



Protective Vents

IP RATINGS

Ingress Protection (IP) Classification

The Ingress Protection (IP) standard defines a system of classifying protection for electronic equipment, devices, or components. IP protection is specified in the IEC 60529: “Degrees of Protection Provided by Enclosures” standard by the European Committee for Electro Technical Standardization.

This standard specifies the protection an enclosure provides against solid objects and liquids. IP ratings consist of two numbers in the format IPxy (Table1):

- The first number (x) indicates protection against solid objects
- The second number (y) identifies the level of liquid protection

The liquid ratings are not linear. Instead, each number in the rating specifies a different type of protection and does not necessarily meet the previous level of protection. For example, an enclosure with an IPx8 rating protects against a long period of immersion under pressure, but does not address high-pressure spray as defined by IPx6.

TABLE 1: INGRESS PROTECTION RATING FORMAT: IP X Y

		Type of Protection	
		Protection Against Foreign Solid Object (x)	Protection Against Liquid (y)
Level of Protection	0	No protection	0 No protection
	1	Solid foreign objects (≥ 50 mm in diameter)	1 Drops of water or condensation falling vertically on an enclosure
	2	Solid foreign objects (≥ 12.5 mm in diameter)	2 Water sprayed at an angle up to 15° on either side of vertical
	3	Solid foreign objects (≥ 2.5 mm in diameter)	3 Water sprayed at an angle up to 60° on either side of vertical
	4	Solid foreign objects (≥ 1.0 mm in diameter)	4 Water splashed against the enclosure from any direction
	5	Dust entry is limited so that operation of the apparatus or safety is not compromised	5 Water projected in low-pressure jets against the enclosure from any direction
	6	No dust particulates enter the enclosure	6 Water projected in high-pressure jets against the enclosure from any direction
			7 Temporary immersion in 1 meter of water for 30 minutes
			8 Continuous immersion under conditions agreed upon between the buyer and seller; Gore tests at 2 meters of water for 60 minutes
			9k Steam directed at a high pressure against the enclosure from any direction

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