

GENERAL INFORMATION ABOUT MOBILE UNINTERRUPTIBLE POWER SUPPLIES

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Annotation. Under the concept of mobile uninterruptible or backup source, which is always connected to the main supply source and automatically or manually switches to the backup source in case of power loss in the main network (in case of network failures) , collapsible, adjustable, moveable position. In an uninterruptible power supply, the supply source performs both primary and backup functions at the same time, and in the event of a power failure at the main source, it automatically switches to backup mode (usually from batteries).

Key words: Frequencies, Generator, Filters, Valve, Bypass Mode, Pulse, Diesel.

Introduction. The need for and use of electricity grid standard indicators and mobile uninterruptible power supply. Mobile sources of uninterruptible power supply are used to protect the user's electrical equipment from any disturbances in the network, power outages or deviations from the indicators, as well as to suppress high-frequency noise and high-frequency pulses from the network.

The following characteristics are the standard indicators established by GOST for electrical networks:

- Consumption voltage - $220\text{ V} \pm 10\%$;
- frequency - $50 \pm 1\text{ Gts}$;
- coefficient of nonlinear distortion of the voltage form - less than 8% in the long run and 12% in the short term;

The following are common problems with the power supply. We often encounter the following:

- Complete loss of mains voltage (power outage for more than 40 seconds due to faults in power transmission systems).

- Voltage drop (decrease in mains voltage by 80% of the nominal value over a period of time (1/50 second), which is observed when the brightness of the lighting lamps decreases due to the connection of strong loads) and voltage increase (mains voltage by 110% of the nominal value). a short-term increase in rise over a period of time (1/50 second); an event observed when a large load is disconnected from the mains.

- High frequency noise - the results of the operation of radio frequency noise, powerful high frequency devices, communication devices;

- Deviation of the frequency from the permissible values;

High-voltage indicators - short-term pulses of voltage up to 6000V with a duration of 10 ms, caused by static electricity, during lightning, disconnection of connectors, during short circuits

- Frequency increase - a change in frequency from nominal (50 Gts) to 3 and more Gts, manifested in the instability of the power supply.

All of these factors can cause high-sensitivity electronic devices to fail, often resulting in data loss. But humanity is deprived of means of protection in this area: in the rise and fall of voltage, mains voltage filters; The main means of protection of diesel generators, personal computers, servers, mini PBXs, which provide electricity in the event of a total loss of voltage in the network system, is an uninterruptible power supply. Thus, an uninterruptible power supply is a device that provides uninterrupted high-quality electricity.

The generator is not considered an uninterruptible power supply because the backup generator does not start at the same time in the event of a power outage. Interruptions in power supply can lead to significant losses. The uninterruptible power supply not only protects against power outages, but can also filter out various interferences, voltage jumps in the uninterruptible power supply to provide a smooth, uninterruptible power supply for high-sensitivity devices. (Fig. 1.1)

Mobile uninterruptible power supplies consist of the following main blocks (Figure 1.2);

- inverter unit with known output power;
- high-capacity rechargeable battery block;
- mains switching relay (can be installed in the inverter);
- Charger with a certain current level (ZQ can be installed in the inverter).

classification

Transducers that convert alternating current to alternating current and operate on stand-alone loads are called stand-alone inverters. Depending on the number of voltage phases at their outputs: single, three, multi-phase inverters. Depending on the structure of the scheme is divided into zero-embedded, bridge-shaped and semi-bridge-like.

Depending on the electromagnetic processes occurring in autonomous inverters are divided into: current inverters, resonant inverters, voltage inverters.

A choke with a large inductance must be connected to the input of the current inverter circuit. In this case, the capacitor involved in the switching is charged non-periodically (aperiodically), the input current is ideally smooth and uninterrupted. That is, the source operates in generator mode.

Depending on how the switching capacitor in the current inverter is connected to the load: it is divided into series, parallel and series inverters.

The operation of the circuit is like that of a single-phase parallel current inverter. Due to the inter-valve switching, when a thyristor is turned on in a group, the open thyristors in this group are closed due to the discharge current of the capacitor. For example: With the opening of thyristor V3 in this group, thyristor V1 is closed as a result of the discharge current through the thyristors V1, V3 due to the energy stored in the capacitor S1.

1.4. Operating modes of mobile uninterruptible power supplies.

Depending on the network status and load size, MUTM can operate in different modes: network, autonomous, Bypass and others.

Network mode is the mode in which the load is supplied from the mains. MUTM operates in network mode, provided that the network voltage and load do not exceed the maximum allowable within the allowable deviation limits. In this mode the following takes place:

- filtering of pulsed and high frequency network interference;
- conversion of alternating current energy in the network to direct current energy using a rectifier and power factor correction scheme;
- conversion of direct current energy into alternating current energy with stable parameters using an inverter;
- Charge the battery using a charger.

Autonomous mode is the mode of charging the battery. In case of deviation or complete loss of mains voltage parameters, the MUTM battery switches to autonomous supply mode via a converter and inverter, which increase the battery power. Switches to mains mode when the mains voltage is restored. [14]

Bypass mode is the provision of downloads directly from the network. If in network mode the MUTM is overloaded or overheated, as well as in the event of failure of one of the elements of the MUTM, the load is automatically connected to the network directly from the inverter output. Once the causes of the bypass (overload or overheating) have been eliminated, the MUTM will automatically return to normal network mode. In bypass mode, the load is not protected from poor mains voltage.

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References

1. Istochniki vtorichnogo elektropitaniya / V.A. Golovatskiy, G.N. Gul'kovich, Yu.I. Konev i dr.; Pod red. Yu.I. Koneva –M.: Radio i svyaz', 2000. –420 s.
2. Istochniki elektropitaniya radioelektronnoy apparatury: Spravochnik / G.S. Nayvel't, K.B. Mazel', CH.I. Xusainov i dr.; Pod red. G.S. Nayvel'ta. –M.: Radio i svyaz', 2005. –576 s.
3. Kostikov V.G., Nikitin I.E. Istochniki elektropitaniya vysokogo napryazheniya REA. –M.: Radio i svyaz', 2006. –200 s.