CARLO GAVAZZI EM530 Power Analyzer For Three Phase And Two Phase Systems Instruction Manual

Contents

CARLO GAVAZZI EM530 Power Analyzer For Three Phase And Two Phase Systems

Specifications

- Operating temperature: Not specified
- Storage temperature: Not specified
- Protection degree: IP40 and IP51 (IP51 degree only in a distribution board)
- Overvoltage/Measurement category: III, 4kV rated Impulse voltage
- Protective class: II
- Altitude: Max 2000 m
- Consumption: Not specified
- Digital output: Available
- Digital input: Available

Installing EM530

1. Mount EM530 on DIN rail.
2. Open terminal caps.
3. Complete measuring input connections.
4. Close the terminal caps.
5. Seal the terminal caps (MID requirement).
6. Connect inputs and digital output, RS485, or M-Bus.
7. Turn on power and check correct operation.
8. Complete the MID programming (only PF version).
9. The CT ratio must be set before use. Once set, the CT ratio cannot be changed. Follow the guided procedure on the display to set the CT ratio.
10. Configure EM530.

FAQ

Q: What is the voltage tolerance of EM530?

A: The voltage tolerance of EM530 is -20% to +15% for a frequency range of 50-60 Hz.

Q: What are the available input voltages for EM530?
A: EM530 supports Un (L-N) voltage range of 120-240 V and Un (L-L) voltage range of 208-415 V.

Installation instruction

Power analyzer for three-phase and two-phase systems

- Operating temperature From -25 to +55 °C/from -13 to +131 °F
- Storage temperature From -25 to +70 °C/from -13 to +158 °F
- Protection degree (not UL evaluated) IP40 and IP51 (just in a distribution board with IP51 degree
- Overvoltage/Measurement category Protective class II, 4kV rated Impulse voltage
- Altitude Max 2000 m
- ConsumptionVON 2.5 V ac/dc, max 100 mA.
- Digital output VOFF 42 V ac/dc max
- Digital input Contact measuring voltage: 5 V dc +/- 5%.
- Contact measuring current: 5 mA max
- Weight 180 g

Note: R.H. < 90 % non-condensing @ 40 °C / 104 °F.

Warnings

DANGER! Live parts. Heart attack, burns and other injuries.

- Disconnect the power supply and loads before connecting/disconnecting the electrical wires and installing or servicing current transformers.
- Only use the analyzer at the specified voltage and current.
- The analyzer should only be installed by qualified personnel experienced in working in safety.
- Access to the terminals is reserved for qualified personnel for maintenance operations.

NOTICE: The system installer is liable for the safety of any system that includes the analyzer
NOTICE: Always use electrical wires according to all applicable local and international regulations.
NOTICE: only use the analyzer at the specified voltage and current to avoid permanent damage.
NOTICE: no one is authorized to open the analyzer. This operation is reserved exclusively for CARLO GAVAZZI technical service personnel. Protection may be impaired if the instrument is used in a manner not specified by the manufacturer.


This manual is an integral part of the product. It must be consulted for analyzer installation. It must be kept in good condition and in a clean location accessible to all operators.

Cleaning
Use a slightly dampened cloth to clean the display. Do not use abrasives or solvents.

Responsibility for disposal

The product must be disposed of at the relative recycling centers specified by the government or local public authorities. Correct disposal and recycling will contribute to the prevention of potentially harmful consequences to the environment and persons.

Service and warranty

In the event of malfunction, fault, requests for information or to purchase accessory modules, contact the CARLO GAVAZZI branch or distributor in your country.
Installation and use of analyzers other than those indicated in the provided instructions void the warranty.

Notes

- The instrument must be installed taking care of leaving the external disconnecting device easily accessible.
- The current transformers may not be installed in equipment where they exceed 75 percent of the wiring space of any cross-sectional area within the equipment.
- Restrict installation of current transformer in an area where it would block ventilation openings.
- Restrict installation of current transformer in an area of breaker arc venting.
- Secure current transformer and route conductors so that they do not directly contact live terminals or bus.
- An external switch or circuit-breaker that must be mounted near the instrument is required.
- For use with Current Sensors rated for basic Insulation.
- To be used in a pollution degree 2 or better environment only.
- Indoor use only.
- Auxiliary inputs/outputs (Digital input, Digital output, RS485, M-Bus) must be connected only to Limited-Energy Circuit in accordance with IEC/EN 61010-1.
- The product is intended to be installed inside a certified fire/electrical enclosure.

Additional UL notes

- For use with Listed or R/C Energy Monitoring Current Sensors rated for basic Insulation.
- Auxiliary inputs/outputs (Digital input, Digital output, RS485, M-Bus) must be connected only to Limited-Energy Circuit in accordance with UL/CSA 61010-1 or Class 2 supply source which complies with the National Electrical Code (NEC), NFPA 70, Clause 725.121 and Canadian Electrical Code (CEC), Part I, C22.1.
- Evaluated as open type device; it is intended to be installed inside a dedicated NRTL certified fire/electrical enclosure (overall enclosure) or inside end-product equipment enclosure; it is not intended for retrofit installations in the enclosure of switchgears or panel boards.

Display icon

Display icons

Symbol	Description
⚠	**ALARM (blinking icon):** the value of the variable has exceeded the threshold set.
ⓘ ⚠	**WIRING ERROR (steady icons):** a wiring fault has been detected, the control operates correctly if the selected system is 3Pn and for each phase: • the power is positive (imported), • PF > 0.7 L or PF > 0.96 C. For problem solutions, see "EM500 IM wiring solutions"
Rx Tx	Serial communication state (reception / transmission)
ⓘ	The association of the phase terminal or the direction of the currents have been modified via UCS software to correct virtually a wiring fault. To view the current setup of the terminals, access the info screens (MENU > INFO > TERMINAL).

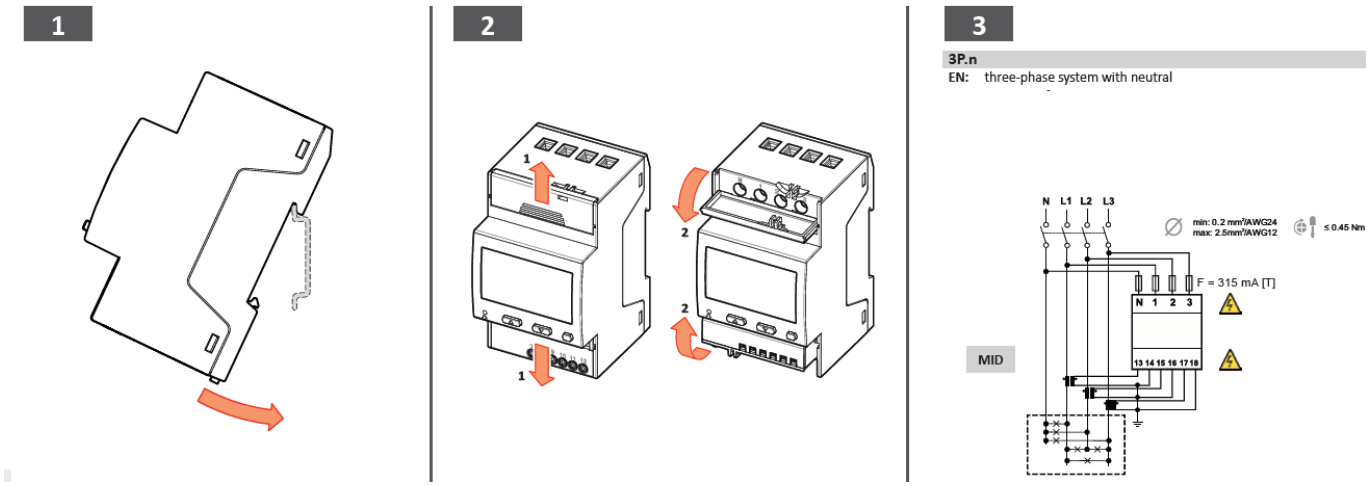
Installation des EM530

1. Mount EM530 on DIN rail.
2. Open terminal caps.
3. Complete measuring input connections.
    - Un (L-N) 120 … 240 V
    - Un (L-L) 208…415 V
    - Voltage tolerance -20 +15%
    - Frequency 50…60 Hz

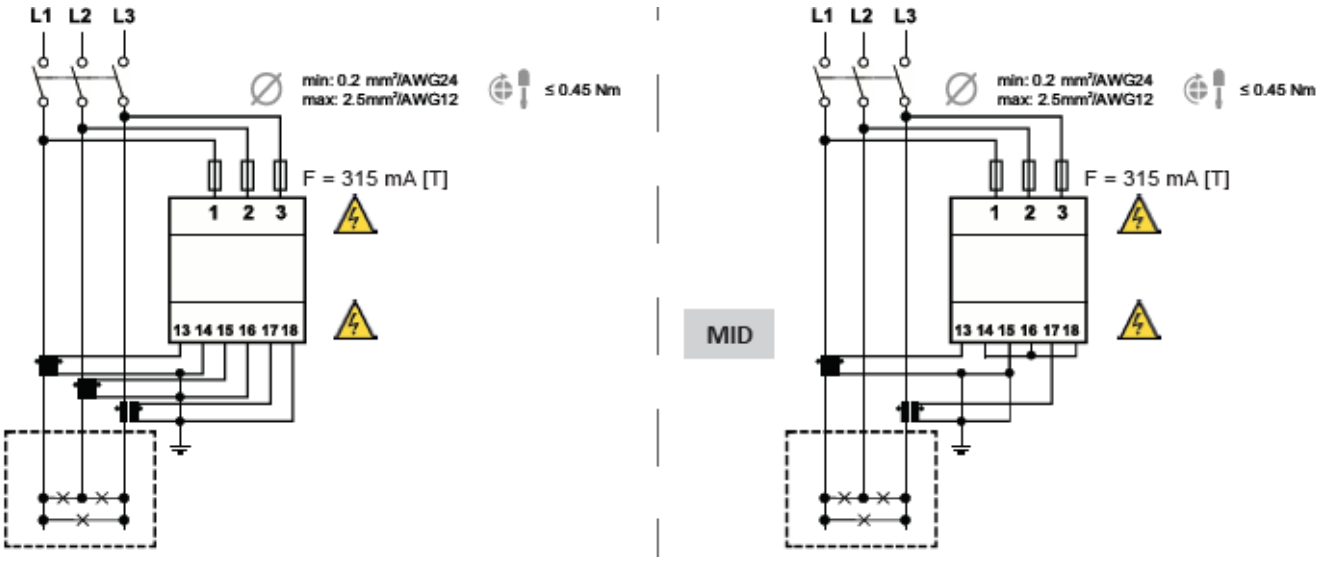
      Note: for MID versions the voltage range is limited to 3×230 (400) V, frequency to 50Hz.
    - In 5 A
    - Imax 6 A
4. Close the terminal caps.
5. Seal the terminal caps (MID requirement).
6. Connect inputs and digital output, RS485 or M-Bus.

   Note: Digital input, digital output, M-bus and RS485 port have reinfoced insulation from mains circuit.
7. Turn on power and check correct operation.
8. Complete the MID programming (only PF version).

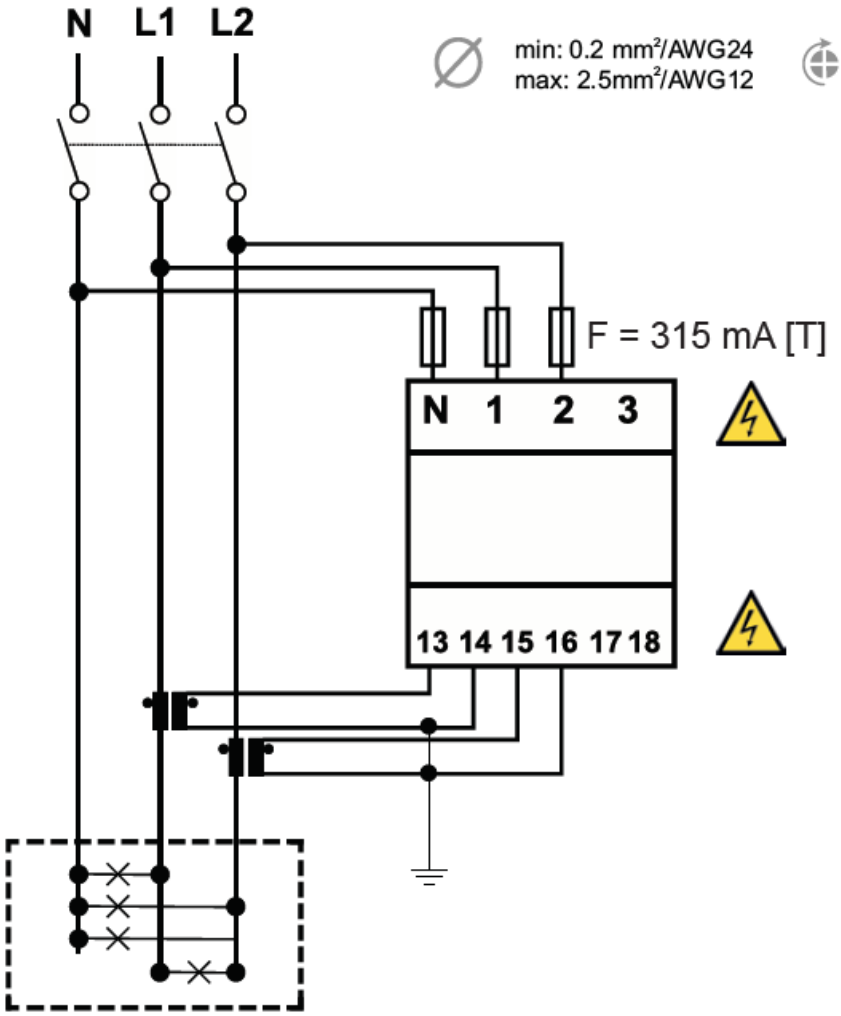
   The CT ratio must be set before use. Once set, the CT ratio cannot be changed. Follow the guided procedure on the display to set the CT ratio.
9. Configure EM530.



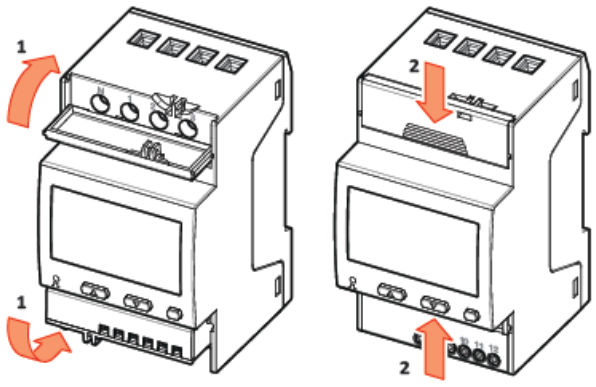
three-phase system without neutral



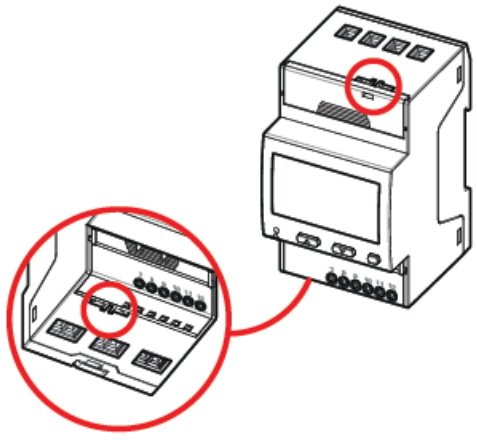
wo-phase system


N L1 L2
min: 0.2 mm²/AWG24
max: 2.5mm²/AWG12
≤ 0.45 Nm
F = 315 mA [T]
N 1 2 3
13 14 15 16 17 18

4


1
1
2
2

5



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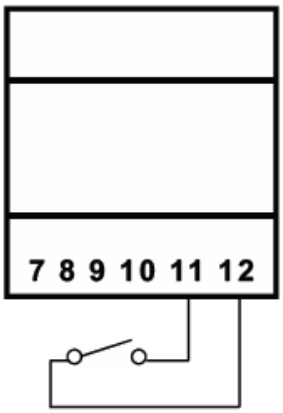
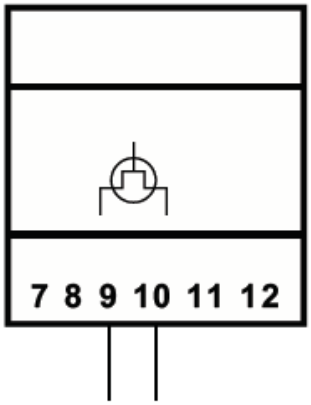
EN: Digital input

min: 0.2 mm²/AWG24
max: 1.5 mm²/AWG14
≤ 0.4 Nm



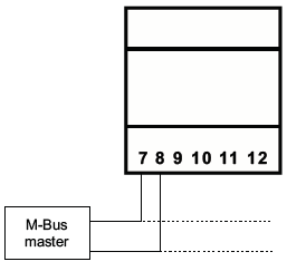
EN: Digital output (option O1))

min: 0.2 mm²/AWG24
max: 1.5 mm²/AWG14
≤ 0.4 Nm

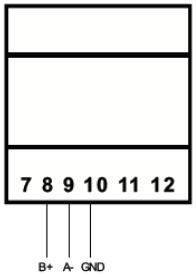


- M-Bus port (option M1)
- RS485 port (option S1)
- RS485 terminalization. Last device on RS485

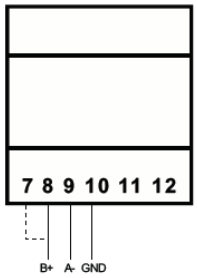
min: 0.2 mm²/AWG24
max: 1.5 mm²/AWG14
≤ 0.4 Nm

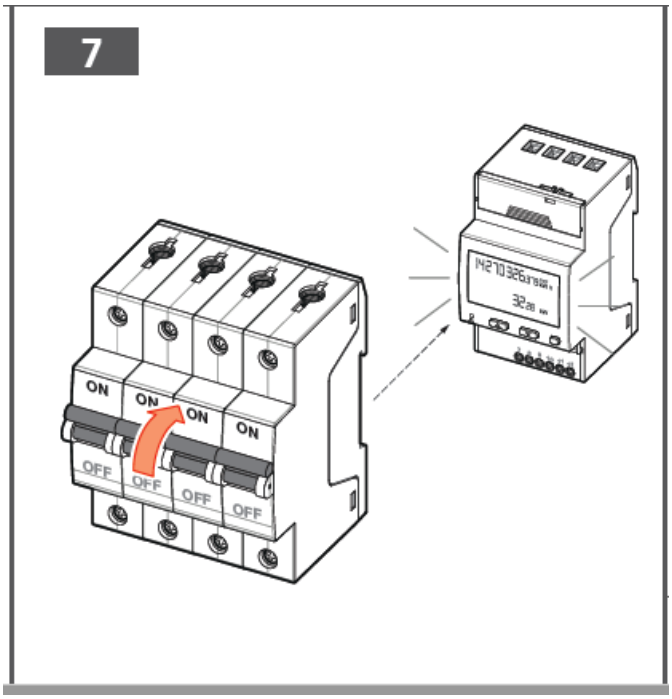


min: 0.2 mm²/AWG24
max: 1.5 mm²/AWG14
≤ 0.4 Nm



min: 0.2 mm²/AWG24
max: 1.5 mm²/AWG14
≤ 0.4 Nm




7
ON
ON
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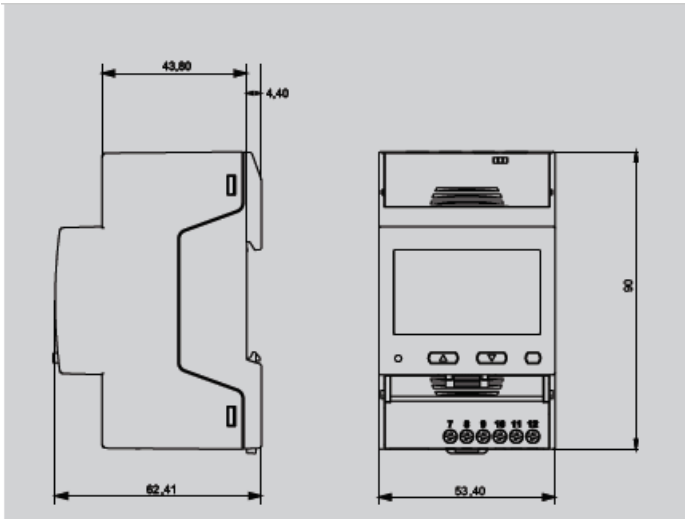
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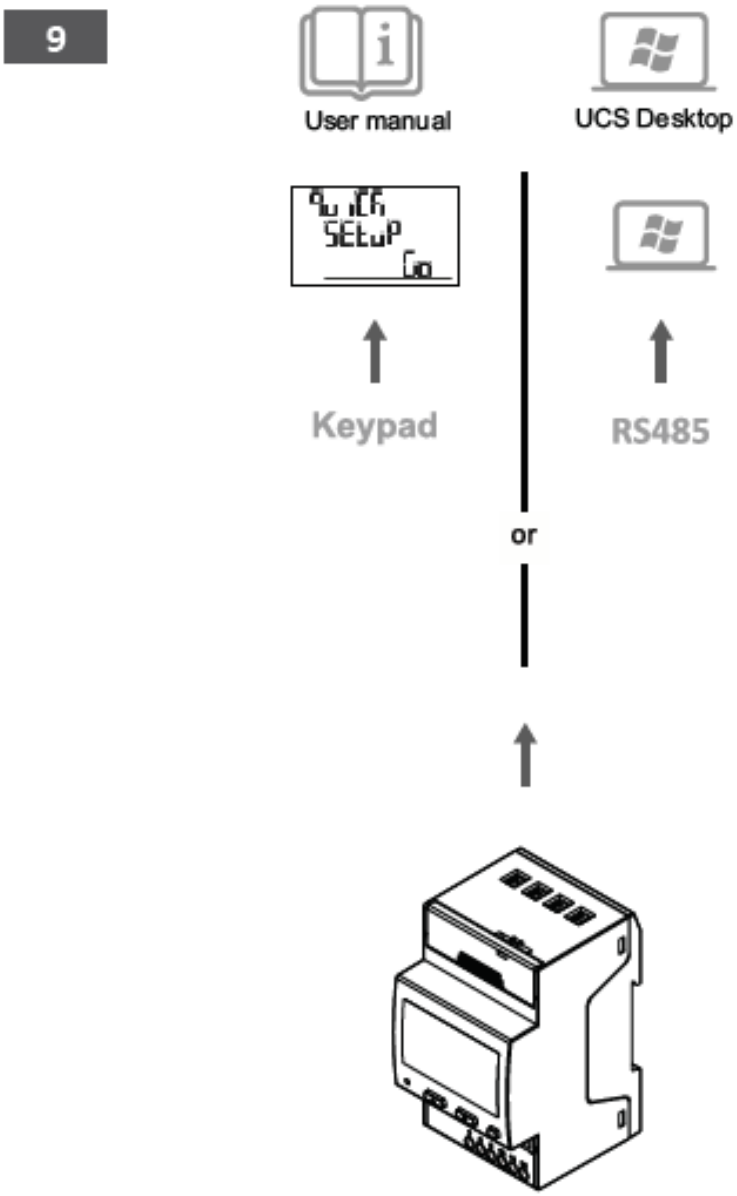
4,40
62,41
53,40
88



- User manual **https://www.gavazziautomation.com/images/PIM/MANUALS/ENG/EM530_IMINST**
- UCS Desktop **https://www.gavazziautomation.com/images/PIM/OTHERSTUFF/ucs.zip**

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ADDITIONAL NOTES FOR MID COMPLIANCE

MID notes

- Electromechanical environmental condition : E2
- Mechanical environmental condition: M2

Reference standards

- EN 50470-3:2022
- EN IEC 62052-11:2021/A11:2022 (Emissions according to CISPR 32:2015, class B)
- EN IEC 62052-31:2016

Supplementary metrology marking:

- EM530 model (Fig. 1a)
- EM540 model (Fig. 1b)

Installation notice.
Check the integrity of the seal

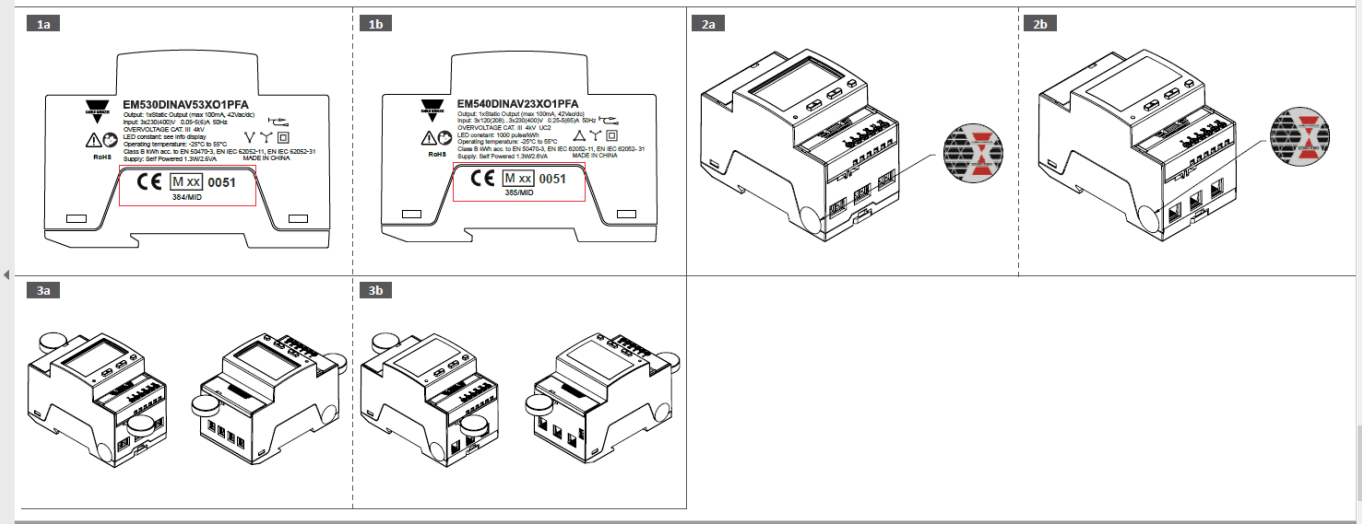
- EM530 model (Fig. 2a)
- EM540 model (Fig. 2b)

Seal the terminal caps before use
Note: the seal is applied by the user and not by the manufacturer. The seal shown is for illustration purpose only.

- EM530 model (Fig. 3a)
- EM540 model (Fig. 3b)

  Note: For EM530 only, the following table reports the optical test output pulse weigh

Weight (kWh per pulse)	CT ratio
0.001	<=7
0.01	From 7.1 to 70
0.1	From 70.1 to 700
1	From 700.1 to 2000



Documents / Resources

	CARLO GAVAZZI EM530 Power Analyzer For Three Phase And Two Phase Systems [pdf] Instruction Manual EM530 Power Analyzer For Three Phase And Two Phase Systems, EM530, Power Analyzer For Three Phase And Two Phase Systems, Analyzer For Three Phase And Two Phase Systems, Three Phase And Two Phase Systems, Two Phase Systems, Systems

References

- Automation.com - News & Resources for Industrial Automation
- User Manual