

International Protection Codes (IP)

IP numbers are used to specify the environmental protection of enclosures around electronic equipment.

First Number

- 0 - No protection (sometimes X)
- 1 - Protected against solid objects up to 50mm²
- 2 - Protected against solid objects up to 12mm²
- 3 - Protected against solid objects up to 2.5mm²
- 4 - Protected against solid objects up to 1mm²
- 5 - Protected against dust, limited ingress (no harmful deposit)
- 6 - Totally protected against dust

Second Number

- 0 - No protection (sometimes X)
- 1 - Protected against vertically falling drops of water (i.e. condensation)
- 2 - Protected against direct sprays of water up to 15° from vertical
- 3 - Protected against direct sprays of water up to 60° from vertical
- 4 - Protected 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, limited ingress permitted (i.e. ship deck)
- 7 - Protected against the effect of immersion between 15cm and 1m
- 8 - Protected against long periods of immersion under pressure

Sensor Reference Information

Environmental Protection Code Description

NEMA

National Electrical Manufacturers Association (NEMA) Standards Publication No. 250 guidelines are as follows:

- NEMA 1 Indoor Use Protects against accidental contact by personnel and falling dirt
- NEMA 2 Indoor Use Protects against falling dirt, liquid and light splash
- NEMA 3 Outdoor Use Protects against rain, sleet, snow, dirt and dust
- NEMA 3A Outdoor Use Protects against rain, sleet, snow, dirt and ice buildup
- NEMA 4 In- or Outdoor Protects against dirt, dust, hosedown and heavy splash
- NEMA 4X In- or Outdoor Protects against dirt, dust, hosedown and prolonged submersion
- NEMA 6 In- or Outdoor Protects against dirt, dust, hosedown and occasional submersion
- NEMA 6P In- or Outdoor Protects against dirt, dust, hosedown and prolonged submersion
- NEMA 7 Indoor Use For use in areas of explosive gases or vapors or combustible dust
- NEMA 9 Indoor Use For use in areas of atmospheres containing combustible dust
- NEMA 12 Indoor Use Protects against dirt, dust, light splash and oil or coolant seepage
- NEMA 13 Indoor Use Protects against dirt, dust, light splash and oil or coolant spray

