Glossary

Ø (aught). The standard abbreviation for phase. This is not to be confused with cable sizes, which are abbreviated 2/0 and 4/0 pronounced two-aught" and "four-aught."

alternating current (AC). The form in which electric power is delivered to homes and businesses. The flow of the electric charge reverses direction 120 times per second (in a 60 Hz system) following a sine wave.

American Wire Gauge (AWG). United States standard classifying wire diameter.

ampacity. Amperage capacity in amps (e.g., cable has a maximum ampacity).

amp. A unit that measures the volume of current conducted at a given point in a circuit.

arc flash. Electrical hazard that occurs when electricity arcs over between two or more separated conductors, instantaneously releasing a large amount of heat.

authority having jurisdiction (AHJ). The delegated authority responsible for determining and enforcing code requirements established by jurisdictional governing bodies such as federal, state, and local government.

battery. A device that converts the chemical energy stored inside it to emit electrical energy as direct current.

bonded (bonding). Connected to establish electrical continuity and conductivity [NEC].

bonding generators. Connecting two or more generators so their grounds have the same voltage potential.

branch circuit. The circuit wiring after the last overcurrent protection device.

cable crossover. Specially constructed cable trough that protects cable from being crushed by vehicular traffic and protects against a pedestrian trip hazard.

catenary lightning protection system. A lightning protection system consisting of one or more overhead ground wires.

circuit. A closed path followed or capable of being followed by an electric current, through the load and back to the source.

circuit breaker. An automatic switch that trips to open a circuit and stop the flow of electric current when a circuit is overloaded or a short circuit occurs.

closed (switch or circuit). A closed switch allows current to flow from the power source to the load (turns it ON). A closed circuit forms an uninterrupted loop.

conductor. Material that has a low resistance to the flow of electricity.

connector. A means of linking conductors together.

continuity test. A continuity test is used to check if conductors provide a continuous, unbroken electrical path between two selected test points. It can be used to test that a lamp filament, fuse, or wire is intact (where continuity is desirable), or to test for a short circuit (where continuity is undesirable).

control device. A device or a combination of devices for the purpose of opening and closing a circuit.

dimmer. A device that controls the circuit by varying the voltage by means of a resistance coil, electronic relay, or variable-point transformer.

direct current. Electricity that flows in a constant direction, from negative to positive, at a nominally constant voltage.

distribution center. A distribution device that provides overcurrent protection to circuits tapped from the feeder circuit.

distribution system. A power network consisting of cables, distribution boxes, and similar devices, used to safely distribute electricity to end-use devices (lights) according to the specific size of the connector or receptacle. The system provides appropriate overcurrent protection for circuits tapped from the feeders, and may also provide control and dimming capabilities.

drop-down box (portable company switch). A distribution box that is inserted into a feeder run that provides overcurrent protection and a main isolation switch. It is used where there is a reduction in feeder cable size to provide overcurrent protection for the downstream feeder cable or as an isolation device to de-energize a subfeeder that branches from the main run.

effective voltage. The "effective" value of an AC voltage is the same as its "root-mean-square" (RMS) voltage which, for a sinusoidal waveform, is 0.707 x Vmax. Vmax is the peak voltage, which is 1.414 x Vrms.

electric shock. An electrical hazard that occurs when a person makes contact with an exposed, energized part and completes a circuit through their body.

electricity. The flow of electrons through a conductor.

electromagnetic induction. The production of an electromotive force (voltage) across a conductor when it is exposed to a varying magnetic field as in a transformer.

electromotive force. The potential difference, measured in volts. It can be thought of as the "pressure" created by the power source that drives current through a circuit.

equipment grounding. The conductive path provided by the equipment grounding conductors. They bond the non-current carrying metal parts of equipment to the grounded system conductor (neutral) at the source of power.

feeder circuit. The portion of the circuit wiring between the power source and the last overcurrent protection device.

frequency. The number of AC cycles per second: 60 Hz in the Americas, 50 Hz in the UK, EU, and large parts of the world.

fuse. A type of overcurrent protection device containing a conductor that melts when current exceeds the rating of the fuse, thereby opening the circuit and interrupting the flow of electrical current when a circuit is overloaded.

gang box. A distribution box that commonly provides multiple duplex Edison outlets, with each circuit protected by a 20-A overcurrent protection device.

generator. Portable gas-powered or mobile diesel-powered unit that converts mechanical energy into electrical energy.

ghost load. A load that is added purely to balance the load between phases or otherwise stabilize electrical performance.

ground and grounding:

ground rod. A metal rod used as a grounding electrode, driven into the ground and connected by means of the grounding electrode conductor to the electrical system for the purpose of grounding it.

earth ground. The deliberate connection of the neutral system bus to earth by means of a grounding electrode or grounding electrode system.

equipment grounding conductor (or wire). A conductor that connects the exterior metal parts of electrical equipment through the distribution system back to the neutral bus at the power source for the purpose of completing a circuit and tripping the overcurrent protection device in the event of a ground fault.

grounding electrode conductor. A conductor that connects the system's grounded neutral at the main service panel to a grounding electrode or to a point on the grounding electrode system.

ground fault. Unintentional contact between an energized conductor and a grounded metal part of the equipment, such as the equipment casing or housing.

ground fault circuit interrupter (GFCI). An electrical device that disconnects a circuit if it senses an imbalance of electric current between the phase conductor and the neutral (return) conductor. Such an imbalance indicates current leakage, which could pose a shock hazard to a person who comes into contact with the unintended current.

guarded. The NEC requires that electrical equipment be guarded by means of an approved enclosure. Guarded is defined as covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger [NEC].

hard power. An industry term for AC power that is not run through a dimmer or remote swtich.

harmonic distortion (in power systems). Distortions in the current sine wave caused by nonlinear loads. Such nonlinear waves are described as a combination of harmonics, primarily the 3rd (180 Hz), 5th (300 Hz), 7th (420 Hz), and 9th (540 Hz) harmonics. Distortion of the current sine wave causes a number of undesirable electronic effects in power systems and transformers.

Hertz (Hz). A unit of frequency that is one cycle per second.

impedance. Electrical impedance is the measure of the opposition that a circuit presents to a current when a voltage is applied. Impedance extends the concept of resistance to AC circuits, and possesses both magnitude and phase angle, unlike resistance, which has only magnitude.

insulator. Material that has a high resistance to the flow of electricity.

inverter. A power inverter is an electronic device or circuitry that changes direct current (DC) to alternating current (AC).

lacing cable. A method of protecting cables and personnel by keeping cables safely bundled together while maintaining a gap between conductors for circulation.

leakage current. Current that leaks from the intended circuit and is able to flow by some alternate path. Leakage current can cause damage, fires, RF noise, or electric shock.

light emitting diode (LED). A semiconductor device that emits light when electrical power runs through it.

lightning protection system. A system of devices that provide a low-resistance path to ground.

linear load. An electronic load where the current at any time is proportional to the voltage.

load. Either a device that uses electricity to operate (such as lights) or the resulting amount of electrical current.

lunch box. A 100-A distribution box that commonly provides five duplex Edison outlets, with each circuit protected by a 20-A overcurrent protection device.

National Electrical Code (NEC). A regionally adoptable standard for the safe installation of electrical wiring and equipment in the U.S., published by the National Fire Protection Association as NFPA 70.

neutral conductor (return wire). The current carrying wire in an electrical circuit that is grounded at the power source.

nonlinear load. An electronic load that does not draw current in proportion to the voltage (in a normal 60-Hz sine wave).

OCPD. See overcurrent protection device.

onboard generator. A generator installed in or on a truck, mobile home, honeywagon, catering truck, or similar vehicle that powers appliances in the vehicle or equipment from the vehicle.

open (switch or circuit). An open switch interrupts the flow of electricity from the power source to the load (shuts it OFF). An open circuit has a break in continuity somewhere in the circuit.

overcurrent. Amperage exceeding the rating of the circuit components.

overcurrent protection device (OCPD). A circuit breaker or fuse.

overload. A condition that occurs when the load current of connected devices is greater than the ampacity of conductors or the rating of the fuse or circuit breaker.

paper load. A system for quickly calculating the amperage of 120-V loads. The paper load is the result of dividing the wattage by 100.

parallel circuit. A circuit in which the current is divided into two or more paths before recombining via a common path to complete the circuit.

phase conductor (line wire, hot leg). The current carrying wire in an electrical circuit that provides voltage potential that is above that of ground.

phase control dimmers. Electronics that control effective voltage by switching off the circuit for some portion of each AC cycle. Thyristor- or silicone controlled rectifier (SCR)-devices are commonly used for this purpose.

power factor. The power factor of an AC electrical power system is defined as the ratio of the real power (used by the load) to the apparent power in the circuit.

power source. A device that supplies voltage.

primary (coil). The windings of a transformer connected to the input side that generate an electromagnetic field in order to induce voltage in the secondary coil (output side).

qualified person. A person designated by the employer, who has received training in and has demonstrated skills and knowledge in the construction and operation of electric equipment and installations and the hazards involved.

reactance. The opposition of a circuit element to a change of electric current or voltage due to that element's inductance or capacitance.

rectifier. An electrical device that converts alternating current (AC) to direct current (DC).

remote switch. A device that physically opens and closes the circuit and is remotely activated.

resistance. The opposition to the passage of an electric current through a conductor.

RMS (voltage). See effective voltage.

secondary (coil). The winding of a transformer connected to the load, in which voltage is induced by movement of an electromagnetic field through the coil.

series circuit. A circuit in which components are connected end-to-end, providing only one path through the circuit.

service equipment. The main electrical panel where the electric service enters a building.

shock. See electric shock.

short circuit. A condition that occurs when a fault in the circuit wiring enables current to bridge directly across two wires of the power source with little or no impedance—hot to neutral or hot to hot. In a short circuit, current rises to a dangerous level very quickly unless an overcurrent protection device interrupts it.

single-phase load. A load that operates properly on the difference in potential between two wires of a system. The load experiences a single sine wave when powered from phase and neutral (120 V), from two phases of a single-phase system (240 V), or from two phases of a three-phase system (208 V). Almost all lighting loads are single-phase loads.

single-phase system. Alternating current electric power using a system in which all the voltages of the supply oscillate in unison.

spider box. A distribution box that has single-pole locking connectors attached directly to a copper bus bar and serves as a splicing point on the feeder circuit.

studio generator. A portable or mobile generator designed for the entertainment industry with insulated housing to dampen sound and mounted cam-type connectors.

switch. A device that physically opens and closes the circuit.

switch mode power supply (SMPS). A switched-mode power supply (switching-mode power supply, SMPS, or switcher) is an electronic power supply that incorporates a switching regulator to convert electrical power efficiently. Non power-factor-corrected SMPSs cause harmonic distortion.

system grounding. Bonding one current carrying conductor of an electrical system (usually the neutral) to the electrical ground at the source of power.

three-phase system. An electrical power system in which the three phases are one third of a cycle (120 degrees) out of phase with one another.

transformer. An electrical device that transfers energy between two circuits by means of electromagnetic induction, commonly used to step voltage up or down.

triplen harmonics. Third order harmonics (3rd, 6th,9th,etc.) of the 60-Hz fundametal frequency caused by nonlinear loads..

UL listed. Equipment that has passed required safety testing by the Underwriters Laboratories.

volt. Unit used to quantify the difference in electrical potential between two points of a circuit.

voltage. May represent either a source of energy (electromotive force), or lost, used, or stored energy (potential drop). A voltmeter can be used to measure the voltage (or potential difference) between two points in a system; often a common reference potential such as the ground of the system is used as one of the points.

voltage drop. The reduction of voltage along a circuit from the source to the load.

waterfall. A vertical run of cable from the stage floor into the overhead structure.

watt. Unit used for the rate of energy transfer from electrical energy into output energy (light, movement or other energy).

wattage. The rated wattage of an electrical device is the output that can be expected at its rated voltage.

zone of protection. The space adjacent to a lightning protection system that is substantially immune to direct lightning flashes.