

Glossary

A = Amp: Ampere = unit of electric current.

AC: Alternating current, e.g. 50 or 60 Hz AC power.

ACR: Attenuation Crosstalk Ratio. The difference between attenuation and crosstalk. Important characteristic in transmission to assure that the transmitted signal is stronger at the receiving end of the cable than are any interference signals imposed on that same pair by crosstalk from other pairs.

Alpet: Aluminium foil covered with polyester.

Alu Braid: Braiding of woven aluminium wires

ANSI: American National Standards Institute

Attenuation: The gradual loss in intensity of signals in electrical circuits.

AWG: American wire gauge, is a standardized wire gauge system used since 1857 predominantly in the United States and Canada for the diameters of round, solid, nonferrous, electrically conducting wire.

B.C. = BC: Bare Copper, mostly referring to a conductor or braid.

Bending Radius: the radius that a cable can be bend without any negative effects.

Braid or Braiding: is a structure or pattern formed by intertwining of commonly 16 strands of wires.

B.S: British Standards are the standards produced by BSI Group which is incorporated under a Royal Charter (and which is formally designated as the National Standards Body (NSB) for the UK).

Cable Core: two or more wires or pairs stranded.

Good twisting is necessary otherwise the cable can hardly be bend and will lose performance after a few bends.

Category Cables: high performance twisted pair cables for local area networking = structured wiring or cabling. Cables range from Cat 3 to Cat 7a. The higher the number, the greater the bandwidth and the better the performance.

Cat 3 Cable supports 10 Base-T Standard for bandwidths up to 10 Mbps over a maximum distance of 100 meters. They can support frequencies in the range of 0-10 Mhz.

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Cat 5/5e Cable supports 100 Base-T Standard for bandwidths up to 100 Mbps over a maximum distance of 100 meters. They can support frequencies in the range of 0-100 Mhz. Cat 5e cables can support 1000 Base-T as well.

Cat 6 Cable supports 1000 Base-T Standard for bandwidths up to 1000 Mbps over a maximum distance of 100 meters. Cat 6 standard can support frequencies in the range of 0-250 Mhz. They also support 10GE bandwidth over limited distances.

Cat 6A Cable supports 10G Base-T standard for bandwidths up to 10 Gbps over a maximum distance of 100 meters. Cat 6A standard can support frequencies in the range of 0-500 Mhz.

Cat 7 Cable supports 10G Base-T standard for bandwidths up to 10 Gbps over a maximum distance of 100 meters. Cat 7 standard can support frequencies in the range of 0-600 Mhz. It offers better performance and improved cross talk suppression over the Cat 6A cables.

Cat 7A Cable supports 10G Base-T standard for bandwidths up to 10 Gbps over a maximum distance of 100 meters. In addition to this, they can also support 40 Gbps bandwidth for around 50 meters and 100 Gbps bandwidth for around 15 meters. They support frequencies in the range of 0-1000 Mhz.

Cat 8 Cable supports frequencies in the range of 0-1200 Mhz. Under development. No applications yet.

CATV: Community Antenna Television, also often used to mean **Cable TV**. It is a system of providing television to consumers through or optical fibre cables. High-speed Internet, telephony, and similar non-television services may also be provided.

CCTV: Closed-circuit television is the use of video cameras to transmit a signal to a specific place, on a limited set of monitors.

Circuit integrity refers to the operability of electrical circuits during a fire. It is a form of fire-resistance rating.

Coaxial Cable or **coax:** an electrical cable with a centre conductor surrounded by a tubular insulating layer = the dielectric, surrounded by a tubular conducting screen = the outer conductor, surrounded by an outer sheath. The term coaxial comes from the centre conductor and the outer screen sharing the same geometric axis.

Conductor: most familiar conductors are metallic. Copper or tinned copper is the most common material used for electrical wiring. Silver is the best conductor, but is expensive.

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Crosstalk (XT): any phenomenon by which a signal transmitted on one circuit of a transmission system creates an undesired effect in another circuit. Crosstalk is usually caused by undesired capacitive, inductive, or conductive coupling from one circuit (mostly a pair) to another (pair).

Current: electric current is a flow of electric charge through a medium. This flowing electric charge is typically carried by moving electrons in a conductor such as wire. The unit of current is Ampere.

DC Resistance: the resistance of an object is defined as the ratio of voltage across it to the direct current through it. The unit of resistance is Ohm.

Dielectric: the insulation between centre and outer conductor (screen) of coaxial cables. Mostly solid or foam (= cellular) polyethylene (PE).

Distortion: the alteration of the original shape (or other characteristic) of an object, image, sound, waveform or other form of information or representation. Distortion is usually unwanted, and often many methods are employed to minimize it in practice.

Drain Wire: a conductor in contact with the foil (of a screen) in order to terminate the screen. Preferably of tinned copper wires.

Decibel (dB): is a logarithmic unit that indicates the ratio of a physical quantity (usually power or intensity) relative to a specified or implied reference level. A ratio in decibels is ten times the logarithm to base 10 of the ratio of two power quantities.

ELFEXT: the Equal-Level Far-End Crosstalk (ELFEXT) test measures Far-End Crosstalk (FEXT). FEXT is very similar to NEXT, but happens at the receiver side of the connection. Due to impedance on the line, crosstalk diminishes the signal as it gets further away from the transmitter. Because of this, FEXT is usually less detrimental to a signal than NEXT, but still important nonetheless.

EIA: the Electronic Industries Association ceased operations on 28 February 2011. The former sectors of EIA are the Electronic Components Association (ECA), JEDEC, Government Electronics and Information Technology Association (GEIA), now part of TechAmerica, Telecommunications Industry Association (TIA), and Consumer Electronics Association (CEA).

EN: European Norms maintained by CEN (European Committee for Standardization), CENELEC (European Committee for Electrotechnical Standardization) and ETSI (European Telecommunications Standards Institute).

Farad: the unit of capacitance.

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FPE: Foam Polyethylene (PE) = closed cells with gas in PE in order to reduce the dielectric constant. Often used as dielectric in coaxial cables.

FAS Cables: cables for fire detection and alarm systems

Far end crosstalk (FEXT): Interference between two pairs of a cable measured at the other end of the cable from the transmitter.

FR: can mean Flame Retardant or Fire Retardant or Fire Resistant.

Flame Retardant: are cables passing the vertical wire test of IEC 60332-1 or UL 1581 VW-1).

Fire Retardant: are cables passing the bundle test of IEC 60332-2-24 or UL 1685 Vertical Tray.

Fire Resistant are cables with a circuit integrity of a specified time.

Frequency: is the number of occurrences of a repeating event per unit time. The unit of frequency is Hertz (Hz).

G.P. Bus: General Purpose Bus Application

Headroom: in case of testing category cables this is the average of the difference between worst case margin and the specified value.

Henry (H): unit of inductance.

Hertz (Hz): unit of frequency. 1 Hz means that an event repeats once per second.

HFFR = Halogen-Free, Flame or Fire Retardant

Impedance: the ratio of voltage applied to the current is called the input impedance; the input impedance of the infinite line is called the characteristic impedance.

Insertion Loss: also referred to as attenuation, refers to the loss of signal strength at the far end of a line compared to the signal that was introduced into the line. This loss is due to the electrical resistance of the copper cable, the loss of energy through the cable insulation and the impedance caused by the connectors. Insertion loss is usually expressed in decibels dB with a minus sign. Insertion loss increases with distance and frequency. For every 6dB of loss, the original signal will be half the original amplitude.

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Inductance: is the property of an electrical circuit causing voltage to be generated proportional to the rate of change in current in a circuit. This property also is called self inductance to discriminate it from mutual inductance, describing the voltage induced in one electrical circuit by the rate of change of the electric current in another circuit.

Insulation: insulations are to isolate conductors, good strippable and interchangeable coloured. The physical properties are in accordance with BS EN 50290-2.

Individually screened pair: a pair with a helically applied (= as a spiral) Aluminium/Polyester (Alpet) foil under which a drain wire.

Jacket = sheath.

Lay-length: The length measured along the axis of a wire or cable required for a single strand (in stranded wire) or conductor (in cable) to make one complete turn about the axis of the conductor or cable. In a twisted pair cable, the lay length is the distance it takes for the two wires to completely twist around each other. Lay length is also known as pitch length.

Local Area Network (LAN): any communication network for connecting computers within a building or small group of buildings.

M = m = metre.

MHz = Megahertz: . 1 MHz = one million Hertz.

Near End Crosstalk (NEXT): Interference between two pairs in a cable measured at the same end of the cable as the transmitter.

Operating temperature (range): the temperature range at which the cable can operate.

PE = Polyethylene.

PVC = Polyvinyl Chloride.

PP = Polypropylene.

Polyolefin: is a polymer produced from a simple an alkene as a monomer, for example PE or PP.

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Power Sum ELFEXT (PSELFEXT): is the sum of FEXT values from 3 wire pairs as they affect the other wire pair.

Pair: two twisted – colour coded – wires.

Quad: a four conductor cable core or unit, symmetrical stranded.

Rated Temperature: the maximum continuous temperature that the cable can withstand during its lifetime. It is generally limited by the thermal aging characteristics of the plastics used to insulate and/or jacket the wire.

Rated Voltage: the maximum voltage at which a cable can operate for extended periods without undue degradation or safety hazard.

Resistance: the electrical resistance of a conductor measures its opposition to the passage of an electric current; the inverse quantity is electrical conductance, measuring how easily electricity flows along a certain path. The unit of electrical resistance is the ohm (Ω), while electrical conductance is measured in Siemens (S).

Return Loss (RL): the Return or Reflection Loss of a line is the ratio of the power reflected back from the line to the power transmitted into the line. RL is expressed in decibels (dB). The RL of coaxial cables is the loss of signal power resulting from the reflection caused at a discontinuity in the cable. This discontinuity can be fluctuations in dimensions and/or dielectric.

Return Loss is also one of many parameters regulated by the requirements established for Category 5e and onwards cables. It is a measure of the reflected energy from a transmitted signal. The larger the value, the less energy that is reflected. Poor Return Loss figures of a circuit are quite often caused by poor termination (connectors).

Screen: a cable screen acts as a Faraday cage to reduce electrical noise from affecting the signals, and to reduce electromagnetic radiation that may interfere with other parts in a cable or other cables. The screen minimizes capacitive coupled noise from other electrical sources. For more info regarding screens: see also the Technical Information section.

Sheath: the outer covering of a cable, standard in accordance with BS EN 50290-2 and grey for PVC, purple for HFFR and black for PE.

Shield = screen.

SMATV = Satellite Master Antenna Television, and refers to a system that uses multiple satellite and broadcast signals to create a single integrated cable signal for distribution to a cabling network

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Solid BC: One solid conductor of bare copper.

Solid TC: One solid conductor of tinned copper

T.C. = TC = Tinned Copper Conductor

TIA: the Telecommunications Industry Association is accredited by the American National Standards Institute (ANSI) to develop voluntary industry standards for a wide variety of telecommunications products.

Twisted pair: a type of wiring in which two conductors are twisted together for the purposes of cancelling out electromagnetic interference (EMI) from external sources; for instance, electromagnetic radiation from unshielded twisted pair (UTP) cables, and crosstalk between neighboring pairs.

Volt = Voltage = unit of electric, expressed with the symbol V.

Wire = Conductor with Insulation. Sometimes also indicated as Core.