

IP / NEMA CLASSIFICATIONS OF PROTECTION

IP CLASSIFICATIONS

Ingress protection class of enclosures is according to IEC 60 529 given in form of IP classification, a two digit coding which is shown below.

NEMA/UL CLASSIFICATIONS

The National Electrical Manufacturers Association (NEMA) is a US Manufacturers organisation. NEMA performance criteria and test methods are used by Underwriters' Laboratories as guidelines for investigation and listing of electrical enclosures.

FIRST NUMBER Protection against solid objects		SECOND NUMBER Protection against liquids		NEMA	
0	No protection.	0	No protection.	1	Indoor use primarily to provide a degree of protection against contact with the enclosed equipment and against a limited amount of falling dirt.
1	Protected against solid objects up to 50mm eg accidental touch by hands.	1	Protected against vertically falling drops of water.	2	Indoor use to provide a degree of protection against limited amounts of falling water and dirt.
2	Protected against solid objects up to 12mm eg fingers.	2	Protected against direct sprays of water up to 15° from the vertical.	3	Outdoor use to provide a degree of protection against windblown dust, rain and sleet; undamaged by the formation of ice on the enclosure.
3	Protected against solid objects up to 2,5mm eg (tools + small wires).	3	Protected against sprays up to 60° from the vertical.	3R	Outdoor use to provide a degree of protection against rain and sleet; undamaged by the formation of ice on the enclosure.
4	Protected against solid objects up to 1mm eg (tools + small wires).	4	Protected against water sprayed from all directions - limited ingress permitted.	3S	Outdoor use to provide a degree of protection against windblown dust, rain and sleet; external mechanisms remain operable while ice laden.
5	Protected against dust - limited ingress permitted (no harmful deposit).	5	Protected against low pressure jets of water from all directions - limited ingress permitted.	4	Indoor or outdoor use to provide a degree of protection against splashing water, windblown dust and rain, hose directed water; undamaged by the formation of ice on the enclosure.
6	Totally protected against dust.	6	Protected against strong jets of water eg for use on shipdecks - limited ingress permitted.	4X	Indoor or outdoor use to provide a degree of protection against splashing water, windblown dust and rain, hose directed water; undamaged by the formation of ice on the enclosure. Resists corrosion.
		6NW	Protected against strong jets of water eg for use on shipdecks - no ingress permitted.	6	Indoor or outdoor use to provide a degree of protection against the entry of water during temporary submersion at a limited depth; undamaged by the formation of ice on the enclosure.
		7	Protected against the affects of immersion between 15cm and 1m.	6P	Indoor or outdoor use to provide a degree of protection against the entry of water during prolonged submersion at a limited depth.
		8	Protected against long periods of immersion under pressure.	11	Indoor use to provide by oil immersion a degree of protection of the enclosed equipment against the corrosive effects of corrosive liquids and gases.
		9	Protected against close-range high pressure, high temperature spray downs.	12/12K	Indoor use to provide a degree of protection against dust, falling dirt and dripping noncorrosive liquids.
				13	Indoor use to provide a degree of protection against dust, and spraying of water oil and noncorrosive coolants.