ILSCOPedia \ Electrical Industry Terminology

AC - Alternating current - A signal or power source that varies with time, switching polarities. Typically, sinusoidal and constant frequency.

ACSR - Aluminum Conductor Steel Reinforced. Used in the Utility industry.

AHJ – Authority Having Jurisdiction – This is the Inspector, a person who has the delegated authority to determine, mandate, and enforce code requirements established by jurisdictional governing bodies.

ALTERNATOR - A device which converts mechanical energy into electrical energy.

AMMETER - An instrument for measuring the flow of electrical current in amperes. Ammeters are always connected in series with the circuit to be tested.

AMPACITY: The current in amperes that a conductor can carry continuously under the conditions of use without exceeding its temperature rating.

AMPERE(s) or Amp(s) – Unit of electrical current.

ANSI - American National Standards Institute.

ANTI-TURN – Resists rotation when wire is tightened. Methods include: square boss, anti-turn key, 2 mounting holes.

AWG - American Wire Gauge - A measure of wire thickness (which also dictates cross-sectional area, and for a given material, ampacity).

BARREL – Where the wire is positioned in the connector.

BONDING: The permanent joining of metallic parts to form an electrically conductive path that will ensure electrical continuity and the capacity to conduct safely any current likely to be imposed.

BOSS – Can be square or round and sticks out from the bottom of the connector. Can be used for mounting and anti-turn.

COMPRESSION LUG – Requires tools to crimp the connector onto the wire, considered irreversible.

CONDUCTOR -

a. *Bare* - A conductor having no covering or electrical insulation whatsoever.
b. *Covered* - A conductor encased within material of composition or thickness that is not recognized by this Code as electrical insulation.
c. *Insulated* - A conductor encased within material of composition or thickness that is recognized by this Code as electrical insulation.

CONNECTOR, PRESSURE (SOLDERLESS) - A device that establishes a connection between two or more conductors, one or more conductors, and a terminal by means of mechanical pressure without the use of solder.

COPPER-CLAD ALUMINUM CONDUCTORS - Conductors drawn from a copper-clad aluminum rod with the copper metallurgically bonded to an aluminum core. The copper forms a minimum of 10 percent of the cross-sectional area of a solid conductor or each strand of a stranded conductor.

CORONA - Phenomenon associated with all transmission lines. Under certain conditions, the localized electric field near energized components and conductors can produce a tiny electric discharge or corona that causes the surrounding air molecules to ionize, or undergo a slight localized change of electric charge.

CRIMP DIE – Part that goes into a die taking tool that compresses the material.

CRIMP LUG: Compression lug.

CRIMP TOOL – Tool used to compress the material around the wire. May or may not require a die.

CURRENT - Movement of electricity along a conductor. Current is measured in amperes.

CURRENT FLOW - The flow or movement of electrons from atom to atom in a conductor.

DC - Direct current.

DE-OX® - Anti-oxidant to reduce corrosion.

DMM - Digital Multimeter - Measuring instrument or VOM (e.g. voltage, resistance, current) with a digital display.

DIELECTRIC - A nonconductor of electricity. An insulator that is capable of concentrating electric fields.

DUSTPROOF: Constructed or protected so that dust will not interfere with its successful operation.

ELECTROMOTIVE FORCE (emf) - The force or electrical pressure that has the potential to cause electron flow in a circuit. Also called voltage, potential difference or difference of potential. Measured in volts (V).

FLEX WIRE (high strand count) - Class G, H, I, K, M, DLO

FUSE - A replaceable safety device for an electrical circuit. A fuse consists of a fine wire or a thin metal strip encased in glass or some fire resistant material. When an overload occurs in the circuit, the wire or metal strip melts, breaking the circuit.

GENERATOR - An electromechanical device that converts mechanical power into electrical power.

GRID (Electric Grid) - The layout of the electrical transmission system or a synchronized transmission network.

GROUND - A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

GROUNDED - Connected to earth or to some conducting body that serves in place of the earth.

GROUNDED CONNECTOR - A system or circuit conductor that is intentionally grounded.

GROUNDING CONDUCTOR - A conductor used to connect equipment to the grounded circuit of a wiring system to a grounding electrode or electrodes.

IEC - stands for the International Electrotechnical Commission: An "organization that prepares and publishes international standards for all electrical, electronic and related technologies."

IEEE - Eye-triple-E is a non-profit, technical professional association of more than 360,000 individual members in approximately 175 countries. The full name is the Institute of Electrical and Electronics Engineers, Inc., although the organization is most popularly known and referred to by the letters I-E-E-E." IEEE also sponsors many electrical and electronic standards.

K - Kilo - Metric unit representing 1000. E.g.: 1kHz is a 1 kilohertz (1000 Hertz). Note that the k is always lowercase. In digital systems, "K" or "k" is often used to mean 2^{10}, that is, 1024. This is not well-standardized but it's usually apparent from context.

kW - Kilowatt (or kilowatts) - 1000 watts.

KCMIL – 1000 circular mills also referred to as MCM

LAY-IN FEATURE – Enables the user to not break the run of wire to make the connection.

LINE SIDE - Main / Run

LISTED: Equipment or material included in a list published by an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets appropriate designated standards or has been tested and found suitable for use in a specified manner.

> (FPN): the means for identifying listed equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

LOAD - A device or apparatus that uses the energy of a circuit to perform work. May also refer to the power used by a device, machine, or a combination of many.

LOAD SIDE - Tap

LOADING /STAGGERING – Placing the wires in the connector to obtain the greatest ampacity and spread the current path.

LOCATION:

a. *Damp Location:* Partially protected locations under canopies, marquees, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns, and some cold-storage warehouses.
b. *Dry Location:* A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction.
c. *Wet Location:* Installations underground or in concrete slabs or masonry in direct contact with the earth, and locations subject to saturation with water or other liquids, such as vehicle washing areas, and locations exposed to weather and unprotected.

LUG VIEW WINDOW - Sight Window - Inspection window - Sight Hole

Fig. 2

MCM is an abbreviation for thousands of circular mils, an old measurement of wire gauge. 1 MCM = 1 kcmil = 0.5067 square milimeters. A mil is 1/1000 inch. A wire 200 mils in diameter is 40 MCM. MCM is generally used for very large-diameter wire. Most wire uses AWG. ALSO known as KCMIL

MECHANICAL LUG – Connection with a screw to tighten on the wire (wire binding screw).

MEGA (M) - Prefix for units of measurement equal to millions (1,000,000 or 10^6).

MILLI (m)- Prefix for units of measurement equal to thousandths (1/1000 or 10^{-3}).

MOUNTING HOLES – How the lug is mounted to a buss or other connection. It can be one or more mounting holes. If more than one mounting hole, both can be used as an anti-turn feature.

MULTIMETER - A testing device that can be set to read ohms (resistance), voltage (force), or amperes (current) of a circuit.

mV - A millivolt (mV) is 1/1000 of a volt.

mW - Milliwatt(s).

MW - Megawatt(s).

OC – Overcurrent

OHM - The standard unit for measuring resistance to flow of an electrical current. Every electrical conductor offers resistance to the flow of current, just as a tube through which water flows offers resistance to the current of water. One ohm is the amount of resistance that limits the current flow to one ampere in a circuit with one volt of electrical pressure.

OHMMTER - An instrument for measuring the resistance in ohms of an electrical circuit.

OHM'S LAW - Very basic circuit law that defines the relationships between current, voltage, and resistance in a DC circuit. Ohm’s law states that current is directly proportional to voltage and inversely proportional to resistance. (I = V/R) The other forms of the formula are V = IR and R = V/I.

PANEL BOARD: A single panel or group of panel units designed for assembly in the form of a single panel; including buses, automatic overcurrent devices and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet or cutout box placed in or against a wall or partition and accessible only from the front.

PANELBOARD LUGS - Stack lugs - Stair step lugs

PARALLEL – More than one wire in a connector all being exactly the same (i.e. two 3/0 wire, five 1/0 wires).

PARALLEL CIRCUIT - A circuit with two or more loads (or sources) connected such that all have the same voltage but different currents. Each load can be operated independent of the others. Parallel sources should have equal voltage ratings.

PHASE - (3 Phase, Single Phase) Also 3 pole , single pole : Single phase used in most houses offers 110v and 220v systems, three phase systems offer 440v and 277v systems.

PIN TERMINALS – ACM, ACO, CPM ILSCO connectors.

POWER DISTRIBUTION BLOCKS – PDB, PDBU, PDH, PDE, PDL, PDM, PDS, LDA, LDB, PDA, PDC ILSCO connectors.

RACEWAY: An enclosed channel of metal or nonmetallic materials designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this Code. Raceways include, but are not limited to, rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, liquid flexible conduit, flexible metallic tubing, flexible metal conduit, electrical nonmetallic tubing, electrical metallic tubing, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways.

RESISTANCE - Represented by the symbol R and measured in ohms, is a measure of the opposition to electrical flow in DC systems. Resistance is the voltage across an element divided by the current (R = V/I).

RMS - Root mean square.

SCR - Silicon-controlled rectifier.

SCCR (**S**hort **C**ircuit **C**urrent **R**ating) – Some connectors may say High SCCR.

SERIES CIRCUIT - A circuit arrangement of two or more loads (or sources) connected end-to-end only allowing for one current path. Therefore, all components have the same current but can have different voltage. An open at any point or in any component interrupts current flow for all.

SERRATIONS – Features in the wire way to promote holding smaller wires and increase pullout force.

SERVICE - The conductors and equipment for delivering energy from the electricity supply system to the wiring system of the premises served.

SERVICE CABLE - Service conductors made up in the form of a cable.

SERVICE CONDUCTORS - The conductors from the service point or other source power to the service disconnecting means.

SERVICE DROP - The overhead service conductors from the last pole or other aerial support to and including the splices, if any, connecting to the service-entrance conductors at the building or other structure.

SERVICE-ENTRANCE CONDUCTORS, OVERHEAD SYSTEM - The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where joined by tap or splice to the service drop.

SERVICE-ENTRANCE CONDUCTORS, UNDERGROUND SYSTEM - The service conductors between the terminals of the service equipment and the point of connection to the service lateral.

(FPN) - Where service equipment is located outside the building walls, there may be no service-entrance conductors, or they may be entirely outside the building.

SHORT (OR SHORT CIRCUIT) - This occurs when one part of a circuit comes in contact with another part of the same circuit, diverting the flow of current from its desired path.

SWITCHBOARD - A large single panel, frame, or assembly of panels on which are mounted, on the face or back, or both, switches, overcurrent and other protective devices, buses, and usually instruments. Switchboards are generally accessible from the rear as well as from the front and are not intended to be installed in cabinets.

TANG – Mounting feature on connector.

TEMPERATURE RATINGS:

a. AL/CU – Dual rated for Copper or Aluminum
b. AL7CU – 75 °C rated lug for Copper or Aluminum
c. AL9CU - 90 °C rated lug for Copper or Aluminum
d. CU - rated for Copper only- typically 90°C

TRANSFORMER - An inductive electrical device for changing the voltage of alternating current. A transformer consists of two magnetically coupled coils. Alternating current in one (called the "primary") creates a changing magnetic field which induces a current in the second coil (the "secondary"). A core made of iron or ferrite generally connects the two coils, but higher frequency devices can work without a ferrous core.
Transformers have two primary functions - voltage transformation and isolation:

- The voltage of the secondary can be higher or lower than the voltage that drives the primary and is determined by the ratio of turns of wire in the two coils.
- Isolation refers to the fact that the coils are connected only by a magnetic field, so they can be independent of a common ground.

Primary applications are for power and for signal isolation / impedance transformation. An autotransformer is a transformer with a single coil with intermediate "taps" to effect the changed outgoing voltages. They do not provide isolation.

Transformer capacity is rated in kilovolt-amps (KVA): The volts x amps / 1000.

UL/ CSA Listing:

a. UL Listed – Generally used as a stand-alone lug or general purpose lug
b. UL Recognized – “Conditions of acceptability” that require other components and is tested as part of a system
c. UL 1059 – Terminal Blocks
d. UL 1953 – Power Distribution Blocks
e. UL 467 – Grounding & bonding
f. UL 486A/B – Power connectors
g. UL 486C Power – Using splicing connectors
h. UL 486D Seal Systems – Covered connectors
i. UL 2703 – PV systems

UL	**CSA**
486A/486B Power Connectors	C22.2 #65
486C Splicing Connector Systems	C22.2 # 188
467 Grounding & Bonding	C22.2 # 41
486D Sealed Wire Connector Systems	C22.2 # 198.2
1059 Terminal Blocks	
1953 Power Distribution Blocks	
2703 PV Systems	

ANSI (American National Standards Institute)

C119.1 Sealed Systems
C119.4 Overhead
C119.5 Insulation Piercing
C119.6 Non-Sealed Multiport Connections

UNINTERRUPTIBLE POWER SUPPLY - An uninterruptible power supply (UPS) is a device that maintains power in the event of a failure. A UPS commonly includes a battery that is kept charged and ready. When power fails, the battery supplies power, as long as it lasts. When the battery fails, a UPS may contain circuitry that triggers an orderly shutdown. An uninterruptible power supply may also provide line regulation, protecting against voltage variations.

UV – Ultraviolet

VOLT - Unit of measure for electromotive force (EMF), the electrical potential between two points. An electrical potential of 1 volt will push 1 ampere of current through a 1-ohm resistive load.

Using a common plumbing analogy, voltage is similar to water pressure and current is analogous to flow (e.g. liters per minute). In equations, the symbol E is often used (as in: E = IR). V is the symbol for the unit of measure, Volt.

VOLT-AMPERE - A volt-ampere (VA) is the voltage times the current feeding an electrical load. A kilovolt-ampere (kVA) is 1000 volt-amperes.

Electrical power is measured in watts (W): The voltage times the current measured each instant. In a direct current system or for resistive loads, the wattage and VA measurements will be identical. But for reactive loads, the voltage and current are out of phase and the volt-ampere spec will be greater than the wattage.

For determining power, watts are appropriate. For determining capacity for the driving circuits (circuit breakers, wiring, and uninterruptible power supplies, for instance), VA is appropriate.

VOLTAGE (OF A CIRCUIT) - The greatest root-mean-square (effective) difference of potential between any two conductors of the circuit concerned.

> (FPN): Some systems, such as 3-phase 4-wire, single-phase 3-wire, and 3-wire direct current may have various circuits of various voltages.

VOLTAGE, NOMINAL - A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (e.g., 120-240 volts, 480Y/277 volts, 600 volts). The

actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

VOLTAGE TO GROUND - For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for ungrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit.

VOLTAGE RATINGS –

- Covered, insulated block connections -600V
- IPC some 300V, Some 600V
- Bare connections up to 35KV

VOM - Volt-Ohm meter

WATT - A unit of measure for indicating the electrical power applied in a circuit. It is obtained by multiplying the current (in amperes) by the electrical pressure (in volts) which cause it to flow. That is: watts = amperes x volts.