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GROUNDING AND ITS ROLE IN ELECTRICAL ENGINEERING

Grounding is mainly divided into functional and protective. Functional grounding is the deliberate connection of any point in the equipment network to a grounding device designed to ensure the operability of electrical equipment and not for electrical safety purposes. For example, it is used in audio amplifiers to suppress various extraneous noise or in computers, or rather power supplies. Without grounding in the circuits of these things, they will not work correctly. As an example, there can be taken the same computer. Often, the computer's microphone and headphones start to hum and make extraneous noise due to electromagnetic interference from the entire set of devices in the system. If this is present, it is possible that the grounding is broken.

Protective grounding - grounding installed for electrical safety purposes. The principle of operation of this grounding is as follows: the ground loop functions due to the ability of the soil to absorb an electric charge. If the equipment case is energized as a result of insulation breakdown, then the charge will go into the ground. When the user touches the case, the current will still move along the path of least resistance, that is, through the ground, and not through the human body. Without grounding, in such a situation the user would have received an electrical shock.

Grounding removes the threat of damaging devices by eddy currents.

With regard to the installation of grounding, everything is simple. Selects any location on the mesh point and connects to a metal object. The metal object itself is usually connected to the ground. In the first type of grounding, if we take the example of the same sound amplifiers, then there grounding goes to the metal part of the case.

In the classification of grounding systems, there are natural and artificial types of grounding. Natural-objects that are constantly in the ground. They cannot be used as electrical equipment grounding due to the lack of resistance value adjustment.

Functional and protective grounding types that we considered above refer to artificial grounding systems they are as follows: TN-S; TN-C; TNC-S; TT; IT. Types of grounding - decoding of the name: T - grounding; N - connection of the conductor to the neutral; I - insulation; C - combination of the options of the functional and neutral protective conductor; S - separate use of wires.

TN — a system in which the neutral of the power supply is deafly grounded, and the open conducting parts of the electrical installation are connected to the deafly grounded neutral of the source by means of zero protective conductors;

TN-C - TN system in which the zero protective and zero working conductors are combined in one conductor throughout its entire length;

TN-S - TN system in which the zero protective and zero working conductors are separated along its entire length;

TN-C-S - TN system in which the functions of the zero protective and zero working conductors are combined in one conductor in some part of it, starting from the power source;

IT – a system in which the neutral of the power supply is isolated from the ground or grounded through devices or devices that have a large resistance, and the open conductive parts of the electrical installation are grounded;

TT - a system in which the neutral of the power source is deafly grounded, and the open conducting parts of the electrical installation are grounded using a grounding device that is electrically independent of the deafly grounded neutral of the source.

From all of the above, it is worth concluding that grounding is a great way to increase human safety when working with electrical systems and a good idea to use it in various devices.

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