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Ingress Protection - IP Grades of Protection

IEC 60309 - CEE 17 devices are provided with different grades of protection as indicated in the table below. The IP standard rating system defines the degree of protection provided. The first digit defines the protection against the ingress of dust particles, the second digit defines the protection against the ingress of water. The table below outlines IP rating for electrical connectors.

IP 44 **IP 55** **IP 67**

1st Digit	Definition — Solids
0	No Protection against contact and ingress of objects
1	Protected against any large surface of the body, such as the back of a hand. Protected against solid objects greater than 50mm in size.
2	Protected against access to hazardous parts by a finger or similar object. Protected against solid objects greater than 12.5mm in size.
3	Protected against access to hazardous parts with a tool or thick wire. Protected against solid objects greater than 2.5mm in size.
4	Protected against access to hazardous parts with a wire, screw, etc. Protected against solid objects greater than 1mm in size.
5	Protected against access to hazardous parts. Dust protected.
6	Protected against access to hazardous parts. Dust-tight.

2nd Digit	Definition — Liquids
0	No Protection
1	Protected against water drops
2	Protected against water drops at a 15 degree angle
3	Protected against water spray at 60 degree angle
4	Protected against water splashing from any angle
5	Protected against water jets from any angle
6	Protected against powerful water jets and heavy seas
7	Protected against the effects of temporary submersion in water. Test requires 30 minutes at 1 meter depth.
8	Protected against the effects of temporary submersion. Customer specification applies and specific testing may be required.

Product Features

IEC 60309 devices are manufactured in Polyamide 6, which provides effective insulation and has extremely high impact resistance strength.

Products have standard sizes and positions of flanges and contacts. This makes for full interchangeability of plugs and sockets of the same type possible, even of plugs and sockets of different manufactures.

The position on the earth contact varies according to the voltage rating and polarity. This makes it impossible to connect plugs and sockets of different current ratings and voltage.

Industrial plugs and sockets are color coded, which prevents confusion about voltage and current ratings.

RATED VOLTAGE COLOR

110-130 Volt Yellow
200-250 Volt Blue
380-415 Volt Red
120/208-144/250 Volt Blue
220/380-240-415 Volt Red

Available on request are:

440 volt & 500 volt devices.
Marine & shipboard container devices.
Combination switched outlet devices.

IEC 60309 PIN & SLEEVE WIRING DEVICES
Configuration Electrical Ratings
Configuration Weatherproof Rating Chart - See Page 196

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IEC 60309 - CEE 17 configurations are HEAVY DUTY plugs and receptacles of a pin and sleeve design and have a specific rating for each configuration. They are not interchangeable with configurations of a different rating. Unlike “NATIONAL” type plug and receptacle configurations that are used in a general geographic area or specific country, the IEC 60309 - CEE 17 are recognized in many countries of the world for use on heavy duty equipment. This recognition and acceptance in various countries allows electrical equipment manufacturers to standardize on plugs and receptacles used on heavy duty equipment intended for domestic and export markets.
IEC 60309 - CEE 17 devices are rated 16 ampere, 32 ampere, 63 ampere, 125 ampere in 100/130 volts, 200/250 volts, 380/415 volts and are available in 2 pole 3 wire, 3 pole 4 wire and 4 pole 5 wire grounding configurations. These units are approved by various testing and standards agencies and are ideal for application on large computers, machine tools, welders, industrial enviroments and equipment.

Position of Grounding (Earth) Contacts

Plugs are provided with a nose (key) and this key mates with the keyway of the outlet. This ensures that the contacts are correctly aligned. The position of the grounding contact relative to the keyway depends on the electrical rating of the plug and outlet. The grounding contact positions are related to the hours of a clock, as shown below.
The grounding contact pin has a larger diameter than the other pins. This prevents the possibility of mating the ground pin to a phase contact.

VOLTAGE	FREQUENCY (HERTZ)	NUMBER OF POLES	POSITION OF GRND. (EARTH) CONTACT	COLOR
100-130 V	50/60	2P+E (2 POLE 3 WIRE GROUNDING)	4H	YELLOW
200-250 V	50/60	2P+E (2 POLE 3 WIRE GROUNDING)	6H	BLUE
380-415 V	50/60	2P+E (2 POLE 3 WIRE GROUNDING)	9H	RED
200-250 V	50/60	3P+E (3 POLE 4 WIRE GROUNDING)	9H	BLUE
380-415 V	50/60	3P+E (3 POLE 4 WIRE GROUNDING)	6H	RED
120/280 V 144/250 V	50/60	3P+N+E (4 POLE 5 WIRE GROUNDING)	9H	BLUE
200/346 V 240/415 V	50/60	3P+N+E (4 POLE 5 WIRE GROUNDING)	6H	RED

Clock face position of the protective contact and colour indicator
Viewed from the front of the connector sockets to the contact socket

	4 h	9 h	6 h	11 h	7 h	5 h	12 h	1 h	10 h	2 h	3 h	8 h
FREQUENCY (Hz)	50-60	50-60	50-60	60	50-60	50-60	50-60	–	100-300	OVER 300 TO 500	50-60	
VOLTAGE (V)	57/100 TO 75/130	120/208 TO 144/250	200/346 TO 240/415	250/400 TO 265/460	277/480 TO 288/500	347/600 TO 400/690		OVER 50	OVER 50	OVER 50	220/380 TO 250/440 16 + 32 A	
5-pole 3-pole + N + ⏚												
VOLTAGE (V)	100-130	200-250	380-415	440-460	480-500	600-690	VOLTAGE ACCORDING TO ISOLATING TRANSFOR-MER*		OVER 50	OVER 50	380-440 ONLY FOR 16 + 32 A 1)	
4-pole 3-pole + ⏚												
VOLTAGE (V)	100-130	380-415	200-250		480-500	277*	VOLTAGE ACCORDING TO ISOLATING TRANSFOR-MER*		*		OVER 50 TO 250 DC	OVER 250 DC
3-pole 2-pole + ⏚												

63 A + 125 A plug connections with pilot contact