Generic cabling systems – Update and news on standardization issues (July 2008)

Information of DKE committee GUK 715.3 "Informationstechnische Verkabelung von Gebäudekomplexen"

1 Installed cabling systems supporting 10 Gbit Ethernet

Technical Reports ISO/IEC TR 24750 and CLC/TR 50173-99-1 (see DIN EN 50173-1 Beiblatt 1), respectively, contain information regarding the evaluation of installed cabling concerning its capability to support 10 GBASE-T. They also indicate which cabling classes will support the transmission of 10 GBASE-T applications without any limitations or restrictions.

2 Standardization of new Channel classes E_A and F_A

In April 2008, Amendment 1 to ISO/IEC 11801:2002 "Information technology - Generic cabling for customer premises" has been published. It specifies the minimum requirements for the new Channel classes E_A (500 MHz) and F_A (1000 MHz). The requirements for components, which are required by Channels created in accordance with the reference implementations (channel lengths of 100 m), are still under consideration, i.e. the values for future component Categories 6_A and 7_A as well as for the link have not yet been agreed to. Therefore, installed cabling for the new Classes E_A and F_A can only be measured for the complete Channel (composed of the permanent link and the work area and equipment cords).

The American TIA standard for channels, permanent links and Category 6_A components has been published as well. Its limits deviate for some parameters, e.g. NEXT, from those specified by ISO/IEC – they are less demanding. These differences have to be duly considered for measurement purposes.

At present, proposals for both channels and permanent links (derived from channels) as well as for the required components (cables and connecting hardware) are under discussion. The requirements for cables and connectors will be more severe in the international and European standards, respectively, than those of the associated US specification TIA/EIA.

So far, no proof has been presented, which would convince ISO/IEC JTC 1/SC 25 WG 3 that the component values specified by the American standard are sufficient to meet the channel limits of ISO/IEC 11801:2002/A1:2008.

The draft Amendment 1 to EN 50173-1:2007, which will specify Classes E_A and F_A will adopt the values published in ISO/IEC 11801:2002/A1:2008; this draft has been submitted to CENELEC Enquiry and is about to be published as draft DIN EN.

3 Equipotential bonding and screening

The following two aspects need to be taken into account. On the one hand, transmission system performance is very important for the user. In order not to slow down the transmitted data rate there shall be no loss of data. This is achieved by a proper equipotential bonding concept within a building – both for use of screened and unscreened information technology cabling – and in addition by using screened information technology cabling (see screening).

On the other hand, safety considerations shall be taken into account (see equipotential bonding).

Screening

For EMC purposes, screens shall be treated as follows:

- The screen shall be terminated on both cable ends and shall be continuous to provide a Faraday cage.
- In order to mitigate parasitic currents, connecting the screen with the building's equipotential bonding network is recommended, but not a requirement.

Equipotential bonding

In order to provide protection against electric shock:

- Single-sided connection to the building's equipotential bonding network is required.

The safety standard DIN EN 50310 (VDE 0800-2-310):2006-10, page 17 paragraph 2, requires:
Cable screens shall be connected at both ends to the screen of the connecting hardware. Circumferential connections (i. e. 360°) are most effective (note: this takes account of the screening requirement). Cable screens shall be connected at least at one end with the system reference potential plane (SRPP) (note: this is required for the protection of persons).

Neither DIN EN 50174-2 (VDE 0800-174-2) nor DIN EN 50310 (VDE 0800-2-310) - both elaborated under the auspices of DKE Committee K 712 - prescribe the earthing of telecommunication outlets, not even if such outlets come with metallic or conductive housing.

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