ELineTM

# ELine 500™ RJ45 S – a new cabling system for 10 Gigabit Ethernet

With ELine 500™ RJ45 S, KERPEN presents a new shielded RJ45 cabling system specially developed and optimised for the future transmission standard 10 Gigabit Ethernet (IEEE 802.3an).



Fig. 1: "The new ELine 500™ RJ45 S jack from KERPEN"

### 10 Gigabit Ethernet

With a transmission performance 10 times as high as that prescribed by the old 1,000 BASE–T standard, the requirements for cabling systems designed to meet the demands of the future have also increased considerably.

In order to guarantee the transmission of 10 GbE, the relevant cabling committees have agreed on the standardisation of a new Class $E_A$ with a bandwidth of 500 MHz. As with ISO/TEC 11801 and EN 50173 2nd Edition, a channel with a length of 100m is to be supported using a maximum number of 4 connector transitions.

In order to improve the signal-to-noise ratio which is critical at 10 GbE, it is also planned to reduce the attenuation and to define the Alien NEXT for the first time with the aim of reducing interference to a minimum.

Alien NEXT is the sum of the interference affecting a data pair in a cable A and induced by one or more data pairs in an adjacent cable B.
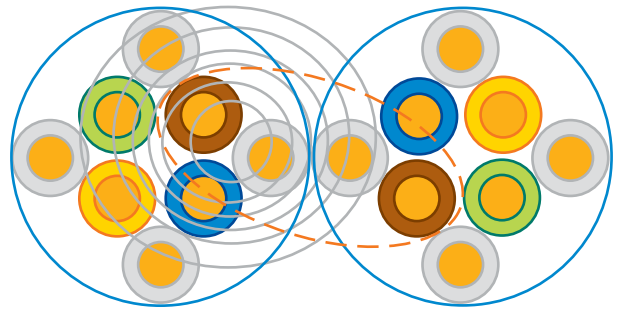


Fig. 2: "Diagram of Alien NEXT"

The use of shielded cabling is the safest and most economical method of reducing the Alien NEXT to a negligible value.

### ELine 500™ RJ45 S – performance

Although the future cabling standard provides for a bandwidth of 500 MHz, ELine 500™ RJ45 S was evaluated up to a maximum frequency of 625 MHz. Evaluation is based on the channel requirements according to JTC1 SC25 N981 –

a) The NEXT of ELine 500™ RJ45 S has a security reserve of >15 dB up to 300 MHz compared with the limits of Class E. The security reserve is still >5dB compared with the limits extrapolated up to 500 MHz.
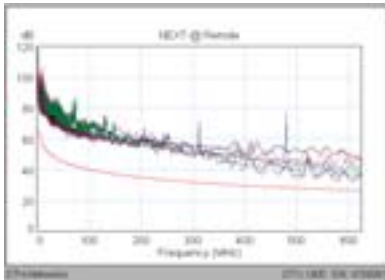
Fig. 3: "NEXT curve" up to 625 MHz

b) The RL curve shows excellent homogeneity of the components selected within the ELine™ 500 RJ45 S cabling system.
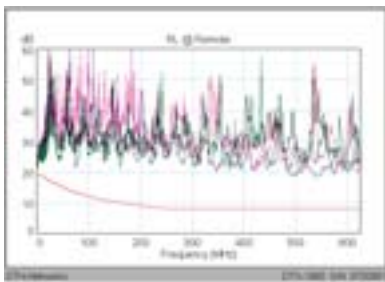

Fig. 4: "RL curve" up to 625 MHz

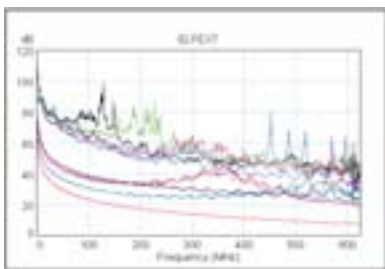c) The ELFEXT of ELine 500™ RJ45 S behaves extremely safely, especially at the limits above 500 MHz.


Fig. 5: "ELFEXT curve" up to 625 MHz

The measurements were carried out successfully on long cable links (80 m) as well as short ones (15 m).

## ELine 500™ RJ45 S – short description

Extremely well-matched components are used for ELine 500™ RJ45 S.

The jack is an improved version of the ELine 250® RJ45 S jack. The dimensions have remained unchanged. However, the engine at the heart of it has been optimised once more for frequencies of more than 250 MHz. The refined surface of the housing allowed optimum shield attenuation values to be achieved. The high-quality products MegaLine® F6-90 S/F and F6-90 S/F flex tested at more than 600 MHz are used as cables.

## ELine 500™ RJ45 S – other highlights in a nutshell

### Space-saving
The components of the ELine 500™ RJ45 S system have especially small dimensions. 3 jacks fit into the space taken up by a conventional dual outlet. A new panel with 1 U provides room for 48 ports.

### Extremely easy to mount
Only three components in one compact high-grade zinc die-cast housing – the ELine 500™ RJ45 is easy to mount quickly and safely.

The clear colour coding virtually makes mounting errors and the resulting additional costs a thing of the past. The compact ELine 500™ RJ45 S modules can be mounted in panel and outlet from the front and from the back.

### Compatible
The ELine 500™ RJ45 S is part of the PREMIUM product family and is therefore compatible with the existing ELine 1200® EC7 and ELine 250® RJ45 S components.

### Economical
Easy to mount, designed to meet the demands of the future and priced to suit the market – all in all, ELine 500™ RJ45 is a highly economical system with a high degree of investment protection!