IP CODES

This Guide gives basic information about the IP (International Protection) code, based on information given in *BS EN 60529: 1992 + A2: 2013 – Degrees of protection provided by enclosures* (IP code), where you can find further details if necessary.

BS EN 60529 describes a system for classifying the degree of protection given by enclosures of electrical equipment. This is to protect:

a) persons against 'access to hazardous parts inside an enclosure', and

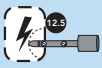
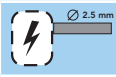
b) equipment inside an enclosure against the 'ingress of solid foreign objects or dust' and 'the harmful effects from ingress of water or moisture'.

Electrical equipment enclosures are specified in the form IPXX. As appropriate, the 'first' and/or 'second' X is replaced by a number as shown in Tables 1 and 2, respectively, of this guide.

As an example, for IP2X, the 2 (from Table 1) defines an enclosure giving protection against ingress of solid foreign objects with a diameter of 12.5 mm, and from a finger being inserted and accessing hazardous parts; the X means there is no protection against ingress of water specified.

A letter A, B, C or D, as shown in Table 3, is sometimes added after 1st and 2nd numbers. the designation IPXX followed by a letter, means that the first and second numbers are not specified, and the letter denotes the degree of protection provided against access to live parts.

FIRST NUMBER OF IP CODES (TABLE 1)

1st number	Protection of equipment inside the enclosure against ingress of solid objects or dust		Protection of persons against access to hazardous (live or moving) parts inside the enclosure
0	No protection		No protection
1	50 mm diameter solid foreign object		Back of hand
2	12.5 mm diameter solid foreign object		Finger Standard joint test (12 mm diameter, 80 mm length)
3	2.5 mm diameter solid foreign object		Tool
4	1.0 mm diameter solid foreign object		Wire
5	Dust protected		Wire
6	Dust-tight		Wire

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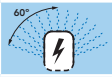
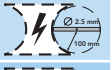
SECOND NUMBER OF IP CODE (TABLE 2)

2nd number	Protection of equipment inside the enclosure against ingress of water with harmful effects	
0	No protection	
1	Vertically falling water drops, such as from condensation from surfaces above the enclosure	
2	Vertically falling water drops when the enclosure is tilted at any angle up to 15° from the vertical	
3	Water sprayed at any angle up to 60° on either side of the vertical	
4	Water splashed against the enclosure from any direction	
5	Water jets projected against the enclosure from any direction, such as from hosepipes	
6	Powerful water jets projected against the enclosure from any direction, such as from power jet sprays, or sea waves	
7	'Temporary' immersion of enclosure in water under specified conditions	
8	'Continuous' immersion of enclosure under specified conditions	
9	Water at high pressure and temperature against the enclosure from any direction, such as from steam cleaning	

Equipment enclosures of an installation need to be correctly selected, installed and maintained to meet the requirements of *BS 7671*, and the manufacturer. For example, an enclosure needs to have an appropriate IP code, and impact resistance against any likely mechanical damage. Cable glands fitted to an enclosure also need to have an IP code at least equal to that of the enclosure.

Covers of an enclosure need to be securely fixed, and access doors left tightly shut.

ADDITIONAL LETTER OF IP CODE (TABLE 3)

Letter	Protection of persons against access to hazardous (live or moving) parts inside the enclosure	
A	Back of hand (50 mm diameter)	
B	Standard jointed test finger (12 mm diameter, 80 mm length)	
C	Tool 2.5 mm diameter,100 mm length	
D	Wire 1.0 mm diameter, 100 mm length