

Adapter:

A mechanical media termination device designed to align and join fiber optic connectors. Often referred to as a coupling, bulkhead or interconnect sleeve.

Analog:

A format that uses continuous physical variables such as voltage amplitude or frequency variations to transmit information.

Aramid Yarn:

Strength elements that provide tensile strength and provide support and additional protection of the fiber bundles. Kelvar is a particular brand of aramid yarn.

Armor:

Additional protective element beneath outer jacket to provide protection against severe outdoor environments. Usually made of plastic-coated steel, it may be corrugated for flexibility.

Attenuation:

The decrease in magnitude of power of a signal in transmission between points. A term used for expressing the total loss of an optical system, normally measured in decibels (dB) at a specific wavelength.

Attenuation Coefficient:

The rate of optical power loss with respect to distance along the fiber, usually measured in decibels per kilometer (dB/km) at a specific wavelength. The lower the number, the better the fibers attenuation. Typical multimode wavelengths are 850 and 1300 nanometers (nm); singlemode wavelengths are 1310 and 1550 nm. Note: When specifying attenuation, it is important to note whether the value is average or nominal.

Backbone Cabling:

The portion of premises telecommunications cabling that provides connections between telecommunications closets, equipment rooms and entrance facilities. The backbone cabling consists of the transmission media (optical fiber cable), main and intermediate cross-connects, and terminations for the horizontal cross-connect, equipment rooms, and entrance facilities. The backbone cabling can further be classified as campus backbone (cabling between floors or closets within a building).

Bandwidth:

Measure of the information-carrying capacity of an optical fiber. Note: This term is often used to specify the normalized modal bandwidth (MHz·km) of a multimode fiber. See Dispersion for single-mode fibers.

Bandwidth-Distance Product:

The information-carrying capacity of a transmission medium is normally referred to in units of MHz·km. This is called the bandwidth-distance product or, more commonly, bandwidth. The amount of information that can be transmitted over any medium changes according to distance. The relationship is not linear, however. A 500 Mhz-km fiber does not translate to 250 Mhz for a 2 kilometer length or 1000 MHz for a 0.5 kilometer length. It is important, therefore, when comparing media to ensure that the same units of distance are being used.

Buffering:

A product material extruded directly on the fiber coating to protect it from the environment (tight-buffered):

(2) extruding a tube around the coated fiber to allow isolation of the fiber from stresses in the cable (buffer tubes).

Buffer Tubes:

Extruded cylindrical tubes covering optical fiber(s), used for protection and isolation. See Loose Tubes.

Building Backbone:

The portion of the backbone cabling within a building (floor-to-floor or closet-to-closet). See Backbone Cabling.

Bundle:

Many individual fibers contained within a single jacket or buffer tube. Also, a group of buffered fibers distinguished in some fashion from another grouping the same cable core.

Cable:

An assembly of optical fibers and other material providing mechanical and environmental protection.

Cable Assembly:

Optical fiber cable that has connectors installed on one or both ends. General use of these cable assemblies includes the inter connection of optical fiber cable systems and opto-electronic equipment. If connectors are attached to only one end of a cable, it is known as a pigtail. If connectors are attached to both ends, it is known as a jumper or patch cord.

Cable Bend Radius:

Cable bend radius during installation infers that the cable is experiencing a tensile load. Free bend infers a smaller allowable bend radius, because it is at a condition of no load.

Campus Backbone:

The portion of the backbone cabling between buildings. See Backbone Cabling.

Central Member:

The center component of a cable. It serves as an anti-buckling element to resist temperature-induced stresses. Sometimes serves as a strength element. The central member material is either steel

Cladding:

The material surrounding the core of an optical waveguide. The cladding must have a lower index of refraction to keep the light in the core.

Coating:

A material put on a fiber during the drawing process to protect it from the environment and handling.

Centralized Cabling:

A cabling topology used with centralized electronics, connecting the optical horizontal. Cabling with the building backbone cabling, passively in the telecommunications Closet.

Composite Cable:

A cable containing both fiber and copper media per article 770 of the National Electrical Code (NEC).

Conduit:

Pipe or tubing through which cables can be pulled or housed.

Connecting Hardware:

A device used to terminate an optical fiber cable with connectors and adapters that provides an administration point for cross-connecting between cabling segments or interconnecting to electronic equipment.

Connector:

A mechanical device used to align and join two fibers together to provide a means for attaching to and decoupling from a transmitter, receiver, or another fiber (patch panel). Commonly used connectors include the 568SC (Duplex SC), ST compatible, FDDI, ESCON, SMA 905/906, Biconic, FC or D4.

Connector Panel:

A panel designed for use with patch panels; it contains either 6, 8 or 12 adapters pre-installed for use when field-connectorizing fibers.

Connector Panel Module:

A module designed for use with patch panels; it contains either 6 or 12 connectorized fibers that are spliced to backbone cable fibers.

Core:

The central region of an optical fiber through which light is transmitted.

Coupling:

See Adapter

Decibel:

Unit for measuring the relative strength of light signals. Normally expressed in dB, it is equal to one-tenth the common logarithm of the ratio of the two levels. Expressed in dBm when a power level is compared to a milliwatt.

Dielectric:

Non-metallic and, therefore, non-conductive. Glass fibers are considered dielectric. A dielectric cable contains no metallic components.

Differential Mode Delay (DMD):

Occurs in some non-laser tested multimode fibers when they are used with laser sources. The result is signal distortion, which limits the distance Gigabit LX signals can be transmitted on multimode fibers.

Digital:

A data format that uses two physical levels to transmit information corresponding to 0s and 1s. A discrete or discontinuous signal.

Dispersion:

The cause of bandwidth limitations in a fiber. Dispersion causes a broadening of input pulses along the length of the fiber. Three major types are: (1) modal dispersion caused by differential optical path lengths in a multimode fiber; (2) chromatic dispersion caused by a differential delay of various wavelengths of light in a waveguide material; and (3) waveguide dispersion caused by light traveling in both the core and cladding materials in single-mode fibers.

Entrance Facility:

An entrance to a building for both public and private network service cables, including the entrance point at the building wall and continuing to the entrance room or space.

Equipment Room:

A centralized space for telecommunications equipment that serves the occupants of a building. An equipment room is considered distinct from a telecommunications closet because of the nature or complexity of the equipment.

FOTP:

Fiber Optic Test Procedures. Defined in TIA/EIA Publication Series 455.

Ferrule:

A mechanical fixture, generally a rigid tube, used to protect and align a fiber in a connector. Generally associated with fiber optic connectors.

Fiber:

Thin filament of glass. An optical waveguide consisting of a core and a cladding that is capable of carrying information in the form of light.

Fiber Bend Radius:

Radius a fiber can bend before the risk of breakage or increase in attenuation occurs.

Fiber Optics:

Light transmission through optical fibers for communication or signaling.

Fresnel Reflection Losses:

Reflection losses that are incurred at the input and output of optical fibers due to the differences in refraction index between the core glass and immersion medium.

Fusion Splice:

A permanent joint produced by the application of localized heat sufficient to fuse or melt the ends of the optical fiber, forming a continuous single fiber.

Gigahertz (GHz):

A unit of frequency that is equal to one billion cycles per second, 10⁹ Hertz.

Graded-Index:

Fiber design in which the refractive index of the core is lower toward the outside of the fiber core and increases toward the center of the core; thus, it bends the rays inward and allows them to travel faster in the lower index of refraction region. This type of fiber provides higher bandwidth capabilities for multimode fiber transmission.

Horizontal Cabling:

That portion of the telecommunications cabling that provides connectivity between the horizontal cross-connect and the work-area telecommunications outlet. The horizontal cabling consists of transmission media, the outlet, the terminations of the horizontal cables, and horizontal cross-connect.

Horizontal Cross-Connect (HC):

A cross-connect of horizontal cabling to other cabling, e.g., horizontal, backbone, equipment.

Hybrid Cable:

A fiber optic cable containing two or more types of fiber, such as 62.5 um multimode and single-mode.

Index-Matching Fluid:

A fluid with an index of refraction close to that of glass that reduces reflections caused by refractive-index differences.

Index of Refraction:

The ratio of light velocity in a vacuum to its velocity in a given transmission medium.

Intermediate Cross-Connect (IC):

A secondary cross-connect in the backbone cabling used to mechanically terminate and administer backbone between the main cross-connect and horizontal cross-connect.

Jumper:

Optical fiber cable that has connectors installed on both ends. See cable assembly.

kpsi:

A unit of force per area expressed in thousands of pounds per square inch. Usually used as the specification for fiber proof test, e.g., 100 kpsi.

Kilometer (km):

One thousand meters, or approximately 3,281 feet. The kilometer is a standard unit of length measurement in fiber optics. Conversion is 1 ft = 0.3048 m.

LASER Diode:

Light Amplification by Stimulated Emission of Radiation. An electro-optic device that produces coherent light with a narrow range of wavelengths, typically centered around 780nm, 1310nm or 1550nm. Lasers with wavelengths centered around 780nm are commonly referred to as CD lasers.

Light Emitting Diode (LED):

A semiconductor device used to transmit light into a fiber in response to an electrical signal. It typically has a broad spectral width.

Link:

A telecommunications circuit between any two telecommunications devices, not including the equipment connector.

Local Area Network (LAN):

A geographically limited communications network intended for the local transport of voice, data and video. Often referred to as a customer premises network.

Loose Tube Cable:

Type of cable design whereby coated fibers are encased in buffer tubes, offering excellent fiber protection and segregation.

MDPE:

Abbreviation used to denote medium density polyethylene. A type of plastic material used to make cable jacketing.

Main Cross-Connect (MC):

The centralized portion of the backbone cabling used to mechanically terminate and administer the backbone cabling, providing connectivity between equipment rooms, entrance facilities, horizontal cross-connects, and intermediate cross-connects.

Mechanical Splicing:

Joining two fibers together by permanent or temporary means (vs. fusion splicing or connectors) to enable a continuous signal. The CamSplice is a good example of a mechanical splice.

Megahertz (MHz):

A unit of frequency that is equal to one million cycles per second.

Micrometer (um):

One millionth of a meter; 10⁻⁶ meter. Typically used to express the geometric dimension of fibers. e.g. 62.5 um.

Mode:

A term used to describe an independent light path through a fiber, as in multimode or single-mode.

Mode Conditioning Patch Cords (MCP):

Mode Conditioning Patch Cords are used with Gigabit LX electronics when non-laser tested multimode backbone fibers are to be used. A splice in the patch cord transmit fiber offsets the laser launch to avoid DMD problems. Corning INFINICOR CL fiber cables are laser tested/qualified and do not require the use of mode conditioning patch cords. See differential Mode Delay (DMD).

Mode Field Diameter:

The diameter of the one mode of light propagating in a single-mode fiber. The mode field diameter replaces core diameter as the practical parameter in single-mode fiber.

Modulation:

Coding of information onto the carrier frequency. This includes amplitude, frequency or phase modulation techniques.

Multifiber Cable:

An optical fiber cable that contains two or more fibers.

Multimode Fiber:

An optical waveguide in which light travels in multiple modes. Typical core/cladding size (measured in micrometers) is 62.5/125.

Multiplex:

Combining two or more signals into a single bit stream that can be individually recovered.

Multi-User Outlet:

A telecommunications outlet used to serve more than one work area, typically in open-systems furniture applications.

National Electrical Code (NEC):

Defines building flammability requirements for indoor cables. Note: Local codes take precedence but may refer to or require compliance to the NEC.

Nanometer:

A unit of measurement equal to one billionth of a meter; 10⁻⁹ meters. Typically used to express the wavelength of light, e.g., 1300 nm.

Numerical Aperture (NA):

The number that expresses the light gathering ability of a fiber. Related to acceptance angle.

Optical Fiber:

See Fiber.

Optical Time Domain Reflectometer (OTDR):

An instrument that measures transmission characteristics by sending a series of short pulses of light down a fiber and providing a graphic representation of the backscattered light.

PE:

Abbreviation used to denote polyethylene. A type of plastic material used for outside plant cable jackets.

PVC:

Abbreviation used to denote polyvinyl-chloride. A type of plastic material used for cable jacketing. Typically used in flame-retardant cables.

PVDF:

Abbreviation used to denote polyvinyl-difluoride. A type of material used for cable jacketing. Often used in plenum-rated cables.

Pigtail:

Optical fiber cable that has a connector installed on one end. See Cable Assembly.

PIN Diode:

A semiconductor device used to convert optical signals to electrical signals in a receiver.

Plenum:

An air-handling space such as that found above drop-ceiling tiles or in raised floors. Also, a fire-code rating for indoor cable.

Point-to-Point:

A connection established between two specific locations, as between two buildings.

Receiver:

An electronic package that converts optical signals to electrical signals.

Reflectance:

The ratio of power reflected to the incident power at a connector junction or other component or device, usually measured in decibels (dB.) Reflectance is stated as a negative value, e.g., -30 dB. A connector that has a better reflectance performance would be a -40 dB connector or a value less than -30dB. The terms return loss, back reflection, and reflectivity are also used synonymously in the industry to describe device reflections, but they are stated as positive values.

Repeater:

A device used to regenerate an optical signal to allow an increase in the system length.

Return Loss:

See Reflectance.

Riser:

Pathways for indoor cables that pass between floors. It is normally a vertical shaft or space. Also a fire-code rating for indoor cable.

Scattering:

A property of glass that causes light to deflect from the fiber and contributes to optical attenuation.

Single-Mode Fiber:

An optical wavelength (or fiber) in which the signal travels in one mode. The fiber has a small core diameter typically 9 μm .

Splice Closure:

A container used to organize and protect splice trays. Typically used in outside plant environment.

Splice Tray:

A container used to secure, organize and protect spliced fibers.

Splicing:

The permanent joining of bare fiber ends to another fiber. See Fusion Splice and Mechanical Splicing.

Telecommunications Closet (TC):

An enclosed space for housing telecommunications equipment, cable terminations, and cross-connect between the backbone and horizontal cabling.

Tight-Buffered Cable:

Type of cable construction whereby each glass fiber is tightly buffered by a protective thermoplastic coating to a diameter of 900 micrometers. Increased buffering provides ease of handling and connectorization.

Transmitter:

An electronic package used to convert an electrical information-carrying signal to a corresponding optical signal for transmission by fiber. The transmitter is usually a light emitting diode (LED) or laser diode.

Wavelength:

The distance between two successive points of an electromagnetic waveform, usually measured in nanometers (nm).

Work-Area Telecommunications Outlet:

A connecting device located in a work area at which the horizontal cabling terminates and provides connectivity for work-area cords.

Zero-Dispersion Wavelength:

Wavelength at which the chromatic dispersion of an optical fiber is zero. Occurs when waveguide dispersion cancels out material dispersion.