

## Glossary of Terms

### A

#### **Abrasion Resistance**

The ability of wire or cable to resist wear and tear to the surface.

#### **AC** (Alternating Current)

See Alternating Current.

#### **ACR** (Attenuation Cross Talk Ratio)

Attenuation Cross Talk Ratio – the difference between attenuation and cross talk measured in decibel at a given frequency.

#### **AF** (Audio Frequency)

#### **AM** (Amplitude Modulation)

#### **Alternating Current (AC or a.c.)**

Electrical current, which changes magnitude and direction in a regular periodic way and is often described by the formula  $I(t) = I_0 \sin(\omega t + \phi)$ , where  $I_0$  is the peak value or amplitude of the current,  $\omega$  is the angular frequency,  $\phi$  is the phase constant and  $(\omega t + \phi)$  is called the phase of the current.

#### **American Society for Testing and Materials**

See ASTM.

#### **Ambient Temperature**

The temperature of a medium (gas or liquid) surrounding an object.

#### **American Wire Gauge (AWG)**

The U.S. standard system to specify size of electrical wiring.

#### **AMP (A) (Ampere)**

A unit of measure for electrical current.

#### **Ampere (A)**

The unit of current. One ampere is the current flowing through one ohm of resistance at one volt potential.

#### **Amplitude Modulation (AM)**

#### **ANSI** (American National Standards Institute)

Appliance Wiring Material (AWM). UL designation for cable intended for use in the appliance wiring industry.

#### **Armored Cable**

A cable provided with a wrapping of metal providing for mechanical protection.

#### **ASTM** (American Society for Testing and Materials)

Acronym for American Society for Testing and Materials – a standards organization, which suggests test methods, definitions or practices.

**Audio Frequency (AF)** – 20 – 20,000 cycles per second

#### **AUTO**

Automotive Industry Wiring Color Code for conductors.

#### **AWG** (American Wire Gauge)

A numerical standard used to refer to the diameter cross-sectional area of a wire. Smaller numbers refer to larger cross sectional areas. Is sometimes referred to as the Brown and Sharpe (B&S) wire gauge.

### B

#### **Binder**

A spirally wrapped tape or thread used for holding assembled cable components in place awaiting subsequent manufacturing operations.

#### **BNC** (Bayonet Neil Concelman)

A coaxial connector used exclusively in video and RF applications.

#### **Braid**

A metal mesh or screen material, usually copper, which is used in a cable to shield against electrical interference and reinforces the cable jacket against damage.

#### **Bridge Rectifier**

An electrical device made up of four diodes, performing the function of full wave rectification (converts the full AC sine wave to DC).

### C

#### **Cable**

Either a stranded conductor with or without insulation and other coverings (single conductor cable), or a combination of conductors insulated from one another (multiple conductor cable).

#### **Capacitor**

An electronic device, which can be used to store an electric charge or to allow alternating current to flow. The ideal capacitor will not allow steady state or DC current to flow. The capacitor is used in many applications such as transient suppression, electrical noise filtering, timing circuits, etc.

#### **CATV** (Community Antenna Television)

#### **CCTV** (Closed Circuit Television)

**CEC** (Canadian Electrical Code)  
Canadian version of USNEC.

#### **Color Code**

Used to identify wires or circuits by color, utilizing solid colors, tracers, braids, and other surface printing.

#### **Conductivity**

The ability of a material to allow electrons to flow, measured by the current per unit of voltage applied. It is the reciprocal of resistivity.

#### **Conductor**

A material that can easily conduct the flow of electrical current. Metals are considered to be good conductors for carrying electrical current.

#### **Connector**

A device used to provide rapid connect or disconnect for electrical cable and wire terminations.

#### **Connector Insert**

Insulating device that holds the contacts in their proper location.

#### **Contact**

The parts of a connector that carries the electrical current through the circuit.

#### **Contact Holder**

Insulating device that holds the contacts in their proper position.

#### **Control Cable**

A term sometimes used to describe the cable that runs between the PLC and a distribution box (Lumberg ASB or ZV product).

#### **Cord**

A small and flexible insulated cable.

#### **CPE** (Chlorinated Polyethylene)

A flexible synthetic rubber material with high tear strength and provides good resistance to most inorganic chemicals. It is inherently difficult to ignite.

#### **CPU** (Central Processing Unit)

#### **Creepage**

Refers to the conduction of electricity across the surface of a dielectric.

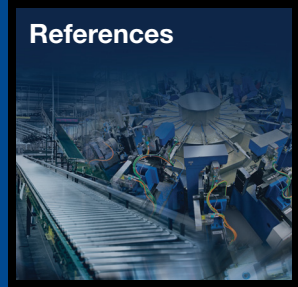
#### **Crimp Termination**

A connection, in which a metal sleeve is secured to a conductor by mechanically crimping the sleeve with pliers, presses or automated crimping machines.

#### **CRT** (Cathode Ray Tube)

#### **CSA** (Canadian Standards Association)

The Canadian equivalent to the Underwriters Laboratories organization.



# Be Certain with Belden

## Glossary of Terms

### Current (I)

This is the rate in which electricity is transferred. Practical unit is the ampere, which represents the transfer of one coulomb per second. In a simple circuit, current (I) produced by a cell or electromotive force (E) when there is an external resistance (R) and internal resistance (r) is:  $I = E / (R + r)$ .

### Current Carrying Capacity

The maximum current a conductor can safely carry without exceeding its insulation and jacket temperature limitations.

### Current Surge

This is a short-term (transient) condition causing a larger than normal amount of current to flow through a conductor. A current surge can often cause damage to an electrical device if it is not properly protected.

### Cut-Through Resistance

The ability of a material to withstand mechanical pressure, usually a sharp edge or small bend radius, without separation.

## D

### dB (Decibel)

Used to express acoustical power.

### DC (Direct Current)

Electrical current that flows in one direction only.

### Dielectric Strength

The voltage that an insulator can withstand before breakdown occurs. Usually expressed as a voltage gradient (such as volts per mil).

### DIN (Deutsches Institut für Normung)

The German Standardization Institute.

### DIN 43650

A German standard, stating the characteristics and requirements of connectors for magnetic valves used in hydraulics and pneumatics.

### Diode

This is a solid-state electronic component, which will allow current to flow in only one direction, similar to a check valve used in hydraulic or pneumatic applications. The diode is used in applications such as transient suppression, power supply circuits etc.

### Direct Current (DC)

The flow of electrical current in one direction.

### Drain Wire

In a cable, the bare wire laid under a metallic foil or braid and is used as a ground connection.

### Distribution Box

Sometimes referred to as Junction or Multi Box is designed to distribute a signal to multiple locations.

## E

### E

The symbol for Voltage or electromotive force.

### Earth

The British term for zero voltage reference.

### EFP (Electronic Field Production)

Video production, non-news production, done outside the studio.

### EIA

Electronic Industries Association – formerly RMA or RETMA.

### Electronic Magnetic Sensor

This is a solid-state device, which is used to sense a magnetic field.

### EMF (Electromotive Force)

Voltage

### EMI (Electromagnetic Interference)

### ENG (Electronic News Gathering)

### EPDM (Ethylenepropylenediene Monomer)

A material with good electrical insulating qualities.

### EPR (Ethylenepropylene Copolymer Rubber)

A material with good electrical insulating qualities.

### ETP (Electrolytic Tough Pitch)

A copper refining process.

### EU (European Union Directives)

A copper refining process.

### EV (Electron Volt)

Extruded Cable with conductors that are uniformly insulated and formed by applying a homogeneous insulation material in a continuous extrusion process.

## F

### f

The symbol for Frequency.

## FAS

Fire Alarm and Signal Cable – cable designation.

### FEP (Fluorinated Ethylenepropylene)

A thermoplastic material with good electrical insulating properties and chemical and heat resistance.

### Fillers

Non-conducting components cabled with the insulated conductors or optical fibers to impart roundness, flexibility, tensile strength, or a combination of all three, to the cable.

### FM (Frequency Modulation)

## G

### Gauss (Ga)

Unit of measure for magnetic flux density.

### GHz (Gigahertz)

A unit of frequency equal to 1 billion (10<sup>9</sup>) hertz.

### Ground (GND)

An electrical connection between a circuit and earth.

### Ground Loop

A completed circuit between shielded pairs of a multiple pair created by random contact between shields. Also, is an undesirable circuit condition in which interference is created by ground currents when grounds are connected at more than one point.

### Ground Potential

A circuit, terminal or chassis is said to be at ground potential when it is used as a reference point for other potentials in the system.

## H

### Hertz (Hz)

The unit of measure for frequency in cycles per second.

### HF (High Frequency)

The band from 3 to 30 MHz in the radio spectrum.

### Hygroscopic

Capable of absorbing moisture from the air.

## I

### I<sup>2</sup>R

Formula for power in watts, where I = current in amperes, and R = resistance in ohms.

### ICEA (Insulated Cable Engineers Association)

### IEC (International Electrotechnical Commission)

## Glossary of Terms

[European Standardization Agency.](#)

[IF \(Intermediate – Frequency\)](#)

[IFB \(Interrupted Feed Back\)](#)

### Input

A signal (or power) which is applied to a piece of electrical apparatus or the terminals on the apparatus to which a signal or power is applied.

### Insertion Force

The force required to insert a contact into the mating contact.

### Insulation

A material having good dielectric properties that is used to separate close electrical components, such as cable conductors and circuit components.

### Insulation Resistance

The resistance measured in Ohms at a designated voltage between two or more conductors separated by the insulation whose resistance is being measured.

### IP (Ingress Protection)

Rating of protection.

### IP65

Dust tight. An environmental protection for a type of enclosure - according to the German Standard DIN 40050. Provides protection against water spray from all directions at 43 PSI through a 12mm nozzle.

### IP67

Protected against the effects of temporary immersion in water (30 minutes – depth of 1 meter).

### IP68

Protected against the effects of continuous immersion in water at a pressure specified by the manufacturer. Lumberg's requirement is 10 Bar (143 PSI) at 24 hours.

### Irradiation

Relating to a cable jacket where the material is exposed to high-energy emissions for the purpose of cross-linking the molecular structure.

[IRS \(Ignition Radiation Suppression\)](#)

[ISO \(International Standards Organization\)](#)

## J

### Jacket

A rubber or plastic covering applied over the primary insulation, braids, shields, and cable components.

## K

### KPSI

Tensile strength expressed in thousands of pounds per square inch.

### KV (Kilovolt)

The measurement of Kilovolt=1000 volts

### KVA (Kilovolt ampere)

### KW (Kilowatt)

## L

### LED (Light Emitting Diode)

A solid-state device, which emits light when current, passes through it.

### LF (Low Frequency)

### Line Voltage

The value of the potential existing on a supply or power line.

### Load

A device that consumes power from a source and uses that power to perform a function.

## M

### M (Mutual Inductance)

The alpha character for Mutual Inductance.

### mA (Mill Ampere)

One thousandth of an ampere.

### MATV (Master Antenna Television)

### MF (Microfarad)

One millionth of a farad.

### MH (Megahertz)

A unit of frequency equal to one million hertz.

### Moisture Resistance

The ability of a material to resist absorbing moisture from the air or from water when immersed.

### Molded Plug

A connector over molded onto either end of a cord or cable.

### MOV (Metal Oxide Varistor)

A solid-state device used to suppress voltage surges/spikes.

### MSHA (Mine Safety and Health Administration)

### Multibox

Sometimes referred to as Distribution or Junction Box -

designed to distribute a signal to multiple locations.

### mV (Millivolt)

One thousandth of a volt.

### mW (Milliwatt)

One thousandth of a watt.

### Mylar

The DuPont trademark for polyester film.

## N

### NA (Numerical Aperture)

A measure of the angular acceptance for a fiber.

### National Electrical Code (NEC)

A set of regulations governing construction and installation of electrical wiring and apparatus in the United States, established by the American National Board of Fire Underwriters.

[NEMA \(National Electrical Manufacturers Association\) – sets the standards for industrial control equipment.](#)

### NEMA 4

Intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water and hose directed water.

### NEMA 6

Intended for indoor or outdoor use primarily to provide a degree of protection against entry of water during occasional temporary submersion at a limited depth.

### NEMA 6P

Intended for indoor or outdoor use primarily to provide a degree of protection against entry of water during occasional temporary submersion at a limited depth. (Requirement; 6 ft. of water for 24 hours).

### Neoprene

Is a synthetic rubber with good resistance to oil, chemical and flame. Also referred to as polychloroprene.

### Nitrile (Buna)

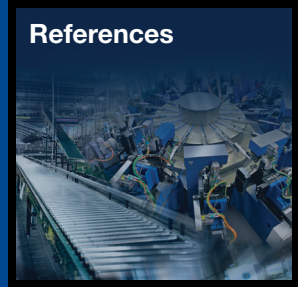
This is a rubber like manmade material used extensively in gasket and sealing applications.

### Nm (Nanometer)

One billionth (10<sup>-9</sup>) of a meter.

### Noise

In a cable or circuit, any extraneous electrical signal that tends to interfere with the signal normally present in or passing through the system.



# Be Certain with Belden

## Glossary of Terms

### Normally Closed

The state of the output or switch is ON with no external influence.

### Normally Open

The state of the output or switch is OFF with no external influence NPN (Sinking) Acronym used to describe the polarization of a bipolar junction transistor (BJTs). Also associated with a sinking output.

### NPN (Sinking)

Acronym used to describe the polarization of a bipolar junction transistor (BJTs). Also associated with a sinking output.

### NPN Output

Transistor output that switches the common or negative voltage to the load (current sinking) connected between output and positive supply.

### Nylon

This is the generic name for synthetic fiber forming polyamides.

## O

### OFHC (Oxygen Free High Conductivity Copper)

### Ohm

The electrical unit of resistance. The value of resistance by which a potential difference of one volt will maintain a current of one ampere.

### Ohm's Law

$E = I \times R$ . Voltage (E) is directly proportional to the product of current (I) and resistance (R) of circuit.

### Opto-Coupled

Refers to a technique used to optically activate (turn on) an electronic device usually a transistor or triac, thus physically separating two sides of a circuit, similar to a solenoid relay. The typical opto coupler incorporates an LED (light emitting diode) as the actuating device.

### Output

The useful power or signal delivered by a circuit or device.

## P

### PA (Polyamide, Nylon)

### PAL (Phase Alternate Line)

A European color TV system featuring 625 lines per frame, 25 frames and 50 fields per second.

### Plastic

High polymeric substances, including both natural and synthetic products, but excluding the rubbers, that are capable of flowing under heat and pressure.

### PLTC (Power Limited Tray Cable)

NEC classification for cable resistant to the spread of fire and is suitable for use in cable trays at 300V rating.

### Plug

A connector associated with being attached to a cable.

### PNP (Sourcing)

Acronym used to describe the polarization of a bipolar junction transistor (BJTs). Also associated with a sourcing output.

### PNP Output

A transistor output that switches the positive voltage to the load (current sourcing) connected between output and common.

### Polarization

The feature of a connector that prevents mismatching by allowing plugging to occur only when the connectors are properly oriented.

### Polyurethane (PUR)

Is a thermoplastic material with good natural chemical resistance.

### Polyvinyl Chloride (PVC)

Is a thermoplastic material with good specific properties when blended with additives.

### POM (Polyoxymethylene, Acetal, Delrin)

Polyoxymethylene – a crystalline thermoplastic polymer with a high melting point. It is suitable for mechanical parts or electrical insulators that require structural strength at above normal temperatures.

### Potting

This is the sealing of a cable termination or other component with a liquid that thermo sets into an elastomer.

### PUR (Polyurethane)

Broad class of polymers noted for good abrasion and solvent resistance.

### PVC (Polyvinyl Chloride)

A general purpose thermoplastic widely used for wire and cable insulation and jackets.

### PVDF (Polyvinylidene Fluoride)

## Q

## R

### Receptacle

The connector is usually mounted in a fixed location and mates with a plug type connector.

### Rectification

This is a term used to describe an electrical process, which converts AC (alternating current) to DC (direct current).

### Reed Switch

This is a miniature mechanical switch, which changes states when a magnetic field is applied.

### Resistance (RI)

The measurement of difficulty in moving electrical current through a medium when voltage is applied. It is measured in ohms.

### Resistor

This is an electrical device, which opposes the flow of current. Higher resistor Ohm values offer more resistance to the flow of current.

### Retractable Cord (Coiled Cord)

A cord having a specially treated jacket or insulation, so that it will retract like a spring. Retraction may be added to all or part of a cord's length.

### RF (Radio Frequency)

### RG/U (RG) (Radio Guide)

A military designation for a coaxial cable, and 'U' stands for Universal.

### RGB (Red, Green, Blue)

3 parts of color video signal; also refers to multi coaxial cables carrying the above signals.

### RJ45

Modular telecommunications connector.

### RMS (Root Mean Square)

### Rubber

A general term used to describe wire insulation made of thermosetting elastomer, such as natural or synthetic rubbers, neoprene, Hypalon, CPE butyl rubber and others.

## S

### SAE (Society of Automotive Engineers)

### SBR

A copolymer of styrene and butadiene. Most commonly used type of synthetic rubber.

## Glossary of Terms

### **SDI (Serial Digital)**

Digital information that is transmitted in serial form.

### **SDL (Shielded Data Link)**

### **Separator**

Pertaining to the wire and cable, a layer of textile, paper, etc. which is placed between the outer jacket and core construction to enhance jacket strip ability.

### **Serve**

A filament or group of filaments such as fibers or wires, wound around a central core.

### **Shield**

A conductive envelope around the primary conductors that provides an electronic barrier to electromagnetic interference.

### **Signal**

Any visible or audible indication that can convey information. Also, the information conveyed through a communication system.

### **Silicone**

This is a rubber like manmade material used extensively in gasket and sealing applications. It is very resistant to a great range of chemicals including oils and solvents, and has a very wide temperature range.

### **Sinking**

The term is used here to describe the way a switch is connected in the circuit. If the switch completes the electrical circuit by connecting the load to ground(/) it is considered to be sinking the load. In a solid-state device this is equivalent to a NPN output.

### **SJ00**

A UL designation for a rubber jacketed junior service cord with oil resistant conductors and jacket. Voltage rating is 300V.

### **SJ00W**

Same as SJ00, but with UL rating for outdoor use.

### **SNR (Signal to Noise Ratio)**

Commonly used interchangeably with ACR

### **Solid Conductor**

A conductor consisting of a single wire.

### **Solid State**

This is a term used often to describe an electronic device, which is made up of solid components (no moving parts).

### **S00**

A UL designation for a rubber insulated hard service cord with oil resistance primaries and jacket. Voltage rating is 600V.

### **S00W**

Same as S00 with UL rating for outdoor use.

### **S00W-A**

UL rating superceded by S00W cable.

### **Sourcing**

The term is used here to describe the way a switch is connected in the circuit. If the switch completes the electrical circuit by connecting the load to the positive (+) it is considered to be sourcing the load.

### **SPDT (Single Pole Double Throw) - Switches**

### **SRL (Structured Return Loss)**

The magnitude of internal cable reflections, measured in dB".

### **STO**

A UL designation for a thermoplastic (usually PVC) insulated hard service cord with oil resistant outer jacket. Voltage rating is 600V.

### **STOW**

Same as STO with UL rating for outdoor use.

### **STOW-A**

Obsolete – replaced by STOW.

### **STP (Shielded Twisted Pair)**

### **Stranded Conductor**

A conductor composed of groups of wires twisted together.

### **SVHS (Super VHS)**

A video format in which the two parts of the VHS signal are transmitted separately providing for better picture resolution with less noise.

### **SWR (Standing Wave Ration)**

A ratio of the maximum amplitude to the minimum amplitude of a standing wave stated in current or voltage amplitudes.

## **T**

### **Temperature Rating**

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

### **TFE (Tetrafluoroethylene)**

A thermoplastic material with good electrical insulating

properties and chemical and heat resistance.

### **Thermoplastic**

A material that will soften, flow or distort appreciably when subjected to heat and pressure.

### **Thermoset**

A material that hardens or sets when heat is applied, and which, once set, cannot be softened by heating. The application of heat is called "curing".

### **TIA (Telecommunications Industry Association)**

### **TPE (Thermoplastic Elastomer)**

Used as a jacket material in multiconductor cables, TPE is a thermoplastic compound resistant to the harmful effects of weld slag and chemicals, especially oil.

### **TP-PMD (Twisted Pair - Physical Medium Dependent)**

### **TPU (Thermo Plastic-Poly Urethane)**

### **Transistor**

This is a solid-state device used in electronic circuits. It is often used in switching or amplifier applications.

### **Triac**

This is a solid-state device often used to switch AC voltage/current.

### **Twisted Pairs**

One or more pairs of insulated conductors twisted together to reduce cross talk.

## **U**

### **UHF (Ultra High Frequency) – 300 to 3,000 MHz"**

### **UL (Underwriter's Laboratories)**

A nonprofit organization, which tests and verifies construction and performance of electronic parts.

### **UP (Universal Power)**

### **UTD (Unshielded Twisted Pair)**

## **V**

### **VA (Volt Ampere)**

A designation of power in terms of voltage and current.

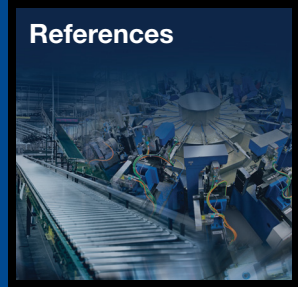
### **VDE (Verband Deutscher Elektrotechniker)**

German approval agency equivalent to UL.

### **Volt (V)**

The unit of measure for electrical potential.

### **Voltage**



# Be Certain with Belden

## Glossary of Terms

The term most often used in place of electromotive force, potential difference, or voltage drop. Designates the electrical pressure existing between two points that is capable of producing a current when a closed circuit is connected between these points.

### Voltage Rating

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

### Voltage Spike

This is a short-term (transient) condition causing a larger than normal amount of voltage to be applied to a circuit. Voltage spikes can often cause damage to an electric device if it is not properly protected.

### VW-1

A flammability rating established by Underwriters Laboratories for wires and cables that pass a specially designed vertical flame test, formerly designated FR1.

## W

### W (Watt or Wattage)

A unit of measure for electrical power.

### Watt (W)

The unit of measure for electrical power.

### Wicking

Capillary absorption of a liquid along the fibers of the base material.

### Withdrawal Force

The force required to separate two mated contacts or group of contacts.

## X

### X

The alpha symbol for Reactance – opposition to alternating electric current flow caused by inductance and capacitance in a circuit.

### XLR

A multi pin audio connector (typically 3 pins) used in a microphone, line level and snake cable connections.

## Y

## Z