

# NEMA and IP Ratings for Industrial Instrumentation

## NEMA Ratings

The NEMA Rating system is a standard primarily used in North America for rating enclosures. The table below shows the equivalent IP ratings. NEMA standards meet or exceed the IP ratings listed, but the reverse cannot be assumed.

NEMA Rating	Description	Equiv. IP Rating
1	GENERAL PURPOSE. Intended for use indoors.	IP 10
2	GENERAL PURPOSE. Intended for use indoors with additional drip protection.	IP 11
3 & 3S	GENERAL PURPOSE WEATHER-RESISTANT. Intended for use outdoors with protection from windblown dust, rain and sleet, and undamaged by the formation of ice.	IP 54
3R	GENERAL PURPOSE WEATHER-RESISTANT. Intended for use outdoors with protection from falling rain and sleet, and undamaged by the formation of ice.	IP 14
4 & 4X	GENERAL PURPOSE WEATHER-PROOF. Intended for use indoors or outdoors with protection from wash down environment and corrosion resistance.	IP 65
5	GENERAL PURPOSE DUST-TIGHT. Intended for use indoors or outdoors with protection from dust provided by gaskets.	IP 52
6 & 6P	GENERAL PURPOSE SUBMERSIBLE. Intended for use indoors or outdoors with protection from occasional submersion.	IP 67
7	HAZARDOUS. Intended for indoor use in Class I, Groups A, B, C, and D environments per NFPA rating system.	
8	HAZARDOUS. Intended for indoor or outdoor use in Class I, Groups A, B, C, and D environments per NFPA rating system.	
9	HAZARDOUS. Intended for indoor or outdoor use in Class II, Groups E, F, and G environments per NFPA rating system.	
12 & 12K	INDUSTRIAL USE. Intended for use in industrial applications with protection from dust and non corrosive liquid drip.	IP 52
13	INDUSTRIAL USE. Intended for use in industrial applications with protection from dust, spraying water, oil and non corrosive liquid drip.	IP 54

## IP Ratings

The IP Rating system (or International Protection Code) is a worldwide standard for rating enclosures. The rating is written as IP-"XY" where X and Y are replaced by the first and second digits as listed in the tables below.

**Degree of protection from contact or foreign body**

First Digit	Brief Description
0	No special protection. Generally not used for pressure or temperature instruments.
1	
2	
3	Protected against solid objects > 2.5 mm in diameter
4	Protected against solid objects > 1.0 mm in diameter
5	Dust protected
6	Dust-tight

**Degree of water protection**

Second Digit	Brief Description
0	No special protection. Generally not used for pressure or temperature instruments.
1	Protected against dripping water
2	Protection against dripping water when case is tilted up to 15°
3	Protected against spraying water
4	Protected against splashing water
5	Protected against a water jet
6	Protected against heavy jet spray
7	Protected against limited submersion
8	Protected against continuous submersion

