3.2 Installation Procedure

3.2.1 Connect the meter in accordance with the diagram on the terminal cover.

When installing the meter, the wire (cable) must be stripped of insulation by approximately 17 mm. Insert the wire into the terminal without tilts.

It is not allowed to insert a wire with insulation into the terminal, as well as to protrude the stripped area outside the block. First, tighten the top screw. Pull the wire lightly to make sure that it has been clamped. Then tighten the bottom screw. After several minutes, tighten the connection again.

The diameter of the wires connected to the meter is selected depending on the value of the maximum load current in accordance with the Requirements for Electric Installations (1÷6) mm.

3.2.2 Power up the meter. When the load is connected, the readings on the counting mechanism should change.

ATTENTION! The presence of readings on the counting mechanism is the result of the meter verification by the manufacturer and does not attest to its wear or operation.

4 Meter Verification

4.1 The meter is verified upon release from production, after repair and in operation in accordance with the document "CE101 Single-phase Single-tariff Active Electricity Meters. Verification Method INES.411152.082 D1".

4.2 Periodic verification of the meter is carried out once every 16 years or after a medium repair.

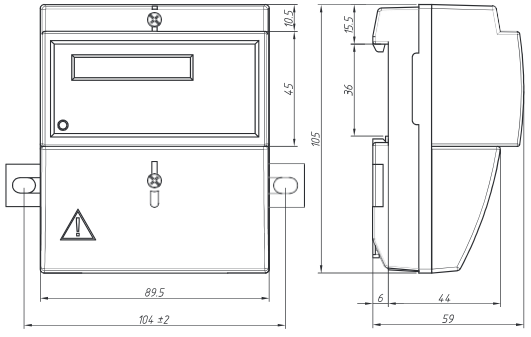
5 Storage and Transportation Conditions

5.1 The meters are stored in the manufacturer's packaging at an ambient air temperature of 5 to 40 °C and a relative humidity of 80 % at a temperature of 25 °C.

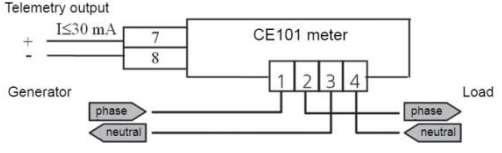
5.2 The meters are transported in closed vehicles of any kind. Limiting transportation conditions:

— temperature: minus 50 to 70 °C;
— relative humidity: 98 % at a temperature of 35 °C;

General view of the CE101 meter



Marking of the CE101 meter connection diagram



*meters with a telemetry output are manufactured on separate order

Rev. 5 01.07.19

Single-phase Single-tariff

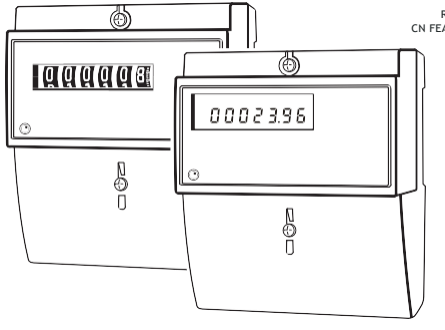
Active Electric Energy Meter

CE101

case type: R5.1

Operational Manual SANT.411152.096 OM

RCP 42 2861 5
CN FEA 9028301100



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ENERGOMERA

This operational manual is designed to study the CE101 meter (hereinafter, the meter) and contains information necessary for its correct operation.

Only persons who have received special training for working with voltages up to 1,000 V and who have studied this operational manual are allowed to work with the meter.

1 Safety Requirements

1.1 The meter meets the safety requirements of GOST 22261-94 and GOST 12.2.091-2012.

1.2 Protection against electric shock is provided by the use of double or reinforced insulation in accordance with GOST 12.2.091-2012.

1.3 Insulation resistance between the case and the electric circuits is at least:

20 MΩ under conditions of par. 2.1.4;

7 MΩ at an ambient air temperature of (40 ± 2) °C and a relative air humidity of 93 %.

1.4 The meter must be mounted and operated in accordance with the applicable rules for technical operation of electric installations.

2 Description of the Meter and Its Operation Principle

2.1 Application

2.1.1 The meter is designed for single-tariff active electric energy metering in single-phase AC circuits.

2.1.2 The meter complies with the requirements of GOST 31819.21-2012 and GOST 31818.11-2012.

2.1.3 CE101 R5.1 145 M6 meter designation:

R5.1: case type;
1: accuracy class 1 according to GOST 31819.21-2012;
4: nominal voltage, 230 V
5: base (maximum) current, 5 (60) A
M6: six-digit counting mechanism
— LCD.

2.1.4 The meter is installed at locations that have additional protection (rooms, racks, cabinets, switchboards), with the following operating conditions:

— temperature: minus 40 to plus 70 °C (minus 30 to plus 70 °C for meters with an LCD);
— relative humidity: 30 to 98 %;
— atmospheric pressure: 70 to 106.7 kPa (537 – 800 mm Hg);
— network frequency: (50 ± 2.5) Hz;
— measuring network voltage waveform: sinusoidal with a nonsinusoidal factor of not more than 12 %.

2.1.5 The installation dimensions of the meter comply with the DIN EN50022-35 standard for installation on a DIN rail.

2.2 Specifications

2.2.1 Apparent (active) power consumed by the voltage circuit does not exceed 9 V·A (0.8 W).

2.2.2 Apparent power consumed by the current circuit does not exceed 0.05 V·A at the base current.

2.2.3 The counting mechanism measures energy directly in kilowatt-hours and displays it to the left from the decimal point with tenths to the right from the decimal point.

2.2.4 The meter constant is 3,200 imp./(kW·h)

2.2.5 The meter functions normally 5 s after the nominal voltage is applied to the meter terminals.

2.2.6 At an open current circuit and a voltage of 264 V, the test output device does not generate more than one impulse over a period of 14 minutes.

2.2.7 Starting current. The meter turns on and continues to record the readings at a current of 0.01 A.

2.2.8 The limits of permissible values of the basic error are indicated in Table 1.

2.2.9 At a voltage below 0.75 U_{NOM}, the error ranges from 10 to minus 100 %.

Table 1

Current	Power factor	Error limit, %
0.05 $I_b \le I < 0.10\ I_b$	1.0	± 1.5
0.10 $I_b \le I \le I_{max}$		± 1.0
0.10 $I_b \le I < 0.20\ I_b$	0.5 (ind.), 0.8 (cap.)	± 1.5
0.20 $I_b \le I \le I_{max}$	0.5 (ind.), 0.8 (cap.)	± 1.0

2.2.10 Time to failure: not less than 220,000 hours.

2.2.11 Average service life: 30 years.

2.2.12 Meter weight: not more than 0.6 kg.

2.3 Design and Operation of the Device

2.3.1 The operation principle is based on the multiplication of input current and voltage signals with subsequent conversion of the signal into an impulse recurrence rate proportional to the input power. The summation of these impulses by the readout unit gives the amount of active energy.

2.3.2 There is a printed circuit board inside the meter case; a shunt is used as a current sensor. The terminals for connecting the meter to the network are closed with a plastic cover.

2.3.3 To ensure the functioning of the test output, it is necessary to apply a DC supply voltage of not more than 24 V and a current of not more than 30 mA.

2.3.4 The LED is constantly lit in the presence of voltage and the absence of load; when the load is connected, it periodically goes out with a frequency proportional to the load current.

3 Preparation and Operation Procedure

3.1 Unpacking

3.1.1 After unpacking, inspect the meter visually, verify that there is no mechanical damage, and check the presence of the seal (of the verification officer).