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## LE-03MW CT

Electric energy meter,  
3-phase, 4-tariff, 2-way



**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.



### Purpose

The LE-03MW CT is a static, (electronic), 2-way calibrated electricity meter of three-phase or three-phase designed for measurement in a semidirect system.

A built-in real-time clock allows energy consumption to be measured by different tariff zones. Equipped with communication interfaces: RS-485 with Modbus RTU protocol and an optical port compliant with EN62056 (IEC1107) allows remote reading and configuration of the meter.

Configuration of the meter is done through the communication port according to the software features of the Modbus RTU.

## Operation and programming manual

Detailed PDF instructions can be downloaded from the website: [www.fif.com.pl](http://www.fif.com.pl) from the product subpage.

### Functions

- » 3-phase, 2-way energy meter;
- » Semidirect measurement (direct measurement up to 6 A);
- » Energy measurement in 4 tariff zones;
- » Built-in real-time clock with battery backup for switching tariff zones;
- » Registration of total and tariff-divided consumption:
  - total active and reactive energy;
  - active and reactive energy split by quadrant\*;
- » 8 time schedules dividing the day into tariff zones;
- » Possibility of energy billing according to different schedules for working days and weekend;
- » Possibility of dividing the year into 8 time intervals, in each interval the energy (for weekdays) may be billed according to a different schedule;
- » Indication of network parameters (voltages, currents, active power, reactive power, apparent power, power factor, frequency);
- » Calculation of power demand for individual tariffs;
- » Additional, erasable energy consumption meter;
- » Compliance with standards IEC62052-11 and IEC62053-21;
- » RS-485 port;
- » Modbus RTU protocol;

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\* *Reading of energy consumption with breakdown into active/reactive, consumed/rejected energy possible via Modbus RTU interface.*

- » Optical communication port in accordance with EN62056 (IEC1107);
- » Pulse output SO with programmable number of pulses per kWh;
- » Multifunction LCD display.

### Measured values

Consumed and supplied active energy	AE+/AE-	[kWh]
Consumed and supplied reactive energy	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		

### Current ratio setting

The current ratio of the meter can be set remotely via the Modbus RTU interface or locally using the PROG button.

To set the gear ratio manually you need to:

1. Switch the meter power off and on.
2. Press and hold down the PROG button.
3. After approximately 15 seconds, release the PROG button.
4. The display will show a blinking gear value (e.g. 0005-5).
5. Use the RIGHT or LEFT buttons to set the selected current gear value.
6. Wait until the gear value disappears from the display.



The position of the **PROG** button is shown in the diagram on page 7.

## Energy consumption indications

The maximum indicated value of electricity consumption depends on the selected value of the current transformer.

<b>Value</b>	<b>Energy consumption reading</b>
5/5	99999.999 kWh
30/5	99999.999 kWh
40/5	99999.999 kWh
50/5	999999.99 kWh
60/5	999999.99 kWh
75/5	999999.99 kWh
80/5	999999.99 kWh
100/5	999999.99 kWh
125/5	999999.99 kWh
150/5	999999.99 kWh
200/5	999 999.99 kWh
250/5	999999.99 kWh
500/5	9999999.9 kWh
600/5	9999999.9 kWh
750/5	9999999.9 kWh
800/5	9999999.9 kWh
1000/5	9999999.9 kWh
1250/5	9999999.9 kWh
1500/5	9999999.9 kWh
2000/5	9999999.9 kWh
2500/5	9999999.9 kWh
3000/5	9999999.9 kWh

Value	Energy consumption reading
4000/5	99999999 kWh
5000/5	99999999 kWh
6000/5	99999999 kWh
7500/5	99999999 kWh

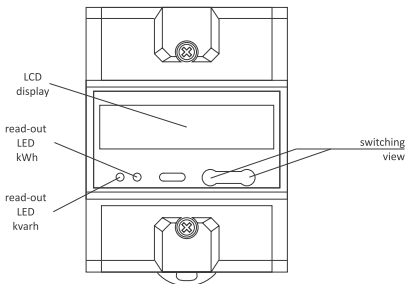


When the reading field is overflowing, the meter starts counting energy from the value of 0 kWh.

### Pulse output

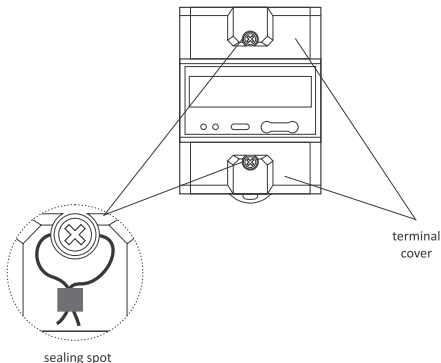
The indicator has a SO+/SO- pulse output. This allows you to connect a pulse meter-reading pulses generated by the meter. For proper operation of the indicator is not required to connect additional devices.

### Front description



## Sealing

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

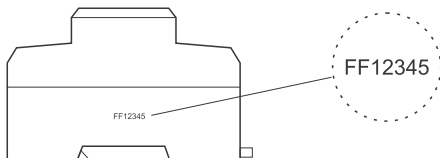


## Service program

Software is available for configuring the meter via the RS-485 interface at [www.fif.com.pl](http://www.fif.com.pl) (on the subpage of the LE-03MW CT meter).

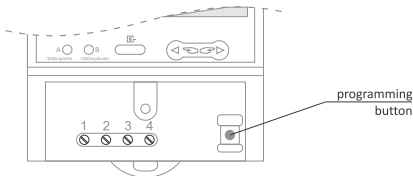
## Meter number

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



## Programming button

The **PROG** button is located under the lower terminal cover of the meter.



## Mounting

1. Disconnect the power supply.
2. The indicator mounted on a rail in the distribution box.
3. Using a screwdriver, remove the screws and remove the front shield meter terminals.
4. Connect the voltage-controlled phase, following the indications to terminals 1 (L1), 2 (L2), 3 (L3).
5. N-wire connect to terminal 4.
6. Transformers fasten on the phase conductors and secondary outputs connected in accordance with the indications to the terminals: 10-9 (L1), 8-7 (L2), 6-5 (L3).



Do not tighten the terminals without an inserted wire. This may damage the clamping mechanism or the plastic cover of the terminal.

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7. Additional pulse receiver connected to terminals 20(+)-21(-). The terminals are located under the top shell meter terminals.



Additional pulse receiver is not required.

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8. Pull the cap setting button transmission. Program indicator slide the cap.

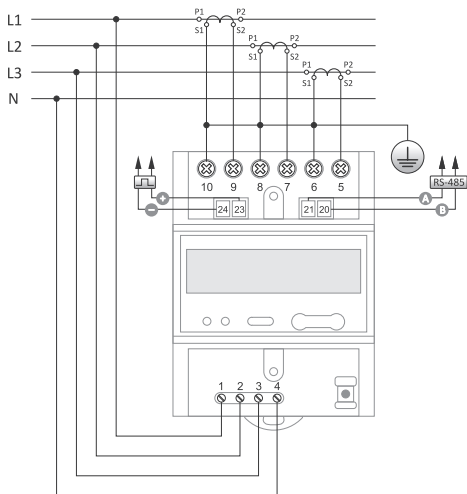


The housing has a hole for safety seal assumption.

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9. Put the meter terminals covers.



## Wiring diagram



- 1 L1 phase – voltage measurement and power supply
- 2 L2 phase – voltage measurement and power supply
- 3 L3 phase – voltage measurement and power supply
- 4 N-wire – voltage measurement and power supply
- 5 current transformer – L3 phase, S2 terminal
- 6 current transformer – L3 phase, S1 terminal

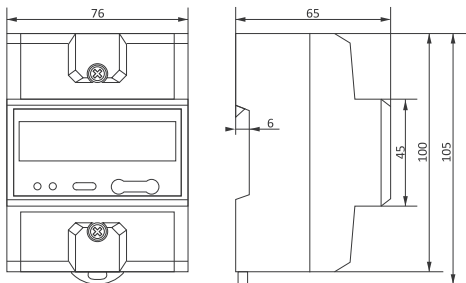
- 7 current transformer – L2 phase, S2 terminal
- 8 current transformer – L2 phase, S1 terminal
- 9 current transformer – L1 phase, S2 terminal
- 10 current transformer – L1 phase, S1 terminal
- 20 RS-485 output (B)
- 21 RS-485 output (A)
- 23 pulse output (+)
- 24 pulse output (-)

### Technical data

rated voltage	3×230/400 V
base current	3×1.5 A
maximum current	3×6 A
minimum detection current	0.02 A
transformers settings	5/5, 30/5, 40/5, 50/5, 60/5, 75/5, 80/5, 100/5, 125/5, 150/5, 200/5, 250/5, 300/5, 400/5, 500/5, 600/5, 750/5, 800/5, 1000/5, 1250/5, 1500/5, 2000/5, 2500/5, 3000/5, 4000/5, 5000/5, 6000/5, 7500/5
voltage measurement	
L-N	100÷289 V AC
L-L	173÷500 V AC
measurement accuracy (IEC62052-11, IEC-62053-21)	1st class
overload	30×I <sub>max</sub> /10 ms
insulation	4 kV/1 min.; 6 kV/1 μs
rated frequency	50 Hz
own power consumption	<10 VA; <2 W

counter reading range	0÷999999.99 kWh
meter constant [kWh]	12000 pulses/kWh
meter constant [kvarh]	12000 pulses/kvarh
reading indication	2× red LED
communication	
port	RS-485
communication protocole	Modbus RTU
baud rate	1200, 2400, 4800, 9600 bps
parity	EVEN
parity bits	1
pulse outputs	
pulse outputs quantity	2
type	open collector
maximum voltage	27 V DC
maximum current	27 mA
pulse constant of output	12000, 1200, 120, 12 pulses/kWh
pulse time	10 ms
working temperature	-25÷55°C
terminal	4.0 mm <sup>2</sup> screw terminals
dimensions	4.5 modules (75 mm)
mounting	on TH-35 rail
ingress protection	IP51

## Dimensions



## 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](http://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.

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