

Ingress protection is one of the key priorities when selecting the right industrial connector for your chosen application. Connectors are often used in demanding environments, where they will be regularly exposed to the elements; as such, buyers require reassurance that the components they select will be able to withstand these conditions, without the system being compromised.

The international **IP (Ingress Protection) Code** is the rating system that has been developed to provide this crucial information. IP ratings provide a reliable benchmark of the IP performance of mechanical casings and electrical enclosure products, helping users to recognise at a glance whether a component will perform safely and reliably under specific conditions.

If you are evaluating industrial connectors and other components, it is therefore essential to check the IP ratings and ensure you have a clear understanding of what they mean. To help with this, Northern Connectors has created this complete guide to IP Code ratings, providing all the information you will need to make use of them.

What are IP ratings?

When selecting an industrial connector, most buyers will be keen to find products that offer protection against dust, moisture, water or intrusion from other foreign objects. However, the degree of protection will inevitably vary from connector to connector, depending on the shape, design, fastening mechanism and cost of the product in question.

The purpose of IP ratings are to provide a standardised worldwide measurement of the exact degree of protection provided, assigned based on rigorous testing by local and international regulators. The IP Code is published and overseen by the International Electrotechnical Commission as part of its IEC 60529 standards, and the ratings are aligned with local regulations in most regions, including the UK and EU.

By reading an IP rating, you will be able to get a clear and specific understanding of exactly how much protection and resistance a connector can be expected to deliver, providing insights above and beyond what can be learned from a basic “dustproof” or “waterproof” labelling.

How to read IP ratings

IP ratings are simple to understand, generally consisting of four letters or digits with a specific meaning. Read from left to right, they can be understood as follows:

IP

Code letters (standing for International Protection)

6

First digit denotes the level of **protection against solid particles and foreign objects**

7

Second digit denotes the level of **protection against water and moisture**

To learn about the specific degree of protection denoted by each digit, consult the table below:

First digit (protection against solid particles and foreign object)		Second digit (protection against water and moisture)	
X	Not tested or rated for protection of this type	X	Not tested or rated for protection of this type
0	No protection against solid particles or foreign bodies	0	No protection against water or moisture
1	Protection against contact by hand, or large solid foreign bodies with a diameter greater than 50mm	1	Protection against damage from vertically-dripping water, including condensation
2	Protection against contact by fingers, or any foreign bodies with a diameter greater than 12mm	2	Protection against damage from vertically-dripping water, when the enclosure is tilted up to 15° off its standard vertical orientation
3	Protection against tools, wires or similar thin solid objects with a diameter greater than 2.5mm	3	Protection against damage from direct diagonal water sprays, when the enclosure is tilted up to 60° off its standard vertical orientation
4	Protection against fine tools, nails, screws, large insects or other solid objects with a diameter greater than 1mm	4	Protection against damage from splashing water from any direction
5	Full protection against all contact, and partial protection against damage from any amount of dust	5	Protection against damage from low-pressure jets of water, from a nozzle size of up to 6.3mm, from any direction
6	Complete vacuum-sealed protection against dust or any other solid particles	6	Protection against damage from powerful jets of water, from a nozzle size of up to 12.5mm, from any direction, and against water penetration in temporary flooding conditions
7		7	Protection against damage when temporarily immersed in water for up to 30 minutes, at depths of between 15cm and 1m
8		8	Protection against damage from long-term immersion in water under high pressure, with parameters specified by the manufacturer
9K*		9K*	Protection against damage from high-pressure, high-temperature jet sprays, wash-downs or steam-cleaning processes

* This classification is not part of the original IEC 60529 standards, and instead part of the ISO 20653 standards that have since been adopted into the standardised IP rating system



Find out **More**

Selecting a connector with the right IP rating is essential for ensuring that your systems are fully protected in any environmental and weather conditions, and that your components are able to operate safely and reliably for extended periods, without the need for maintenance.

If you have any further questions about IP ratings and ingress protection, get in touch with the expert team at Northern Connectors. We are specialist providers of industrial connectors and components, working with leading manufacturers and clients from multiple sectors, and will be able to answer any queries you may have.

Give us a call on 01744 815 001 for information and technical advice on any aspect of ingress protection, or fill in our [online contact form](#).