

SPOTLIGHT ON Fibre Optic Cables

● What is Fibre Optic Cable?

Fibre Optic Cable is a flexible, transparent fibre made of glass (silica) or plastic, and functions as a waveguide to transmit light, and therefore information, between the two ends of the fibre.

● Fibre v Copper

One of the main differences between traditional Cat 5e cable and fibre optic cable is that the maximum installation distance of fibre is not limited to 90m. The low attenuation of fibre optic allows data to be transmitted over distances of up to multiple kilometres.

● Multi Mode v Single Mode

A multi mode fibre supports multiple paths of light propagation whilst single mode fibres support the transmission of only 1 light source at any given time. Multi mode fibres are used for short distance communication whilst single mode fibres are generally used for communication links longer than 1,050m. Although single mode fibres allow data transmission over a longer distance, they require more expensive and specialised laser light sources compared to multi mode fibres.

● Fibre size

Fibre Optic Cables are often described in the context of their core and cladding diameters. For example a 62.5/125 fibre has a core of 62.5 microns and a cladding diameter of 125 microns.

● Splicing

Unlike copper, the ends of the fibres must be carefully cleaved, and then spliced together, either mechanically or by fusing them with heat.

● Terminations

As an alternative to splicing, fibre optic connectors can be fused to the end of a fibre. These connectors mechanically couple fibres allowing light to propagate from one cable to another and allow quick and easy connection and disconnection. There are numerous different types of connectors such as FC, SC, ST and LC.

● OM1, OM2, OM3, & OM4

Fibre optic cables have been classified as a function of the length to which they can support differing transmission rates.

Ethernet Bandwidth	100 Mb	1 Gb (1000 Mb)	10 Gb	40 Gb
OM1 (62.5/125)	up to 550m	220m	33m	Not supported
OM2 (50/125)	up to 550m	550m	82m	Not supported
OM3 (50/125)	up to 550m	550m	300m	100m
OM4 (50/125)	up to 550m	1000m	550m	150m

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