

Function of **Datalinks** is to convert electrical input signal to an optical signal, to transmit the optical signal over the optical fibre and to convert the optical signal back to an electrical signal.

Parts used in a datalink are **transmitter** (LED or Laser Diode), **optical fibre** (including connector, cable, splice and connector) and **reciver** (PIN Diode or Avalanche Diode and signal conditioning circuit).

The signal in the cable can be distorted, weakened due to absorption, dispersion and scattering in the fibre optics waveguide. Noise (causes weakening of the signal) can disturb the quality of the electrical signal.

Cables are clasified as **single and multimode fibres**. www.EASA66.de

Cable **loss** is the decrease of light in respect of input (may be caused by impurities in the fibre material). Loss is measured in **dB/km**. Low-Loss optical fibres have less impurities and are made of a high-Siclica-Core. Multimode Cables have nowadays a loss (**attenuation**) of 0.5 dB/km at a wavelenth of about 1300nm, whereas singlemode cables have loss of 0.25 dB/km at a wavelenth of about 1500nm (year 2000).

Single mode cables have less loss and **are used for long-haul systems**.

Aircraft tend to **use multimode system cables** over short distance e.g in a LAN with multiple connections. www.EASA66.de

Advantages of using fibre optical systems:

System Performance, Economical - low installation - and cost per channel.

Size and weight and environmental advantages e.g temperature, corrosion,

immune to noise EMI (do not need a common ground), less signal losses, less bit errors, more rugged and less restrictive in harsh environment

www.EASA66.de