

GLOSSARY

ELECTRICAL TERMS COMMONLY USED IN THE APPLICATION OF THE CANADIAN ELECTRICAL CODE, PART I

The following terms are used extensively in the application of the *Canadian Electrical Code, Part I* (1998). Together with the terms related to electric phenomena they constitute a “culture literacy” for the electrical construction industry. Many of these definitions are quotations or paraphrases of definitions given by the *Canadian Electrical Code, Part I*; these have been marked with an *.

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

Bonding conductor:* A conductor that provides a low impedance path to ground. This path augments the normal earth path. A grounding conductor does not carry current except when a fault occurs between a current-carrying conductor and ground. The primary purpose of grounding conductors is to prevent the electric shock of personnel and animals. An example of a bonding connector is the grounding pin or blade on a cord attachment plug.

Branch-circuit:* The circuit conductors between the final overcurrent protection device protecting the circuit and the outlet(s).

Branch-circuit selection current (BCSC):* Refrigeration equipment may be marked with this value, which shall be at least 64.1 percent of the hermetic motor compressor’s maximum continuous current. This value must be used when selecting the conductor sizes, the disconnect switch, and short-circuit and overcurrent protective devices.

Circuit ampacity: The ampacity of the complete circuit, which would not be greater than the derated ampacity of the conductor or the rating of the conductor terminations.

Circuit breaker:* A device designed to open and close a circuit by manual means and to open the circuit automatically on a predetermined overcurrent. Circuit breakers may not be used as snap switches unless especially rated for this use.

Circuit rating: The ampere rating of the overcurrent protective device installed to protect the circuit.

Conductor:* A wire, either copper or aluminum or copper-clad aluminum, used as part of an electrical system. Except when noted otherwise, wire is encased in an electrical insulation as recognized by the *Canadian Electrical Code, Part I*. The exceptions are limited to grounding conductors and to grounded conductors installed on the supply side of the service.

Conductor ampacity: The ampacity of a conductor identified by type and size as given in *Canadian Electrical Code, Part I, Table 2*. This definition is not valid for all situations. See *derated ampacity* and *circuit ampacity*.

Continuous load:* For loads up to 225 amperes, any load that in normal operation is on for more than one hour in any two hour period is considered to be continuous. Larger loads are considered to be continuous if they are on for more than three hours in any six hour period.

Current-limiting fuse:* A fuse that will open significantly before the current caused by a fault reaches its maximum possible value (that is, in significantly less than 0.25 of a cycle). These fuses generally have silver links.

Derated ampacity: The ampacity of a conductor after the correction factors (*Canadian Electrical Code, Part I, Tables 5A and 5C*) have been applied.

Dual-element fuse: A fuse with separate interrupting means for overload currents and for short-circuit currents; frequently called a time-delay fuse or “Fusetron” (a trademark).

Fault: An inadvertent connection between any two conductors of an electrical system or any conductor and ground.

Feeder:* Any set of circuit conductors providing a connection between the service equipment and the branch-circuit overcurrent device(s).

Fuse: A disposable thermal device providing overcurrent protection. A fuse may be selected to provide short-circuit, overload, and current-limiting protection.

Ground:* The earth or any conducting body that serves in place of the earth, essentially establishing a universal point of equal potential. The term *ground* is also used to designate a conducting connection between an electrical circuit and the ground.

Ground-fault circuit-interrupter:* A device designed to detect a difference of about 5 milliamperes of current between the grounded and the ungrounded conductors of a two-wire branch-circuit. This device is intended for protection of personnel.

Ground-fault protection:* A device installed to provide protection of equipment by the detection of line-to-ground faults. Only required on wye-connected services with a rating of 1000 amperes or greater. These devices should be installed only by qualified personnel.

Grounded circuit conductor:* A current-carrying conductor that has been intentionally connected to ground. Although at the same

potential as the grounding conductor, these are separate systems and should not be interconnected except in the service equipment.

Intermediate metal conduit (IMC): Intermediate metal conduit is a raceway commonly used in the United States. It has an outer diameter slightly smaller than that of rigid metal conduit and a wall thickness approximately 60% that of rigid conduit. IMC uses the same fittings as rigid metal conduit and is threaded using standard pipe dies.

Interrupting rating:* A rating given to protective devices to indicate the highest current that the device can interrupt without damage to associated equipment—10 000 amperes is considered a low (poor) interrupting rating; 100 000 amperes is acceptable except in rare cases.

Maximum continuous current (MCC): A value that is determined by the manufacturer of hermetic refrigerant motor compressors under high-load (high refrigerant pressure) conditions. This value is established in the *Canadian Electrical Code, Part I*, as being no greater than 156 percent of the marked rated amperes or the branch-circuit selection current.

Neutral conductor:* A grounded circuit conductor in a system that provides two or more line voltages of equal magnitude.

One-time fuse: A fuse that is neither dual-element nor current-limiting. This fuse is in general the cheapest and offers less sophistication in circuit protection than other fuses.

Outlet:* A point on a branch-circuit where current is taken to supply utilization equipment.

Overcurrent protection: A device that provides protection from current in excess of the rating of the equipment or the ampacity of the conductors.

Overload protection: An overcurrent protective device that incorporates a delay that allows temporary overloads but will open the circuit should current in excess of the device rating persist for more than a brief period.

Panelboard:* An assembly including a metal cabinet and overcurrent protective devices with connecting bus bars. Accessible only from the front, they are usually installed on or in a wall.

Rated load current (RLA): A value determined by the manufacturer of the refrigeration equipment by actual operation (testing) at rated pressure and temperature conditions and voltage. RLA is usually 64.1 percent of the compressor's maximum continuous current. When the same hermetic refrigerant motor-compressor is designed into different manufacturers' models, the RLA rating of the products will most likely be different. See *maximum continuous current* and *branch-circuit selection current*.

Selective coordination: The selection of overcurrent protective devices with time-current characteristics such that the effects of a fault will be localized. This will minimize the interruption of equipment operation.

Service:* The conductors and equipment for delivering energy from the supply (utility) system to the wiring system of the premise being served. The service equipment always includes one to six overcurrent devices that can interrupt all electrical energy to the premises.

Short circuit: A connection between any two or more conductors of an electrical system in such a way as to significantly reduce the impedance of a circuit. When inadvertent, a short circuit is referred to as a "fault."

Short-circuit protection: An overcurrent protective device that responds instantly to short circuits, generally currents in excess of 600 percent of the circuit rating.

Switchboard:* A large, single-frame assembly that contains overcurrent protective devices and usually instruments such as energy meters. Generally accessible from the front and rear. Often used as service equipment in commercial buildings.

Ungrounded conductor: A conductor that has not been grounded, often referred to as a "hot" or line conductor. A potential difference may exist between an ungrounded conductor and the grounded conductor or between any two ungrounded conductors of an electrical system.

Unit substation: Similar to a switchboard except the unit substation will include high-voltage protective device(s) and transformer(s). The installation of a unit substation requires that special attention be given to noise control, ventilation, access for replacement, and the possibility of flooding or other exposure to moisture.