



MK Electric's Guide to Ingress Protection

Ingress Protection ratings – based on the international standard IEC 60529 – provide classification of a device in terms of the level of protection provided against the insertion of solid objects (for example fingers or dust) and water into enclosures. The intention is to provide users with details of performance, rather than vague descriptions such as waterproof or splashproof.

An IP rating consists of two digits: the first from zero to six and the second from zero to eight.

The first number refers to the size of object that could enter an enclosure and compromise any device within.

The second indicates the level of protection afforded against liquids. The following tables detail the actual ratings and what they protect against:

IP – solids and objects: Level	Protected against:
0	No protection against contact and ingress of objects.
1	Objects greater than 50mm, such as any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part.
2	Objects greater than 12.5mm, like fingers.
3	Objects greater than 2.5mm, like tools or thick wires.
4	Objects greater than 1mm, like most wires, nails etc.
5	Dust protected, insofar as it's not completely sealed but dust cannot enter in sufficient quantity to interfere with the satisfactory operation of the equipment. Also complete protection against contact.
6	Dust tight: No ingress of dust and complete protection against contact.

IP – moisture and water: Level	Protected against
0	Not protected
1	Dripping water
2	Dripping water when tilted up to 15°
3	Spraying water
4	Splashing water
5	Water jets (from a 6.3mm nozzle) from any direction.
6	Powerful water jets (12.5mm nozzle) from any direction.
7	Immersion up to 1 m
8	Immersion beyond 1 m

With regards to the IP ratings for moisture and water, 7 and 8 are not likely to be encountered in everyday life, and would normally need clarification from the manufacturer as to actual time limits for immersion and applicable depths.