2			
Reach SVHC	Lead 7439-92-1			

# Connection terminals designation

HV connection (Top left)	Description
(1) HV Meas. +	High voltage positive measuring point
(2) HV Meas. -	High voltage negative measuring point
(2) HV Ref.	High voltage reference point. Internally not connected to GND to avoid current loops
LV connection	Description
(1) Power + or L	Positive power supply on DC powered model. Line power supply on AC powered models.
(2) Power - or N	Negative power supply on DC powered model. Neutral power supply on AC powered models.
(3) GND	PE connection
(4) Output 1 COM	Common point for output 1
(5) Output 1 NO	Normally Open point for output 1
(6) Output 1 NC	Normally Closed point for output 1
(7) Output 2 COM	Common point for dry output 2
(8) Output 2 NO	Normally Open point for dry output 2
(9) Output 2 NC	Normally Closed point for dry output 2



Enclosure dimensions