

GLOSSARY



Air Spaced Cables

A cable in which air is the essential dielectric material. A spirally wound synthetic filament or spacer may be used to center the conductor.

Alien Crosstalk

Crosstalk from an adjacent cable or cables.

Alternating Current Resistance

electrical resistance (usually ohms/km) of a cable when measured with alternating current. (This will generally be higher than the direct current resistance, and is needed for the purpose of circuit rating calculations.)

Ambient Temperature

The temperature of any medium surrounding an object.

Ampacity

The maximum allowable continuous current carrying capacity of a conductor without exceeding either the insulation or jacket material limitations

Ampere

The unit of current flowing through one ohm of resistance at one volt potential.

Anneal

To soften and relieve strains in any solid material by heating to just below its melting point and then slowly cooling it. Annealing generally lowers the tensile strength of the material, while improving its flex-life and flexibility.

Aramid Yarn

Generic name for a tough synthetic material that is often used in cable construction to provide tensile strength.

Armour

A braid or wrapping of metal, (usually steel), or non-metallic material used to protect a cable from mechanical stress. This is generally placed under the outer sheath

Attachment cable

The cable between the wall socket and active equipment - usually a PC or DTE

Attenuation

The power loss in an electrical system. In cables, this is generally expressed as db per unit length, usually a Km.

**Backbone Cable**

A cable used to interconnect buildings.

Balanced Cable

Cables of which the transmission lines are symmetrical pairs

Balanced Pair

The assembly of two insulated conductors twisted together.

Balun

A device used to convert an unbalanced circuit to a balanced circuit.

Bandwidth

A measure of the amount of data that can be transmitted via a communications channel.

Baseband

A type of transmission where data is sent over a single un-multiplexed channel, such as an Ethernet LAN. Baseband transmissions send simultaneous bits of data along the full bandwidth of the transmission channel.

Bedding

The additional underlying sheath of a cable which protects the cores from mechanical stress.

bps

Bits per second. A unit of measure that describes the rate of data transmission.

Braiding

Interwoven textile or metallic filaments forming a tubular flexible structure around a cable.

Bundle

A number of individual cable elements contained within a single jacket or sheath and distinguished from other groups in the same cable.

Buried cable

A cable installed directly into the earth without the use of a conduit.

**Cable**

An insulated group of one or more conductors or optical fibres in twisted or parallel configuration with a protective sheath.

Cable Assembly

A completed cable and its associated hardware

Cable Core

The conductor with its own insulation (and screens if any) lying under the outer protective covering(s) of a cable.

Cable Drum

A cylinder onto which cable is wound during manufacture, for storage, transportation and installation.

Capacitance

The ability of a dielectric material between conductors to store electric charge when a difference of potential exists between the conductors. The unit of measurement is the farad, which is the capacitance value that will store a charge of one coulomb when a one-volt potential difference exists between the conductors. In ac, one farad is the capacitance value which will permit one ampere of current when the voltage across the capacitor changes at the rate of one volt per second

Coaxial Cable

A cable consisting of two conductors with a common axis separated by a dielectric.

Common-mode

The mode where the voltage of both conductors of a pair, relative to ground potential is equal and in phase.

Composite Cable

A cable containing more than one gauge size or a variety of circuit types, eg. pairs, triples, quads, coaxials, etc

Concentric Stranding

A conductor consisting of a central wire or core surrounded by one or more layers of helically wound wires.

Conductivity

The capability of a material to carry an electrical current. Usually expressed as a percentage of copper conductivity - copper being one hundred (100%) percent

Conductor

A material capable of carrying electric current. The most common materials for wire and cable applications are aluminium and copper.

Conductor Resistance

The ratio of the potential difference across to the current flowing through a conductor. Usually expressed in ohms/km. This parameter is required for voltage drop and current rating calculations.

Connector

A device used to physically and electrically connect two or more conductors.

Core

The central component or assembly of components over which other materials are applied, such as a shield, sheath, or armour.

Core Identification

The method of distinguishing between multiple cores, either with a colour or a number.

Crimp Termination

A wire termination that is attached by compression to the conductor.

Cross sectional area (CSA)

The area of the cut surface of the conductor of a cable cut at right angles to the length of the cable

Crosstalk

The electrical interference between adjacent conductors. When wires are placed next to each other in parallel (within a cable) there is usually some crosstalk - signal interference between the cables.

Current Carrying Capacity

This is the maximum allowable continuous current carrying capacity of a conductor without exceeding either the insulation or jacket material limitations.

**Dielectric**

An insulating material between conductors in a cable.

Dielectric Strength

The voltage which an insulating material can withstand before breakdown occurs.

Differential-mode

The mode of transmission where the voltage is equal and in opposite phase on each conductor relative to ground potential.

Direct Burial Cable

A cable installed directly in the earth without a conduit.

Direct Current

An electrical current that flows in one direction only.

Direct Current Resistance

The resistance offered by a circuit to the flow of direct current.

Direction of Lay

The direction, clockwise or counter-clockwise, of a conductor or group of conductors when looking axially down a cable length.

Dissipation

The loss of energy, as the production of waste heat in a circuit.

Distribution Cable

The transmission cable between the distribution amplifier and the drop cable in a CATV system.

Drain Wire

An uninsulated wire usually placed directly beneath an electrical contact with a grounded shield, which is used for making ground connections.

Drop Cable

The transmission cable from the distribution cable to a dwelling in a CATV system.

Duct

A tube or trough used for carrying electrical conductors and designed for mechanical protection.

**Earth Continuity Conductor**

A conductor used to connect equipment (or the earth circuit of a wiring system) to a grounding electrode.

EL-FEXT (Equal Level of FEXT)

Calculation that normalises the results of Far End Cross Talk (FEXT) as it takes attenuation into account. It is calculated by subtracting attenuation of interfering pairs from the FEXT

Electrical Length

The length of cable multiplied by the relative propagation velocity.

Electrical Screen

A metallic shield which isolates a device from external fields.

Electromagnetic Disturbance

The disturbance of a signal by a superimposed electromagnetic field.

**Fault current**

The maximum electrical current that flows through a circuit during an electrical fault condition prior to the activation of a current limiting device.

Filler

The material used in multi-conductor cables to occupy large interstices formed by the assembled conductors, which imparts flexibility, strength and shape to the cable.

Fire Integrity

This refers to the amount of time a cable can be exposed to a flame and continue to function.

Fire Resistance

The ability of a cable to continue to transmit a signal for a specific period of time while in the presence of a fire.

Flame Retardance

The ability of a cable to restrict the propagation of flames in the event of a fire.

Flexible Cable

A cable or cable component which is capable of repeated bending under the influence of an outside force.

Foam Filled

The cellular structured insulation typically found in coaxial cable which acts as a dielectric.

Foil

The film of metal or composite polymer which is used as a screen in the cable construction.

Foiled Twisted Pairs Cable (FTP)

A cable containing multiple twisted pairs of wire enclosed in a foil screen. Also known as Screened Twisted Pairs.

Frequency

The number of cycles which occur in one second. Frequency is measured in Hertz.

FTP

Foiled Twisted Pair. Cat 5e FTP Cable contains an Aluminium Foil (Al-Foil) screen, which provides protection against external electromagnetic interference or cross talk.

Full duplex

Allows data to travel in two directions at once. One pair of wires will transmit and one pair will receive simultaneously.

**Graded-Index Fibre**

A multimode optical fibre in which the refractive index of the core is lower toward the outside of the fibre core and increases toward the centre.

Grounding Conductor

A conductor used to connect equipment (or the earth circuit of a wiring system) to a grounding electrode.

GSWB

Galvanised Steel Wire Brai



Half Duplex

Allows data to travel in one direction at a time. Both Ethernet are capable of transmitting and receiving data but not simultaneously. They must use CSMA/CD to contend the right to send data.

Heat Endurance

The time of heat aging that a material can withstand before failing a specific physical test.

Heat Resistance

The property of a material to resist the deteriorating effects of elevated temperatures.

Helix

A spiral winding.

Hertz

The term to denote cycles-per-second as an indication of frequency.

HOFR

Heat and Oil Resistant, Flame Retardant (also Hypalon/CSP Chlorosulphated Polyethylene).

Horizontal Cabling

The data cables connecting the wall outlets to the data cabinets in a data room. This includes Cat 5E and Cat 6.



Impedance

The total opposition that a circuit offers to the flow of a current at a particular frequency.

Inductance

The property of wire which stores electrical current in a magnetic field around the wire. This can be intensified by coiling the wire.

Insertion Loss

The loss of power that results from inserting a component, such as a connector or splice, into a previously continuous path.

Insulation

A material having high resistance to the flow of electric current. Often called a dielectric.

Insulation Resistance

That property of an insulating material which resists electrical current flow through the insulating material when a potential difference is applied.

Interference

The undesired electrical or electromagnetic signal induced into a conductor.

ISO

The International Organisation for Standardisation is a developer and publisher of standards and a network of the national standards institutes of 157 countries.

ISP

Internet Service Provider. A company that provides a connection to the internet.



Jacket

The material, usually an extruded plastic or elastomer, applied outermost to a wire or cable to provide mechanical and environmental protection.



LAN

A Local Area Network is a computer network that covers a small area.

Lay

The length measured along the axis of a wire or cable of one complete helix of a strand or conductor.

Loss Factor

The dissipation multiplied by the dielectric constant of an insulation material.

LSF

Low Smoke and Fume.

LSZH

Low Smoke Zero Halogen.



MAC

Media Access Control - a data communication protocol sub-layer, which is part of the Data Link layer (layer 2) of the OSI seven layer model.

MAN

A Metropolitan Area Network is a data network designed for a town or city.

Marker Tape

A tape, imprinted with the manufacturer's name, and various other relevant information and laid parallel to the conductors in a cable under the outer sheath.

Mechanical Splice

A semi-permanent joint created by mechanical means, which ensures the electrical/optical continuity of conductors or fibres.

Messenger Wire

A longitudinal wire supporting the weight and enhancing the tensile strength of a suspended cable

Minimum Bending Radius

The radius to which a copper or fibre cable can be bent before the risk of breakage or the degradation of performance occurs.

Miss-Wire

Happens when single wires in a UTP cable are attached to the connector in the wrong sequence.

Mode

A single wave that travels in a Fibre Optic Cable.

Moisture Absorption

The amount of moisture, in percentage, that an insulation or a jacket will absorb under specified conditions.

Multi mode

A type of Fibre Optic Cable used for signal transmission over short distances. An MM Cable has a larger core than a Single Mode Cable and is therefore better at collecting light - it has higher numerical apertures. The information transmission capacity of a MM Cable is limited because it has higher pulse spreading rates.

Multiconductor

More than one conductor within a single cable complex.

Multifibre Cable

An optical fibre cable containing two or more fibres.

Multimode Fibre

Fibre with a comparatively wide optical core, permitting several light modes to pass at once.

Mutual Capacitance

Capacitance between two conductors when all other conductors are connected together.

**N Connector**

An electrical connector designed to join Coaxial Cables.

Neutral Conductor

The wire in a two-wire AC electrical system that carries the return current.

NEXT

Near End Cross Talk. Signal interference between two neighbouring twisted pairs

Nominal Thickness

The specified, indicated, or named thickness of an extruded layer in a wire or cable.



Ohm

The unit of electrical resistance. It is the value of resistance through which a potential difference of one volt will maintain a current of one ampere.

Ohm's Law

Stated $V=IR$, $I=V/R$ or $R=V/I$, the current I in a circuit is directly proportional to the voltage V , and inversely proportional to the resistance R .

Operating Temperature

The range of temperatures between which cables will continue to function acceptably.

Optical Fibre

Translucent fibre which can transmit beams of laser light.

Optical Fibre Cable

A cable in which the transmission elements are optical fibres.

OTDR

Optical Time Domain Reflectometer. An optoelectronic instrument that sends pulses into optical fibre to measure length and find faults in the cable.

Outer Protection

The outer layer of a cable intended to enhance the mechanical protection from external factors.

Outside Diameter

The length of a straight line passing through the center of a cable and connecting two points on the circumference.

Overhead (Aerial) Cable

A cable suspended in the air on poles or other overhead structures

Oxygen Index (OI)

Percentage of Oxygen required to support combustion.



PABX

A Private Automatic Branch Exchange is a switchboard that serves a particular business or office.

Patch Lead

Also known as a Patch Cable or Patch Cord, this is the cable that connects the network panel and the active switch or hub. It also runs from the wall outlet to the electrical appliance in structured cabling networks – it has flexible copper stranded conductors so it portable and suitable for domestic and office environments.

Pigtail

A short length of optical fibre or cable that has a connector installed on one end.

Plug

A connector used for attachment on the free end of a cable.

Polyvinyl Chloride (PVC)

A family of vinyl compounds widely used as insulation on low voltage applications and jacketing for many types of cables.

POTS

Plain Old Telephone Service is a term used when referring to the basic telephone network that exists across much of the world.

Power Rating

The maximum continuous input power when the cable is terminated with its nominal impedance.

Premises cabling

Cabling for voice, data and video transmission throughout a given building.

Primary coating

The plastic coating applied directly to the cladding surface during manufacture of optical fibres to preserve the integrity of the surface.

Propagation delay

The amount of time it takes for a number of bytes to travel from the input to the output of a device.

Propagation Time

Time required for a wave to travel between two points on a transmission line.

Protocol

A protocol is an agreed standard that controls or enables the transfer of data between two devices.

PS-ELFEXT (Power Sum Equal Level FEXT)

Sum of EL-FEXT, which is the calculation that normalises the results of Far End Cross Talk (FEXT) as it takes attenuation into account. It is calculated by subtracting attenuation of interfering pairs from the FEXT.

PS-NEXT (Power Sum NEXT)

Power Sum NEXT (PS-NEXT) is the sum of the total NEXT power coupled to a wire pair from all other adjacent pairs.

PSACR

Power Sum Attenuation to Cross Talk Ratio

PSELFEXT

Power Sum Equal Level Far End Cross (X) Talk. In a four-pair cable, PSELFEXT measures the effect of cross talk from 3 pairs on the remaining pair - having taken into account the known attenuation of the cable.

PSNEXT

Power Sum Near End Cross Talk. In a four-pair cable, PSNEXT refers to the crosstalk affecting one pair from the three other pairs.

PSTN

Public Switched Telephone Networks or PSTN is the term used to describe the international telephone system.

Pull Strength

The pulling force that can be safely applied to a cable without damage.

Pulling tension

The maximum pulling force that can be applied to data fibre optic cable without affecting its electrical characteristics and network performance.



Quad

A term used to describe a cable consisting of four separately insulated conductors twisted together.



Reversed Pairs (or Crossed Pairs)

A common fault where the single wires in a pair have been reversed.

RFI

Radio Frequency Interference - unwanted interference that affects an electrical circuit.

RG 58

A specific type of coaxial cabled used for thin Ethernet networks.

Riser Cable

Indoor cables made especially for between floor applications.



Screen

The conducting layer of a cable which has the function of controlling the electric field within the cable core or element.

Screened Twisted Pairs Cable (STP)

A cable in which each twisted pair is individually screened. It may also have an additional overall screen.

Screening Effectiveness

The measure of the ratio of the power inside the cable to the total radiated power outside.

Secondary Coating

A coating applied directly to the primary coating of one or more fibres to reinforce the protection of the optical fibre during handling and cabling. Also known as a buffer.

Secondary Insulation

Any extremely high resistance material which is placed over primary insulation to protect it from abrasion.

Semi-Flexible Cable

A cable not intended for applications requiring repeated flexing of the cable in service but bending or forming is permissible during installation.

Sheath

The material, usually an extruded plastic or elastomer, applied outermost to a wire or cable to provide mechanical and environmental protection

Shield

A metallic layer of tape, braid or spiral wrapped wire construction (commonly aluminium or copper) with the primary purpose of preventing electrostatic or electromagnetic interference between adjacent wires and external sources.

Shield Coverage Percentage

Percentage of the surface is of a cable core surface area which is covered by the shield.

Shielded

Cable with metal shielding (such as foil) to reduce electromagnetic interference.

Single Mode Fibre

A fibre with a small core, usually between 2 and 9 microns that can only support one wavelength.

Skew

The difference in arrival time of data transmitted by two adjacent cables simultaneously.

Socket/Jack

A connector for attachment to the fixed end of a cable.

SOHO

Short for a Small Office Home Office, SOHO refers to a small/home office environment. It often mixes voice, data and video on the same cables.

Solid Dielectric Cables

Cables in which the space between the inner conductor and outer conductor is substantially filled by solid plastic dielectric.

Spark Test

A test designed to locate flaws in an insulated wire by application of an electrical potential across the material for a very short period of time while the wire is drawn through an electrode field.

Spike Test

A Spike Test is a test specifically designed to prove that the screen of a cable can withstand a full specified fault current for a defined period. It simulates the accidental “spiking” of a live cable installation and ensures that the circuit protection will operate and the circuit fails to safety.

Splice

A connection of two or more conductors or cables to provide good mechanical strength as well as good conductivity.

Split Pairs

A Split Pair is a common wiring error, where a connection is made using the single wires from two different pairs. The benefits brought about by twisting the pairs (eg interference) in the first place are lost.

Standards

An agreed set of guidelines used to maintain the level of quality in the production of cables and their component elements.

Static Bending Radius

The smallest radius to which an installed cable can be bent once without impairing its transmission characteristics.

STP

Shielded Twisted Pair, with metal shielding over each individual pair of copper wires.

Strand

A single uninsulated wire.

Stranded Conductor

A conductor composed of individual wires twisted together.

Strength Member

An element which mechanically reinforces a cable, in particular against tension, compression or bending.

Structured cabling

The fixed data and telecommunications cabling found in a building.

SWA

Steel Wire Armour.

Symmetrical Cable

Cables of which the transmission lines are symmetrical pairs.

Symmetrical Pair

The assembly of two insulated conductors twisted together.



TCWB

Tinned Copper Wire Braid.

TDR

Time Domain Reflectometer. This electronic instrument is used to measure the length of cables and locate flaws and problems.

Temperature Rating

The maximum temperature at which the insulating material may be used in continuous operation without loss of its basic properties.

Terminator

A device attached to the end of a cable to reduce signal reflections and unwanted noise.

Thermoplastic Insulation

A material which will soften, flow or distort when subjected to heat and pressure. Examples are PVC (Polyvinyl Chloride) and PE (Polyethylene).

Tinned Wire

Copper wire coated with tin to make soldering easier and to inhibit corrosion

Transfer Impedance

The ratio of the induced voltage inside the cable to the inductive current outside the cable.

Trefoil

A cross-sectional arrangement of cables that minimises electrodynamic forces during fault conditions.

Twisted Pair

A cable composed of two insulated conductors, twisted together without a common covering. Pairs of wires that are twisted together to reduce the amount of electromagnetic interference from external sources and crosstalk between neighbouring pairs.



UN-balanced cable

In an unbalanced cable, a single conductor carries a single unbalanced signal. The outer screen on the cable doubles up as the signal return path. An example would be coax.

Underground Cable

A cable installed in an underground trough or duct system which separates the cable from direct contact with the soil.

Unscreened Twisted Pair Cable (UTP)

Unshielded twisted pair is the most common kind of copper telephone wiring. Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company.

UTP

Unshielded Twisted Pair. It is found in cables such as Cat 5e UTP PVC Cable and Cat 5e UTP PE External Cable. Twisting the pairs reduces the amount of electromagnetic interference (EMI) from external sources or cross talk between neighbouring pairs.

**Volt**

The potential difference across a conductor when a current of one ampere dissipates one watt of power.

Voltage Drop

The voltage developed between the terminals of a circuit component by the flow of current through the resistance or impedance of that part.

Voltage Rating

The highest voltage that may be continuously applied to a wire or cord in conformance with standards or specifications.

Voltage Withstand Test

A test used to stress the insulation of a product far beyond what it would encounter during normal operation.

VoP

Velocity of Propagation. The speed at which an electrical signal passes through a medium. Expressed as a percentage, it is the ratio of a signal's transmission speed compared to the speed of light in a vacuum.

**XLPE**

Cross-linked Polyethylene.