

IP (Ingress Protection) Codes


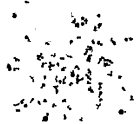

IEC 60529 outlines an international classification system for the sealing effectiveness of enclosures of electrical equipment against the intrusion into the equipment of foreign bodies (i.e., tools, dust, fingers) and moisture. This classification system utilizes the letters “IP” (“Ingress Protection”) followed by two digits. (An “X” is used for one of the digits if there is only one class of protection; i.e., IPX4 which addresses moisture resistance only.)

Degrees of Protection—First Digit

The first digit of the IP code indicates the degree that persons are protected against contact with moving parts (other than smooth rotating shafts, etc.) and the degree that equipment is protected against solid foreign bodies intruding into an enclosure.

Degrees of Protection—Second Digit

Second digit indicates the degree of protection of the equipment inside the enclosure against the harmful entry of various forms of moisture (e.g. dripping, spraying, submersion, etc.).

					
0	No special protection	No special protection	0	No special protection	
1	Protection from a large part of the body such as a hand (but no protection from deliberate access)	Protection from solid objects greater than 50mm in diameter	1	Protection from vertically dripping water	
2	Protection against fingers	Protection against objects greater than 12.5mm	2	Protection from vertically dripping water (15° tilted)	
3	Protection from entry by tools, wires, etc., with a diameter or thickness greater than 2.5mm	Protection against solid objects up to 2.5mm diameter	3	Protection from sprayed water	
4	Protection from entry by solid objects with a diameter or thickness greater than 1.0mm	Protection from entry by solid objects with a diameter or thickness greater than 1.0mm	4	Protection from splashed water	
5	Protection against tools and wires greater than 1.0mm in diameter	Protection from the amount of dust that would interfere with the operation of the equipment	5	Protection from jetting water	
6	Protection against tools and wires greater than 1.0mm in diameter	Dust-tight	6	Protection from powerfully jetting water	
<p style="text-align: center;">Rating Example:</p> <div style="display: flex; justify-content: center; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 5px 10px;">I</div> <div style="border: 1px solid black; padding: 5px 10px;">P</div> <div style="border: 1px solid black; padding: 5px 10px; background-color: #e0f0ff;">6</div> <div style="border: 1px solid black; padding: 5px 10px;">9</div> </div>			7	Protection against temporary immersion	
			8	Protection against complete, continuous submersion in water	
			9	Protection against high pressure/steam jet cleaning*	

* The reference for #9 is only in DIN 40050-9. All other IP ratings are in IEC 60529.