

Product Group: Environmental Protection Ratings  
 Number: AN-GEN-002

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**Title:** IP Environmental Protection Rating

**Summary:** Describes the Ingress Protection (IP) Environmental Protection Rating system levels and commonly found IP Ratings.

**IP Rating Descriptions**

1<sup>st</sup> Digit: Protection against ingress of solid objects.

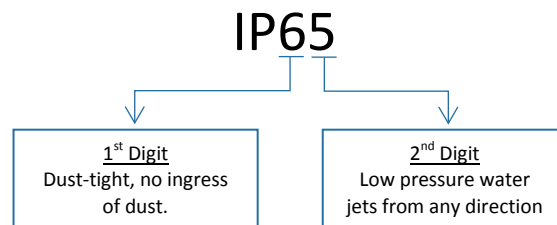
2<sup>nd</sup> Digit: Protection against ingress of liquids.

First Digit: Solid Object Protection		Second Digit: Liquid Protection	
0	No protection	0	No protection
1	Over 50mm (e.g. back of hand)	1	Vertically falling drops of water.
2	Over 12.5mm (e.g. finger)	2	Falling drops of water, when angled up to 15° from vertical
3	Over 2.5mm (e.g. tools)	3	Spraying water, when angled up to 60°
4	Over 1.0mm (e.g. wire)	4	Splashing water from any direction
5	Dust-protected. Dust shall not penetrate in a quantity enough to interfere with satisfactory operation of the apparatus or to impair safety	5	Low pressure water jets from any direction
6	Dust-tight, no ingress of dust	6	Powerful water jets from any direction
		7	Temporary immersion in water
		8	Continuous immersion in water

Table 1

**Example:**

We are given a device with an IP65 rating. To determine its level of protection, we would check the above chart to find the solid object protection (1<sup>st</sup> Digit) and the liquid protection (2<sup>nd</sup> Digit).



**These rating descriptions are not complete representations of IP standards and are intended to be used only as a guide to help you select the proper equipment for the environments where it will be installed. It is up to the customer to validate code compliance.**

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### Common IP Ratings

Below are some common IP ratings and their protections from solid object ingress and liquid ingress.

	1 <sup>st</sup> Digit: Solid Object Ingress Protection	2 <sup>nd</sup> Digit: Liquid Ingress Protection
00	No protection	No protection
20	Over 12.5mm (e.g. finger)	No protection
32	Over 2.5mm (e.g. tools)	Falling drops of water, when angled up to 15° from vertical
40	Over 1.0mm (e.g. wire)	No protection
50	Dust-protected. Dust shall not penetrate in a quantity enough to interfere with satisfactory operation of the apparatus or to impair safety	No protection
54	Dust-protected. Dust shall not penetrate in a quantity enough to interfere with satisfactory operation of the apparatus or to impair safety	Splashing water from any direction
55	Dust-protected. Dust shall not penetrate in a quantity enough to interfere with satisfactory operation of the apparatus or to impair safety	Low pressure water jets from any direction
65	Dust-tight, no ingress of dust	Low pressure water jets from any direction
66	Dust-tight, no ingress of dust	Powerful water jets from any direction
67	Dust-tight, no ingress of dust	Temporary immersion in water
68	Dust-tight, no ingress of dust	Continuous immersion in water
69	Dust-tight, no ingress of dust	High pressure water spray at close range

Table 2

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