

Operating instructions

The Energy Meter provides all relevant measures for the evaluation of an electrical network: L, U, PF, F, THD%, Powers (displayed for each phase and 3 phase) and Imported/Exported Active Energies.

* All models have the 0.25-5(80) A current range, with 2 tariffs.



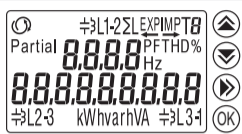
The built-in communication depends on the model:

Code	Model	Communication
HC.ECSOP6	M3PRO 80 Modbus MID	Built in RS-485 Modbus RTU MID certified
HC.ECSOP5	M3PRO 80 M-Bus MID	Built in M-Bus (1 unit Load) MID certified

(*) For Swiss market only active energy on display

RISK OF ELECTRIC SHOCK, BURNS OR EXPLOSION
 This device must be installed and maintained ONLY by qualified and duly authorized personnel.
 During its installation, be sure there is no voltage applied.

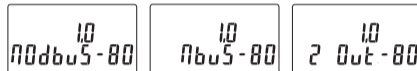
Frontal of the Energy Meters



- UP button: to scroll pages and change parameters
- DOWN button: to scroll pages and change parameters
- MENU/ESC button: to change menu and stop modification procedure of a parameter
- OK button: to confirm the modification of a parameter

Device Switch-on

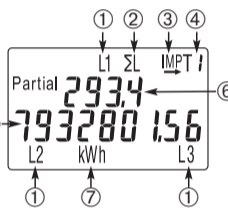
When the device is switched on, the firmware version and the model appear on the display for one second. (Preliminary Page)



Display Back light

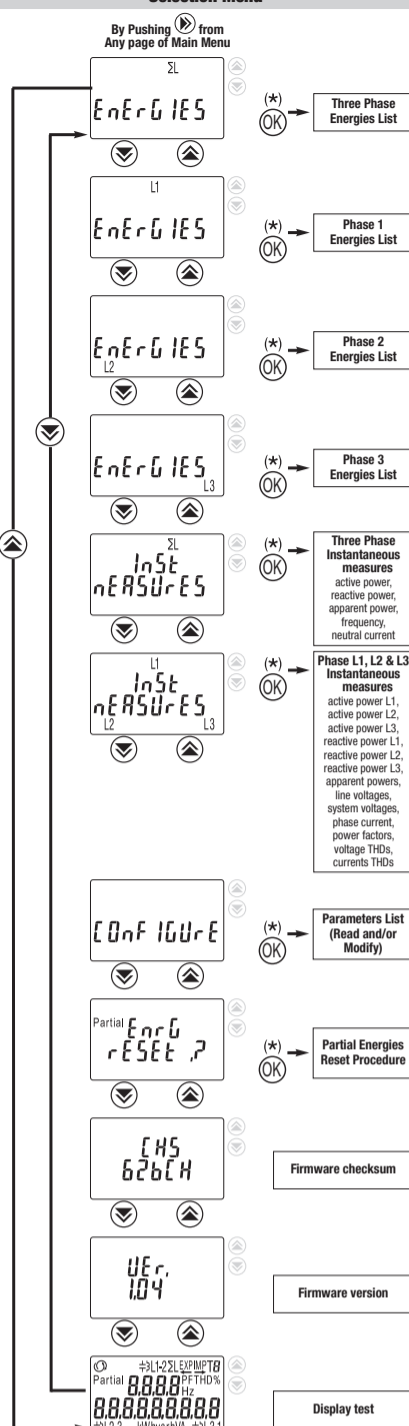
- If no button is pushed for 40 seconds, the display goes back to the Main Page and the backlight is switched off.
- The first button pushing does not change the page but is used to switch the backlight on.

Main Energy Page



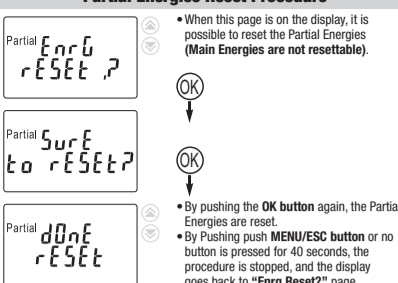
- 1: Appears if V (L-N) >= 92 VAC
- 2: Three-phase Energy
- 3: "MPorted" / "EXPorted" flowing power direction
- 4: working tariff
- 5: Three-phase Active Energy register
- 6: Corresponding Partial Energy register
- 7: Energy Unit

Selection Menu

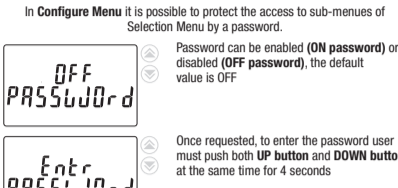


(*) access can be protected by Password (see Password chapter)

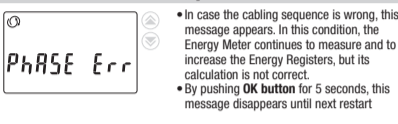
Partial Energies Reset Procedure



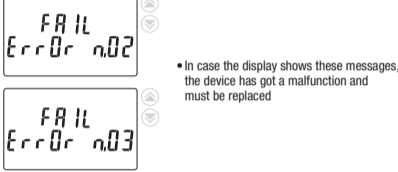
Password



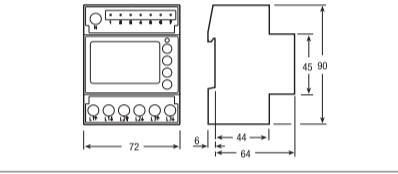
Phase Sequence Error



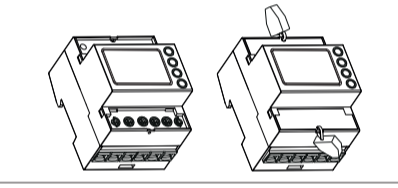
Unrecoverable Internal Errors



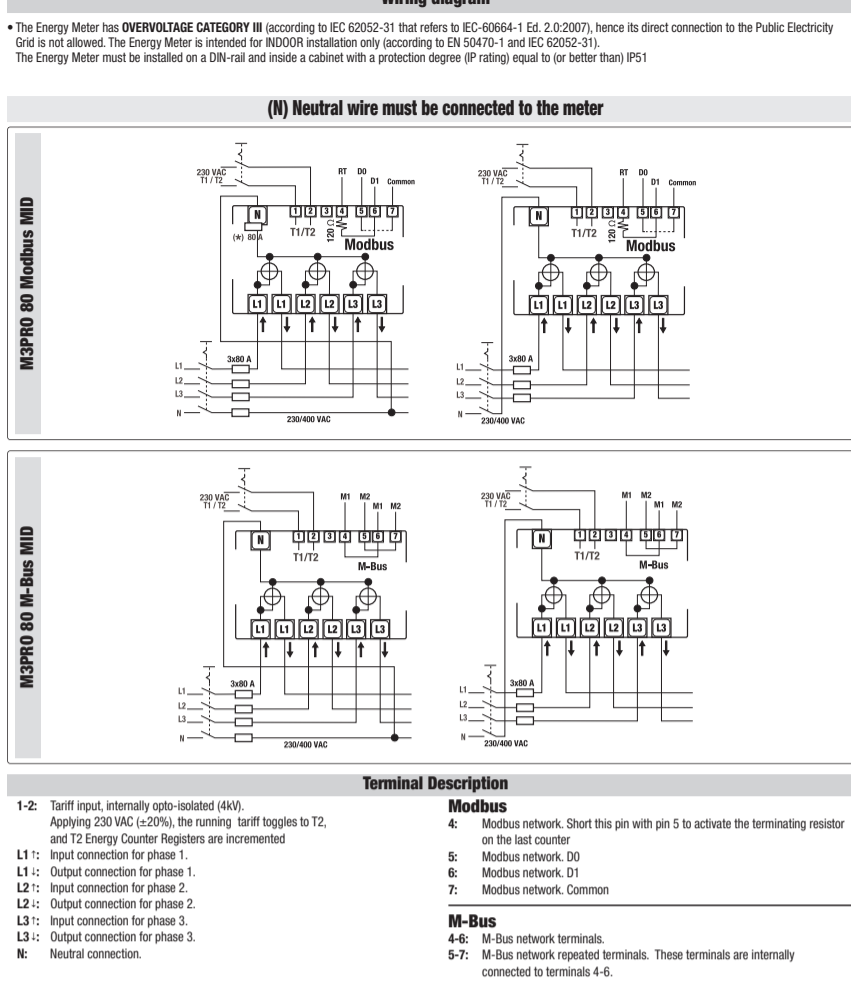
Dimension



Sealable terminal covers



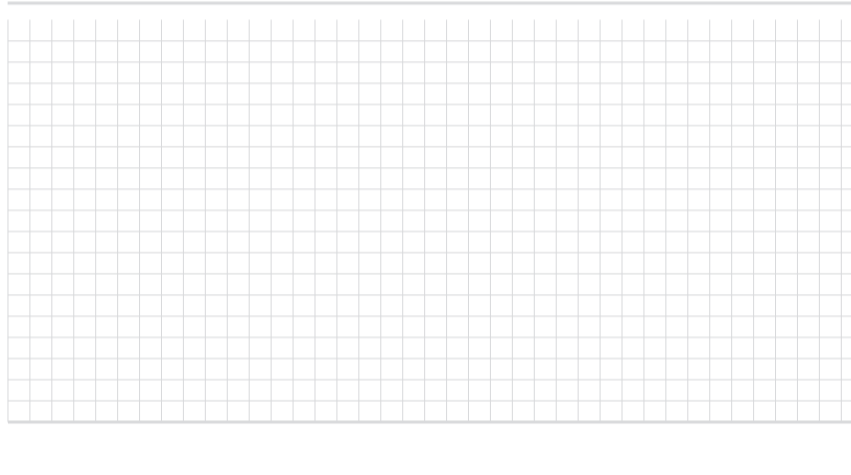
Wiring diagram



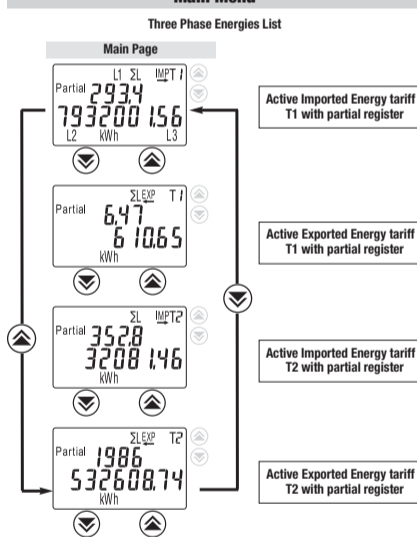
Terminal Description

1-2: Tariff input, internally opto-isolated (4kV). Applying 230 VAC (±20%), the running tariff toggles to T2, and T2 Energy Counter Registers are incremented.
 L1+: Input connection for phase 1.
 L1 -: Output connection for phase 1.
 L2+: Input connection for phase 2.
 L2 -: Output connection for phase 2.
 L3+: Input connection for phase 3.
 L3 -: Output connection for phase 3.
 N: Neutral connection.

Note

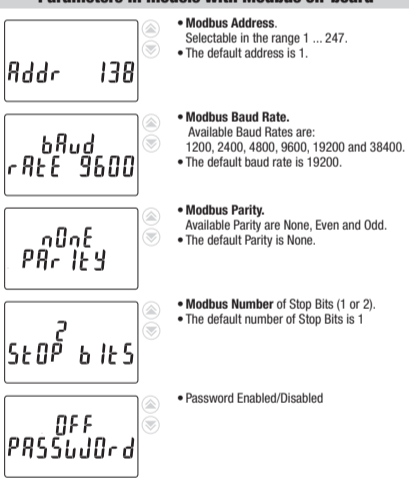


Main Menu

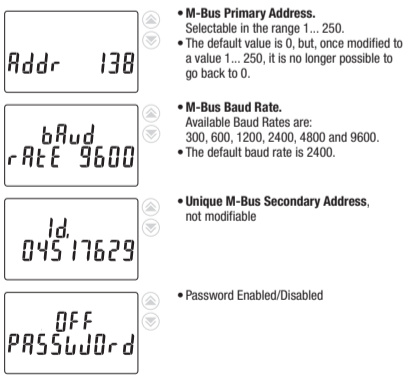


Note: Main Page and consequently page sequence could be different, according to the flowing power and working tariff

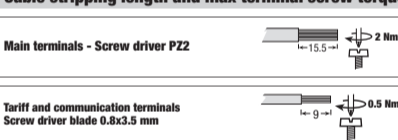
Parameters in models with Modbus on-board



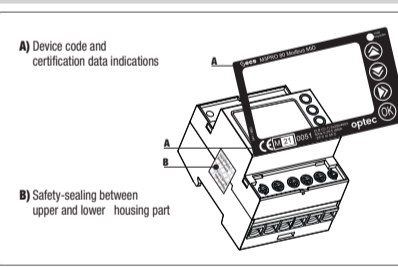
Parameters in models with M-Bus on-board



Cable stripping length and max terminal screw torque



MID certified



Technical Data

Data in compliance with CLC/TR 50579, EN 62059-32-1, EN 50470-1, EN 50470-3			ENGLISH
		Direct connection built-in communication Modbus / M-Bus	
General characteristics			
• Housing	DIN 43880	DIN	4 modules
• Mounting	EN 60715	35 mm	DIN rail
• Depth	-	mm	70
• Weight	-	g	412
Operating features			
• Connectivity	to three-phase network	n° wires	4
• Storage of energy values and configuration	internal FLASH memory	-	yes
• Display tariffs identifier	for active energy	n° 2	T1 and T2
Approval (according to EN 50470-1, EN 50470-3)			
• Reference Voltage Un	Line to Neutral	VAC	230
• Reference Voltage Un	Line to Line	VAC	400
• Reference Current (Iref)	-	A	5
• Minimum Current (Imin)	-	A	0.25
• Maximum Current (Imax)	-	A	80
• Starting Current (Ist)	-	A	0.015
• Reference Frequency (fn)	-	A	50
• Number of phases (number of wires)	-	-	3(4)
• Certified Measures	-	kWh	→ kWh, ← kWh
• Accuracy	Active Energies (accor. to EN 50470-3) and Active Powers	class	B
Supply Voltage and Power Consumption			
• Operating Supply Voltage range	VAC	92 ... 276 / 160 ... 480	
• Maximum Power Dissipation (Voltage circuit)	VA (W)	≤2 (0.6)	
• Maximum VA burden (Current circuit) @ Imax	VA	≤0.7	
• Voltage Input Waveform	-	AC	
Overload capability			
• Voltage	continuous; phase/phase	VAC	480
	1 second; phase/phase	VAC	800
	continuous; phase/N	VAC	276
	1 second; phase/N	VAC	300
• Current	continuous	A	80
	Temporary (10 ms)	A	2400
Measuring Features			
• Voltage range	phase/phase	VAC	160 ... 480
	phase/N	VAC	92 ... 276
• Current range (secondary winding)	-	A	0.015 ... 80
• Frequency range	-	Hz	45 ... 65
• Measured Quantities	-	-	kWh
Display features			
• Display type	LCD	-	9 (2 Decimal)
	Energy digits dimension	mm	6 x 3
• Active Energy	7 digits + 2 decimal digits	min. ... max. kWh	0.01 ... 9999999.99
• Running Tariff	1 digit	-	T1 or T2
• Display refresh period	-	s	1
Safety			
• Protective class	-	class	II
• AC voltage test (EN 50470-3, 7.2)	-	kV	4
• Degree of pollution	-	-	2
• Operational voltage	-	VAC	300
• Impulse voltage test	-	V	6
• Housing material flame resistance	UL 94	class	V0
• Safety-sealing between upper and lower housing part	-	-	yes
Embedded communication Modbus			
• Physical interface	RS485 - 3 Wire	-	D1, D0, Common (GND)
• Internal termination resistor	-	-	120 Ω
• Baud rate	adjustable	-	1200-2400-4800-9600-19200-38400
• Parity	adjustable	-	Odd, Even, None
• Stop Bit	adjustable	-	1, 2
• Address	adjustable	-	1-247
• Isolation class	-	-	SELV circuit
Embedded communication M-Bus			
• Baud rate	adjustable	-	300-600-1200-2400-4800-9600
• Unit load	-	-	1
• Isolation class	-	-	SELV circuit
Optical metrological LED			
• Front mounted red LED (meter constant)	proportional to active imp/exp Energy	p/kWh	1000
Connection terminals			
• Screwdriver for main terminals	head with 2 +/-	POZIDRIV	22
• Screwdriver for tariff and comm. terminals	slotted head	mm	0.8 x 3.5
• Terminal capacity main current paths	solid wire min. (max)	mm²	0 (33)
	stranded wire with sleeve min. (max)	mm²	0 (33)
	solid wire min. (max)	mm²	0 (4)
	stranded wire with sleeve min. (max)	mm²	0 (2.5)
Environmental conditions (storage)			
• Temperature range	-	°C	-25 ... +70
Environmental conditions (operating)			
• Temperature range	-	°C	-25 ... +55
• Mechanical environment	-	M1	
• Electromagnetic environment	-	E2	
• Installation	indoor	-	yes
• Altitude (max.)	-	meters	≤2000
• Humidity	yearly average, not condensing on 30 days per year (not condensing)	-	≤75%
	-	-	≤95%
• IP rating	-	-	IP51/IP40

(*) The metering equipment must be installed inside a cabinet with IP rating IP51 or better.

