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LE-03M

ENERGY METER three phase type



5 19 0 8 3 1 2 1 5 9 4 4 0 6 >

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F&F products are covered by an 24 months warranty from date of purchase

PURPOSE

LE is a static (electronic) rated energy which is to serve as an auxiliary meters to measure energy consumption in a three phase direct system.

FUNCTIONING

The meter LE with the influence of the flowing current and the applied voltage shall accurately measure the amount of energy consumed by each phase. Energy consumption is signalled by flashing of LEDs (800 pulses / kWh). The sum of energy absorbed by the three phases is converted into the total energy taken by the three-phase system, and its value is displayed by the LCD. Digits after the decimal point means hundredths of kWh (0.01 kWh = 10 Wh). The meter LE-03M is equipped with a pulsed output of SO+ and SO- which allow you to connect an external meter system that allows remote monitoring of gain of power indication. The frequency of the output pulse is 800 pulses / 1 kWh.

To remote report of electricity can be used a RS-485 interface which supports standard Modbus RTU protocol (slave).

0x00 - Address of the first report of meter

0x00

0x03 - Numbers of registers to read

CRC - checksum CRC (two bytes)

In response, the meter sends a message in the form:

0x00 - Address of the corresponding meter

0x03 - Command code which response the meter

0x06 - Number of bytes of data communication

0x00 - Meter display - byte 1

0x01 - Meter display - byte 2

0x00 - Meter display - byte 3

0xE8 - Meter display - byte 4

0x00 - Meter display - byte 5

0x48 - Meter display - byte 6

CRC - Two bytes (CRCL and CRCH)

The report is stored in consecutive bytes form a hexadecimal number. When converted to decimal form we obtain the result in the nearest kWh with precision 0.01 kWh.

Example: (0x01 0xE8 0x48)₁₆ = (125000)₁₀ = 1250.00 kWh

ASSEMBLY

1. Take OFF the power.
2. Energy meter put on the rail, in the switchgearbox.
3. Supply connect to joints 1(L1), 3(L2), 5(L3)
4. The system which is measured, or a single receiver connect to joints: 2(L1), 4(L2), 6(L3)
5. Cable N connect to joint 7.
6. Additional receiver pulse connect to joints 9 (+) - 8 (-)
7. Joints 10 and 11 connect to RS-485 system.

ATTENTION! Connection from points 5 and 6 is not required.

ATTENTION!

The meter has the possibility of sealing guards input and output terminals to prevent the circumvention of making counter.

Communication parameters:

- transmission speed - 9600 bit/s
- No parity
- The length of the word - 8 bits
- Stop bits - 1
- Security of the transmission - CRC

The meters can be connected in a network (up to 245 devices), in which each of the meters is identified by a unique address assigned by the user.

Modbus interface in meters LE-03M allows for the following orders:

CHANGE OF METER ADDRESS:

To change the meter address the master device sends an order with the following structure:

0x00 - Current meter address

0x06 - Modbus Command code (write command of registers)

0x06

0x06 - The register number where is stored in the meter address

0x00

0x01 - New meter address (upper and lower byte)

CRC - checksum CRC (two bytes)

ATTENTION!

1) During of change a meter address, you must hold down the button 12

2) By default, the meter have set to address 0

3) LE-03M does not support a broadcast command (address zero is treated like any other.)

METER REPORTS

To read the actual report of meter, master device sends an order with the following structure:

0x00 - Current meter address

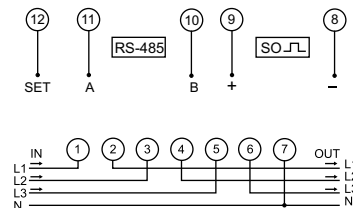
0x03 - Modbus Command code (read command of registers group)

0x00

TECHNICAL DATA

reference voltage	3×230/400V+N
basic current	3×10A
max current	3×100A
min current	0,04A
measure precision with IEC61036	class 1
meter's own power consumption	<10VA; <2W
range of display reports T0 i T1	0+9999,99kWh
constatnt of the meter	800pulses/kWh
reading signaling	red LED
pulse output SO+ SO-	open collector
connection voltage SO+ SO-	<30V DC
connection current SO+ SO-	<27mA
constant SO+ SO-	(1,25Wh/pulse) 800pulses/kWh
port	RS-485
communication protocol	MODBUS RTU
working temperature	-20+55°C
protection level	IP20
connection	screw terminals 25mm ²
dimensions	7 modules (122mm)
fixing	on the rail TH-35

WIRING DIAGRAM



A111104