



SOFT CONTROL INTEGRATION

Information document related to the IP rating on enclosures .

An IP number is often used when specifying the environmental protection afforded by enclosures around electronic equipment. These ratings refer to specific tests. The IP number is made up of two components as follows: IP44 The first number refers to the protection against solid objects and the second against liquids. The higher the number the better the protection. (see below for a summary).

IP Protection Number Summary

FIRST NUMBER

- 0 No protection
- 1 Protected against solid objects up to 50mm eg accidental touch by hands
- 2 Protected against solid objects up to 12mm eg fingers
- 3 Protected against solid objects up to 2.5mm (tools and wires)
- 4 Protected against solid objects up to 1mm (small tools and wires)
- 5 Protected against dust, limited ingress (no harmful deposit)
- 6 Totally protected against dust

SECOND NUMBER

- 0 No protection
- 1 Protection against vertically falling drops of water eg condensation
- 2 Protection against direct sprays of water up to 15 degrees from vertical
- 3 Protection against direct sprays of water up to 60 degrees from vertical
- 4 Protection against water sprayed from all directions - limited ingress permitted
- 5 Protected against low pressure jets of water from all directions - limited ingress permitted
- 6 Protected against low pressure jets of water (use on shipdeck)- limited ingress permitted
- 7 Protected against the effect of immersion between 15cm and 1m
- 8 Protected against long periods of immersion under pressure

Note that there is a third number which is commonly omitted which refers to protection against mechanical impacts.



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Additional information on the IP rating of enclosures.

NEMA/IP Number Definitions

NEMA-#:

- 1: General Purpose (Indoor)
- 2: Water Drip Proof (Indoor)
- 3R: Dust Tight, Rain Tight, and Ice Resistant (Outdoor)
- 4: Water Tight and Dust Tight (Indoor/Outdoor)
- 4X: Water Tight, Dust Tight, and Corrosion Resistant (Indoor/Outdoor)
- 9: Indoor Hazardous Locations (Not Applicable to EMS Equipment)
- 12: Industrial Use - Dust Tight and Drip Tight (Indoor)
- 13: Oil Tight and Dust Tight (Indoor)

Example: NEMA-4 is water tight and dust tight indoor and outdoor.

IP##:

(First #)	(Second #)
0: No Special Protection	0: No Special Protection
1: Protected Against Solid Objects > 50 mm in Diameter	1: Protected Against Dripping Water
2: Protected Against Solid Objects > 12 mm in Diameter	2: Protected Against Dripping Water When Tilted Up to 15° C From Normal Position
3: Protected Against Solid Objects > 2.5 mm in Diameter	3: Protected Against Spraying Water
4: Protected Against Solid Objects > 1 mm in Diameter	4: Protected Against Splashing Water
5: Dust Protected	5: Protected Against Water Jet Spray
6: Dust Tight	6: Protected Against Heavy Jet Spray
	7: Protected Against the Effects of Immersion
	8: Protected Against Submersion

Example: IP54 is dust protected, and protected against splashing water.