

Technical Bulletin

Division of a three-phase circuit into three single-phase AC circuits

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This technical bulletin provides you with information on specific technical subjects. It is based on the current rules and regulations and on our current test results. The contents of this document is not legally binding.

Basic information

The division of a three-phase AC circuits into single-phase AC circuits reduces the amount of cables to be laid and also reduces fire loads.

An asymmetrical load of individual phases and joint neutral wire can lead to unpermissible heating of the cable.

Standard specifications

According to DIN VDE 0100-520, a three-phase circuit with a neutral wire may be divided into single-phase AC circuits of an outer wire and the neutral wire. However, the preconditions for this are:

- the allocation of the circuits to a three-phase circuit must be clearly visible on the outside

and

- the three-phase circuit must be enabled using a switch, which switches all the active cables simultaneously.

Application

A borderline case would be a suspended VH power supply unit with CEE plug and socket unit and three isolated ground receptacles. The arrangement of the sockets in a shared housing is shown on the exterior, showing that it is a unit. However, it must be understood that the load of individual phases causes asymmetry in the network. In addition, the power supply unit may only have a 16A fuse, meaning that not all the sockets can be used simultaneously.

Our recommendation would be to use the CEE plug and socket unit and the isolated ground receptacles with different circuits. The power supply unit is therefore designed for two feed cables. The connection terminal of the isolated ground receptacles has five pins.