

## IP Enclosures

IP is an international standard for protection of an electrical apparatus including motors, pushbuttons, electronic devices, etc. It is designated by the letters IP followed by two numbers. The first number states the category of protection against operator contact and protection against intrusion of foreign objects. The second number states the category of protection against the entry of water. The following chart explains the categories of each protection.

### IP \_\_

Contact and Foreign Object Protection Categories		Water Protection Categories	
Numeral	Degree of Protection	Numeral	Degree of Protection
0	No special protection	0	No special protection.
1	Protection against the entry of solid foreign objects, having a diameter larger than 50mm (large foreign object) No protection against intended access, i.e. with the hand.	1	Protection against vertically falling drip water. No harmful effects are allowed (drip water).
2	Protection against the entry of solid foreign objects having a diameter larger than 12mm (medium-sized foreign object). Protection for fingers or similar objects.	2	Protection against vertically falling drip water. When the enclosure is tipped up to an angle to 15° from its normal position, there should be no harmful effects (drip water falling at an angle).
3	Protection against the entry of solid foreign objects having a diameter larger than 2.5mm (small foreign object). Protection for tools, wires or similar objects that are thicker than 2.5mm.	3	Protection against water which falls at an angle of up to 60° from the vertical. No harmful effects are allowed (automized water).
4	Protection against the entry of solid foreign objects having a diameter larger than 1mm (grain-type foreign object). Protection for tools, wires or similar objects that are thick than 1mm.	4	Protection against water which sprays against the equipment from all directions. No harmful effects are allowed (spray water).
5	Protection against harmful dust deposits. The entry of dust is not totally prevented but the entry of dust is not allowed in such quantities that the operation of equipment will be impaired (dust protection). Complete contact protection.	5	Protection against water from a hose which is directed on the enclosure from all directions. No harmful effects are allowed (hose directed water).
6	Protection against the entry of dust (dustproof). Complete contact protection.	6	Protection against strong seas or strong water jets. Entry of water into the enclosure in harmful amounts is not allowed (overflow).
		7	Protection against water when the enclosure is dipped in water under given pressure and time conditions. Entry of water onto the enclosure in harmful amounts is not allowed. (submersion).
		8	The enclosure is suitable for constant submersion in water under given conditions which are determined by the manufacturer (submersion).