



## Definition of IP Codes (Ingress Protection)

In the IEC (International Electrotechnical Commission) 60529 Standards document, it specifies an international classification system for the **sealing effectiveness of enclosures of electrical equipment against the intrusion into the equipment of foreign bodies (i.e., tools, dust, fingers) and moisture**. This classification system utilizes the letters "IP" ("Ingress Protection") followed by two digits. (An "X" is used for one of the digits if there is only one class of protection; i.e., IP X4 which addresses moisture resistance only.)

### 1. Degrees of Protection - First Digit

The first digit of the IP code indicates the degree that persons are protected against contact with moving parts (other than smooth rotating shafts, etc.) and the degree that equipment is protected against solid foreign bodies intruding into an enclosure.

- 0 No special protection
- 1 Protection from a large part of the body such as a hand (but no protection from deliberate access); from solid objects greater than 50mm in diameter
- 2 Protection against fingers or other objects not greater than 80mm in length and 12mm in diameter
- 3 Protection from entry by tools, wires, etc., with a diameter or thickness greater than 2.5mm
- 4 Protection from entry by solid objects with a diameter or thickness greater than 1.0mm
- 5 Protection from the amount of dust that would interfere with the operation of the equipment
- 6 Dust-tight

### 2. Degrees of Protection - Second Digit

Second digit indicates the degree of protection of the equipment inside the enclosure against the harmful entry of various forms of moisture (e.g. dripping, spraying, submersion, etc.).

- 0 No special protection
- 1 Protection from dripping water
- 2 Protection from vertically dripping water
- 3 Protection from sprayed water
- 4 Protection from splashed water
- 5 Protected against low-pressure jets from all directions - limited ingress permitted
- 6 Protected against direct sprays from all directions - limited ingress permitted
- 7 Protection against effects of immersion from 15cm to 1m
- 8 Protection against complete, continuous submersion in water from 15 meters or 50 feet

## IP Code Symbols

The chart below illustrates the use of special symbols in the IP classification system. In the "1st digit" columns, note the grid-like symbols next to numbers 5 and 6. In the "2nd digit" columns numbers 38 are symbolized by teardrop shaped symbols, sometimes enclosed in a box or a triangle, sometimes unenclosed (7-8).

*Example:*

