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LE-03MQ-CT v2

Electric energy meter,
3-phase



Do not dispose of this device in the trash along with other waste!

According to the Law on Waste, electro coming from households free of charge and can give any amount to up to that end point of collection, as well as to store the occasion of the purchase of new equipment (in accordance with the principle of old-for-new, regardless of brand). Electro thrown in the trash or abandoned in nature, pose a threat to the environment and human health.



Compliance

Directive MID	2014/32/EU
Certificate number	0120/SGS0753

Purpose

The LE-03MQ-CT v.2 meter is an electronic, certified (MID declaration) 3-phase AC electricity meter designed for semi-direct (using current transformers) or indirect (using voltage and current transformers) measurement in 1-phase and 3-phase networks.

The meter enables the recording of imported and exported active and reactive energy (parameters 1.8.0, 2.8.0, 3.8.0, 4.8.0 according to OBIS codes) and the monitoring of many additional network parameters, such as: voltage, current, active power, reactive power, apparent power, frequency, power factor.

The LE-03MQ-CT v.2 meter is equipped with an RS-485 communication interface supporting the Modbus RTU protocol, which enables remote reading and configuration of the meter.

The meter can also be configured via the front panel with a multifunctional LCD display and touch buttons. The backlit LCD display facilitates the reading of measured values.

Operation and programming manual

Detailed PDF instructions can be downloaded from the website: www.fif.com.pl from the product subpage.

Functions

- » 1-phase or 3-phase system (3- and 4-wire);
- » 2-way measurement of active and reactive energy;
- » Transformers 1 A or 5 A;
- » Current transformer 1÷2000;
- » Display of kWh/kvar (consumed/generated);
- » Network parameter indications;
- » MID compliance;
- » RS-485 port;
- » Modbus RTU protocol;
- » SO pulse output (×2);
- » Backlit, multifunction LCD display;
- » Password protection for the meter configuration.

Measured values

Active energy consumed/supplied	AE+/AE-	[kWh]
Reactive energy consumed/supplied	RE+ /RE-	[kVARh]
Phase voltages	U1, U2, U3	[V]
Phase currents	I1, I2, I3	[A]
Frequency	f	[Hz]
Active power	P	[W]
Reactive power	Q	[var]
Apparent power	S	[VA]

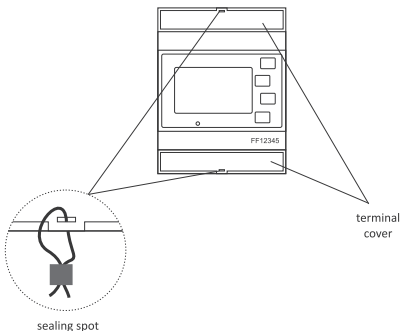
Power factor	$\cos\varphi$
THD harmonic	%
Demand for power and electricity	kW, kvar, kVA, I

Pulse output

The indicator has a 2 SO+/SO- pulse outputs. This allows you to connect a pulse meter-reading pulses generated by the counter. For proper operation of the indicator is not required to connect additional devices.

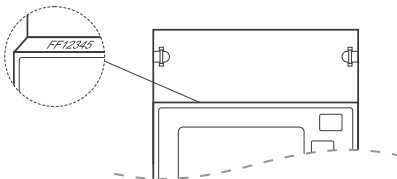
Sealing

The meter has sealable input and output terminal covers to prevent any attempts to bypass the meter.

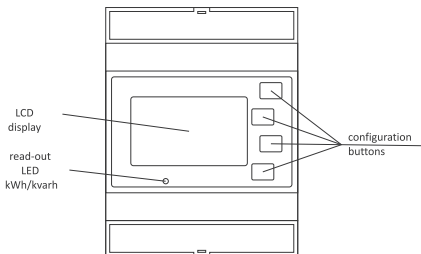


Meter number

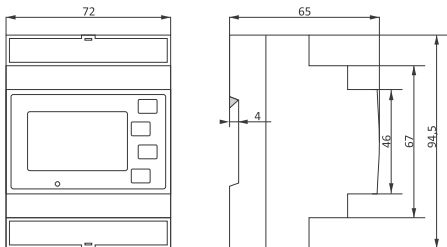
The meter is marked with individual serial number allowing its unambiguous identification. The marking is laser engraved and cannot be removed).



Front description



Dimensions



Wiring diagram



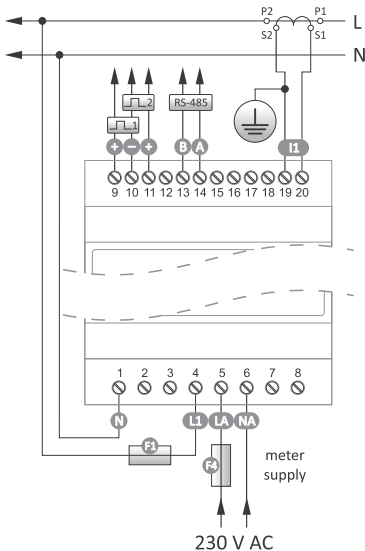
To operate the meter, an auxiliary power supply of 230 V AC must be connected to the LA-NA terminals. Terminals 5-7 (LA) and 6-8 (NA) are connected inside the meter.

- | | | |
|-----------|----|---|
| 1 | N | voltage input: neutral wire |
| 2 | L3 | voltage input: L3 phase |
| 3 | L2 | voltage input: L2 phase |
| 4 | L1 | voltage input: L1 phase |
| 5, 7 | LA | meter power supply: phase |
| 6, 8 | NA | meter power supply: neutral wire |
| 9, 10, 11 | | pulse outputs (pulse 1+, pulse -, pulse 2+) |
| 13, 14 | | RS-485 communication (B, A) |

15, 16	I3	current input: L3 phase
17, 18	I2	current input: L2 phase
19, 20	I1	current input: L1 phase

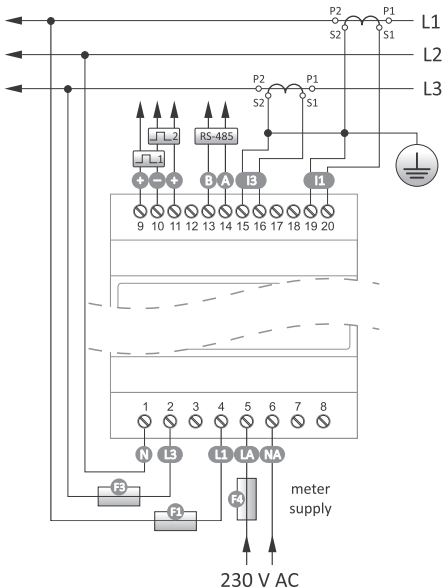
1-phase 2-wire system

Semi-direct measurement



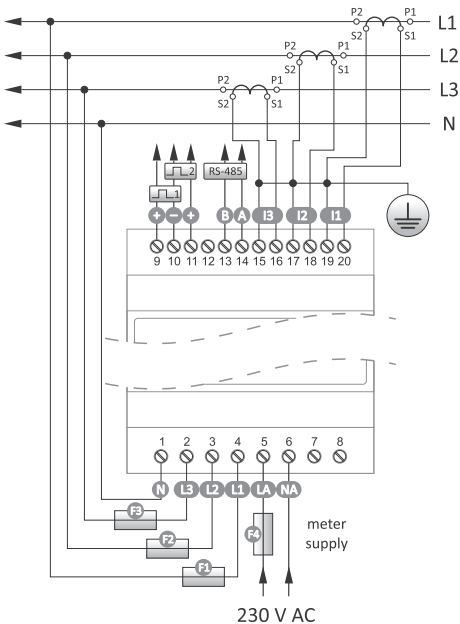
3-phase 3-wire system (without netral wire)

Semi-direct measurement



3-phase 4-wire system

Semi-direct measurement





Wiring diagrams for indirect measurement available in the full manual to download from the device subpage at: www.fif.com.pl.

Technical data

MID declaration	0120/SGS0753
instalation	1-phase (2-wire) 3-phase (3-, 4-wire)
measurement	semi-direct, indirect
rated voltage	3×230/400 V AC
current	
minimum detection current	0.01 A
minimum	0.05 A
base	5 A
maximum	6 A
overload	30× I _{max} /10 ms
insulation	4 kV/1 min.; 6 kV/1.2 μs
insulation protection class	II class
installation category	CAT III
environmental condition class	
mechanical	M1
electromagnetical	E2
voltage measurement range (L-N)	176÷276 V AC
voltage measurement range (L-L)	304÷480 V AC
measurement accuracy	
voltage	0,5%
current	0,5%
frequency	0,2%
active power	1%
reactive power	1%

apparent power	1%
active energy (EN50470-1/3)	B class
reactive energy (IEC62053-23)	2nd class
rated frequency	50/60 Hz
power consumption	
own power consumption	<10 VA; <2 W
auxiliary meter power supply	230 V AC
measuring circuit consumption	0.6 VA/phase
indication range	0÷9999999.9 kWh/kVArh
display	LCD backlit (blue)
meter constant	3200 pulses/kWh
pulse outputs	
quantity	2
type	open collector (OC)
voltage maximum	27 V DC
current maximum	30 mA
pulse output 1	
pulse constant	0,001; 0,01; 0,1; 1* , 10, 100, 1000/kWh(kVArh)
pulse time	60, 100, 200* ms
pulse output 2	
pulse constant	3200 pulses/kWh
pulse time	60 ms
communication	
interface	RS-485
protocole	Modbus RTU
address	1* ÷247
baud rate	2400, 4800, 9600* , 19200, 38400 bps
parity	NONE* , ODD, EVEN
stop bits	1* , 2
read-out indication	red LED

working temperature	-25÷55°C
storage temperature	-40÷70°C
humidity (non-condensing)	≤95%
vibration resistance (IEC60068-2-6)	2g (10÷50 Hz)
mounting altitude	up to 3000 m a.s.l.
terminal	0.5÷1.5 mm ² screw terminals
tightening torque (max)	0.4 Nm
housing	PC+ABS plastic (self-extinguishing)
dimensions	4 modules (72 mm)
mounting	for TH-35 rail
internal (enclosure recommended)	IP51
external (enclosure required)	IP54
ingress protection	
front	IP51
whole	IP20

** factory settings*

Warranty

F&F products are covered by a 24-month warranty from the date of purchase. The warranty is only valid with proof of purchase. Contact your dealer or contact us directly.

CE declaration

F&F Filipowski L.P. declares that the device is in conformity with the essential requirements of the Low Voltage Directive (LVD) 2014/35/EU and the Electromagnetic Compatibility (EMC) Directive 2014/30/UE.

The CE and MID Declaration of Conformity, along with the references to the standards in relation to which conformity is declared, can be found www.fif.com.pl on the product subpage.

General work safety conditions

- » Please read the instructions carefully before installation.
- » The device should be installed and operated by qualified personnel who are familiar with its design, operation, and associated risks.
- » Do not install a meter that is damaged or incomplete.
- » The user is responsible for proper grounding of the system, proper selection, installation, and efficiency of other devices connected to the meter, including safety devices such as over-current, residual current and overvoltage circuit breakers.
- » Before connecting the power supply, make sure that all cables are connected correctly.
- » It is essential to observe the operating conditions of the meter (supply voltage, humidity, temperature).
- » To avoid electric shock or damage to the meter, turn off the power supply whenever the connection is changed.
- » Do not make any changes to the unit yourself. Doing so can result in damage to or improper operation of the device, which in turn can pose a threat to people operating it. In such cases, the manufacturer is not responsible for the resulting events and may refuse the provided warranty in the event of a complaint.