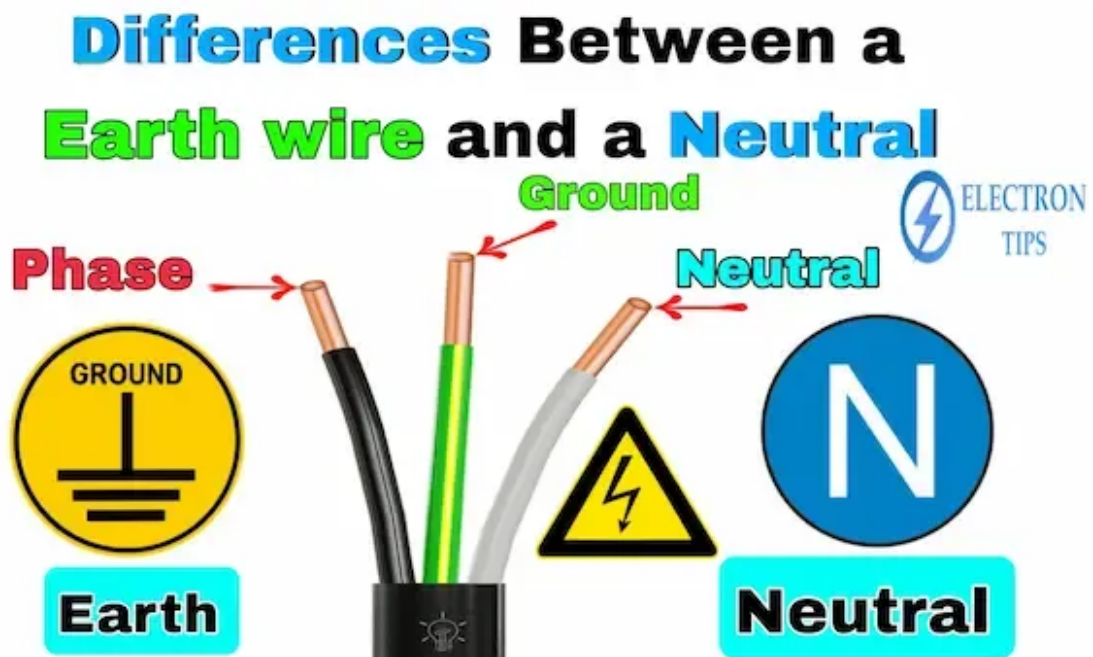


What is the difference between a Earth wire and a neutral wire in AC System

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Electrical wires and cables play an essential role in electrical systems, as they are responsible for transmitting electrical energy whether over long distances via so-called electrical towers.

Electrical wires differ in their function in home electricity installations, where each wire has a special symbol and color. In the brief educational article we will learn about the difference

between the neutral wire and the ground (earth) wire that is connected to the ground in order to protect against shocks and electrical leakage.

Reminder of the function of the neutral wire:

The neutral wire is the return line in a three-phase electrical system when it is connected in the form of a star (star). When electrical energy is transmitted over large distances, a delta connection is adopted to obtain only three wires to reduce the cost. When the electricity reaches the places of consumption, the electrical voltage is reduced to the required voltage of 220 volts or 110 volts via electrical transformers, and with this we get the neutral line via the star connection, which is known in blue in household electrical installations and is symbolized by the letter N, and is somewhat similar to the negative wire in the DC electrical system.

What is the role of the ground wire:

As for the grounding line, it is a line connected to the ground through a hole called the grounding pit, in which there is a rod with a length of one meter or more made of copper, and its main role is to protect electrical equipment and appliances from excessive electrical current. It also protects people from indirect electrification when touching electrical appliances made of iron. As we know, iron is a good conductor of current and thus the current passes through the grounding wire with the least resistance, as its resistance usually does not exceed 5 ohms. The grounding wire is symbolized in green and yellow.

The difference between the neutral wire and the ground wire:

The role of the neutral wire is evident in completing the electricity cycle to obtain a closed electrical circuit to return the electrical current to the source, while the ground wire does not play

any role in operating electrical equipment and appliances, but rather protects them from exposure to damage or burning and protects people from exposure to electrical shocks due to leakage electricity or excess electrical current.

In summary, the neutral wire is a current-carrying conductor that completes the circuit, while the ground wire is a safety feature that provides a path for fault currents to safely dissipate. Both the neutral and ground wires play crucial roles in ensuring the safety and proper functioning of electrical systems.