

IP Ratings and Definitions

IP Ratings, International Protection Rating, or International Protection Code, is a standard rating system that classifies the degrees of protection in electrical enclosures as defined in the international standard IEC 60529. An IP Rating consists of the letters IP followed by two digits. The first digit refers to intrusion by solid objects, while the second refers to intrusion by liquids. The following list details the ratings:

First digit: solids

- 0** No special protection
- 1** Protected against solid objects greater than 50 mm in diameter, such as the back of a hand.
- 2** Protected against solid objects greater than 12 mm in diameter, such as fingers or similar objects.
- 3** Protected against solid objects greater than 2.5 mm in diameter, such as tools or thick wires.
- 4** Protected against solid objects greater than 1 mm in diameter, such as small tools, screws, or thin wires.
- 5** Dust protected: Dust may be able to enter the equipment, but it must not enter in sufficient quantity to interfere with the operation of the equipment; complete protection against contact.
- 6** Dust tight: No ingress of dust; complete protection against contact.

Second digit: liquids

- 0** No special protection
- 1** Protected against vertically falling drops of water.
- 2** Vertically falling water has no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.
- 3** Protected against spraying water up to 60° from vertical.
- 4** Protected against splashing water from any direction, including water from a water jet.
- 5** Protected against low-pressure water projected by a nozzle from any direction.
- 6** Protected against high-pressure water projected by a nozzle, water similar to sea waves, or temporary flooding.
- 7** Protected against the effects of immersion up to 1 m. May not be watertight, but water may not enter the equipment in sufficient quantities to interfere with the operation of the equipment. The test lasts 30 minutes.
- 8** Protected against submersion beyond 1 m. This normally means that the equipment is watertight

Sources:

IEC: http://www.iec.ch/online_news/etech/arch_2009/etech_0109/technology_1.htm

Lamothe Approvals: <http://www.lamothe-approvals.com/Articles/ipratingsforequipment.htm>

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