Energy Management
Energy Analyzer
Type EM270

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- **2 programmable pulsating outputs (optional)**
- **Easy connections management (selectable) disabled by default**
- **Fast installation system by:**
  - **Detachable dual voltage terminal blocks**
  - **Daisy-chain of max 20 EM270 by dual voltage terminal blocks**
  - **Detachable serial and pulse outputs terminal blocks**
  - **RJ11 connection for external TCD current transformers**
- **Overall dimensions: 72x72 mm**
- **Protection degree (front): IP50**
- **Equivalent to Class 1 (kWh) of EN62053-21 (EM270 Base only)**
- **Equivalent to Class 2 (kvarh) of EN62053-23 (EM270 Base only)**
- **Equivalent to Class 0.5 (currents) of EN60044-1 (TCD current transformers only)**
- **2 meters in 1:**
  - **up to 2 three-phase loads with virtual sum function**
- **6 meters in 1:**
  - **up to 6 single-phase loads system**
- **Virtual meter (sum of two 3-phase or six 1-phase loads)**
- **Energy meter with 6+1 DGT readout**
- **Current measurement up to 630 A with external TCD current transformer accessories**
- **Auto-detection of the primary current of the external TCD current transformer**
- **Phase order of external TCD current transformer selectable**
- **Instantaneous variables readout: 3-DGT (power: 3-DGT, current and voltage: 3-DGT)**
- **Single phase variables: V, A, kW**
- **Total energy measurements: total kWh and kvarh**
- **TRMS measurements of distorted sine waves (voltages/currents)**
- **Self power supply**
- **RS485 serial communication port (standard)**
- **RS485 dual port for daisy chain connection (optional)**

Product description

Dual three-phase energy meter with built-in configuration key-pad and LCD data displaying capable to measure the consumed energy (and other electrical parameters) by up two three-phase loads or by up to six single-phase loads. Housing for both DIN-rail and panel mounting with IP50 (front) protection degree. The voltage connections are carried out by a couple of detachable terminals so to allow a very fast daisy chain installation of multiple meters. Measurement of the current up to 630 A with external TCD current transformer accessories connected by RJ11. Moreover the meter is provided either with two pulsating outputs proportional to the active energy being measured (e.g. one for lighting load and one for power load) and a serial RS485 port or with a dual serial RS485 port based on detachable terminals for a fast installation. A virtual energy meter can be enabled to provide the total consumptions data of the two 3-phase loads (or of the six 1-phase ones).

How to order

EM270-72D MV5 3 X OS X

Model
Range code
System
Power supply
Output
Option

Type Selection

Range code

MV5: 230VLN/400VLL AC)
MV6: 120VLN/230VLL AC both by TCD current transformers

System

3: 3-phase 3-wire, 3-phase 4-wire, or 1-phase 2-wire

Power supply

X: Self power supply from 40V to 460VA-CLL, 45 to 65Hz

Outputs

OS: dual static output (opto-mosfet) and serial port
2S: dual RS485 serial communication port

Option

X: none

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Input specification

Rated Input	
Current type	Galvanic insulation carried out by means of external TCD current transformer accessories
Current range	630 A with TCD current transformer
Voltage	230VLN and 400VLL (MV5), 120VLN and 230VLL (MV6)
Accuracy	The below data considers the whole measuring chain: EM270 base meter and TCD current transformer
(Display, serial communication) (@25°C ±5°C, R.H. ≤60%, 45 to 65 Hz)	
Current range	In: 160A, 250A, 630A (TCD primary current)
Voltage range	Un: see below
Current	From 0.02In to 0.05In: ±(1.25% RDG +3DGT) From 0.05In to 0.2In: ±(1% RDG +2DGT) From 0.2In to Imax: ±(0.75% RDG +1DGT)
MV5 range	Un: 160 to 260VLN (277 to 450VLL)
MV6 range	Un: 40 to 144VLN (70 to 250VLL)
Phase-neutral voltage	In the range Un: ±(0,5% RDG +1DGT)
Phase-phase voltage	In the range Un: ±(1% RDG +1DGT)
Frequency	Range: 45 to 65Hz. Resolution: 1Hz
Active power	From 0.02In to 0.05In, within Un range, PF=1: ±(2% RDG +2DGT) From 0.05In to 0.2In, within Un range, PF=1: ±(1.5% RDG +1DGT) From 0.2In to Imax, within Un range, PF=1: ±(1.25% RDG +1DGT) From 0.05In to 0.1In, within Un range, PF=0.5L or 0.8C: ±(2.5% RDG +2DGT) From 0.1In to 0.2In, within Un range, PF=0.5L or 0.8C: ±(2% RDG +1DGT) From 0.2In to Imax, within Un range, PF=0.5L or 0.8C: ±(1.5% RDG +1DGT)
Reactive power	From 0.02In to 0.05In, within Un range, sin(ϕ)=1: ±(3% RDG +2DGT) From 0.05In to 0.2In, within Un range, sin(ϕ)=1: ±(2.5% RDG +1DGT) From 0.2In to Imax, within Un range, sin(ϕ)=1: ±(2.25% RDG +1DGT) From 0.05In to 0.1In, within Un range, sin(ϕ)=0.5 (L or C): ±(3.5% RDG +2DGT) From 0.1In to 0.2In, within Un range, sin(ϕ)=0.5 (L or C): ±(3% RDG +1DGT) From 0.2In to Imax, within Un range, sin(ϕ)=0.5 (L or C): ±(2.5% RDG +1DGT)
Energies	kWh: better than the combination of a class 1 of EN62053-21 meter (EM270 base) and class 0.5 of EN60044-1 CTs (TCD current transformer) considering the whole measurement chain (see Active power above). kvarh: better than the combination of a class 2 of EN62053-23 meter (EM270 base) and class 0.5 of EN60044-1 CTs (TCD current transformer) considering the whole measurement chain (see Reactive power above). Start-up current: 0.002In.
Temperature drift	≤200ppm/°C
Sampling rate	1600 samples/s @ 50Hz; 1900 samples/s @ 60Hz
Display	2 lines (1 x 7-DGT + 1 x 3-DGT)
Type	LCD, h 7 mm
Instantaneous variables readout	3-DGT (Power: 3-DGT, currents: 3-DGT)
Energies	Imported Total: 6+1DGT
Overload status	EEE indication when the value being measured is exceeding the “Continuous inputs overload” (maximum measurement capacity)

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Input specification (cont.)

Max. and Min. indication	Max. instantaneous variables: 999; energies: 9 999 999. Min. instantaneous variables: 0; energies 0.0
Refresh time	1 second
LEDs	Red LED (Energy consumption only, relevant to the sum of the consumption of any load connected to the meter, 1 imp./kWh according to EN50470-1. Green LED for Power-on (steady) and communication status: RX-TX (in case of RS485 option only), blinking.
Measurements	See “List of the variables that can be connected to:”
Method	TRMS measurements of distorted wave forms.
Coupling type	By means of the external current transformer accessories.
Crest factor	1.414 @ Imax (Imax=1.2 In = 0.4V). In any case: Vpeak max = 0.565V
Voltage Overloads	
Continuous	1.2 Un
For 500ms	2 Un (except power supply terminals)
Voltage input impedance	
Self-power supply	Power Consumption: < 4VA / 2W
Frequency	45 to 65 Hz
Keypad	2 pushbuttons for variable selection and programming of the digital output parameters

Output specifications

Pulse output	
Number of outputs	2, Programmable from 0.1 to 1000 pulses per kWh.
Type	Output connectable to the energy meters (kWh)
Connection type	Detachable screw terminal connectors
Pulse duration	Selectable, 40ms or 100 ms (ON), according to EN62052-31. Static: optomosfe
Output	V_{ON} 2.5 VAC/DC/ max. 70 mA
Load	V_{OFF} 40 VAC/DC max.
Insulation	4kVp/2,5kVAC output to measuring inputs.
RS485	
Type	Multidrop, bidirectional (static and dynamic variables)
Connections	2-wire max. distance 1000m
Connection type	Detachable screw terminal connectors
Termination	Termination by using a proper jumper in the terminal block.
Addresses	247, selectable by means of the front keypad
Protocol	MODBUS/JBUS (RTU)
Data (bidirectional)	
Dynamic (reading only)	System and phase variables: see table “List of the variables that can be connected to:”.
Static (reading and writing)	All the configuration parameters.
Data format	1 start bit, 8 data bit, no or even parity,1 stop bit
Baud-rate	9.6, 19.2, 38.4 kbaud
Driver input capability	1/5 unit load. Maximum 160 transceivers on the same bus.
Insulation	By means of optocouplers, 4kVp/2,5kVAC output to measuring input.

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Software functions

Password	Numeric code of max. 3 digits; 2 protection levels of the programming data:
1st level	Password “0”, no protection;
2nd level	Password from “1” to “999”, all data are protected
Lock knob	Programming (by keypad or serial commands) is not possible with the lock knob located behind the display unit is on lock position
System selection	
System 1.3P unbalanced load	3-phase (3- or 4-wire). Management of one 3-phase load.
System 2.3P unbalanced load	3-phase (3- or 4-wire). Management of two 3-phase loads.
System 3.1P unbalanced load	1-phase (2-wire). Management of three 1-phase loads.
System 6.1P unbalanced load	1-phase (2-wire). Management of six 1-phase loads.
Function selection	
Function SUM	ON: each single system and total data (A, W, kWh) available. OFF: each single system data available without total data
TCD phase order	123: Phase L1 is in the top (looking at the installed TCD with the output cable on the right). 321: Phase L3 is in the top (looking at the installed TCD with the output cable on the right).
Easy connection Function (EC)	ON: measurement independent on current direction. OFF: measurement dependent on current direction (default).
Easy connection function	When NOT active, energies (kWh and kvarh) and power (kW) measurements are dependent from the current direction (if negative, A, P, Q are shown with the “-“ sign). The displayed energy values are only relevant to the “imported” energies.

Transformer ratio	
VT (PT) ratio	1.0 to 99.9 / 100 to 999
CT primary current	Auto-detection of the primary current of the TCD current transformer. The 2 TCD’s shall have the same primary current . The maximum value of the VT is limited to grant the measurement of the mx possible power (210MW). The following table list the max VT values. In case of programming a VT or a current primary value which exceed this limit, an error message appears for 2 s, then the previous value is displayed again. An exception is sent via Modbus in case of wrong CT or VT value set via serial communication.
Max VT (PT) ratio	
MV5 model	Primary current 160 A: VT max 620. Primary current 250 A: VT max 410. Primary current 630 A: VT max 150.
MV6 model	Primary current 160 A : VT max 999. Primary current 250 A: VT max 720. Primary current 630 A: VT max 270
Integration time	
For dmd power calculation	Selectable, from 1 to 60 min
Displaying	Up to 3 variables per page. See «Display pages»
Reset	By means of the front keypad: - total energies (function SUM on): kWh - partial energies: single load energy (kWh) and demanded power (Wdmd) - Max demand (Md) of active and apparent power.

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General specifications

Operating temperature	Operating temperature -25 to +55°C (-13°F to +131°F) (R.H. from 0 to 90% non-condensing @ 40°C) according to EN62052-11
Storage temperature	-30 to +70°C (-22°F to +158°F) (R.H. < 90% non-condensing @ 40°C) according to EN62052-11
Overvoltage category	Cat. III (IEC 60664, EN60664)
Dielectric strength	4000VAC RMS for 1 minute (all terminals to front panel)
Noise rejection	
CMRR	100 dB, 48 to 62 Hz
EMC	According to EN62052-11 and EN50470-1 (E2)
Electrostatic discharges	5kV air discharge, 8kV contact discharge;
Immunity to irradiated electromagnetic fields	Test with current: 10V/m from 80 to 2000MHz Test without any current: 30V/m from 80 to 2000MHz;
Burst	On current (TCD primary) and voltage measuring inputs circuit: 4kV
Immunity to conducted disturbances	10V/m from 150kHz to 80Mhz
Surge	On current (TCD primary) and voltage measuring inputs circuit: 4kV;
Radio frequency suppression	According to CISPR 22

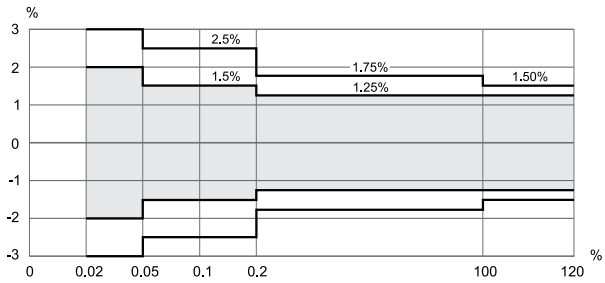
Standard compliance	
Safety	IEC60664, EN60664, IEC61010-1, EN61010-1 EN62052-11, EN50470-1
Pulse output	DIN43864, IEC62053-31
Approvals	CE
Connections	
Voltage	Detachable dual screw terminals. Max wire cross section 1.5 mm² (14 AWG). Min./max. screws tightening torque: 0.2/0.25 Nm
Current inputs	2x RJ11 (female) for current connections
Outputs (pulse and RS485 port)	Detachable screw terminals. Max wire cross section 1.5 mm² (14 AWG). Min./max. screws tightening torque: 0.2/0.25 Nm.
Housing	
Dimensions (WxHxD)	72 x 72 x 65 mm
Material	Noryl, self-extinguishing: UL 94 V-0
Mounting	DIN-rail or Panel mounting
Protection degree	
Front	IP50
Screw terminals	IP20
Weight	Approx. 400g (packing included)

Power supply specifications

Self supplied version	From 40V to 460VAC LL, 45 to 65Hz, between L2 and L3
Power consumption	≤4VA/2W

Accuracy

kWh, **PF**=1, compared with a cl 1 meter EN62053-2 and a cl 0.5 CT EN60044-1

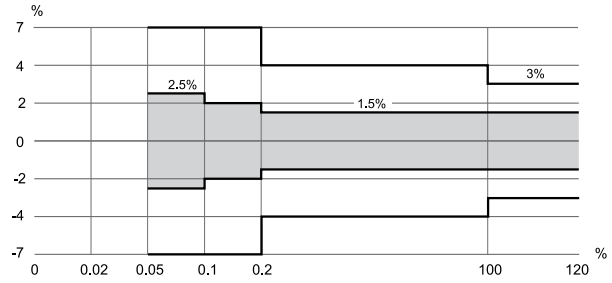


Error limit of EN6205321 (cl 1) EN6044-1 (cl 0.5)

Error in EM270 + TCD

In= 160, 250, 630. 630A max 110% @ ....

kWh, **PF**=0.5L, compared with a cl 1 meter EN62053-21 and a cl 0.5 CT EN60044-1



Error limit of EN6205321 (cl 1) EN6044-1 (cl 0.5)

Error in EM270 + TCD

In= 160, 250, 630. 630A max 110% @ ....

Used calculation formulas

Phase variables

Instantaneous effective current

$$A_1 = \sqrt{\frac{1}{n} \cdot \sum_{1}^{n} (A_1)_i^2}$$

Instantaneous apparent power

$$VA_1 = V_{1N} \cdot A_1$$

Instantaneous reactive power

$$\mathrm{var}_1 = \sqrt{(VA_1)^2 - (W_1)^2}$$

System variables

Three-phase reactive power

$$\mathrm{var}_\Sigma = (\mathrm{var}_1 + \mathrm{var}_2 + \mathrm{var}_3)$$

Three-phase active power

$$W_\Sigma = W_1 + W_2 + W_3$$

Three-phase apparent power

$$VA_\Sigma = \sqrt{W_\Sigma^2 + \mathrm{var}_\Sigma^2}$$

Three-phase power factor

$$\cos\varphi_\Sigma = \frac{W_\Sigma}{VA_\Sigma}$$

Energy metering

$$k\,\mathrm{var}\,hi = \int_{t1}^{t2} Qi(t)dt \cong \Delta t \sum_{n1}^{n2} Qnj$$

Where:
i= considered phase (L1, L2 or L3)
P= active power; **Q**= reactive power;
t1, t2 =starting and ending time points of consumption recording; **n**= time unit; Δ **t**= time interval between two successive power consumptions;
n1, n2 = starting and ending discrete time points of consumption recording

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List of the variables that can be connected to:

RS485 communication port

All the variables listed in the "Display pages" table, when available (according to the selected system), can be read via serial communication

Pulse outputs

Pulse out 1

Pulse out 2

kWh load 1 (3-phase load 1 or sum of 1-phase loads 1, 2, 3)
kWh load 2 (3-phase load 2 or sum of 1-phase loads 4, 5, 6)

Display pages

No	A (1st line)	B (1st line)	(2nd line)	SYS 1.3P	SYS 2.3P	SYS 3.1P	SYS 6.P	Note
1	kWh		kW (∑)		S	S	S	∑ = Total
2	dMd		kW (∑)		S	S	S	∑ = Total, dMd = dmd
3	Pd		kW (∑)		S	S	S	∑ = Total, Pd = maximum (peak) demand
4	A L1 (∑)	A L2 (∑)	A L3 (∑)		S1	S1	S1	∑ (Total) single phase currents
5	kvarh		kvar (∑)		S	S	S	∑ = Total
6	dMd		kVA (∑)		S	S	S	∑ = Total, demand = dmd
7	Pd		kVA (∑)		S	S	S	∑ = Total, Pd = maximum (peak) demand
8a	kWh (Load A1)		kW (Load A1)	X	X			
8b	kWh (Load A1)		L1			X	X	Relevant to 1-ph load 1
8c	kWh (Load A1)		L2			X	X	Relevant to 1-ph load 2
8d	kWh (Load A1)		L3			X	X	Relevant to 1-ph load 3
8e	kW L1(Load A1)	kW L2	kW L3			X	X	Relevant to 1-ph load 1, 2, 3
9a	dMd (Load A1)		kW (Load A1)	X	X			
9b	dMd L1 (Load A1)		kW (Load A1 L1)			X	X	Relevant to 1-ph load 1
9c	dMd L2 (Load A1)		kW (Load A1 L2)			X	X	Relevant to 1-ph load 2
9d	dMd L3 (Load A1)		kW (Load A1 L3)			X	X	Relevant to 1-ph load 3
10a	Pd (Load A1)		kW (Load A1)	X	X			Md = maximum demand
10b	Pd L1 (Load A1)		kW (Load A1 L1)			X	X	Relevant to 1-ph load 1
10c	Pd L2 (Load A1)		kW (Load A1 L2)			X	X	Relevant to 1-ph load 2
10d	Pd L3 (Load A1)		kW (Load A1 L3)			X	X	Relevant to 1-ph load 3
11	A L1 (Load A1)	A L2 (Load A1)	A L3 (Load A1)	X	X	X	X	In case of system 3P: load 1 single phase currents. In case of system 1P AL1 is the current of 1-ph load 1, Al2 of load 2, AL3 of load 3.
12	kvarh		kvar (Load A1)	X	X			
13	dMd		kVA (Load A1)	X	X			
14	Pd		kVA (Load A1)	X	X			Pd = maximum (peak) demand
15a	kWh (Load A2)		kW (Load A2)	X				

Display pages (cont.)

No	A (1st line)	B (1st line)	(2nd line)	SYS 1.3P	SYS 2.3P	SYS 3.1P	SYS 6.P	Note
15b	kWh (Load A2)		L1			X	Relevant to 1-ph load 4	
15c	kWh (Load A2)	L2				X	Relevant to 1-ph load 5	
15d	kWh (Load A2)		L3			X	Relevant to 1-ph load 6	
15e	kW L1(Load A2)	kW L2	kW L3				X	Relevant to 1-ph load 4, 5, 6
16a	dMd (Load A2)		kW (Load A2)	X				
16b	dMd L1 (Load A2)		kW (Load A2 L1)		X	Relevant to 1-ph load 4		
16c	dMd L2 (Load A2)		kW (Load A2 L2)		X	Relevant to 1-ph load 5		
16d	dMd L3 (Load A2)		kW (Load A2 L3)		X	Relevant to 1-ph load 6		
17a	Pd (Load A2)		kW (Load A2)	X			Md = maximum demand	
17b	Pd L1 (Load A2)	kW (Load A2 L1)			X	Relevant to 1-ph load 4		
17c	Pd L2 (Load A2)		kW (Load A2 L2)		X	Relevant to 1-ph load 5		
17d	Pd L3 (Load A2)		kW (Load A2 L3)		X	Relevant to 1-ph load 6		
18	A L1 (Load A2)	A L2 (Load A2)	A L3 (Load A2)		X		X	In case of system 2.3P: Load 2 single phase currents. In case of system 6.1P AL1 is the current of 1-ph load 4, Al2 of load 5, AL3 of load 6.
19	kvarh		kvar (Load A2)		X			
20	dMd		kVA (Load A2)		X			
21	Md		kVA (Load A2)		X			Md = max. demand
22	V L1N (L1)	V L2N (L2)	V L3N (L3)	X	X	X	X	
23	V12 (L1)	V23 (L2)	V31 (L3+triangle)	X	X			
24	kW (LoadA1)	kW (Load A2)	kW (∑)		S		S	In case of system 6.1P load 1 is the sum of 1-ph loads 1, 2, 3 and load 2 is the sum of 1-ph loads 4, 5, 6.

Note: whatever page the user has selected, after 120s it goes back to page 1 (if available, otherwise page 8).
X: available;
S: available only if SUM function is on;
S1: available only if SUM function is on but TCD phase orders are the same (both 123 or both 321, see available menu table);
Empty: not available.

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Additional available information on the display

Type	1st line	2nd line	Note
Meter information 1	Y. 2008	r.A0	Year of production and firmware release
Meter information 2	PuL_LEd (kWh)	[value]	kWh per pulses of the LED
Meter information 3	SYS [2.3P]		1.3P, 2.3P, 3.1P, 6.1P
Meter information 4	[value 1][value 2]**	tcd	Phase order (123 or 321) of TCD A1 and A2
Meter information 5	Ut rat.	[value]	Voltage transformer ratio
Meter information 6	Ct Prin	[value]	Current transformer primary value
Meter information 7*	PuL 1 (kWh)	[value]	Pulse output: kWh per pulse Load A1
Meter information 8*	PuL 2 (kWh)	[value]	Pulse output: kWh per pulse Load A2
Meter information 9	AddrESS	[value]	Serial communication address
Md reset	rESEtuP	no/YES	Reset of maximum demand

(*) = in case of digital pulse output model
(**) = [value 2] is "---" in case of system 1.3P or 3.1P

Display resolution

Variable	Resolution	Range	
		From	To
Active and Apparent Power	0.1 W 1 W 0.01 kW 0.1 kW 1 kW	0.1 W 1 W 1.00 kW 10.0 kW 100 kW	99.9 W 999 W 9.99 kW 99.9 kW 999 kW
Energy (kWh and kvarh)	0.1 kWh / kvarh 1 kWh / kvarh	0.1 kWh 1 000 000 kWh	999 999.9 kWh 9 999 999 kWh
Voltage	1 V	1 V	999 V
Current	0.01 A 0.1 A 1 A	0.01 A 10.0 A 1A	9.99 A 99.9 A 999 A

Error message management

Description	Display message
1st load CT not connected	[load 1] MISSInG tcd
2nd load CT enabled (systems 2.3P or 6.1P) but not connected	[load 2] MISSInG tcd
1st and 2nd loads CT not connected	[load 1] [load 2] MISSInG tcd
2nd load CT enabled (systems 2.3P or 6.1P) but having a different primary current than 1st load CT	[load 2] WrOnG tcd
Over-range condition of the measuring inputs (voltage and current)	E E E

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List of available menus

Always available		Selection	Default setting
PASS ?	Password	From 0 to 999	0
PASS ? (100)	“rESEt UP” Reset of the max value of Wdmd and VAdmd (only for Total)	no / YES	No
CnG¬_PASS	New Password	From 0 to 999	0
SYS	3-phase (3- or 4-wire). Management of one 3-phase load.	1.3P	1.3P
	3-phase (3- or 4-wire). Management of two 3-phase loads.	2.3P	
	1-phase (2-wire). Management of three 1-phase load.	3.1P	
	1-phase (2-wire). Management of six 1-phase loads.	6.1P	
SuM (**)	SUM function	On/OFF	On
EC (****)	Easy connection function	On/OFF	OFF
tCd A1 (***)	1st TCD phase order	123/321	123
tCd A2 (***)	2nd TCD phase order	123/321	123
P.int ti	Integration time for “dmd” power calculation	From 1 to 60 min	15
Ut	VT ratio	1.0 to 99.9 / 100 to 999	1.0
PuL 1 (*)	Number of kWh per pulse Load A1	From 0.01 to 9.99	0.1
PuL 2 (*) (**)	Number of kWh per pulse Load A2	From 0.01 to 9.99	0.1
t.on (*)	TON time (milliseconds)	40 or 100ms	100
AddrESS	Modbus address of the instrument	From 1 to 247	1
bAud	Modbus baud rate	9.6, 19.2, 38.4 kbps	9.6
PArItY	Modbus parity	No, EvEn	No
EnE PA.rE	Reset of the Load A1 and Load A2 energies (6 load in 1-phase system)	no / YES	No
EnE to.rE	Reset of the total energy	no / YES	No

(*) = in case of digital pulse output, only 3-phase systems. In 1-phase system the pulse is relevant to the sum of the first three and second three 1-phase loads.
(**) = not present in case of 1.3P
(***) = in case the phase order in one or both the TCD is not the same shown in the wiring diagram, it is possible to swap the phase order (from L1, L2, L3 to L3, L2, L1). If the phase order is not the same and SUM function is enabled, the current SUM page is not available.
(****) = in case of Easy connection disabled and imported power: A, kW are to be shown with negative sign; only kWh is not integrated; the negative instantaneous contribution to Wdmd calculation is not considered. In all the cases kvar is displayed with the actual sign.

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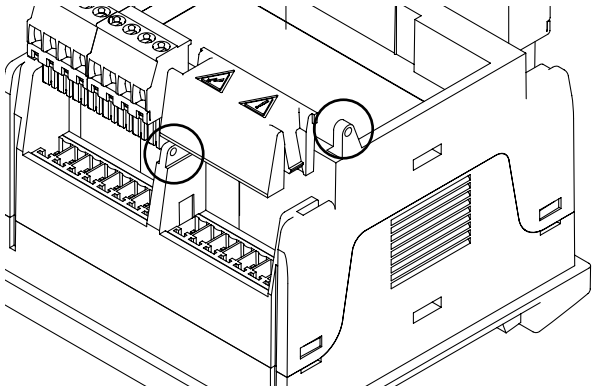
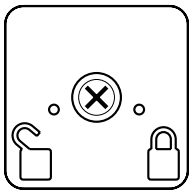
Tamper proof capability



Position of the seals

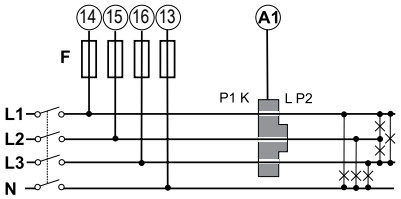


Rear view of the detached display unit with highlight of the programming lock.

Wiring diagrams

3-ph. system type selection 1.3P

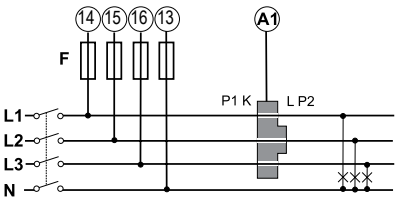
Fig.1



Note: in case of 3W connection, do not consider N in this diagram

3-phase system type selection: 2.3P

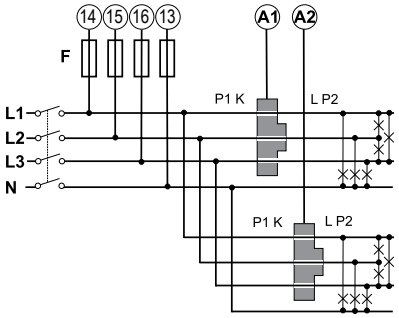
Fig.2



Note: in case of 3W connection, do not consider N in this diagram

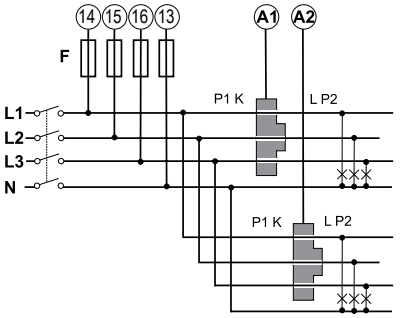
1-phase system type selection: 3.1P

Fig.3



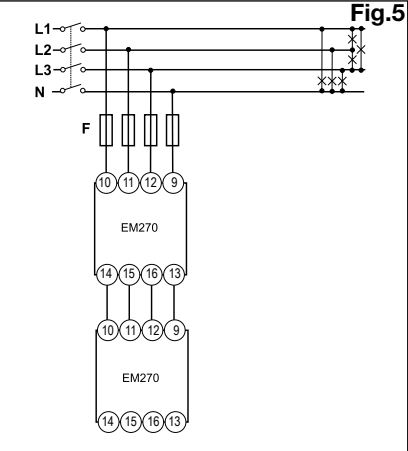
1-phase system type selection: 6.1P

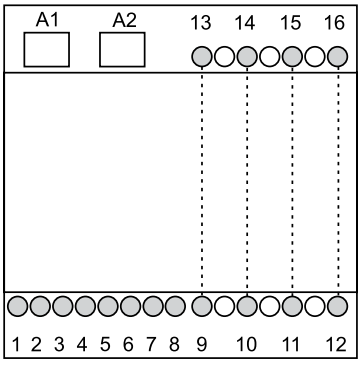
Fig.4



Loom example

Fig.5





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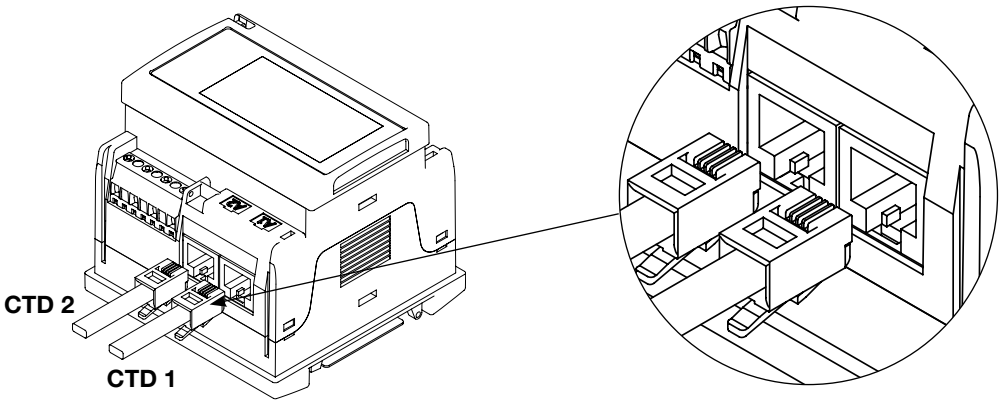
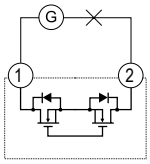
Current connections

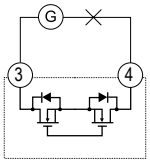


Static output connections

Out 1 **Fig.1**

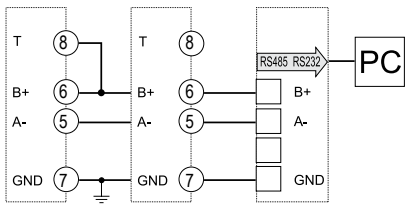


Out 2 **Fig.1**

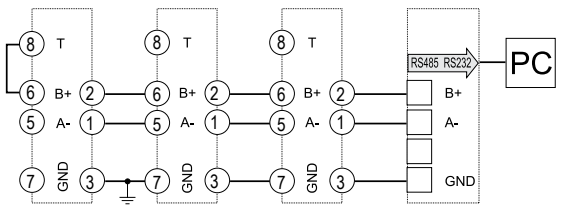


RS485 Serial Port

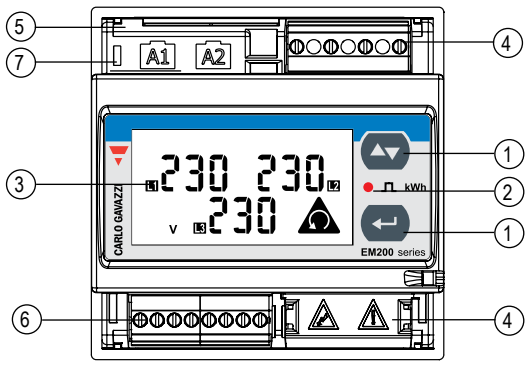
Single Port **Fig.1**



Dual (In/out) Port **Fig.2**



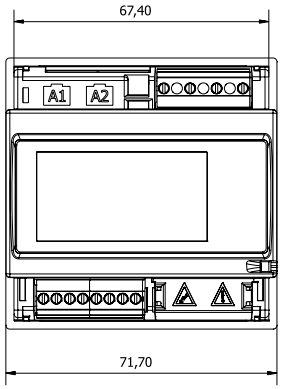
Front panel description

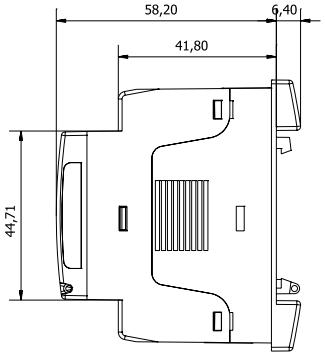


1. **Keypad**
   2 push-buttons to program the configuration parameters and scroll the variables on the display
2. **LED**
   Red LED blinking proportional to the total active energy being measured (Total= Load A1 + Load A2).
3. **Display**
   LCD-type with alphanumeric indications to:
   - display configuration parameters;
   - display all the measured variables.
4. **Detachable voltage screw terminals**
   Detachable screw terminal blocks for voltage wiring.
   NOTE: max 20 EM270 connected in cascade. No other loads can be connected to voltage terminals.
5. **Current RJ11 connectors**
   RJ11 connectors (female) for quick connection to up to two CT accessories.
6. **RS485 or pulse screw terminals**
   Detachable screw terminal blocks for quick connection in daisy chain of the serial RS485 line or for connection if the 2 independent pulse output.
7. **Power-On LED**
   Green LED lit when power supply is available.

Dimensions and panel cut-out (mm)

DIN





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