DIN EN 60529 / ISO 20653 | IP Degrees of Protection

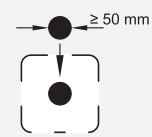
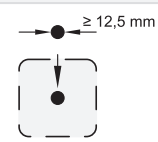
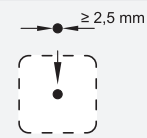
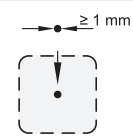
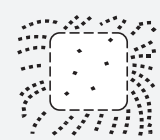
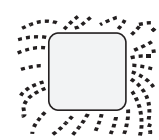
Extract

The IP code indicates the degrees of protection of a housing and is made up of two identification numbers. The first identification number indicates the protection against access to hazardous parts and ingress of foreign bodies; the second identification number indicates protection against ingress of water. The abbreviation IP stands for International Protection, but is also referred to informally as Ingress Protection.

Protection class and testing conditions for housings are defined in DIN EN 60529. ISO 20653 contains further identification numbers with special requirements for vehicle equipment. These are marked with a K.

The degrees of protection of the two identification numbers are classified in protection levels of different strengths. Higher protection levels generally include those below them. Water protection levels 7 / 8 / 9 / 9K are an exception. The lower degree of protection must be specified separately for these, if necessary.

IP code structure 1 2 IP 6 9		
	1	First identification no.
	2	Second identification no.

First identification no.		Protection	
DIN EN 60529	ISO 20653	against access to hazardous parts	against ingress of foreign objects
0		not protected	not protected
1		protected against access with the back of the hand	protected against foreign objects Ø ≥ 50 mm 
2		protected against access with a finger (Ø12 mm, length 80 mm)	protected against solid foreign objects Ø ≥ 12.5 mm 
3		protected against access with a tool (Ø ≥ 2.5 mm, length 100 mm)	protected against solid foreign objects Ø ≥ 2.5 mm 
4		protected against access with a wire (Ø ≥ 1.0 mm, length 100 mm)	protected against solid foreign objects Ø ≥ 1 mm 
5	5K		protected against dust (ingress of dust just in quantities which does not impair function / safety) 
6	6K		dust-tight 

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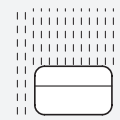
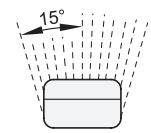
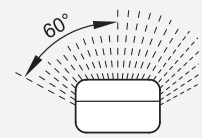
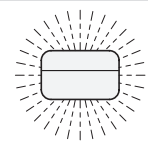
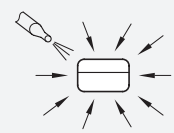
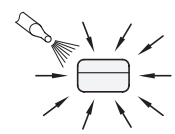
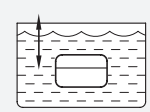
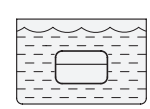
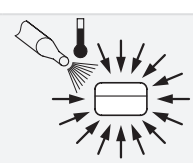
Second identification no. DIN EN 60529	Second identification no. ISO 20653	Protection against harmful ingress of water	
0		no protection	
1		Protection against vertical dripping water	
2		Protection against dripping water falling at an angle of up to 15°	
3		Protection against dripping water falling at an angle of up to 60°	
4		Protection against water splashing on all sides / splash water	
-	4K	Protection against water splashing on all sides / splash water with increased pressure	
5		Protection against high-velocity water striking from any angle	
6		Protection against strong high-velocity water striking from any angle	
-	6K	Protection against strong high-velocity water striking from any angle under high pressure	
7		Protection against temporary submersion in water (up to 30 minutes, 1 m deep)	
8		Protection against continuos submersion in water (≥ 30 minutes, ≥ 1 m deep, upon agreement)	
9	9K	Protection against water in high-pressure and steam jet cleaning	

Examples

Ganter's line includes products with a wide range of IP codes. Some examples are listed in the following.

IP code	Protection	Products
IP40	- against access to hazardous parts with a wire - against ingress of foreign bodies Ø ≥ 1.0 mm - not protected against water ingress	- GN 251.2 Setting bolts, with end limit switch - GN 615.7 Spring plungers, with limit switch
IP65	- against access to hazardous parts with a wire - dust-tight - against jets of water striking from any angle	- GN 115 / GN 515 Latches - GN 9053 Position indicators - GN 628.5 Cabinet U-handles with switching function
IP66	- against access to hazardous parts with a wire - dust-tight - against high-velocity water striking from any angle	- GN 7330 / GN 7332 Gripping trays - GN 1150 Latches - GN 115 Latches in A4 (Type DK / VK7 / VK8 / VDE)
IP67	- against access to hazardous parts with a wire - dust-tight - against temporary immersion in water	- GN 422 Cabinet U-handles with switching function - GN 3310 Switches - GN 9053 Position indicators
IP65 / IP67	- against access to hazardous parts with a wire - dust-tight - against jets of water striking from any angle - against temporary immersion in water	GN 3380 Sensor
IP69K*	- against access to hazardous parts with a wire - dust-tight - against water in high-pressure and steam jet cleaning as per ISO 20653	GN 115 Latches (Type AD7 / AV8 / AZ13)
IP67 / IP69K*	- against access to hazardous parts with a wire - dust-tight - against temporary immersion in water - against water in high-pressure and steam jet cleaning as per ISO 20653	GN 139.1 / GN 139.5 Hinges with safety switch

* IP69K is a short form for the combination of the first identification no. 6K and the second identification no. 9K from ISO 20653