

SMART Energy meters

7M
SERIES



Panels for electrical distribution



Control panels



Electrical energy control



Industrial robots



Road / tunnel lighting



Elevators and lifts



**Single-phase energy meter
with backlit LCD display**

Type 7M.24.8.230.0001

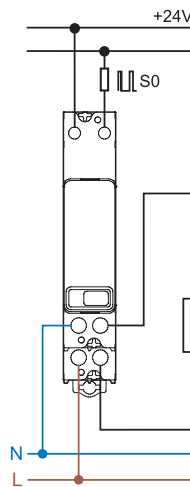
**S0 pulse output
kWh energy meter**

- Display of active energy consumption (kWh)
- Active power accuracy Class B according to EN 50470-3
- S0 pulse output for remote energy monitoring according to EN 62053-31
- Sealable tamperproof terminal shield
- Protection category II
- 35 mm rail (EN 60715) mount

NEW 7M.24.8.230.0001



- Reference current 5 A (40 A Maximum)
- S0 pulse output
- 1-phase 230 V AC
- kWh



For outline drawing see page 14

Specification

| | | |
|---|------|-------------------|
| Reference/Maximum current I_n/I_{max} | A | 5/40 |
| Starting current I_{st} | A | 0.02 |
| Minimum measured current I_{min} | A | 0.25 |
| Current range (within accuracy class) | A | 0.5...40 |
| Maximum peak current | A | 1200 (10 ms) |
| Supply (& monitored) voltage U_N | V AC | 230 |
| Operating range | | $(0.8...1.15)U_N$ |
| Frequency | Hz | 50/60 |
| Power consumption | W/VA | $\leq 0.5/1.5$ |
| Display | | LCD |
| Max. totalising count/Min. increment | kWh | 999 999.9/0.1 |
| LED pulses per kWh | | 1000 |
| LED pulse length | ms | 4 ± 0.5 |

Output specification (S0+/S0-)

| | | |
|--|---------|------------------------|
| Number/Type | | 1 opto-isolated output |
| Voltage range/Maximum current (conforming to EN 62053-1) | V DC/mA | 3.3...27/1...27 |
| Pulses per kWh | Imp/kWh | 1000 |
| Pulse length | ms | 32 ± 2 |
| Maximum cable length | m | 1000 |

Technical data

| | | |
|---|----|-------------|
| Accuracy class EN 50470-3 (MID) | | B |
| Ambient temperature (Within accuracy class) | °C | -25...+55 |
| Protective class | | II |
| Protection category: Housing/terminals | | IP 50/IP 20 |

Approvals (according to type)



**Single-phase Bi-directional energy meters with backlit LCD display
Multi-function and MID certified**

**Type 7M.24.8.230.0010
S0 pulse output**

**Type 7M.24.8.230.0110 (with NFC)
S0 pulse output, IR communication port
NFC technology allows reading the measured energy even in the absence of mains voltage and to program and customize the counters via smartphone**

- Display of total or partial (resettable) consumption: kWh, kVAh, kvarh
- 2 active energy MID counters + 2 reactive energy nationally certified counters
- 8 resettable counters
- Scroll to view the following instantaneous values: V, A, PF, kW, kVA, kvar, Hz, THD V, THD A, phase angle and direction of power flow
- 7 digit backlit LCD display
- Multi-function touch button
- Active energy accuracy Class B according to EN 50470-3 (MID)
- Reactive energy accuracy Class 2 to EN 62053-23
- S0 pulse output for remote energy monitoring according to EN 62053-31
- Sealable tamperproof terminal shield
- Protection category II
- 35 mm rail (EN 60715) mount

NEW 7M.24.8.230.0010

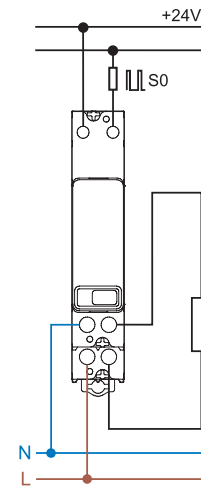
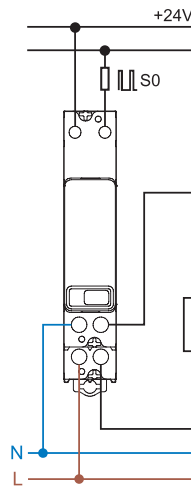


- Reference current 5 A (40 A Maximum)
- S0 pulse output
- 1-phase 230 V 50/60 Hz
- MID certified

NEW 7M.24.8.230.0110



- Reference current 5 A (40 A Maximum)
- S0 pulse output, IR communication port and NFC
- 1-phase 230 V 50/60 Hz
- MID certified



For outline drawing see page 14

Specification

| | | | |
|--|---------|------------------------|------------------------|
| Reference/Maximum current I_N/I_{max} | A | 5/40 | 5/40 |
| Starting current I_{st} | A | 0.02 | 0.02 |
| Minimum measured current I_{min} | A | 0.25 | 0.25 |
| Current range (within accuracy class) | A | 0.5...40 | 0.5...40 |
| Maximum peak current | A | 1200 (10 ms) | 1200 (10 ms) |
| Supply (& monitored) voltage U_N | V AC | 230 | 230 |
| Operating range | | $(0.8...1.15)U_N$ | $(0.8...1.15)U_N$ |
| Frequency | Hz | 50/60 | 50/60 |
| Power consumption | W/VA | $\leq 0.5/1.5$ | $\leq 0.5/1.5$ |
| Display | | LCD | LCD |
| Max. totalising count/Min. increment | kWh | 999 999.9/0.1 | 999 999.9/0.1 |
| LED pulses per kWh | | 1000 | 1000 |
| LED pulse length | ms | 4 ± 0.5 | 4 ± 0.5 |
| Output specification (S0+/S0-) | | | |
| Number/Type | | 1 opto-isolated output | 1 opto-isolated output |
| Voltage range/Maximum current (conforming to EN 62053-1) | V DC/mA | 3.3...27/1...27 | 3.3...27/1...27 |
| Pulses per kWh | Imp/kWh | 1000 | 1000 |
| Pulse length | ms | 32 ± 2 | 32 ± 2 |
| Maximum cable length | m | 1000 | 1000 |
| Technical data | | | |
| Accuracy class IEC EN 50470-3 / IEC EN 62053-23 | | 1/2 | 1/2 |
| Ambient temperature (Within accuracy class) | °C | -25...+55 | -25...+55 |
| Protective class | | II | II |
| Protection category: Housing/terminals | | IP 50/IP 20 | IP 50/IP 20 |
| Approvals (according to type) | | CE | |

Single-phase Bi-directional energy meters with NFC technology , MID certification and LCD display
IR comms port + Modbus/M-Bus interface

Type 7M.24.8.230.0210 (with NFC)
Multi-function energy meter
Bi-directional, MID certified with RS485
Modbus integrated interface

Type 7M.24.8.230.0310 (with NFC)
Multi-function energy meter
Bi-directional, MID certified with M-Bus
integrated interface

NFC technology allows reading the measured energy even in the absence of mains voltage and to program and customize the counters via smartphone

- Display of total or partial (resettable) consumption: kWh, kVAh, kvarh
- 2 active energy MID counters + 2 reactive energy nationally certified counters
- 8 resettable counters
- Scroll to view the following instantaneous values: V, A, PF, kW, kVA, kvar, Hz, THD V, THD A, phase angle and direction of power flow
- 7 digit backlit LCD display
- Multi-function touch button
- Active energy accuracy Class B according to EN 50470-3 (MID)
- Reactive energy accuracy Class 2 to EN 62053-23
- Sealable tamperproof terminal shield
- Protection category II
- 35 mm rail (EN 60715) mount

* Modbus default transmission baud rate: 19200 bps
M-Bus default transmission baud rate: 2400 bps

For outline drawing see page 14

Specification

| | | | |
|---|------|-------------------|-------------------|
| Reference/Maximum current I_N/I_{max} | A | 5/40 | 5/40 |
| Starting current I_{st} | A | 0.02 | 0.02 |
| Minimum measured current I_{min} | A | 0.25 | 0.25 |
| Current range (within accuracy class) | A | 0.5...40 | 0.5...40 |
| Maximum peak current | A | 1200 (10 ms) | 1200 (10 ms) |
| Supply (& monitored) voltage U_N | V AC | 230 | 230 |
| Operating range | | $(0.8...1.15)U_N$ | $(0.8...1.15)U_N$ |
| Frequency | Hz | 50/60 | 50/60 |
| Power consumption | W/VA | $\leq 0.5/1.5$ | $\leq 0.5/1.5$ |
| Display | | LCD | LCD |
| Max. totalising count/Min. increment | kWh | 999 999.9/0.1 | 999 999.9/0.1 |
| LED pulses per kWh | | 1000 | 1000 |
| LED pulse length | ms | 4±0.5 | 4±0.5 |

Technical data communication protocol

| | | | |
|-----------------|------|----------------|------------|
| Bus System | | Modbus RS485 | M-Bus |
| Frame (default) | | 8, N, 2 | — |
| Max bus length | m | 1000 | — |
| Baud rate* | Baud | 1200...115 200 | 300...9600 |

Technical data

| | | | |
|---|--|-------------|-------------|
| Accuracy class IEC EN 50470-3 / IEC EN 62053-23 | | 1/2 | 1/2 |
| Ambient temperature (Within accuracy class) °C | | -25...+55 | -25...+55 |
| Protective class | | II | II |
| Protection category: Housing/terminals | | IP 50/IP 20 | IP 50/IP 20 |

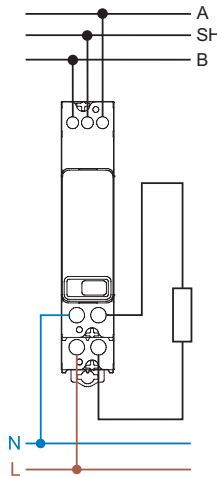
Approvals (according to type)



NEW 7M.24.8.230.0210



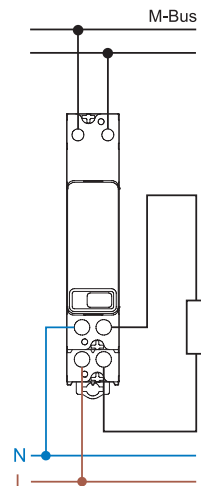
- Reference current 5 A (40 A Maximum)
- Modbus integrated interface and IR communication port and NFC technology
- 1-phase 230 V 50/60 Hz
- MID certified



NEW 7M.24.8.230.0310



- Reference current 5 A (40 A Maximum)
- M-Bus integrated interface and IR communication port and NFC technology
- 1-phase 230 V 50/60 Hz
- MID certified



Three-phase multi-function Bi-directional energy meters with backlit Matrix LCD display. MID certified for 3 or 4 wire system and single phase application up to 80 A @ 70°C.

Type 7M.38.8.400.0112

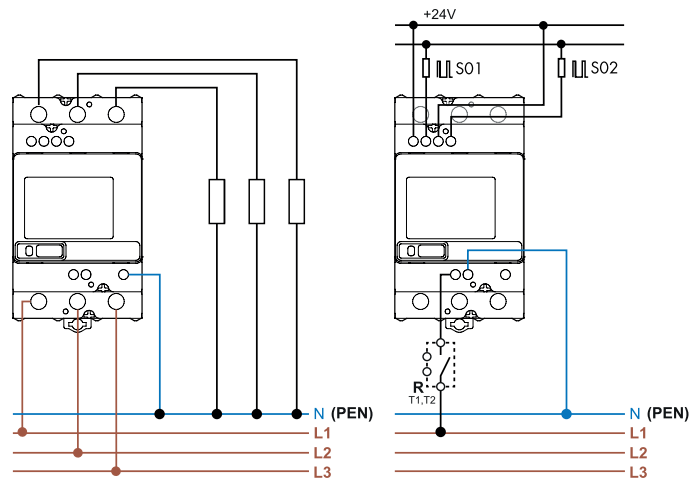
Direct connection up to 80 A, dual tariff

- Display of total or partial (resettable) consumption: kWh, kVAh, kvarh
- 2 active energy MID counters + 2 reactive energy nationally certified counters
- 16 resettable counters
- Scroll to view the following instantaneous values: V, A, PF, kW, kVA, kvar, Hz, THD V, THD A, phase angle and direction of power flow
- Matrix backlit LCD display
- Multi-function touch button
- Active energy accuracy Class B according to EN 50470-3 (MID)
- Reactive energy accuracy Class 2 to EN 62053-23
- Sealable tamperproof terminal shield
- Protection category II
- 35 mm rail (EN 60715) mount

NEW 7M.38.8.400.0112



- Reference current 5 A (80 A Maximum)
- Three phase system 3 or 4 wire or single phase
- Dual S0 outputs and IR communication port
- MID certified up to 70°C



For outline drawing see page 15

Specification

| | | |
|---|------|-------------------|
| Reference/Maximum current I_n/I_{max} | A | 5/80 |
| Starting current I_{st} | A | 0.02 |
| Minimum measured current I_{min} | A | 0.25 |
| Current range (within accuracy class) | A | 0.5...80 |
| Maximum peak current | A | 2400 (10 ms) |
| Supply (& monitored) voltage U_N | V AC | 3 x 230/400 |
| Operating range | | $(0.8...1.15)U_N$ |
| Frequency | Hz | 50/60 |
| Power consumption | W/VA | $\leq 1/7.5$ |
| Display | | Matrix - LCD |
| Max. totalising count/Min. increment | kWh | 999 999.9/0.1 |
| LED pulses per kWh | | 1000 |
| LED pulse length | ms | 4±0.5 |

Output specification (S0+/S0-)

| | | |
|--|-------------------------|-----------------|
| Number/Type | 2 opto-isolated outputs | |
| Voltage range/Maximum current (conforming to EN 62053-1) | VDC/mA | 3.3...27/1...27 |
| Pulse per kWh | Imp/kWh | 500 |
| Pulse length | ms | 32 ± 2 |
| Maximum cable length | m | 1000 |

Technical data

| | |
|---|-------------|
| Accuracy class IEC EN 50470-3 / IEC EN 62053-23 | B/2 |
| Ambient temperature (Within accuracy class) °C | -25...+70 |
| Protective class | II |
| Protection category: Housing/terminals | IP 50/IP 20 |

Approvals (according to type)



Three-phase multi-function Bi-directional energy meters with backlit Matrix LCD display. MID certified for 3 or 4 wire system and single phase application up to 80 A @ 70°C.

Type 7M.38.8.400.0212

Multi-function energy meter with RS485 Modbus integrated interface and and S0 output

- Display of total or partial (resettable) consumption: kWh, kVAh, kvarh
- 2 active energy MID counters + 2 reactive energy nationally certified counters
- 16 resettable counters
- Scroll to view the following instantaneous values: V, A, PF, kW, kVA, kvar, Hz, THD V, THD A, phase angle and direction of power flow
- Matrix backlit LCD display
- Multi-function touch button
- Active energy accuracy Class B according to EN 50470-3 (MID)
- Reactive energy accuracy Class 2 to EN 62053-23
- Sealeable tamperproof terminal shield
- Protection category II
- 35 mm rail (EN 60715) mount

* Modbus default transmission baud rate: 19 200 bps

For outline drawing see page 15

Specification

| | | |
|---|------|--------------------|
| Reference/Maximum current I_n/I_{max} | A | 5/80 |
| Starting current I_{st} | A | 0.02 |
| Minimum measured current I_{min} | A | 0.25 |
| Current range (within accuracy class) | A | 0.5...80 |
| Maximum peak current | A | 2400 (10 ms) |
| Supply (& monitored) voltage U_N | V AC | 3 x 230/400 |
| Operating range | | (0.8...1.15) U_N |
| Frequency | Hz | 50/60 |
| Power consumption per phase | W/VA | ≤ 1/7.5 |
| Display | | Matrix - LCD |
| Max. totalising count/Min. increment | kWh | 999 999.9/0.1 |
| LED pulses per kWh | | 1000 |
| LED pulse length | ms | 4±0.5 |

Output specification (S0+/-S0-)

| | | |
|--|---------|------------------------|
| Number/Type | | 1 opto-isolated output |
| Voltage range/Maximum current (conforming to EN 62053-1) | VDC/mA | 3.3...27/1...27 |
| Pulse per kWh | Imp/kWh | 500 |
| Pulse length | ms | 32 ± 2 |
| Maximum cable length | m | 1000 |

Modbus technical data

| | | |
|---------------------------------------|------|----------------|
| Bus System | | Modbus RS485 |
| Frame (default) | | 8, N, 2 |
| Max bus length | m | 1000 |
| Max. Modbus energy meters connectable | | 32 |
| Baud rate* | Baud | 1200...115 200 |

Technical data

| | | |
|---|----|-------------|
| Accuracy class IEC EN 50470-3 / IEC EN 62053-23 | | B/2 |
| Ambient temperature (Within accuracy class) | °C | -25...+70 |
| Protective class | | II |
| Protection category: Housing/terminals | | IP 50/IP 20 |

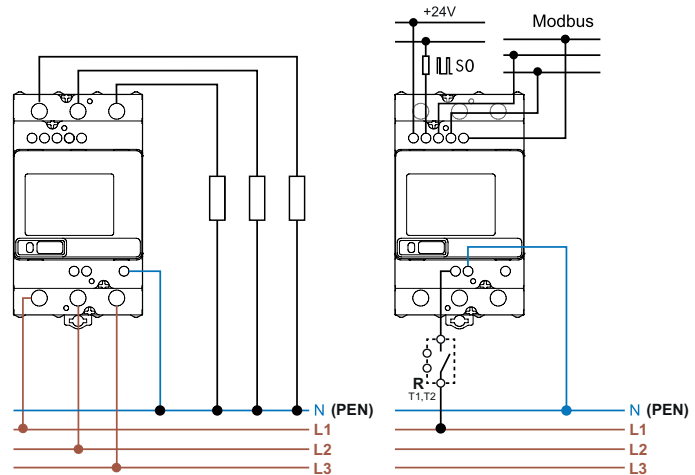
Approvals (according to type)



NEW 7M.38.8.400.0212



- Reference current 5 A (80 A Maximum)
- Modbus integrated interface and IR communication port
- 3-phase 230/400 V 50/60 Hz system: 3L+N, 3L, 1L+N
- MID certified up to 70°C



Three-phase multi-function Bi-directional energy meters with backlit Matrix LCD display. MID certified for 3 or 4 wire system and single phase application up to 80 A @ 70°C.

Type 7M.38.8.400.0312

Multi-function energy meter with M-Bus integrated interface and S0 output

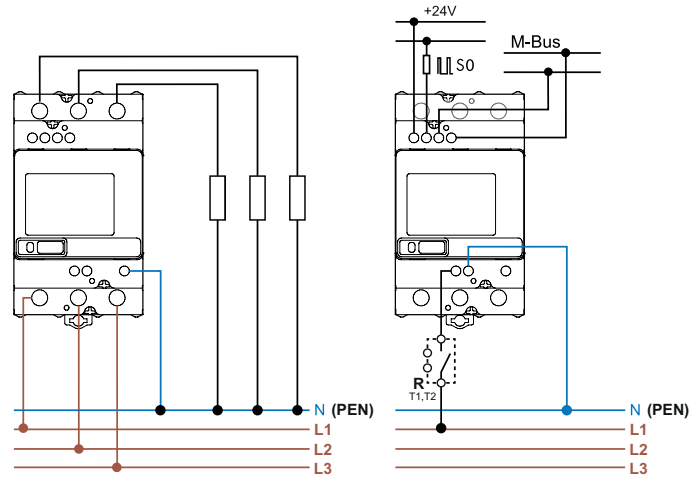
- Display of total or partial (resettable) consumption: kWh, kVAh, kvarh
- 2 active energy MID counters + 2 reactive energy nationally certified counters
- 16 resettable counters
- Scroll to view the following instantaneous values: V, A, PF, kW, kVA, kvar, Hz, THD V, THD A, phase angle and direction of power flow
- Matrix backlit LCD display
- Multi-function touch button
- Active energy accuracy Class B according to EN 50470-3 (MID)
- Reactive energy accuracy Class 2 to EN 62053-23
- Sealable tamperproof terminal shield
- Protection category II
- 35 mm rail (EN 60715) mount

* M-Bus default transmission baud rate: 2400 bps

NEW 7M.38.8.400.0312



- Reference current 5 A (80 A Maximum)
- M-Bus integrated interface and IR communication port
- 3-phase 230/400 V 50/60 Hz system: 3L+N, 3L, 1L+N
- MID certified up to 70°C



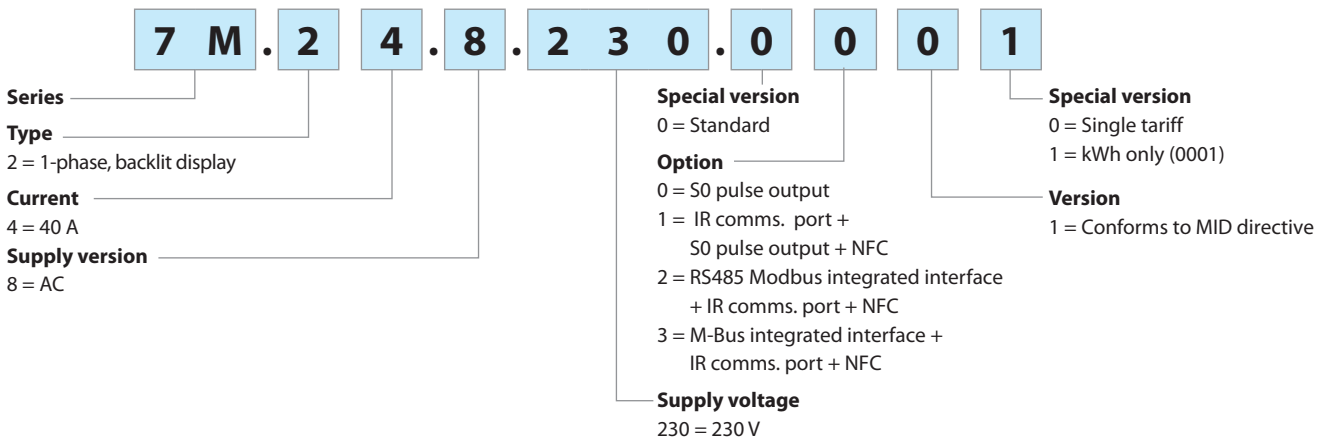
For outline drawing see page 15

Specification

| | | |
|--|---------|------------------------|
| Reference/Maximum current I_n/I_{max} | A | 5/80 |
| Starting current I_{st} | A | 0.02 |
| Minimum measured current I_{min} | A | 0.25 |
| Current range (within accuracy class) | A | 0.5...80 |
| Maximum peak current | A | 2400 (10 ms) |
| Supply (& monitored) voltage U_N | V AC | 3 x 230/400 |
| Operating range | | $(0.8...1.15)U_N$ |
| Frequency | Hz | 50/60 |
| Power consumption per phase | W/VVA | $\leq 1/7.5$ |
| Display | | Matrix - LCD |
| Max. totalising count/Min. increment | kWh | 999 999.9/0.1 |
| LED pulses per kWh | | 1000 |
| LED pulse length | ms | 4 ± 0.5 |
| Output specification (S0+/S0-) | | |
| Number/Type | | 1 opto-isolated output |
| Voltage range/Maximum current (conforming to EN 62053-1) | VDC/mA | 3.3...27/1...27 |
| Pulse per kWh | Imp/kWh | 500 |
| Pulse length | ms | 32 ± 2 |
| Maximum cable length | m | 1000 |
| M-Bus technical data | | |
| Bus System | | M-Bus |
| Baud rate* | Baud | 300...9600 |
| Technical data | | |
| Accuracy class IEC EN 50470-3 / IEC EN 62053-23 | | B/2 |
| Ambient temperature (Within accuracy class) | °C | -25...+70 |
| Protective class | | II |
| Protection category: Housing/terminals | | IP 50/IP 20 |
| Approvals (according to type) | | |

Ordering information

Example: 1-phase energy meter for direct connection up to 40 A, S0 pulse output, Class B accuracy, for 35 mm rail (EN 60715) mounting, with integral sealable tamperproof terminal shield.

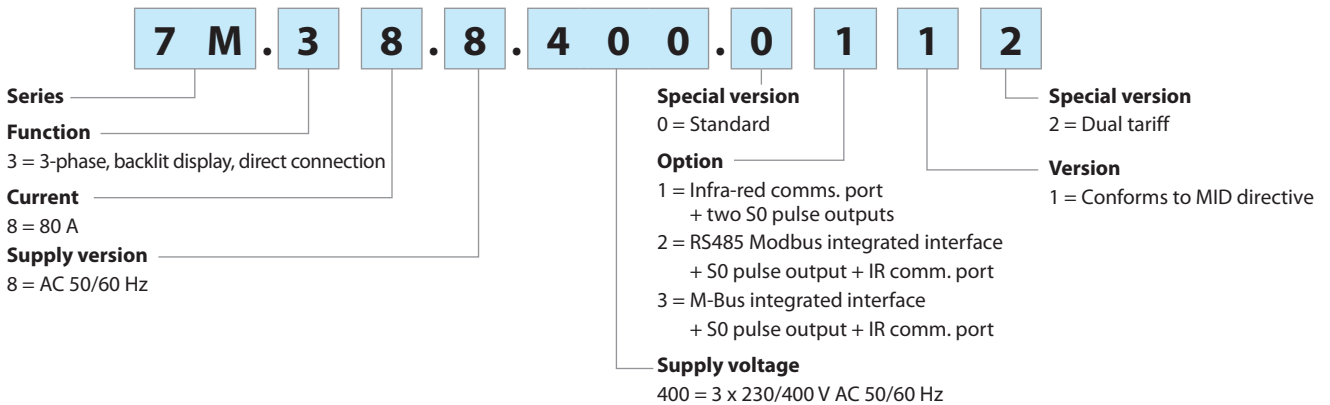


Available versions

- 7M.24.8.230.0001
- 7M.24.8.230.0010
- 7M.24.8.230.0110
- 7M.24.8.230.0210
- 7M.24.8.230.0310



Example: 3-phase energy meter for direct connection up to 80 A, with MID certification, Class B accuracy, for 35 mm rail (EN 60715) mounting.



Available versions

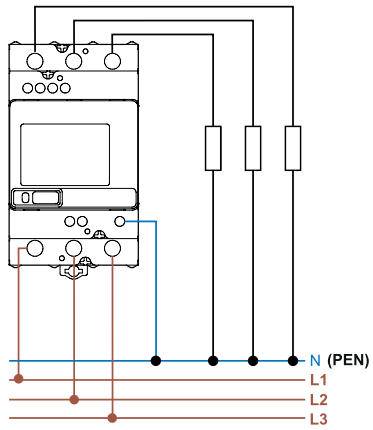
- 7M.38.8.400.0112
- 7M.38.8.400.0212
- 7M.38.8.400.0312

Technical data

| Insulation | | 7M.24.8.230.0xxx | | 7M.38.8.400.0xxxx | |
|--|--|---------------------|----------------|-------------------|----------------|
| Insulation rated voltage | | V 250 | | 250 | |
| Insulation | between active parts and S0+/S0- terminals | kV (1.2/50 µs) | | 6 | |
| | between supply and Modbus, M-Bus terminal | kV (1.2/50 µs) | | 6 | |
| | between adjacent phases | kV (1.2/50 µs) | | 6 | |
| Insulation | between active parts and S0+/S0- terminals | V AC | | 4000 | |
| | between supply and Modbus, M-Bus terminal | V AC | | 4000 | |
| Protection class | | | | II | |
| EMC Specification according to 61000-4-(2/3/4) | | 7M.24.8.230.0xxx | | 7M.38.8.400.0xxxx | |
| Electrostatic discharge | contact discharge | | | 8 kV | |
| | air discharge | | | 15 kV | |
| Radio frequency Electromagnetic field (80...2000)MHz | | | | 30 V/m | |
| Fast Transients (burst) (5-50 ns, 5 kHz) | on Supply terminals | | | 4 kV | |
| | on S0+/S0- terminals | | | 2 kV | |
| | Modbus, M-Bus terminal | | | 2 kV | |
| Surge (1.2/50 µs) | on Supply terminals | | | 4 kV | |
| Other data | | 7M.24.8.230.0xxx | | 7M.38.8.400.0xxxx | |
| Pollution degree | | | | 2 | |
| Vibration resistance | | EN 60068-2-6 | | EN 60068-2-6 | |
| Shock resistance | | EN 60068-2-27 | | EN 60068-2-27 | |
| Power lost to the environment | | max value per phase | | 0.5W/1.5 VA | |
| | | | | 1W/7.5VA | |
| Supply terminals | | 7M.24.8.230.0xxx | | 7M.38.8.400.0xxx | |
| Max. wire size | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 1.5...10 | 1.5...10 | 1.5...25 | 1.5...25 |
| | AWG | 16...8 | 16...8 | 16...4 | 16...4 |
| Screw torque for I _{max} | | Nm | 0.8 | 0.8 | 3.5 |
| | | | | 3.5 | 3.5 |
| S0+/S0- terminals, RS485 Modbus, M-Bus | | 7M.24.8.230.0xxx | | 7M.38.8.400.0xxx | |
| Max. wire size | | solid cable | stranded cable | solid cable | stranded cable |
| | mm ² | 0.14...2.5 | 0.14...2.5 | 0.14...2.5 | 0.14...2.5 |
| | AWG | 26...14 | 26...14 | 26...14 | 26...14 |
| Screw torque | | Nm | 0.6 | 0.6 | 0.6 |

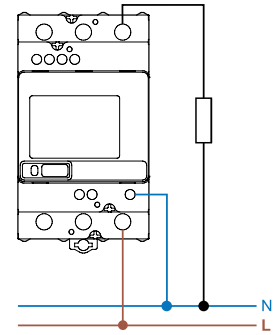
Wiring diagrams

Three-phase system



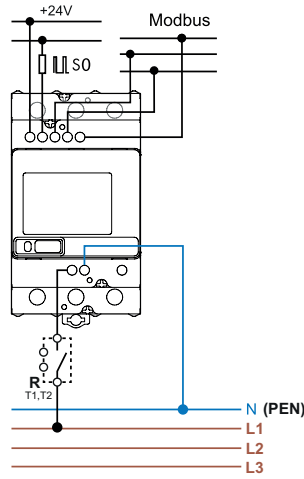
Type 7M.38.8.400.0112

Single-phase system

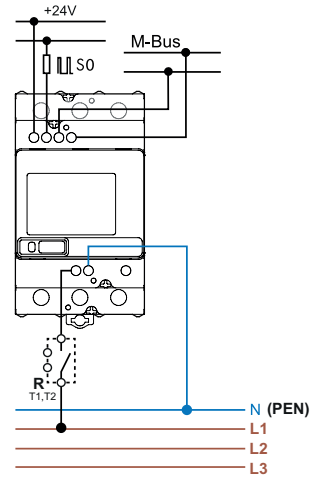


Type 7M.38.8.400.0112

Modbus or M-Bus system



Type 7M.38.8.400.0212



Type 7M.38.8.400.02312

E

Two programming modes for energy meters with NFC technology

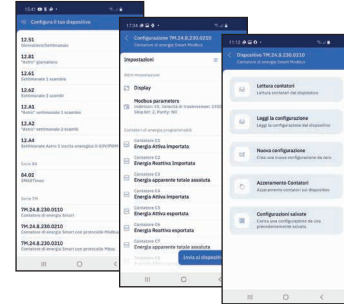
“Smart”

Smart mode via smartphones with NFC communication using Finder toolbox NFC, iOS or Android App.



“Classic”

Classic mode via touch button to scroll and read the meter



E

Finder Toolbox NFC App for programming

Once the FINDER Toolbox NFC App is downloaded and installed, you can easily program your device thanks to NFC technology. One of the main features is that even in the absence of the power supply network, it is possible to read an energy counter, read the existing configuration, change the communication protocol parameters, or save and share the settings.

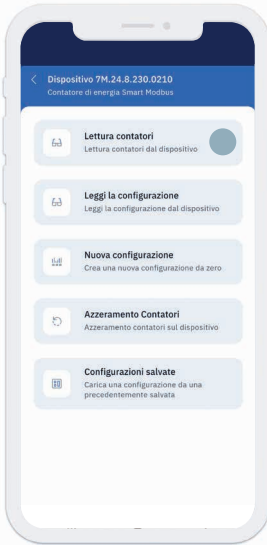
All that is required for the transfer of data is to simply touch the device with the smartphone.

Finder Toolbox for information

Finder Toolbox can provide you with all the latest technical data sheets and news from Finder.

Example using the NFC Toolbox APP

Reading Counters



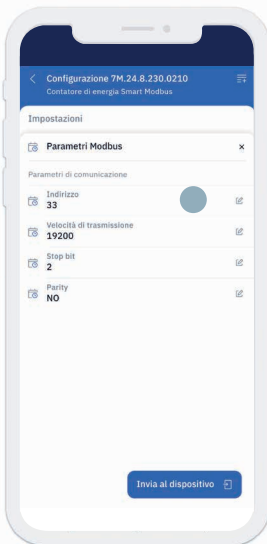
If you want to read all the energy counters select **“Read Counters”**



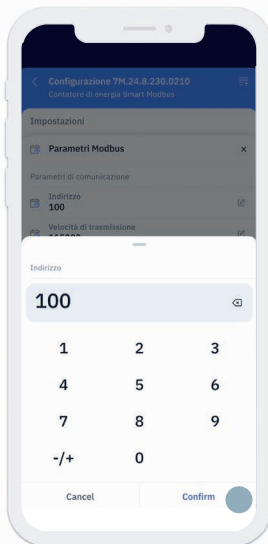
Even in the absence of the power supply network all the measurements made are readable thanks to the App - not just MID values.

E

Modbus parameter settings

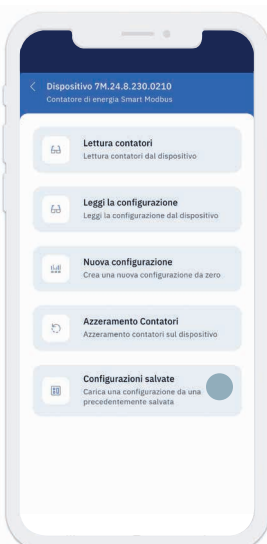


Select **“Address”** in order to change default values

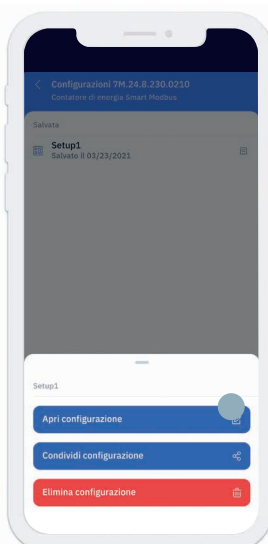


write the new address: **100**.
Click **“Confirm”**

Saved configuration

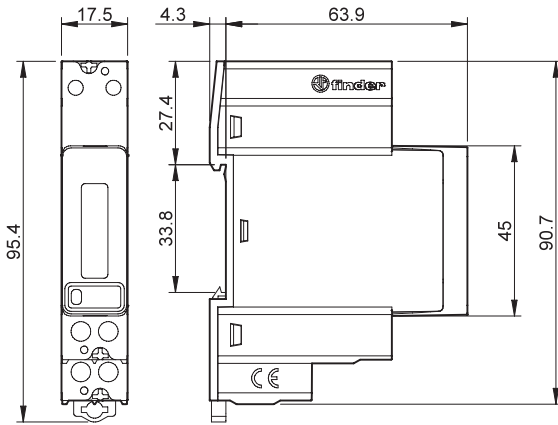


Recall the stored configuration

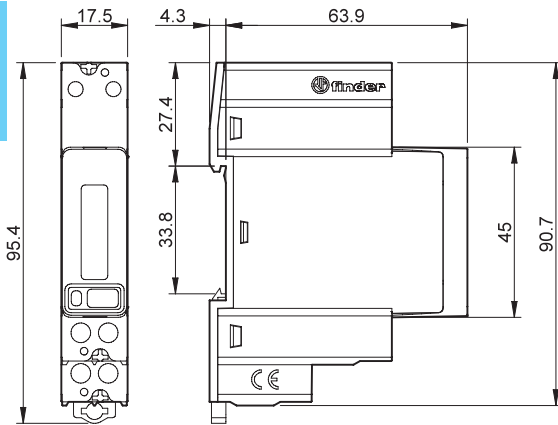


Outline drawings

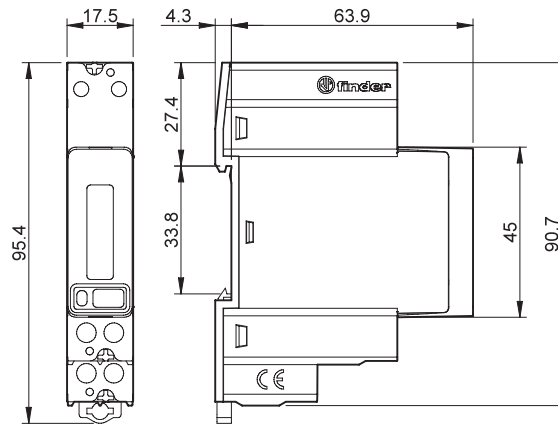
Type 7M.24.8.230.0001



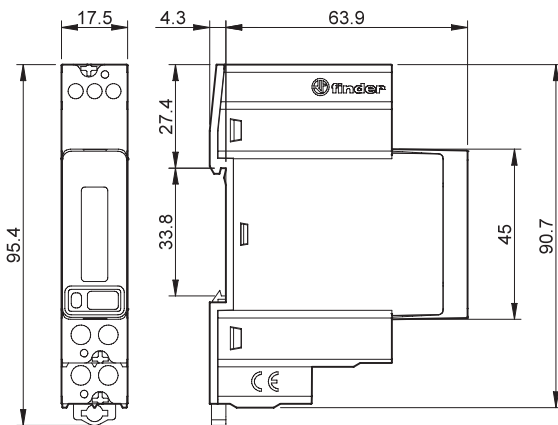
Type 7M.24.8.230.0010



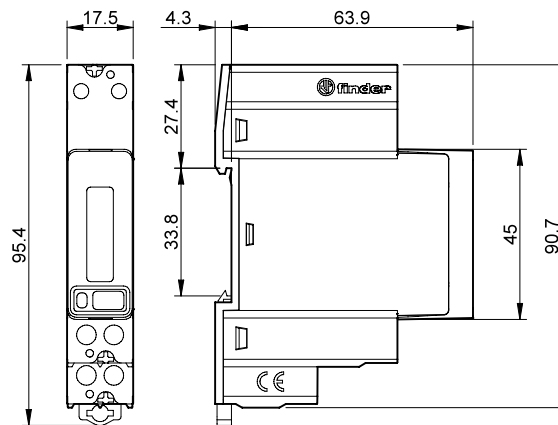
Type 7M.24.8.230.0110



Type 7M.24.8.230.0210

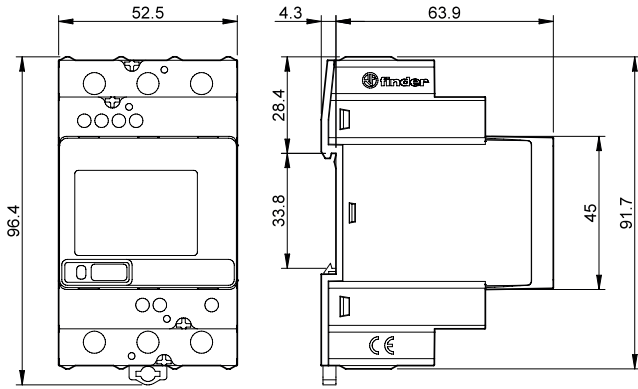


Type 7M.24.8.230.0310

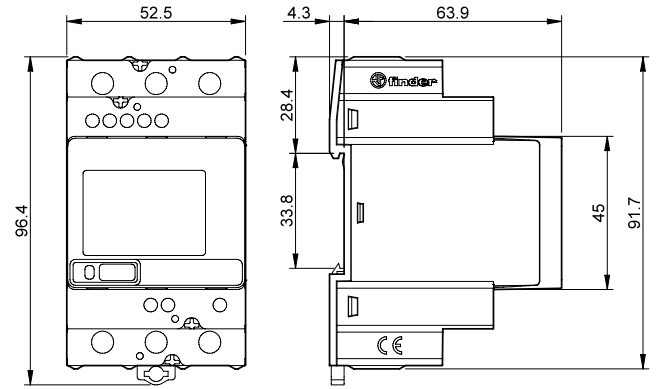


Outline drawings

Type 7M.38.8.400.0112



Type 7M.38.8.400.0212



Type 7M.38.8.400.0312

