

Technical bulletin

Separation of power and information technology cabling

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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.

General view

The requirement for a safe separation of cables for power and information technology cabling within a cable management system has various reasons: the topmost priority is **electrical safety**. An additional reason is the **electromagnetic compatibility (EMC)** of the electrical system.

Requirements of the standards

To maintain the required electrical safety, it is not fully necessary to lay the different current types separately, with the separation in the form of a separation bar. Cables with different voltage levels can be laid in shared compartments (cable ducting systems CDS, cable trunking systems CTS, cable support systems, installation pipes, etc.) without additional separation, if a voltage resistance against the maximum possible voltage is ensured (DIN VDE 0100-520). This safety aspect is usually achieved using appropriate insulation of the lines and cables used.

Regarding the electromagnetic compatibility (EMC) of communication cabling, EN 50172 Part 2 specifies some key conditions.

Here, two were specified for the minimum spacing of low voltage and data cables for the three areas: **primary cabling** (service connection), **secondary cabling** (connection of the individual floors) and **tertiary cabling** (connections on one floor).

Requirements of communication cables

Due to the physical properties of communication cables, there is the necessity for spatial separation of cables of different current types. This can be done by maintaining a minimum spacing, either by using multidraw duct systems, or by using separating retainers within a duct system.

Separation of power and information technology cabling

The minimum spacing between communication cables and power cables is dependent on many factors, for example:

- a) the immunity level of the IT cabling of connected units against different electromagnetic influences (transients, lightning pulses, pulse bursts, continuous wave transmissions, etc.);
- b) the adaptation of the connection units to the earthing concept;
- c) the local electromagnetic environment (simultaneous occurrence of influences, e.g. harmonics, pulse bursts and continuous wave transmissions);
- d) the electromagnetic spectrum;
- e) the distance over which the cables run in parallel (coupling zone);
- f) the cable type;
- g) the screening attenuation of the cables;
- h) the quality of the installation of the connectors on the cable;
- i) the type and connection of the cable gland system.

Separation of power and information technology cabling

Minimum distances to be maintained

The occurrence of any of the above factors can mean that a minimum spacing or separation is required.

In the coupling zone specified under e), it is possible to lay cables with different current types without spacing. However, such areas are only permitted for short ranges and are only valid for the **tertiary area** (cabling within one floor). As soon as the tertiary cabling has reached a length of >35 m, separation is required. The last 15 m of this section can then be laid without separation or a separating retainer.

In **primary and secondary areas**, the distance between power cables and IT cables is required according to the following table:

Type of installation	Distance A		
	Without separating retainer or non-metallic separating retainer ¹⁾	Aluminium separating retainer	Steel separating retainer
Unscreened power cables and unscreened IT cables	200 mm	100 mm	50 mm
Unscreened power cables and screened IT cables ²⁾	50 mm	20 mm	5 mm
Screened power cables and unscreened IT cables	30 mm	10 mm	2 mm
Screened power cables and screened IT cables ²⁾	0 mm	0 mm	0 mm

1) It is assumed that, in the case of metallic separating retainers, the dimensioning of the cable laying system can provide screening attenuation appropriate to the material of the separating retainer.
2) The screened IT cables must correspond to the standards given in the series EN 50288.

Note:

This table is currently being revised. As soon as up-to-date data is available, the contents will be corrected.

Separation of power and information technology cabling

Closing comments

The frequently asked question of whether separation of different cable types is actually necessary or is specified in the standards cannot generally be answered with "Yes" or "No". The necessity is dependent on local factors, on the cables to be laid and on the quality of the installations.

In general, we recommend the use of separators in our wall trunking systems and cable trunking systems. Besides being tidy, there are also positive impacts on the EMC of networks.

An additional advantage of separation is in the common installation practice, in which the power cables and the IT cables are laid by different installation companies. In this case, the guarantee for the provided service also plays a role.

There are, therefore, many good reasons for using separating retainers in duct systems.