

High protection against dust and moisture

Protection against dust particles and moisture is becoming increasingly important. More and more applications are calling for optimized solutions in this area. The IP protection class provides information on how well a product is protected in this aspect.



SCHURTER 6080: socket outlet with associated cable for IP54 in plugged-in state (available as of summer 2022)

The abbreviation IP stands for "International Protection". In the English-speaking world, however, it is almost exclusively translated as "Ingress Protection". These IP protection classes define the degree of protection of the housing against contact, foreign objects and water. But be careful: The IP protection class must be clearly distinguished from the electrical protection class. The electrical protection classes describe measures against voltages dangerous to touch on parts of equipment that are not under voltage during operation

How to read the IP code?

The IP protection class, often also called IP code, consists of two digits. The first digit stands for protection against the ingress of foreign objects or against contact. The second digit indicates protection against moisture. Example: IP 65, where the first digit 6 means "dust-tight" and the second digit 5 means protection against "strong jets of water".

So the higher these two digits, the higher the protection of the component. The following table shows the individual IP codes and their exact meaning.

What IP protection do you need?

As we can see from the table, the range of possible IP protection levels is high. It ranges from IP00 to IP69k. Two extremes that definitely find their applications, but are not to be discussed in detail here.

In addition, you should primarily focus on the plugged-in state. That is, when the device plug and cable socket are connected to each other. In the unplugged state, higher IP protection ratings are often achieved and also indicated as such, but they only correspond to the actual application to a limited extent.

IP xy	Meaning for the protection of equipment	Meaning for the protection of persons
	Against ingress of solid foreign objectif	Against access to hazardous parts with
x = 0	(non protected)	(non protected)
x = 1	50 mm diameter	back of hand
x = 2	12.5 mm diameter	finger
x = 3	2.5 mm diameter	tool
x = 4	1.0 mm diameter	wire
x = 5	dust protected	wire
x = 6	dust tight	wire
	Against ingress of water with harmful effects	
y = 0	(non protected)	
y = 1	vertically dripping	
y = 2	dripping (15° tilted)	
y = 3	spraying	
y = 4	splashing	
y = 5	jetting	
y = 6	powerful jetting	
y = 7	temporary immersion	
y = 8	continuous immersion	
y = 9K	high pressure, i.e. steam jet cleaning	

Industry applications

Ever stricter equipment standards and increasing customer requirements are leading equipment manufacturers to demand products with a higher degree of IP protection. In modern industrial plants, where moisture and dust are to be expected, IP54 is often installed today, but only IP20 in protected control cabinets. Examples include cobots (collaborative robots), which assist their operators in harsh environments.

Medical applications

In the medical field, a high IP protection rating is almost always mandatory. This

is simply due to the need to regularly clean and disinfect medical devices that come into contact with liquids, and even to sterilize them if necessary. In such applications, a degree of protection of IP54, sometimes even IP65 or even higher, is desired. An ideal application is found in medical laboratories, where work is constantly carried out with liquids.

Food processing

In addition to the medical sector, reliable IP protection is an important feature in food processing equipment. One conceivable application here would undoubtedly be in (large) bakeries, where a lot of flour and similar particles float around in the air.

IP54 = excellent Protection

IP54 in plugged-in state in the industry, where moisture and a large number of dirt particles must be expected, is mandatory standard. IP54 provides excellent dust protection for particles of all sizes and is splash-proof.

Cord retention classic way

With mobile devices, e.g. analysis devices, diagnostic devices or laboratory devices in medical technology, mobile measuring equipment or devices in the food industry, there is a risk of unintentional disconnection of the power cord. A large number of medical devices as well as those in the food industry are mounted on mobile transport trolleys. This circumstance significantly increases the risk of unintentional unplugging.

To prevent this, various types of cord retention devices are available. The most common but not the most elegant type are safety clips, which are mounted on the appliance plug and pressed over the appliance socket. Depending on the type of appliance plug and the variety of shapes of appliance sockets, the right choice of bracket shape must be made here.

However, this bracket system ensures that the socket is inserted correctly, i.e. sufficiently deep, and secondly that any IP protection of e.g. IP 54 is ensured by means of an inserted flat gasket. The safety of an IP-protected power supply always requires careful selection of the device plug, sealing kit, power cable and cord retention device.

Cord retention V-Lock

The definitely more elegant solution is called V-Lock. It also works in cases where only a cord retention is required, i.e. without an increased IP protection rating of the plug connection. With this system, the cable socket engages with a latch in the device plug and thus prevents unintentional disconnection. The latch is released again by finger pressure on the release lever.

SCHURTER 6080 with dedicated cordset

Parts of the SCHURTER IP54-family available as of summer 2022 are the appliance inlet 6080 and the corresponding cordset. The blue color of the V-Lock cable socket already indicates that something is different here. The plug and cordset have been trimmed with special sealing elements to provide IP54 protection when



SCHURTER 5707: IEC appliance inlet C14 or C18 with filter, degree of protection IP65 into the appliance and safety clip

plugged in. This is a completely new design. The additional effort with separate sealing elements and the safety clips are completely eliminated. Insert the device plug, snap in the matching cordset, and you are IP54-protected.

Type 6080 will be followed by others. SCHURTER is going to equipping a complete family of device connections with this new technology.

About SCHURTER

The SCHURTER Group is a globally successful Swiss technology business. With our components ensuring the clean and safe supply of power, input systems for ease of use and sophisticated overall solutions, we impress our customers with agility and excellent product and service quality.

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Reference

[Datasheet SCHURTER 6080](#)