

1200 mc/s – and what next?

Status of the standardization of high-value data cables

Last year, the international wiring standard ISO / IEC 11801 has been considerably revised, resulting in a definition of the new categories 5e, 6 and 7. Is this the end of the development of high-value cables?

For the comprehension of the standard structure it is important to note that the international standard ISO / IEC 11801 and its nearly coextensive European counterpart EN50173-1 specify a wiring system. Aside from installation cables, it consists of connecting components in the control cabinet, at the workplace and in the distributing cabinet (if necessary), as well as patch cables. Thus, it is an interplay of several components which all must comply with the requirements of the standard as to their transmission characteristics. This system as a whole is graded into wiring classes D, E or F. However, in the past, in many planning documents the wiring standards ISO / IEC 11801 or EN 50173 were referred to, even when actually cables had to be defined. These, however, are described in the IEC 61156-5 and the Cenelec

series EN 50288....

Whilst the cross section marks an important aspect for power cables, the channel capacity represents the same importance for data cables, misleadingly referred to as bandwidth. Actually, the channel capacity of a cable is the product of the utilisable frequency range and its signal-to-noise ratio, expressed by the Power-sum-Attenuation-Crosstalk-Ratio (PS-ACR) in the cable.

For each category, both the transmission characteristics of a cable, i.e. attenuation, crosstalk, impedance and return loss, and its frequency range are determined in the above standard. There are three different categories: category 5e with a corresponding bandwidth of 100 mc/s, category 6 for 250 mc/s and category 7 for 600 mc/s.

Cables and components of category 5e correspond to wiring class D, category 6 to class E and category 7 to class F.

Important: the performance of a cable is not only determined by the bandwidth in

Product line of data transmission cables made by Draka Comteq

Brand name	Screening	AWG	Pairs	Category	Construction	Standard
UC300	-	24	4P	Category 5e	UTP FTP S/FTP	IEC 61156-5
	SCREEN	24				
	HIGH SCREEN	24				
UC400	-	23/1		Category 6	UTP STP S/STP S/STP	
	SCREEN	23/1				
	HIGH SCREEN SUPER SCREEN	23/1				
UC600	HIGH SCREEN	23/1	Category 7	S/STP S/STP S/STP		
	SUPER SCREEN	23/1				
	SUPER SCREEN	22				
UC1200	HIGH SCREEN	23/1	S/STP HP-S/STP	S/STP HP-S/STP	IEC 61156-7	
	SUPER SCREEN	23/1				
	HIGH SCREEN SUPER SCREEN	22 22				



mc/s but to an essential degree by the crosstalk attenuation as expressed by the PS-ACR.

Already today, a class D wiring system reaches its performance limit with regard to gigabit-Ethernet applications. Strictly speaking, there are no reserves for applications rated any higher, thus resulting in new installations being planned on the basis of at least class E or class F. However, new applications like the transmission of videos and MPEG, which is still characterized by a very high demand for bandwidth, calls for an even higher demand on the infrastructure:

- Highest transmission reserves in a frequency range of 1000 mc/s and more not realized so far
- High-value screening against external EMC sources
- Safe separation of bundled transmission channels

Especially the latter requirement is often underestimated. High-value category 7 connectors allow for the simultaneous use of several pairs for different applications. Thus, the separation of signals is most important as due to the level differences the necessary signal-to-noise ratios can only be guaranteed when the channels are separated accordingly. The High Performance-S/STP design (HP-S/STP) of the product line UC1200 as developed by Draka solves this problem with the patented double foil screening which – despite its excellent transmission quality – allows for an easy and reliable installation.

Important when comparing products: the PS-ACR which shows the important aspect of separating signals upon mixed applications. The ratio must be positive at the highest signal frequency and as high as possible.

At 1200 mc/s, the UC1200 SS22 HP-S/STP still shows a PS-ACR of at least 19 dB, thus creating the prerequisite for a transmission free of interferences upon different multimedia applications on only one cable.

Aside from this, in IEC the standard of a product category (better than category 7, but without a number) is

presently in preparation which is anticipated to be published as IEC 61156-7: "Symmetrical pair cables with transmission characteristics up to 1200 mc/s" within the next months. The prerequisites of this standard rather aim at a low attenuation than a high NEXT, that is why for this class of cables only AWG22 can be taken into consideration as condition size.

This development has been taken into account by the extension of our product line UC1200 where the cable types UC1200 HS23/1 S/STP and UC1200 HS22 S/STP have newly been added. The incorporation into the already existing product scope can be seen from the table. Both are high-value category 7 cables with proven characteristics up to 1200 mc/s. Furthermore, the AWG22 type – same as the well proved UC1200 SS22 HP-S/STP – meets the attenuation requirements of the new IEC 61156-7 standard.

These additional products provide the user with the economic solutions for a variety of problems regarding structured wiring. The choice of product, however, should always be based on the classification of the respective standard. The pure indication of the bandwidth – whether 800, 900 or 1000 mc/s – does not automatically lead to the solution of problems which normally come along with multimedia applications.

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