# IP CODE

## Enclosure Type Designation

Enclosures serve the dual purpose of protecting personnel from incidental contact with the enclosed electrical equipment and protecting the enclosed equipment against specified environmental conditions. Enclosures are rated for use in specific environmental conditions by international and national standards organizations. The major international rating system uses the IEC Enclosure Classification Designation.

## The IEC

Founded in 1906, the International Electrotechnical Commission (IEC) is the global organization that prepares and publishes international standards for all electrical and related technologies. The membership consists of more than 60 participating countries, including the USA and Canada. Central office of IEC is located in Geneva Switzerland. IEC web site: www.iec.ch

## International Standard IEC 60529

IEC International Standard 60529 “Degrees of protection provided by enclosures (IP Code)”
describes a system for classifying the degree of protection by the IP Code.

## IP Code

IP (Ingress Protection) Code is a coding system to indicate the degree of protection provided by enclosure against access to hazardous parts, ingress of solid foreign objects, ingress of water and to give additional information in connection with such protection. There are several different uses of IP Codes, as described in IEC 529. IP Codes can have the following arrangement:

1. First character only, such as IP 3X
2. Second character only, such as IP X4, or
3. Both characters, such as IP 34

The first character indicates the degree of protection against the ingress of solid foreign objects.
**First character** definitions are as follows:

0 - Non-protected
1 - Protected against solid foreign objects of 50 mm diameter and greater
2 - Protected against solid foreign objects of 12.5 mm diameter and greater
3 - Protected against solid foreign objects of 2.5 mm diameter and greater
4 - Protected against solid foreign objects of 1.0 mm diameter and greater
5 - Dust-protected
6 - Dust-tight

The second character of the IP Code indicates the degree of protection against the ingress of water with harmful effects.
**Second character** definitions are as follows:

0 - Non-protected
1 - Protected against vertically falling water drops
2 - Protected against vertically falling water drops as the enclosure is tilted 15 degrees
3 - Protected against spraying water
4 - Protected against splashing water
5 - Protected against water jetting
6 - Protected against powerful water jetting
7 - Protected against temporary immersion
8 - Protected against continuous immersion

The higher protection classification always takes precidence over the lower classification. Example: an enclosure with IP 67 code:
Totally protects persons against access to hazardous parts
(tested with a wire of 1,0 mm diameter)
Dust-tight enclosure, totally protects the equipment inside the enclosure against dust
(tested with talcum powder in suspension in a closed test chamber under pressure)
Waterproof enclosure, totally protects equipment inside the enclosure against water penetration
(tested by completely immersing the enclosure in a water tank for 30 min. 1 m deep)

*Note: IP rating will ONLY apply for properly installed equipment*