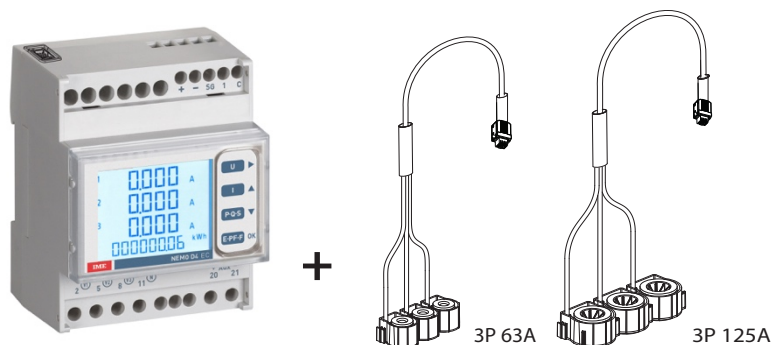


Multifunction instrument with 1 input "Easy Connect" for 3 Rogowski probes

Code: **MKD4R63DT – MKD4R63MT**
MKD4R125DT – MKD4R125MT
Model: **NEMO D4 EC**



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1. USE

Multifunction in 4 DIN module instrument with 1 quick-connect input for 3 probes current Rogowski.
The instrument measures in 4 quadrants up to 63A/125A, is equipped with diagnostics and phase sequence correction for low voltage networks.

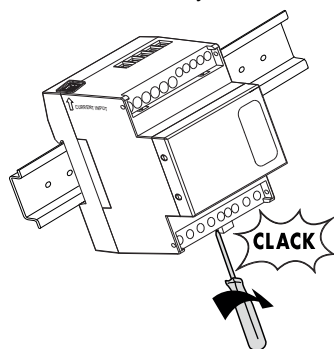
2. RANGE

Code. Art.	Output	Type connection	Weight
MKD4R63DT	Modbus	Screw terminals + "Easy Connect" connection for currents	0,230Kg
MKD4R125DT			0,250 Kg
MKD4R63MT	Mbus		0,230 Kg
MKD4R125MT			0,250 Kg

3 INSTALLATION

Fixing:

On EN/IEC 60715 symmetric rail or DIN 35 rail.



Necessary tools:

For fastening the device on the DIN rail: 5.5 mm flat screwdriver (from 4 to 6 mm).

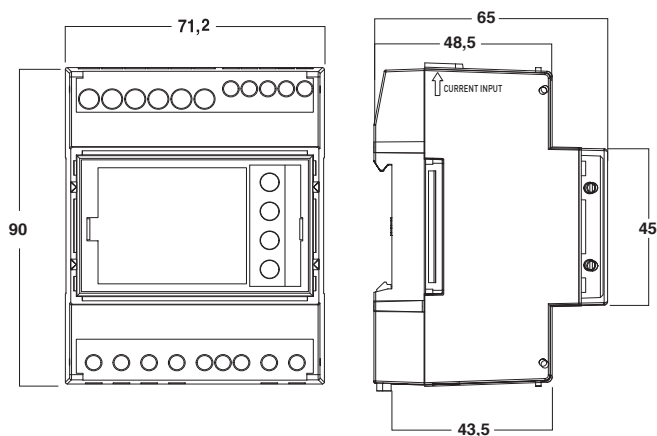
Operating position:

Vertical, Horizontal, Upside down, On the side



4. DIMENSIONS

Housing: 4 DIN43880 modules



Multifunction instrument with 1 input "Easy Connect" for 3 Rogowski probes

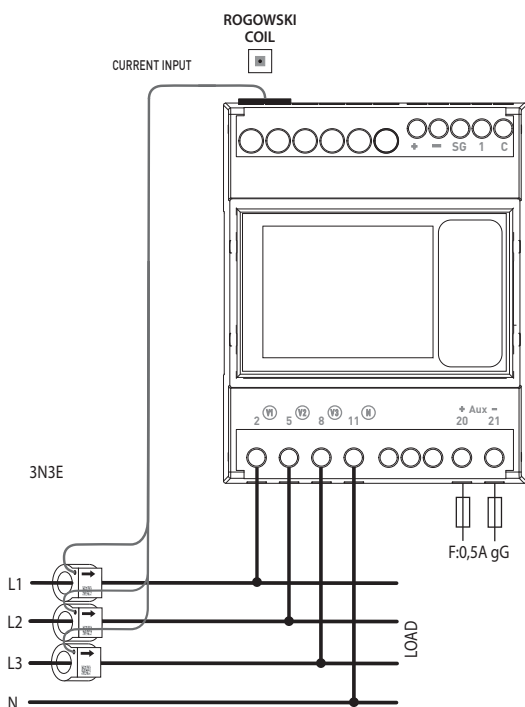
Code: MKD4R63DT – MKD4R63MT
MKD4R125DT – MKD4R125MT

Model: NEMO D4 EC

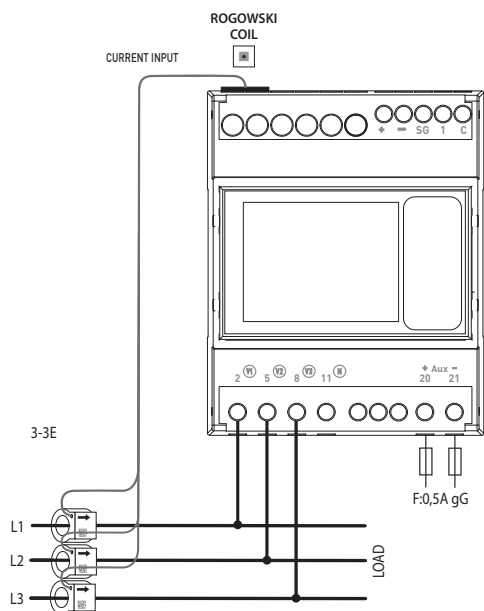
5. COMMISSIONNING - CONNECTION

Wiring diagrams:

- 4 wires three-phase network, 3 Rogowski:



- 3 wires three-phase network, 3 Rogowski:



Protection of the device:

- Recommended fuse 0,5 A type gG

5. COMMISSIONNING - CONNECTION

Terminal board marking and diagram combination:

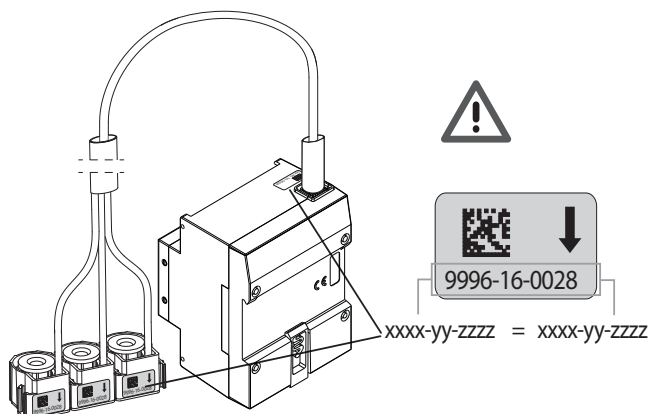
Modbus RS485



Tarif



V: 27V d.c. Max.



Multifunction instrument with 1 input "Easy Connect" for 3 Rogowski probes

Code: MKD4R63DT – MKD4R63MT
MKD4R125DT – MKD4R125MT

Model: NEMO D4 EC

6. OPERATING DATA

6.1 ELECTRIC

Currents:	MKD4R63DT MKD4R63MT	MKD4R125DT MKD4R125MT
Ref. Current	10A	20A
Min. Current	0,5A	1A
Max. Current	63A	125A

Voltages:

- Three-phase voltage: 3x230V / 3x400V $\pm 15\%$

Rated frequency:

- F_n : 50...60Hz
- Permitted variation: 47...63Hz

Connectable section:

Terminals	Without bush
Rigid wire	0,05 + 4,5 mm ²
Flexible wire	0,05 + 2,5mm ²

Necessary tools:

- Terminals: 2,5 mm flat or Phillips PH0 screwdriver

6.2 MECHANICAL

Depth of the terminals:

- Terminal depth: 8mm
- Lengths of the wire stripping: 8mm

Screw head:

- Phillips screw

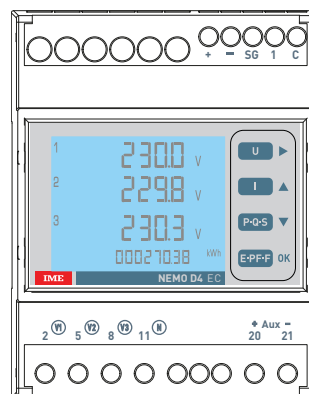
Recommended torque:

- Voltage connection terminals (V1, V2, V3, N),
auxiliary supply: 0,6 Nm

7. GENERAL FEATURES (continued)

Cover and front marking:

Adhesive film and marking by indelible tampography.



Display:

- Type: backlit LCD
- Reading points: 10.000 4 digits (7mm digit height)
- Energy count: 8 digit numerator (5mm digit height)
- Resolution: automatic
- Decimal point: automatic
- Update time: 1 sec.

Display of the value and programming:

- By means of the front keypad, 4 pushbuttons (please refer to the user manual).
- Access protected by identification code (**predefined code 1000**)

Measurements and precision in conformity with EN/IEC 61557-12

- Current: cl.1
- Voltage: cl.0,5
- Frequency: $\pm 0,1$ Hz
- Instantaneous total active power, phase, average value and max.
average value : cl.1
- Instantaneous total reactive power, phase, average value and max.
average value : cl.2
- Instantaneous total apparent power, phase, average value and
max. average value : cl.1
- Power Factor : cl.1
- Total active energy, positive and negative: cl. 1
- Total reactive energy, positive and negative: cl.2

Average power:

- Measurement: current-apparent, reactive, active power
- Calculation: moving average, on the selected period
- Average time: 5/8/10/15/20/30/60min.

Hour meter:

- Counting of operating hours and minutes (**resettable meter**)
- Resolution 8 figures (6 for the hours + 2 for the minutes)
- Maximum display: 999999.99
- Programmable value : 0...50% Pn (Positive active power)

Harmonic analysis (THD):

- Up to the 15th harmonic

Multifunction instrument with 1 input "Easy Connect" for 3 Rogowski probes

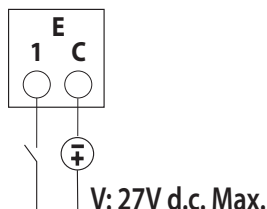
Code: MKD4R63DT – MKD4R63MT
MKD4R125DT – MKD4R125MT

Model: NEMO D4 EC

7. GENERAL FEATURES

Digital input

- The digital input allows switching the energy counting on 2 tariffs
- 2 input terminals with common point (1 - C)
- Rated voltage: 12 – 24V d.c. max. 10mA



Features of the ModBus communication port:

- Programmable addresses: from 1 to 255 (5*)
- Communication speed: 4.8 – 9.6 – 19.2* – 38.4 kbps
- Parity bit: none, even*, odd
- Stop bit: 1
- Galvanically isolated with respect to the measurement inputs
- Standard RS485 3 wires, half-duplex
- Modbus® RTU protocol
- Response time (question/response time-out): ≤ 200ms
- 120Ω terminating resistor inside the instrument (it can be set in the SETUP menu, default value: none*)

Features of the MBus communication port:

- Standard: EN 13757
- Transmission: serial asynchronous
- No. of bit: 8
- Parity bit: fixed even
- Communication speed: 300-600-1.200-2.400*-4.800-9.600bit/s
- No. of primary address: 0*...250
- No. of secondary address: 0*...99,999,999
- Load MBus: 1
- Galvanically isolated with respect to the measurement inputs
- Transferred measurements: see communication protocol

* Factory setting

Diagnostic, Phase sequence correction:

In the software there is a diagnostic and correction algorithm of the voltmetric and amperometric connection sequence.

The function can be activated on request and password protected: it can display and modify the wiring sequence with the following limitations:

- 1) The neutral conductor (in the 4-wire connections) must be correctly positioned (terminal 11)
- 2) The power factor must be between 0.9cap and 0.7ind for each phase. See www.imeitaly.com "TECHNICAL SUPPORT".

7. GENERAL FEATURES

Auxiliary supply (terminals 20 and 21):

- Value U_{aux} ca: 230Vac +/-15%
- Rated frequency: 50/60Hz
- Operating frequency: 47...63Hz
- Self consumption: ≤ 2,5VA @230 Vca

Operating room temperatures:

- Min. = - 5 °C Max. = + 55 °C.

Room storage temperatures:

- Min. = - 25 °C Max. = + 70 °C

Short-duration overcurrent:

30I_{max} per 10ms

Maximum dissipated thermal power for the thermal dimensioning of the panels: ≤ 5W

Protection class:

- Terminal protection index against solid bodies and liquids: IP 20 (IEC/EN 60529).
- Housing protection index against solid bodies and liquids: IP 54 (IEC/EN 60529).

Protection of the device:

- By means of thermal-magnetic

Room: Mechanical M1 – Electric E2

Housing material: Self-extinguishing BLEND

Packaged volume: 1,170 dm³.

8. CONFORMITY AND CERTIFICATIONS

Insulation

- Measurement categories: III
- Level of pollution: 2
- Insulation voltage, U_i : 300V, Phase-Neutral

Dielectric rigidity:

- Power supplies/ Outputs: 3kV / 50Hz / 1min
- Housing / Terminals: 4kV / 50Hz / 1min

Pulse:

- Power supplies: 6.3kV / 1.2 – 50µsec / 0.5J

In compliance with the standards:

- Precision class: Class 1 active energy (EN/IEC 62053-21)
- Precision class: Class 2 reactive energy (EN/IEC 62053-23)
- Electromagnetic compatibility: Tests in accordance with EN/IEC 62052-11 / EN 50470-1, -3
- Precision class according to IEC/EN61557-12
- 2014/35/UE 2014/30/UE

Respecting the environment – Conformity with the CEE directives:

- Compliance with the 2100/65/EU Directive, as modified by the 2015/863 Directive (RoHS 2), on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
- Conformity with the REACH Regulation (1907/ 2006): at the date of publication of this document no substance in the annex XIV is found in these products.
- RAEE Directive (2012/19/EU: the sale of this product includes a contribution to the appointed environmental bodies of each European country in charge of handling, at the end of their life, the products falling within the scope of the EU Directive on Electric and Electronic Equipment Waste.

Plastic materials:

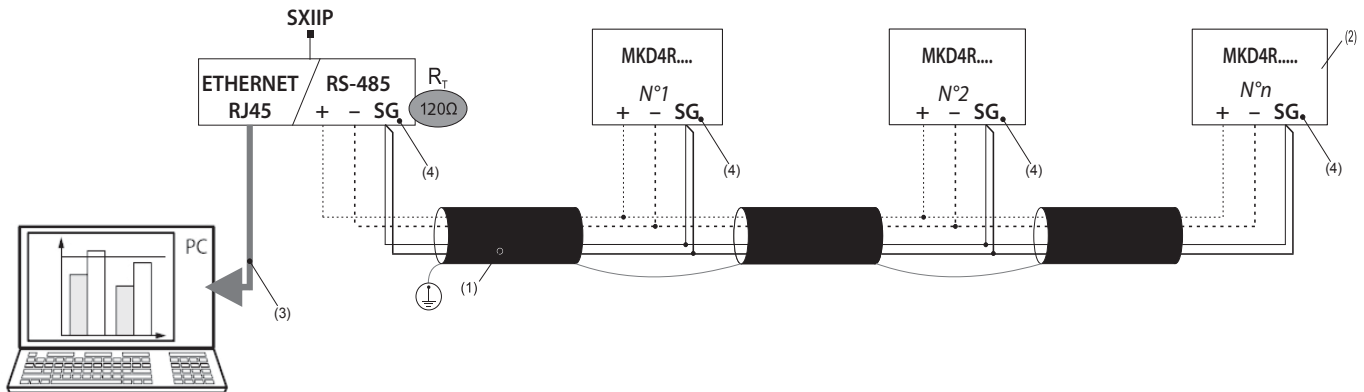
- Plastic materials without Halogens.
- Part marking according to standards ISO 11469 and ISO 1043.

Packaging:

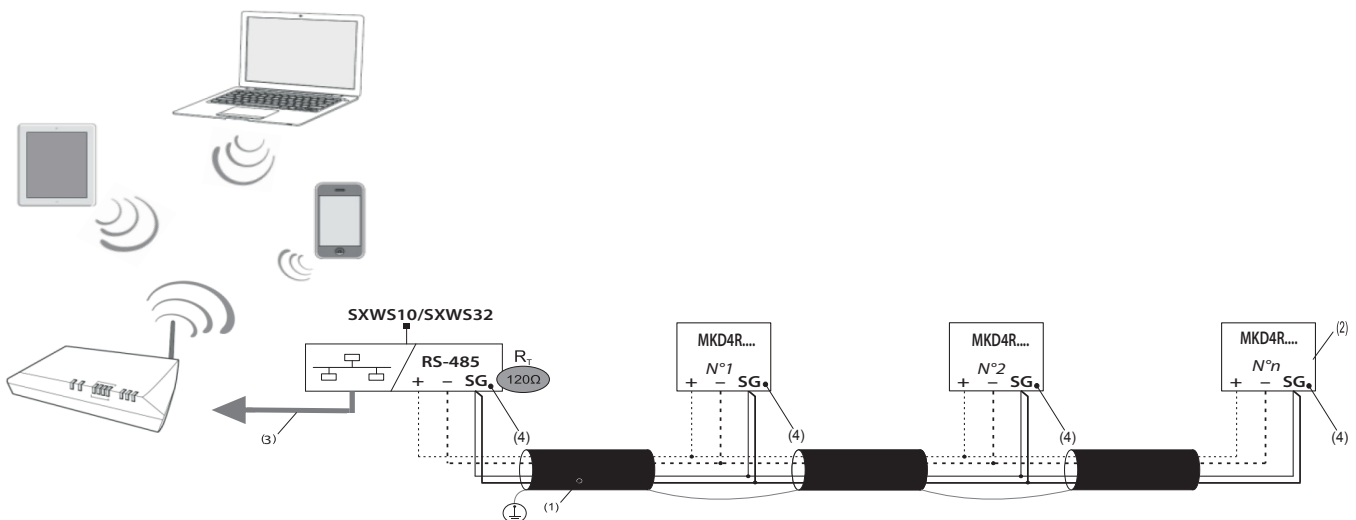
- Packaging designed and produced in accordance with Decree 98-638 of 07.20.98 and directive 94/62/CE

9. COMMUNICATION

RS485 Modbus wiring diagram:



RS485 Modbus wiring diagram with Mini Web Server:



- (1) RS485: Required use of Belden 9842 or Belden 3106A wire (or equivalent) for a maximum bus length of 1000 m, or Category 6 wire (FTP or UTP) for a maximum length of 50 m
- (2) 120Ω terminating resistor inside the instrument (it can be set in the SETUP menu)
- (3) Ethernet: Cat. 6 (FTP/UTP)
- (4) The terminal "SG" must never be earthed

Communication tables

- The MODBUS and MBUS communication protocols are available on the <http://www.imeitaly.com>, site, entering the codes "MKD4R63DT / MKD4R63MT / MKD4R125DT / MKD4R125MT" in the search field.