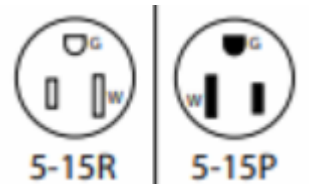
Plugs and Receptacles

Sources: 1

Quick reference

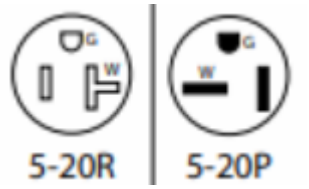
120V 15 amp circuits

Normal 15 amp grounded circuits use 5-15P plugs and 5-15R receptacles



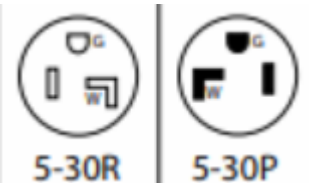
120V 20 amp circuits

5-20P plugs and 5-20R receptacles



120V 30 amp

These are typically going to require twist-lock style plugs and receptacles



The chart below shows various plug and receptacle types.



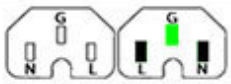
The chart below shows all plug and receptacle types for various voltage and current scenarios.

NEMA Configurations Chart

North American Non-Locking Plugs and Receptacles

VOLTAGE	NEMA	15 AMPERE		20 AMPERE		30 AMPERE		50 AMPERE		60 AMPERE	
		RECEPTACLE	PLUG	RECEPTACLE	PLUG	RECEPTACLE	PLUG	RECEPTACLE	PLUG	RECEPTACLE	PLUG
125V	1	 1-15R	 1-15P		 1-20P		 1-30P				
250V	2		 2-15P	 2-20R	 2-20P	 2-30R	 2-30P				
125V	5	 5-15R	 5-15P	 5-20R	 5-20P	 5-30R	 5-30P	 5-50R	 5-50P		
250V	6	 6-15R	 6-15P	 6-20R	 6-20P	 6-30R	 6-30P	 6-50R	 6-50P		
277V	7	 7-15R	 7-15P	 7-20R	 7-20P	 7-30R	 7-30P	 7-50R	 7-50P		
125/ 250V	10			 10-20R	 10-20P	 10-30R	 10-30P	 10-50R	 10-50P		
3Ø250V	11	 11-15R	11-15P	11-20R	11-20P	11-30R	11-30P	11-50R	11-50P		
125/ 250V	14	14-15R	14-15P	14-20R	14-20P	14-30R	14-30P	14-50R	14-50P	14-60R	14-60P
3Ø250V	15	15-15R	15-15P	15-20R	15-20P	15-30R	15-30P	15-50R	15-50P	15-60R	15-60P
3ØY 120/208V	18	18-15R	18-15P	18-20R	18-20P	18-30R	18-30P	18-50R	18-50P	18-60R	18-60P

International Standards IEC 60320

Connector (female)	Appliance inlet (male)	Configuration Female/Male	Earth contact	International		North America		Max. pin temp. (°C)
				Max. current (A)	Voltage (V)	Max. current (A)	Voltage (V)	
C1	C2		No	0.2	250	10	125	70
C5	C6		Yes	2.5	250	10	125	70
C7	C8		No	2.5	250	10	125	70
C9	C10		No	6	250	/	125	70
C13	C14		Yes	10	250	15	125/250	70
C15	C16		Yes	10	250	15	125/250	120
C15A	C16A		Yes	10	250	15	125/250	155
C17	C18		No	10	250	15	125/250	70
C19	C20		Yes	16	250	20	125/250	70
C21	C22		Yes	16	250	20	125/250	155
C23	C24		No	16	250	20	125/250	70

Among the connector types, C13, C15 and C19 are the most commonly used ones in data centers. Details are listed in the table below:

Connector Type	Configuration	Max. Current/Voltage	Max. pin temp. (°C)	Common Application
C13		10A/250V	70	C13 connectors commonly work with inlets on computers and devices that can be attached to computers.
C15		10A/250V	120	C15 receptacles are for use in high temperature settings, such as electric kettles, computer networking closets, and PoE switches with high wattage power supplies.
C19		16A/250V	70	C19 connectors are common for devices that require higher current than which can be por-vided by C13 and C15 connec-tors. Typical applications are on enterprise-class servers, data center rack-mounted power distribution units (PDUs) and chassis switches

IEC 60320 power cords uses even number for plug and odd number for the mating receptacle, and usually male appliance inlet is 1 higher than the sheet for the corresponding female cable connector. Therefore the most common used power cord types is C14 to C13 and C20 to C19. Other common power cord types also include C14 to C15 and C20 to C15.



C14 to C13



C20 to C15



C20 to C19

North American: NEMA 5-15P (Type B)

The NEMA standards are commonly adopted in most North American countries and some countries that follow NEMA standard. Among the NEMA 5-15P plug are the most widely used in sockets. They are three-wire circuits (hot, neutral and ground), and are rated at 15 A at 250 V, although they usually carry 110 V.

Nema 5-15 standard

NEMA 5-15P to NEMA 5-15R power cord is the most common type. The NEMA 5-15P stands for the plug, and the NEMA 5-15R stands for the receptacle. Other frequently used power cord types that use NEMA 5-15 plug include NEMA 5-15P to C13 and NEMA 5-15P to C15.

common nema 5-15p power cords

Europe: CEE 7/7 (Type E, Type F)

CEE 7/7 is now the de facto plug standard in many European countries, and in some countries that follow CENELEC standard. European countries that do not use CEE 7/7 are Denmark (AFSNIT 107-2-D1), Ireland, Italy (CEI 23-50), Malta (BS 1363), Cyprus (BS 1363), Gibraltar (BS 1363) and Switzerland (SEV 1011). The most popular power cords that adopt CEE 7/7 plug include CEE 7/7 to C13, CEE 7/7 to C15, and CEE 7/7 to C19.

common cee7-7 power cords

Other Standards: JIS C 8303, AS/NZS 3112 etc.

Some other countries also have their own plug standard. For example, Australian standard AS/NZS 3112 (Type I), Brazilian standard NBR 14136 and Japanese standard JIS C 8303 (Type A, B), etc. But one common thing is that they might all adopt the IEC 60320 connector standard.

plug standards in different countries

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