

## Energy cost monitoring

### How to choose an electricity meter

Today, in the age of electric cars, [electric charging points](#) and other innovations, choosing the right **home energy monitor** is quite difficult, especially for a beginner in this matter. Not everyone knows that you first need to determine the number of phases in the electrical network. This is quite simple to do - if a cable with two cores (phase and neutral) is suitable for your entrance to the living space, you should buy a single-phase **meter**. Such a device is designed for a voltage of 220 V, which will be indicated on its panel. The presence of a four-core cable indicates the need to install a three-phase **electricity meter**. Three-phase devices are designed for phase (between one phase and another) voltage of 380 V.

In addition, **energy monitoring** devices can be divided into two categories - designed for free installation on a vertical surface and devices that provide mounting on a DIN-rail. In fact, most of the other models come with a wall mount bracket.

When choosing an **electricity meter**, also pay attention to such nuances as:

- type of device used (electronic, induction, hybrid);
- nominal current flow;
- the ability to keep records at several rates (if required);
- accuracy of measurements.
- service life.

An important aspect: all work on the replacement / installation of a **home energy monitor** is associated with the risk of electric shock, fire or property damage. Therefore, they must be performed by a certified specialist. If the inspector from the distribution company considers that the work performed does not meet the requirements of regulations, the supply of electricity may be denied. Therefore, always consult with the distribution company, as well as read the recommendations at <https://patriot-nrg.com> before buying an **electric meter** and start work.

If you live in a private house and want to save electricity, we recommend looking closely at a household [wind turbine](#) or solar mini power plant.

### Electric meter: features

An **electric meter** is a necessary utility meter. The electronic control and measuring device allows to fix multitariffness and has high accuracy. The principle of operation of the electronic **electricity meter** is based on the conversion of the input signal, presented in analog form, into digital values. The generated code is sent to the microcontroller where it is decrypted. The result is displayed as exact numbers. The advantages of the device include the following:

- high sensitivity and measurement accuracy;
- **energy monitoring** can be carried out in two directions;
- work in multi-tariff mode;
- possibility of connection to automated systems of commercial accounting of electricity consumption;

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- information is stored in the memory of the **electricity meter**;
- the presence of built-in protection against theft of electricity,
- small size.

The **electric meter** can have both the liquid crystal display, and the analog counting mechanism. Such devices have a long inter-calibration period. Depending on the manufacturer, the **electricity meter** needs to be checked every 4-16 years.

### Energy monitoring using an induction meter

Induction **electricity meter** is now considered an obsolete device. However, many continue to use it. Do they need to switch to an electronic **electric meter**? It is necessary to understand this question in more detail.

Induction energy monitoring has such advantages as:

- very reliable in operation;
- large resource of work, reaching several decades;
- no dependence on the quality of electricity (voltage drops and reductions);
- relatively low cost compared to electronic meters.

However, a **home induction energy monitor** also has many disadvantages, among which the most significant are:

- very low accuracy class (2.0);
- increase in error in case of load reduction;
- almost complete lack of protection against theft of electricity;
- when accounting for several types of electricity (active and reactive) it is necessary to use several meters;
- electricity metering is conducted in one direction;
- large overall dimensions.

It can be concluded that it is more appropriate to change the outdated model to an **electronic meter**. With such a device you can use a powerful water heater or a [new boiler](#).

### Hybrid electricity meter as a home energy monitor

Hybrid energy monitor - a device that combines elements of induction and electronic meters. The energy consumed is read by counting the speed of the disk, and the readings are displayed on the electronic dial. Such home energy monitors, in contrast to purely induction, are able to calculate tariffs. The device consists of several components:

- circuit of the electric meter;
- power supply;
- adjustment circuits, etc.

The power supply converts the AC input voltage to a low DC and provides power to the electronic circuits of the meter. The circuit measures the current that feeds the load using a current transformer (sensor), through which flows the measured current. Other units perform a number of different functions: output and control via Ethernet, WiMax, Wi-Fi, ZigBee network, display control, accuracy correction.

#### What is a heat meter

The rising cost of thermal energy is of considerable interest to the population in heat metering and

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the installation of a special device called a **heat meter**. If in the summer we are warmed by [solar energy](#), then in the winter for heating of housing often come considerable bills. It is many times more profitable to settle with thermal networks not on settlement or contractual sizes, and on the basis of actual data from the **heat meter**. Installation of the device is allowed at the legislative level. Along with energy monitoring, the equipment will help you save more money.

The device is intended for installation on a heating pipe. Due to the small size and ease of maintenance, the installation of a **heat meter** is allowed even in hard-to-reach places. Devices are of the following types:

- mechanical;
- ultrasonic;
- electromagnetic;
- vortex.

When choosing a heat meter, you should first of all pay attention not to the durability and features of work, but to certain parameters of your heating system. It is better to entrust the choice of the necessary model to the corresponding service, or to know quantity of thermal inputs, type and existence of hot water system, a thermal mode, pressure difference a direct or return line, expenses of the heat carrier.

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