

SMART Energy meters

7M
SERIES



Panels for
electrical
distribution



Control panels



Electrical
energy
control



Industrial
robots



Inverter



Charging
Stations



PV applications



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

Type 7M.24.8.230.0001

S0 pulse output

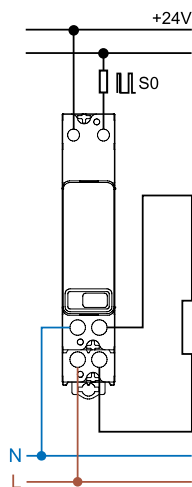
kWh energy meter

- 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

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

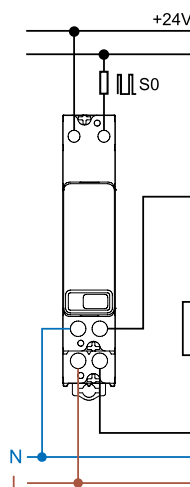
Approvals (according to type)



NEW 7M.24.8.230.0010



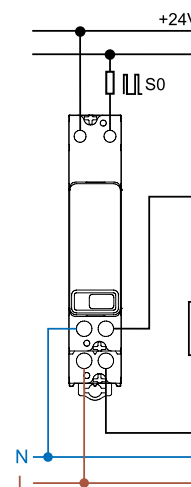
- Reference current 5 A (40 A Maximum)
- S0 pulse output
- 1-phase 230 V 50/60 Hz
- MID certified



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



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

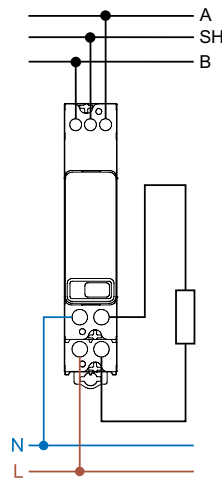
Specification

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...+70	-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



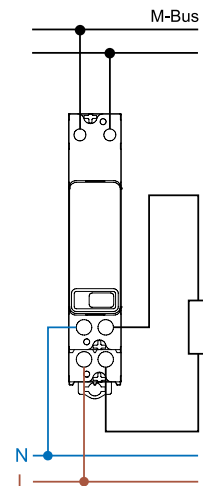
- Reference current 5 A (40 A Maximum)
- Modbus integrated interface and IR communication port and NFC technology
- 1-phase 230 V 50/60 Hz
- MID certified



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 NFC technology and 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 (with NFC)

Direct connection up to 80 A, dual tariff, two SO pulse output

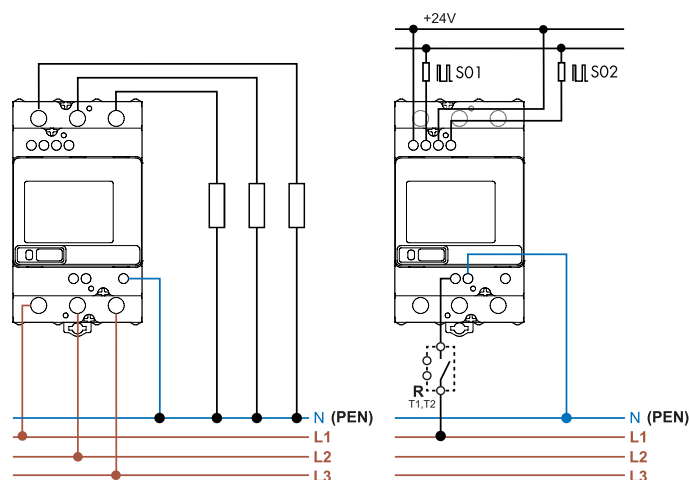
NFC technology allows reading the measured energy even in the absence of mains voltage and to program and customize the counters via smartphone

- Display of total or partial (resettable) consumption: kWh, kVAh, kvarh
- 2 active energy MID counters + 2 reactive energy nationally certified counters
- 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
- Two SO pulse outputs for remote energy monitoring according to EN 62053-31
- 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 SO outputs and IR communication port and NFC technology
- 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 (SO+/SO-)

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 NFC technology and 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 (with NFC)
Direct connection up to 80 A, dual tariff
Multi-function energy meter with RS485
Modbus integrated interface and and S0
output
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
- 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
- RS485 Modbus integrated communications port
- S0 pulse outputs for remote energy monitoring according to EN 62053-31
- 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

* 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

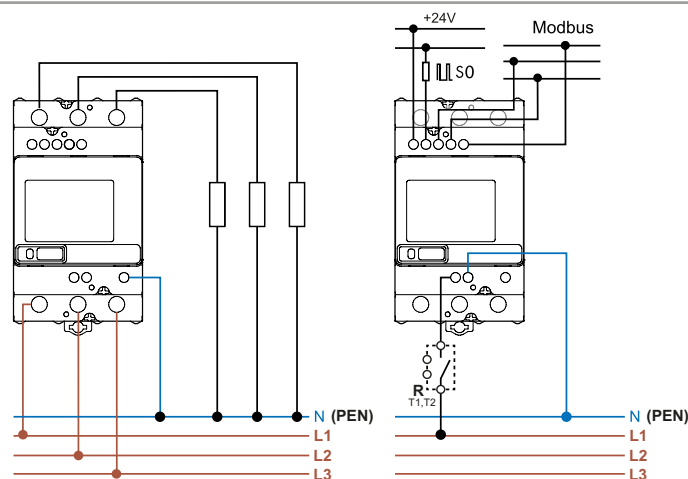
Approvals (according to type)



NEW 7M.38.8.400.0212



- Reference current 5 A (80 A Maximum)
- RS485 Modbus integrated interface and IR communication port and NFC technology
- 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 NFC technology and 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 (with NFC)
Direct connection up to 80 A, dual tariff,
Multi-function energy meter with M-Bus
integrated interface and S0 output
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
- 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
- M-Bus integrated communications port
- S0 pulse outputs for remote energy monitoring according to EN 62053-31
- 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

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	$\leq 1/7.5$
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

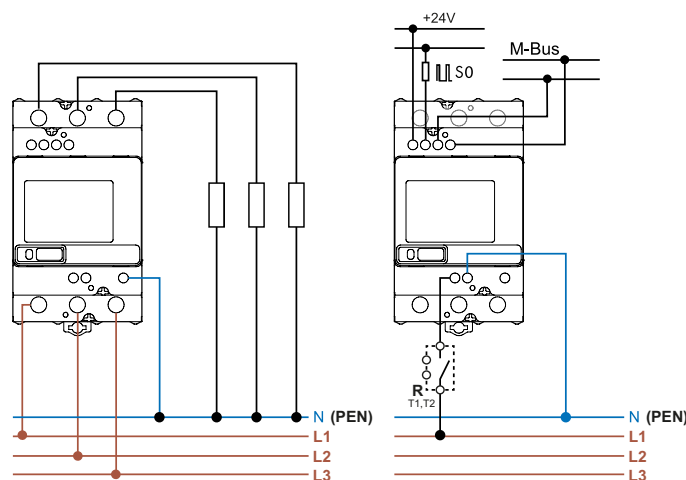
Approvals (according to type)



NEW 7M.38.8.400.0312

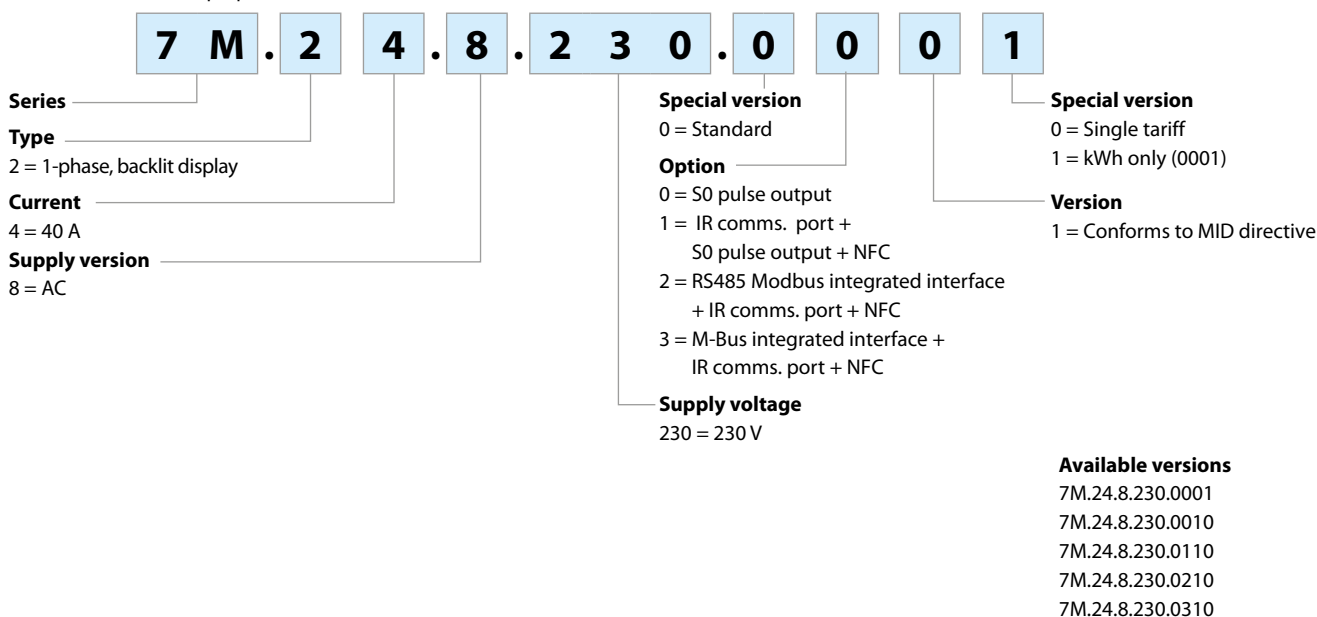


- Reference current 5 A (80 A Maximum)
- M-Bus integrated interface and IR communication port and NFC technology
- 3-phase 230/400 V 50/60 Hz system: 3L+N, 3L, 1L+N
- MID certified up to 70°C

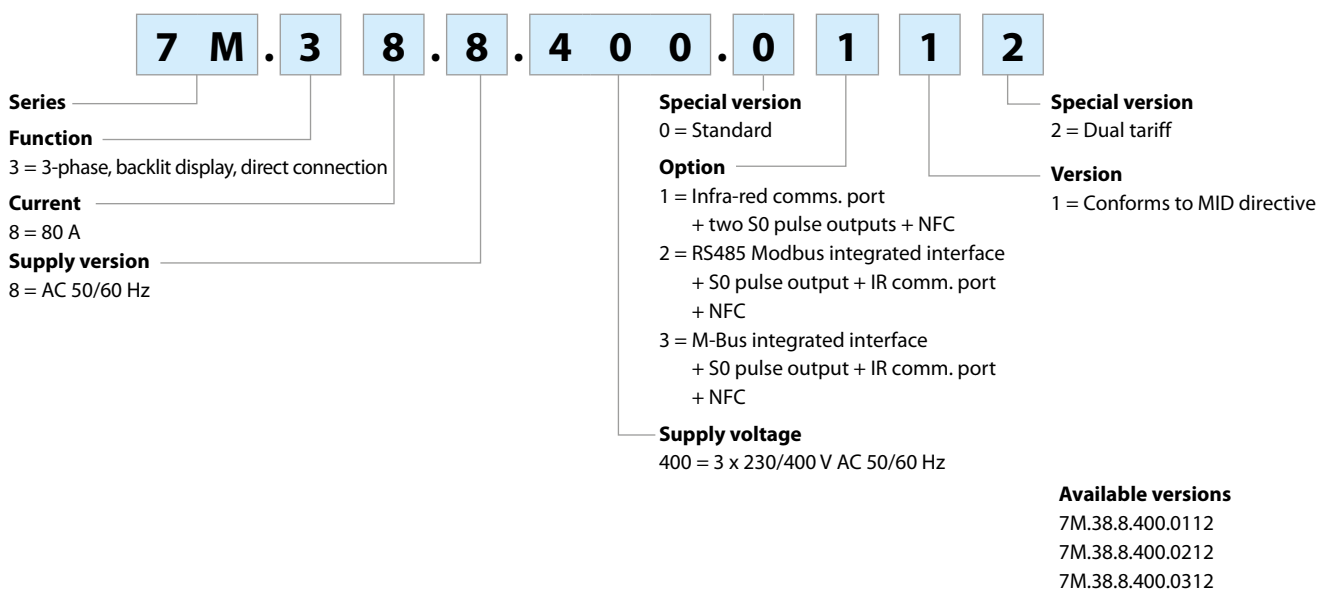


Ordering information

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.



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.

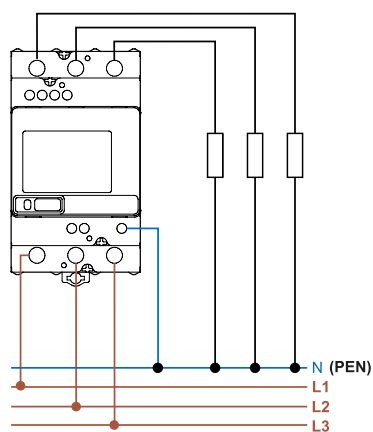


Technical data

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 EN 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
	mm²	1.5...10	1.5...10	1.5...10	1.5...25	1.5...25
	AWG	16...8	16...8	16...8	16...4	16...4
Screw torque for I _{max}	Nm	0.8	0.8	0.8	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
	mm²	0.14...2.5	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	26...14
Screw torque	Nm	0.6	0.6	0.6	0.6	0.6

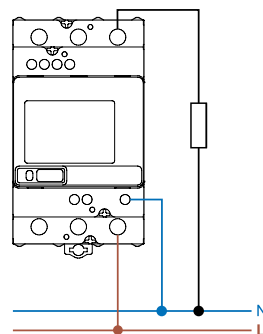
Wiring diagrams

Three-phase system



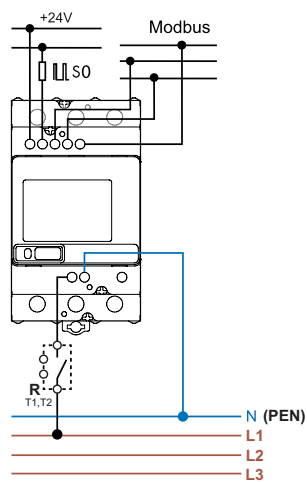
Type 7M.38.8.400.0112

Single-phase system

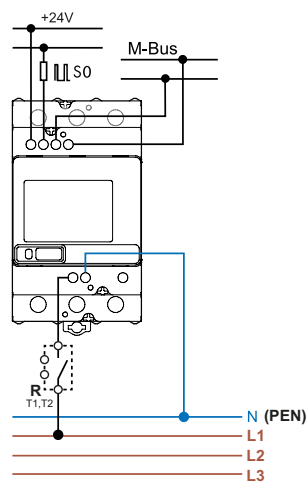


Type 7M.38.8.400.0112

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"

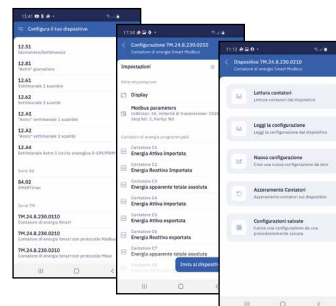
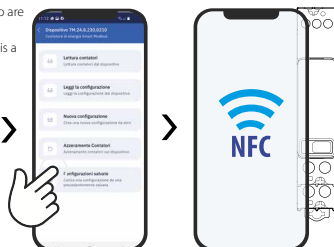
Smart mode via smartphones with NFC communication using Finder toolbox NFC, iOS or Android App.



"Classic"

Classic mode via touch button to scroll and read the meter

Android, Google Play and the Google Play logo are trademarks of Google Inc.
Apple is a trademark of Apple Inc. App Store is a service mark of Apple Inc.



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.

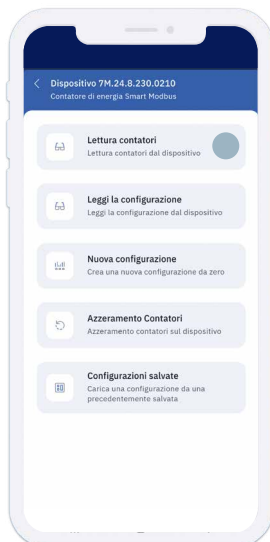
All that is required for the transfer of data is to simply touch the device with the smartphone.

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

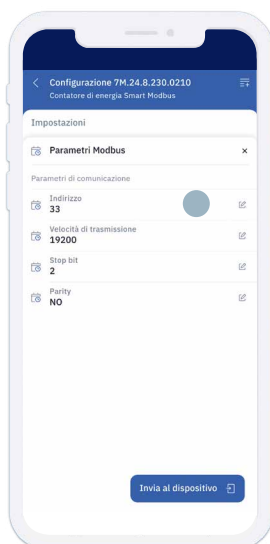


If you want to read all the energy counters select **"Read Counters"**

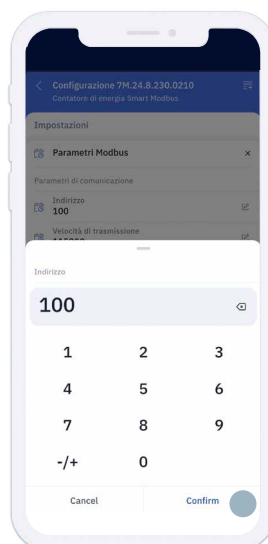


Even in the absence of the power supply network all the measurements made are readable thanks to the App - not just MID values.

Modbus parameter settings

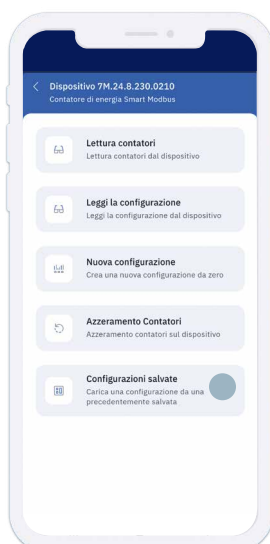


Select **"Address"** in order to change default values

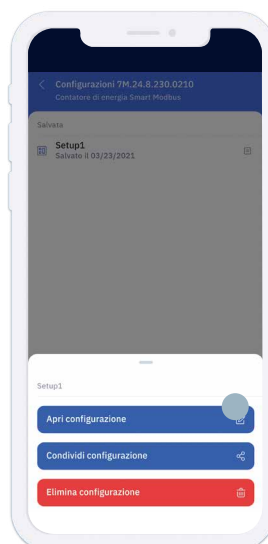


write the new address: **100**.
Click **"Confirm"**

Saved configuration

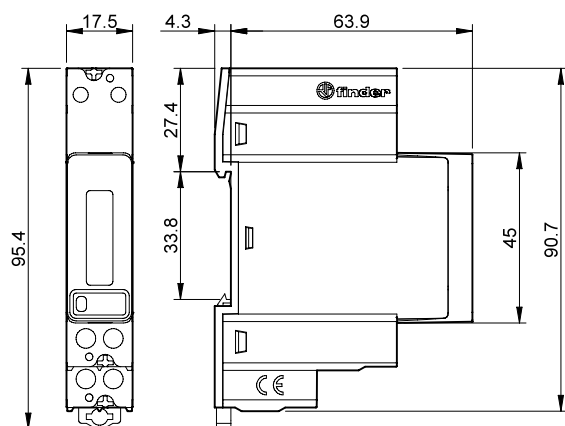


Recall the stored configuration

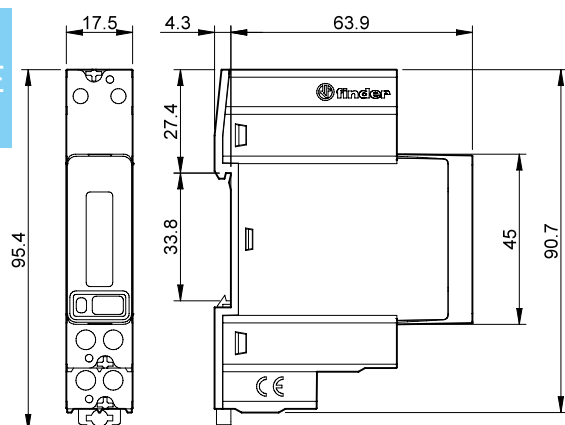


Outline drawings

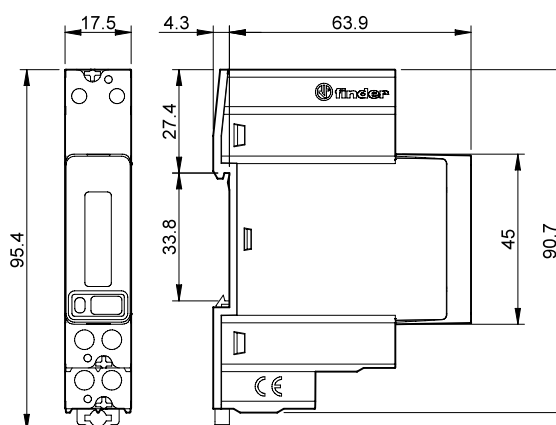
Type 7M.24.8.230.0001



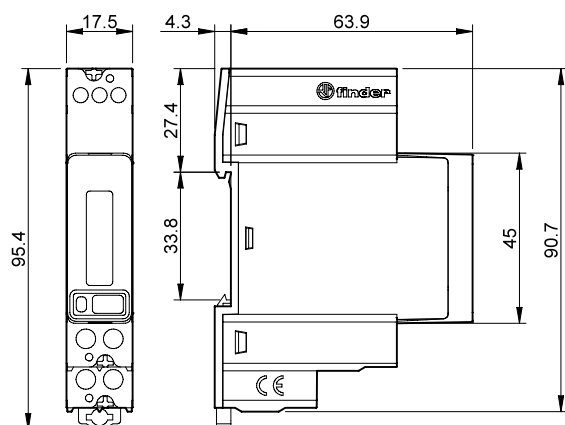
Type 7M.24.8.230.0010



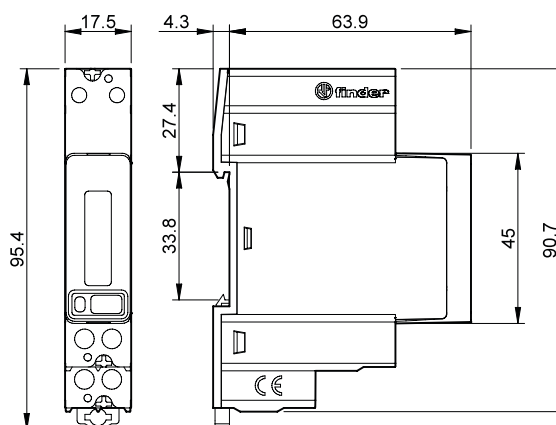
Type 7M.24.8.230.0110



Type 7M.24.8.230.0210

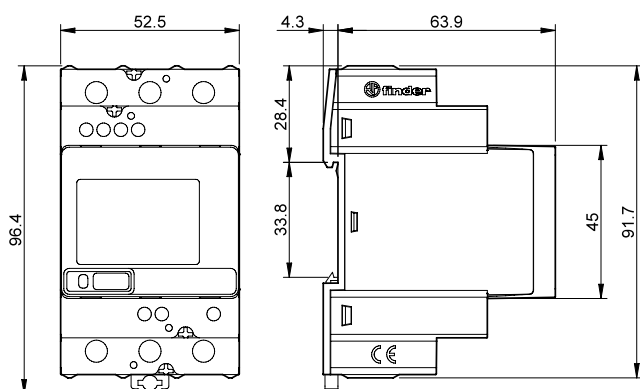


Type 7M.24.8.230.0310

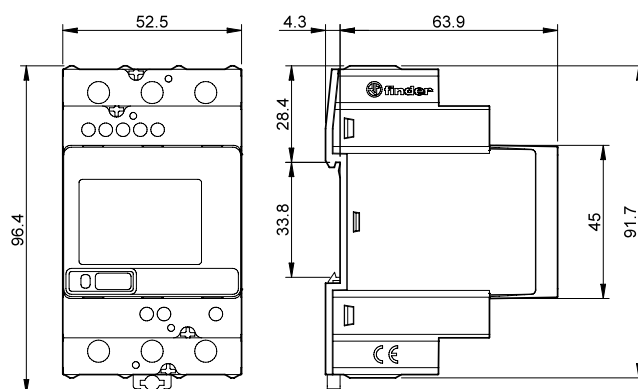


Outline drawings

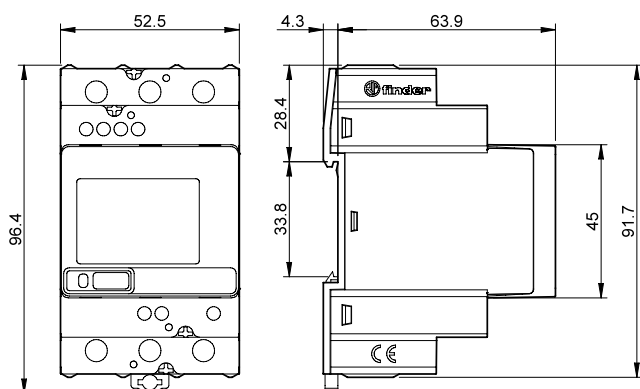
Type 7M.38.8.400.0112



Type 7M.38.8.400.0212



Type 7M.38.8.400.0312



E

