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## LE-02d CT

Electric energy meter,  
3-phase



51190831215950831

### 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-02d CT is a static (electronic) calibrated three-phase alternating current electricity meter in a semi-indirect system.

The indicator is designed to work with current transformers with primary current  $I_p$  from  $5\div 6000$  A and secondary current 5 A. The maximum measured current is determined by the value of the primary current  $I_p$  current transformer used.

You can set the index value of the gear used transformers, allowing you to identify the actual value taken by the electricity system.

## Functioning

A special electronic system under the influence of current flow and applied voltage in each phase generates pulses in proportion to the electricity consumed in this phase. Phase energy consumption is indicated by flashing the corresponding LED (L1, L2, L3). The sum of the three phases of pulses indicated by a flashing LED is converted to energy taken in the entire three-phase system, and its value is determined by the segment LCD display.

Stored in the memory index values transformer primary current  $I_p$  possible to apply. Choosing the right value compatible with the values of external transformers automatically sets the correct ratio, which is calculated according to the actual value of the collected energy. The LCD displays the actual value of the energy consumed in the format depending on the selected gear.

### Measured value

Active energy consumed AE+/AE- [kWh]

### Pulse output

The indicator has a pulse output. 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.

Constant pulse counter is 12000 pulses/kWh for maximum input current meter, or the secondary current transformer (5 A). When using a dedicated transformer the number of pulses per 1 kWh is calculated from the formula  $(12000 \times 5) / I_p$ , where:

$I_p$  – primary current transformer used

Example:

for transformer 5/5 A ( $I_p=5$ ):

$$(12000 \times 5) / 5 = 12000 \text{ pulses/kWh}$$

for transformer 100/5 A ( $I_p=100$ ):

$$(12000 \times 5) / 100 = 600 \text{ pulses/kWh}$$

### Programming

Transmission programmable using the button located under the lower casing meter terminals.



For safety reasons, the data logging function can make the gear set only once.

CT current values  $I_p$  inscribed in memory device:

5, 25, 40, 50, 60, 75, 80, 100, 120, 150, 200, 250, 300, 400, 500, 600, 800, 1000, 1200, 1500, 1600, 2000, 2500, 3000, 4000, 5000, 6000.

Another pressing the programming button jumps to the next value.

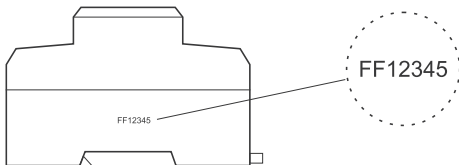
After switching to the desired value in order to confirm the selected value to hold the key from 35 to 45 sec.

To verify the correctness of the programming, the power supply must be switched off for a while.

After switching on again, the display will show the value of the entered ratio, such as the factory value: "5 - - 5" (factory settings).

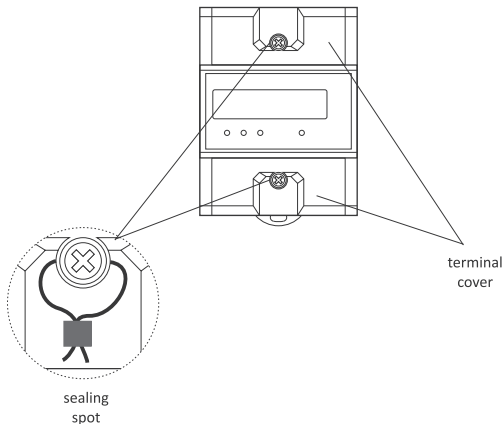
### Meter number

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

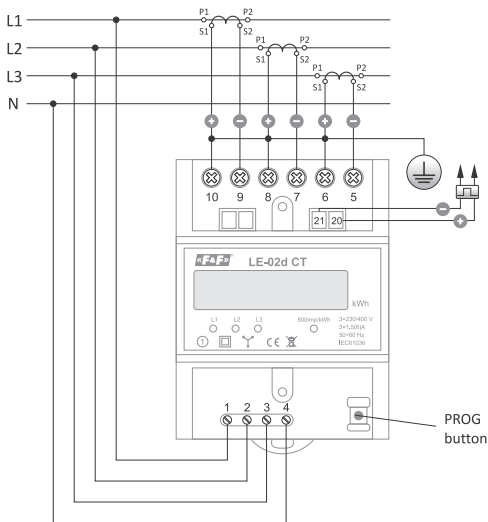


## Sealing

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



## Wiring diagram



### voltage inputs

- 1 – L1 phase
- 2 – L2 phase
- 3 – L3 phase
- 4 – neutral N-wire

## current outputs for transformers

- 5 – L3 output (–)
- 6 – L3 output (+)
- 7 – L2 output (–)
- 8 – L2 output (+)
- 9 – L1 output (–)
- 10 – L1 output (+)
- 20 – pulse output (+)
- 21 – pulse output (–)



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If the secondary circuit of the transformer is opened during operation, there is a risk of high voltage on the secondary winding. In order to protect personnel operating the device, it is recommended to ground one end of the secondary winding of each transformer.

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## 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.

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.

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



The housing has a hole for safety seal assumption.

9. Put the meter terminals covers.

### Technical data

installation	4-wire
rated voltage	3×230/400 V
minimum measured current	0.04 A
base current	3×1.5 A
maximum current	3×6 A
secondary current transformer	5 A
voltage measuring range	185÷275 V AC
measurement accuracy (IEC62052)	1st class
rated frequency	50 Hz
insulation protection class	II
housing	PC material
own power consumption	10 VA; 2 W
load capacity of current inputs	0.4 VA
indication range	dependent on gear

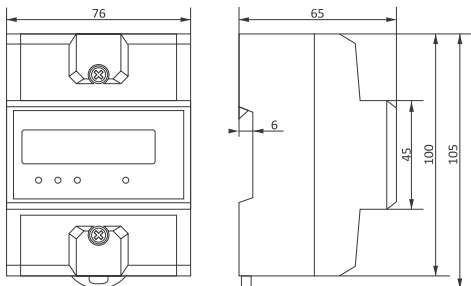
constant	dependent on gear
current consumption signalling	3× red LED
read-out signalling	red LED
pulse output	
type	open collector
maximum voltage	27 V DC
maximum current	27 mA
pulse constant	dependent on gear
pulse time	35 ms
working temperature	-25÷55°C
terminal	16 mm <sup>2</sup> screw terminals
dimensions	4,5 module (75 mm)
mounting	on TH-35 rail
ingress protection	IP20

The method of data projection depending on the gear settings:

Format	Ip current
000000.00	5; 25; 40; 50; 60.
0000000.0	75; 80; 100; 120; 150; 200; 250; 300; 400; 500; 600.
00000000	800; 1000; 1200; 1500; 1600; 2000; 2500; 3000; 4000; 5000; 6000



## 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 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.

