



Attenuation

Loss of signal power between points. In optical cables, attenuation is a ratio of input power vs. output power, measured in decibels per unit length, usually dB/km.

Attenuation Coefficient

A factor expressing optical power loss per unit of length, expressed in dB/Km.

Backbone

A high-speed transmission system used to connect relatively distant points. Backbone networks can be used to join autonomous networks within buildings or between different buildings.

Bandwidth

The information carrying capacity of a fiber. The bandwidth for a given wavelength is the lowest frequency at which optical power has decreased by 3 dB and is expressed in MHz*km.

Bend radius

The radius of curvature that an optical fiber cable can bend without causing harmful effects on the optical or mechanical performance of the cable.

Chromatic dispersion

Different wavelengths travel along an optical medium at different speeds. Wavelengths reach the end of the medium at different times, causing the light pulse to spread. This chromatic dispersion is expressed in picoseconds (of dispersion) per kilometer (of length) per nanometer (of source bandwidth). It is the sum of material and waveguide dispersion.

Cladding

The layer of material, usually glass, that immediately surrounds the fiber core. The cladding is usually coated with another material to provide protection when handling.

Cleave

The process of cutting an optical fiber by a controlled fracture of the glass, for the purpose of obtaining a fiber end, which is flat, smooth, and perpendicular to the fiber axis.

Coating

A material applied to the cladding for protective purposes.

Concentricity

In a wire or cable, the measurement of the location of the center of the conductor with respect to the geometric center of the circular insulation.

Core

The central part of the glass construction through which light is transmitted.

Core eccentricity

A measure of the displacement of the center of the core relative to the cladding center.

Critical angle

The smallest angle at which a meridional ray may be totally reflected within a fiber at the core-cladding interface.

Cut-off Wavelength

The wavelength at which a singlemode fiber transmits a single mode of light.

Decibel (dB)

The standard unit used to express gain or loss of optical power. A standard logarithmic unit for the ratio of two powers, voltages or currents. In fiber optics, the ratio is power.

Dielectric

Non-metallic. All-dielectric designs are inherently non-conductive; all-dielectric cables contain no metal and are lightning resistant.

Dispersion

The cause of bandwidth limitations in a fiber. Dispersion causes a broadening of input pulses along the length of the fiber. Two major types are: mode dispersion caused by differential optical path lengths in a multimode fiber and material dispersion caused by a differential delay of various wavelengths of light in a waveguide material.

EIA

Electronic Industry Association.

Ethernet Standards

Not all Ethernet and IEEE 802.3 standards are identical. In fact, in some instances, there are enough differences in Ethernet standards to cause major problems. In a network environment (such as Ethernet Version 1.0 and IEEE 802.3) nodes can coexist and communicate properly on a network but the important link is overall transceiver-to-node integrity.

Fiber Distributed Data Interface (FDDI)

An ANSI standard to ensure compatibility of components from different manufacturers.

Fiber Optics

Light transmission through optical fibers for communication or signaling.

Frequency

The number of cycles per unit of time, denoted by Hertz (Hz). 1 Hertz = 1 cycle per second.

Graded Index

A core refractive index profile that varies with the radius of the core.

Halogen

A term used to identify any of the four elements: chlorine, fluorine, bromine and iodine, grouped together because their chemical properties are similar.

Halogens

Chemicals from the halogen family (chlorine, fluorine, bromine) are typically compounded into plastic materials to improve the flame retardance. When the materials are exposed to a high heat source, halogen gases are released, limiting the spread of flames but potentially causing a health hazard.

Hertz

The unit of frequency, in cycles per second.

Insertion Loss

Total optical power loss caused by insertion of an optical component such as a connector, splice, or coupler into a previously continuous path.



ISDN

(Integrated Services Digital Network) ISDN is an international standard for transmitting digital information (text, sound, voice, data, video, etc.)

Jumper

Fiber optic cable that has connectors terminated on both ends.

Kevlar

The trademark of the Dupont Company for aramid yarn used as strength members.

KPSI

Tensile strength in thousands of pounds per square inch.

LAN

Local Area Network.

Laser

A device that produces monochromatic, coherent light through stimulated emission. Most lasers used in fiber optic communications are solid-state semiconductor devices.

Light Emitting Diode (LED)

A semiconductor device which emits incoherent light from a p-n junction.

Loose Tube Buffering

A cable construction in which the optical fiber is placed in a plastic tube having an inner diameter much larger than the fiber itself. The loose tube isolates the fiber from the exterior or mechanical forces acting on the cushion. The space between the tube and the fiber is often filled with a gel to cushion the fiber.

Loss Budget

The total acceptable loss for a given system from transmitter to receiver. Includes cables, splices and connectors.

Low Smoke Zero Halogen (LSZH)

Thermoplastic or thermoset jacketing compounds that emit limited smoke and no halogens when exposed to high sources of heat.

Material Dispersion

Pulse dispersion due to the variations in a material's refractive index as a function of wavelength.

Macrobending

In an optical fiber, all macroscopic deviations of the fiber's axis from a straight line; distinguished from microbending.

Microbending

Minute but severe bends in fiber that result in light displacement and increased loss. Most microbending can be avoided by the correct selection of materials and proper cabling, handling, and installation techniques.

Mode

A path of light through a fiber.

Mode Field Diameter (MFD)

In singlemode fiber, the region in which the light transmitted is larger than the glass core diameter. This mode field diameter is a measured value and often listed as a requirement with core diameter in fiber specifications.

Pigtail

A fiber optic cable that has a connector on only one end.

Plenum Cable

A cable whose flammability and smoke characteristics allow it to be routed in a plenum area without being enclosed in a conduit.

Polyethylene (PE)

Tough, chemical and moisture resistant jacketing material, ideal for outdoor cables.

Polyurethane

A jacketing material used mostly for outdoor cables. Provides excellent abrasion resistance and low temperature flexibility.

PolyvinylChloride (PVC)

Flame retardant jacketing material providing good mechanical protection, flexibility, and abrasion resistance. Ideally suited for indoor cables.

Refraction

The bending of a beam of light at an interface between two dissimilar media or in a medium whose refractive index is a continuous function of position (graded-index medium).

Refractive Index

The ratio of the speed of light in a vacuum to the speed of light in a material. Also called Index of Refraction.

Riser Cable

Indoor cables made especially for between floor applications.

Singlemode Fiber

An optical fiber that supports only one mode of light propagation above the cutoff wavelength.

Step Index

A refractive index profile characterized by a uniform refractive index within the core and a sharp decrease at the core-cladding interface.

Strength Member

That part of a fiber optic cable composed of aramid yarn, steel strands, or fiberglass filaments that increase the tensile strength of the cable.

Thermoplastic

A plastic jacketing material that softens when heated and becomes firm on cooling. Thermoplastics include PVC, PE, Polyurethane, and Nylon.

Thermoset

A jacketing material where the molecules have been cross-linked (interlocked) through exposure to heat or irradiation. Once the material is "set", it cannot be softened or melted by re-heating. Thermosets include Neoprene and Hypalon.

Tight Buffer

In tight buffer constructions the thermoplastic is extruded directly over the coated fiber, increasing the outside diameter to 900 micron (0.9 mm), an industry standard.

Waveguide Dispersion

Dispersion caused by the fact that light travels at different speeds in the core and cladding of singlemode fibers.

Zero Dispersion Wavelength

In singlemode fibers, the wavelength at which the effects of chromatic dispersion and waveguide dispersion are lowest; thus providing the greatest information carrying capacity.