

INTELLIGENT DATA & POWER SOLUTIONS

FIBRE TYPES AND ISO11801 ISSUE 2

INS Sudlows has a wide range of experience in Optical Fibre Technology from both the Design and Installation aspects. This experience accrued over the last 20 years allows INS Sudlows to offer clients optimal solution with affordable optical technology.

There are two fundamental grades of optical fibre - multimode and singlemode. In each case the outside diameter of the fibre is 125 microns, however a multimode fibre has a 50 or 62.5 micron core and the singlemode fibre, typically an 8 to 10 Micron core.

Singlemode fibre has the lowest attenuation per unit length and also the highest bandwidth therefore historically it

has been used for long distance and / or support of very high data rates.

The largest installed base of multimode fibre in Europe is 62.5/125 and it was long thought that it would be sufficient for the future. However, Gigabit Ethernet was developed and earlier grades of 62.5/125 micron fibre can only support up to 220 metres. The recent development of 10Gigabit Ethernet can reduce this distance to a mere 33 metres on 62.5/125. The use of 50/125 micron fibre results in a maximum distance of 550 metres for Gigabit Ethernet.

ISO 11801 ISSUE 2

The latest issue of the International Standard ISO11801 introduces a series of fibre performance specifications. There are three classes of end-to-end or channel performance:

OF-300 to support applications up to 300m (min)

OF-500 to support applications up to 500m (min)

OF-2000 to support applications up to 2000m (min)

The specification lists a series of physical and transmission characteristics e.g. attenuation at specific operating wavelengths. Four types of optical fibre are specified to support the three classes of channel performance.

There are three multimode fibre types (OM1, OM2, OM3) and one singlemode type (OS1). In reality they correspond well with older grades / types of fibre except OM3 which is a new high bandwidth 50/125 micron type.

WHAT DOES THIS MEAN IN PRACTICE?

In practice OM1 62.5/125 fibre will support Gigabit Ethernet - up to 275m for 1000BaseSX and up to 550m for 1000Base LX (SX referring to short wavelength 850nm transmission and LX long wavelength 1300nm transmission). OM2 50/125 micron fibre will support 550m for both 1000BaseSX and LX. OM3 50/125 micron fibre will support 500m for 1000BaseSX and up to 5Km for 1000BaseLX. It also extends 10Gigabit Ethernet up to 300m.

Singlemode fibre (OS1) is becoming more widely used although the electronics required to support singlemode are still two to three times more expensive compared to multimode. Generally where fibre cable lengths exceed 200-300m, singlemode is a viable option.

The deployment of OM3 fibre is uncertain at present although it will support legacy applications (and electronics) unlike singlemode. INS Sudlows has the capability to Design, Install, Test and Certify Optical Fibre Systems. Please contact us and one of our Design Engineers will be pleased to develop an 'Intelligent Solution' with you.

To find out more,
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