

Important Differences & Similarities in Argentine, Australian, & Chinese 10A/250V Plugs & Sockets



These plugs and sockets might have obvious similarities, but there are distinct differences you need to know.

Contents

Overview	3
Australia	5
Argentina	7
China	8
How Interpower Marks its Products Concerning Standard/Safety Agency Requirements	9
Conclusion	11

Overview

As their standard plug, Australia, Argentina, and China all use the Class I, 10A/250VAC plugs with an Alternate Current (AC) cycle of 50Hz. (Fig. 1) All three countries have similar plug patterns and all use the international color code for the conductors of the cable. Conductor colors are: green/yellow (ground/earth), light blue (neutral), and brown (line). (Fig. 2) And both Australia and Argentina plugs are connected to H05VV-F cable (Harmonized, 300/500VAC, PVC, Flexible cable) while the China cable is RVV (PVC insulated flexible cable under GB/T 5023.5 and IEC 60227-5. (Fig. 3) So how compatible are these plugs and sockets?

While China and Argentina have similar plug patterns, the line and neutral contact pins for these plugs are reversed on the face of the plug—the Australian and Argentinian line and neutral are also opposite each other. (Fig. 2) Manufacturers must consider these wiring differences when exporting electrical products to all three of these countries due to similar patterns and components.

Fig. 1: Alternating Current (AC) Wave

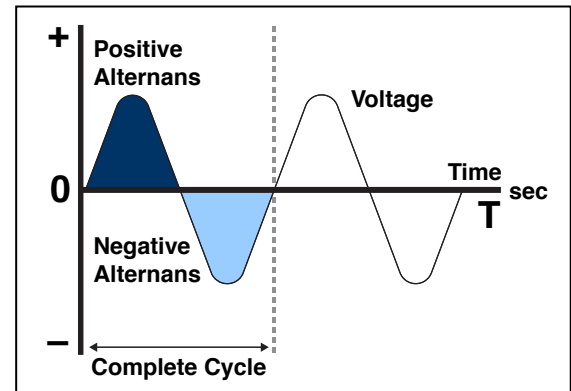


Fig. 2: Conductor Color and Pin Orientation

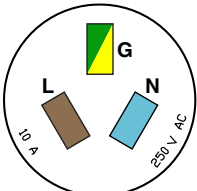

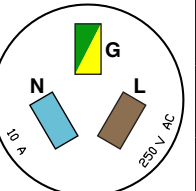

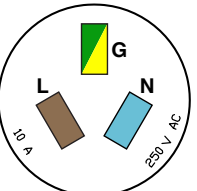







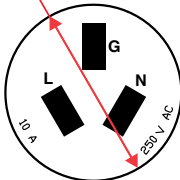
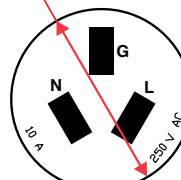
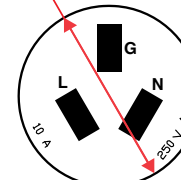
Australia			Argentina			China		
	Ground/Earth			Ground/Earth			Ground/Earth	
	Neutral			Neutral			Neutral	
	Line			Line			Line	

Fig. 3: Cable Types

Australia
H05VV-F Harmonized, 300/500V PVC, Flexible Cable
Argentina
H05VV-F Harmonized, 300/500V PVC, Flexible Cable
China
RVV PVC insulated flexible cable, 300/500V under GB/T 5023.5

Fig. 4: Plug Diameters

Australia	Argentina	China*
Diameter: 38 mm +/- 0.3 	Diameter: Max 44 mm 	Diameter: 37 mm 

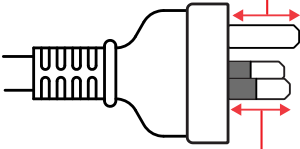
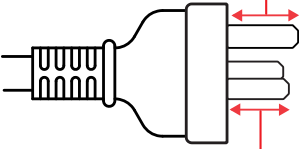
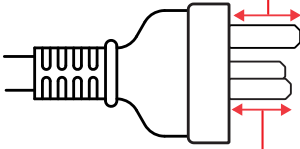
Per Australian standards, the plug diameter will be 38 mm +/- 0.3; per Argentine standards, the plug diameter will be at maximum 44 mm + 0.15 -0.0. (Fig. 4)

* Although Interpower specifies a diameter for our Chinese plug molds, the Chinese standard says the outline of the plug is not specified, but that no part of the pins shall be less than 6.5 mm from the edge of the plug.

Overview Continued

However, there are anomalies if trying to pair one country's plug to another's socket: though the Chinese line and neutral pins are 1 mm longer than its Australian counterpart (18 to 17 mms respectively), the Australian plug will fit the Chinese socket. Interpower **Does Not Authorize** the use of country-specific plugs with another country's country-specific socket unless authorized by their respective agencies. (Fig. 5)

Fig. 5: Pin Length

Australia	Argentina	China
<p>Ground/Earth Pin Length: 19.94 +/- 0.8 mm</p>  <p>Line/Neutral Pin Length: 17.06 +/- 0.4 mm</p>	<p>Ground/Earth Pin Length: 21.4 +/- 0.2 mm</p>  <p>Line/Neutral Pin Length: 18.2 +/- 0.2 mm</p>	<p>Ground/Earth Pin Length: 21 +/- 0.42 mm</p>  <p>Line/Neutral Pin Length: 18 +/- 0.35 mm</p>

Australia



Australian plugs and sockets are described in **AS/NZS 3112**. The standard plug and socket rating is 10A, but 15A and 20A models are also available. The cord sets can be terminated with a variety of IEC 60320 connectors such as the C13. Contact Customer Service regarding other connector options.

IEC 60320 C13 Connector Angles

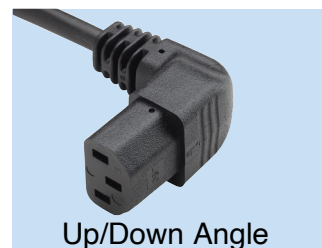
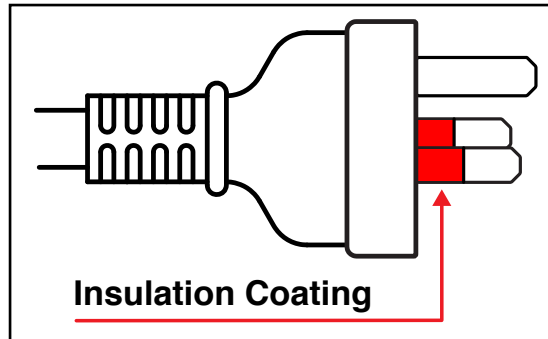


Fig. 6: Argentina Plug Design

Diameter	Pin Length	Conductor Colors	
<p>Diameter: 38 mm +/- 0.3</p>	<p>Ground/Earth Pin Length: 19.94 +/- 0.8 mm</p> <p>Line/Neutral Pin Length: 17.06 +/- 0.4 mm</p>		<p>Ground/Earth</p>
			<p>Neutral</p>
			<p>Line</p>

Australia Continued

Fig. 7: Insulated Line & Neutral Blades

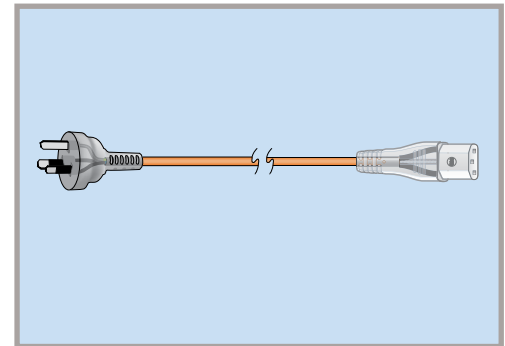


According to AS/NZS 3112: "The material for plug pins shall be copper, or an alloy containing 58% copper for parts made from cold-rolled sheet, or at 50% for other parts." Stainless steel can also be used if containing at least 13% chromium but not more than 0.09% carbon. Since 2000, the Australian standards require the line and neutral blades of the plug to contain insulation (Fig. 7).

Insulation for Australian pins cannot be lacquered, enameled or sprayed with insulation coating. Except for ceramics, all insulating materials of a plug shall comply with AS/NZS 3112, clause 2.13.11: **Determination of Ignitability and Combustion Propagation**, that "Plugs shall comply with the requirements for resistance to fire in accordance with AS/NZS 3100 for equipment designated 'attended' or 'unattended.' The glow-wire test temperature (T) shall be 650°C." The designation can be found in AS/NZS 3100, Annex B (B3.3).

Australia requires approval of plugs and connectors through any one of its state run certification bodies after being tested at an accredited testing laboratory. Test reports are then submitted to the proper Australian province. Only then will they issue a certificate. *Approval is not referenced by an approval mark as with other agencies*, but instead the approval file number must be on the part.

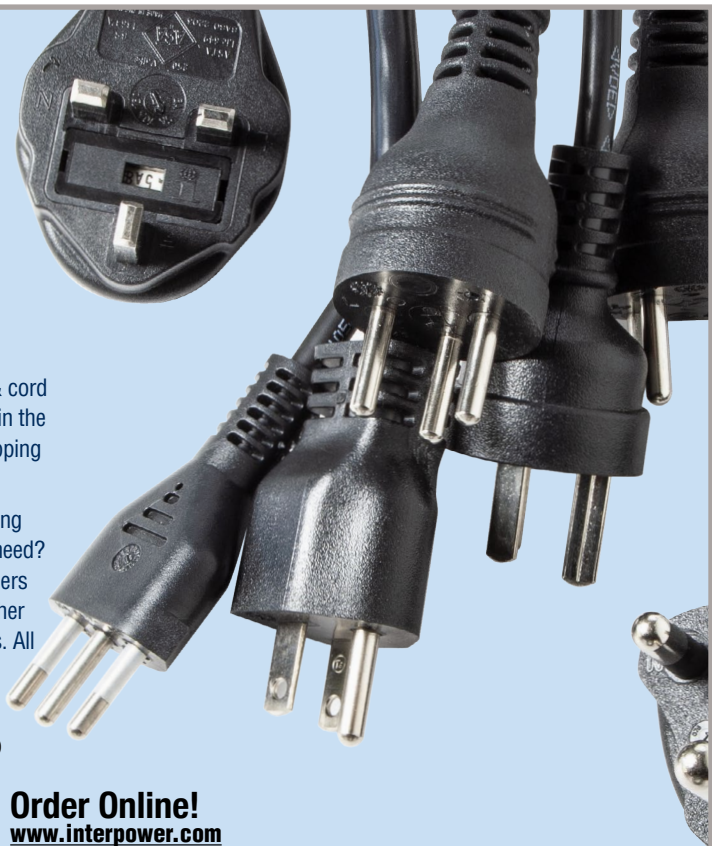
Australian medical equipment needs to meet the AS/NZS 3200 standard. There are no special requirements for molded plugs, only preferences. All Australian plugs must be approved to the AS/NZS 3112 standard. In Australian medical applications, it is preferred by some hospitals to have a clear molded plug with an orange, flexible cable. **Per the AS/NZS 3200.1**, if a plug must be replaced with a hand-wired plug, or a hand-wired plug is used on an original assembly, the medical equipment standard requires the hand-wired plug to be clear.



North American & International Cord Sets Made in the U.S.A!

Interpower® manufactures reliable state-of-the-art electrical cords & cord sets for global markets—fast. These cords and cord sets are made in the U.S.A., and come with 1-Week U.S. Lead-Times and Same Day Shipping on in-stock cord sets.

With congested ports and rising freight costs in maritime and trucking sectors, why wait weeks or months for the electrical cord sets you need? Interpower can help you design for global markets providing end users with the correct connections to the local mains power supply. Whether ordering 1 cord or 5,000, Interpower provides customized solutions. All Interpower cords are tested in both design and production phases.



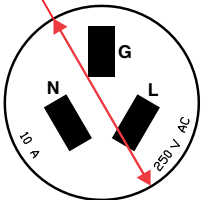
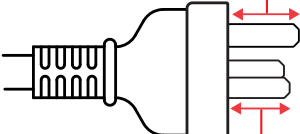
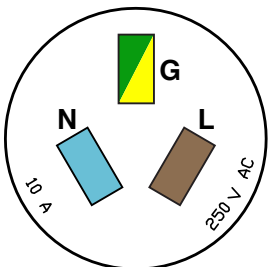









Argentina



Argentina 10A/250VAC rewirable plugs are white, and molded plugs can be any color except clear. Their cables range from 0.75 mm² to 1.0 mm². According to Argentine standards, the plug diameter will be at maximum 44 mm +0.15 -0.0*, and its grounding or earthing pin must be 21.4 mm +/- 0.2 in length*. The line and neutral pins are 18.2 mm +/- 0.2*. The plug's pins are constructed of nickel-plated brass. The three conductor colors are brown, blue, and green-yellow*.

* See Fig. 8

Fig. 8: Argentina Plug Design

Diameter	Pin Length	Conductor Colors							
<p>Diameter: Max 44 mm</p> 	<p>Ground/Earth Pin Length: 21.4 +/- 0.2 mm</p>  <p>Line/Neutral Pin Length: 18.2 +/- 0.2 mm</p>		<table><tr><td>Ground/ Earth</td><td></td></tr><tr><td>Neutral</td><td></td></tr><tr><td>Line</td><td></td></tr></table>	Ground/ Earth		Neutral		Line	
Ground/ Earth									
Neutral									
Line									

The thermoplastic plug's operational temperature range is from -5°C to 35°C. The recommended maximum cable diameter for the plug is 8.5 mm. Argentina requires the plug and connector be approved by **IRAM** and bear that marking, as well as the **Argentine product safety mark (S)**.

The standard plug for Argentina is defined by **IRAM 2073**. **IRAM** is the standards agency for Argentina. The Argentine plug, which is used in Class I applications in Argentina, is similar in appearance to the Australian plug. However, this plug differs greatly from the Australian plug—the pins are one millimeter longer, the body dimensions change slightly and most importantly, the wiring differs—the positions of the line and neutral contact pins are reversed. For this reason, great care must be taken when manufacturing equipment for export to both Australia and Argentina, as well as specifying the correct cord or cord set for use with equipment.

The cable type is H05W-F with a standard length of 8.2 feet. The Argentine cord set is terminated with various IEC connectors rated at 10A. All cord sets carry the appropriate approvals. The 10A/250VAC plug also has a flammability rating through the glow-wire test at 750°C.



Plug
IRAM Marking



Connector
IRAM Marking



Argentine Product
Safety Mark

China



China Quality Certification Center (CQC) Marking



China Compulsory Certification (CCC) Marking

Environmental Markings

Markings may be placed on the product or on the packaging label.

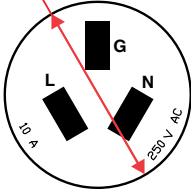
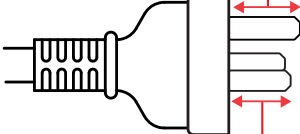
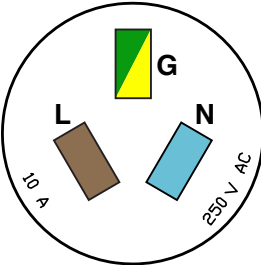











China Environmental Marking:
Safe Use 10 yrs.



China Environmental Marking:
Product Contains Less than Maximum
Value of Hazardous Substances

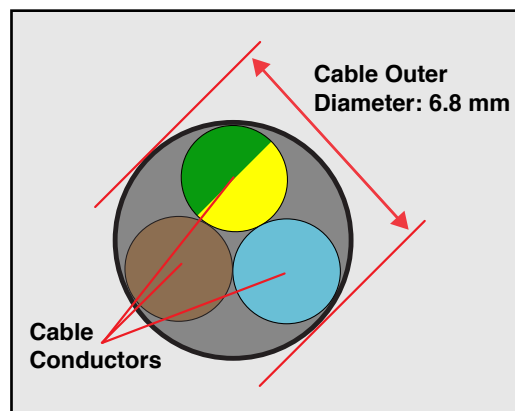
Fig. 9: China Plug Design

Diameter	Pin Length	Conductor Colors							
<p>Diameter: 37 mm</p> 	<p>Ground/Earth Pin Length: 21 +/- 0.42 mm</p>  <p>Line/Neutral Pin Length: 18 +/- 0.35 mm</p>		<table><tr><td>Ground/ Earth</td><td></td></tr><tr><td>Neutral</td><td></td></tr><tr><td>Line</td><td></td></tr></table>	Ground/ Earth		Neutral		Line	
Ground/ Earth									
Neutral									
Line									



Interpower's Chinese 10A/250VAC rewirable plug is two-tone: black on the back and clear on the pin side. Its molded plugs are black only. The plug is 37 mm in diameter. Its grounding/earthing pin is 21 mm, and the line and neutral pins 18 mm (Fig. 9). Conductor size is 1.0 mm². China requires that plugs, connector couplers, and cable used in the construction of the Chinese cord sets be successfully tested by the **China Quality Certification (CQC)** center to meet approval for **China Compulsory Certification** to bear its "CCC" mark.

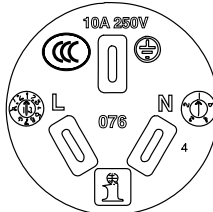

The cable type is RVV with a standard length of 8.2 feet. It has three conductors—brown, blue, and green-yellow. The cable's outer diameter is 6.8 mm (Fig. 10). The common connector type is IEC 60320 C13.

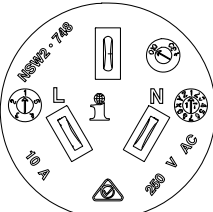

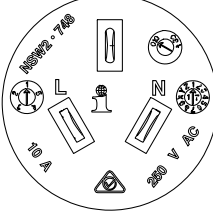

Figure 10: China Cable



How Interpower Marks its Products Concerning Standard/Safety Agency Requirements

Argentina	
Type Reference 031	
	 10A 250~ Made in USA

China	
Type Reference 076	
	 10A 250~

Australia	
Type Reference 010	
	 10A 250~ NSW23748
Type Reference 025 (Clear Medical Version)	
	 10A 250~ NSW23748

Type Reference:

Interpower Type Reference numbers are mostly internal for our traceability, but they are also what is referenced on our approval documentation by the agencies for identification.


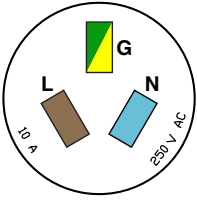
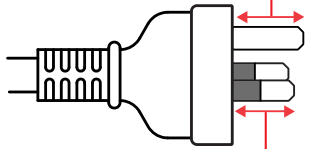



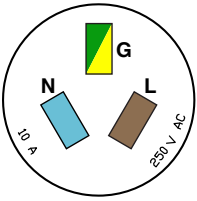
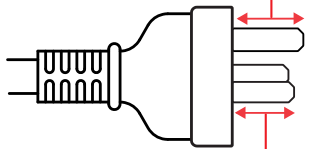



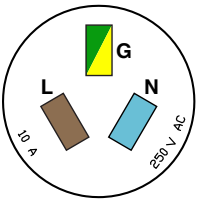
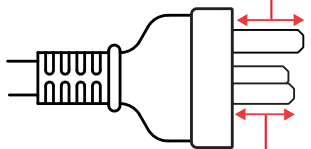


Australia Type 010 & 025:

The 010 is the standard plug. The 025 is the clear medical version, which is a different resin compound. The approval agency references them separately, since the compound is different. Other than the different compound, they are identical.

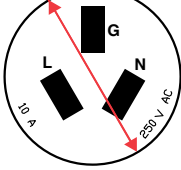
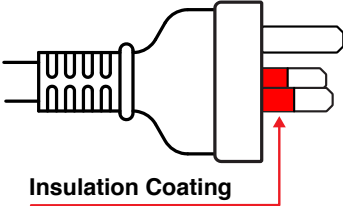
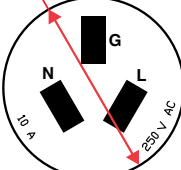


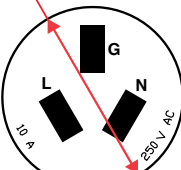

Conclusion

Approvals are a major difference between these three products and a key in why one cord set cannot be used in one of the other locations. Failure to use the appropriate approved cord set in these locations is not authorized and would void the certification of the cord.

Australia, Argentina, China Plug Comparison Chart

Country	Conductor Colors		Pin Orientation	Pin Length
Australia	Ground/Earth			 Ground/Earth Pin Length: 19.94 +/- 0.8 mm Line/Neutral Pin Length: 17.06 +/- 0.4 mm
	Neutral			
	Line			
Argentina	Ground/Earth			 Ground/Earth Pin Length: 21.4 +/- 0.2 mm Line/Neutral Pin Length: 18.2 +/- 0.2 mm
	Neutral			
	Line			
China	Ground/Earth			 Ground/Earth Pin Length: 21 +/- 0.42 mm Line/Neutral Pin Length: 18 +/- 0.35 mm
	Neutral			
	Line			

Australia, Argentina, China Plug Comparison Chart (Continued)

Country	Diameter*	Pin Insulation	Cable Types**	Markings
Australia	Diameter: 38 mm +/- 0.3 	Insulated Line & Neutral Blades 	H05VV-F Harmonized, 300/500V PVC, Flexible Cable	Approval is not referenced by an approval mark as with other agencies, but instead the approval file number must be on the part.
Argentina	Diameter: Max 44 mm 	Not Applicable	H05VV-F Harmonized, 300/500V PVC, Flexible Cable	 Plug IRAM Marking  Argentine Product Safety Mark
China	Diameter: 37 mm 	Not Applicable	RVV PVC insulated flexible cable, 300/500V under GB/T 5023.5	 China Compulsory Certification (CCC) Marking

* Although Interpower specifies a diameter for our Chinese plug molds, the Chinese standard says the outline of the plug is not specified, but that no part of the pins shall be less than 6.5 mm from the edge of the plug.

** Examples of cable types Interpower uses on our Australia, Argentina, and China cords and cord sets.



Blanket or Scheduled Orders

Lock in a specific quantity price break with a blanket or scheduled order for Interpower products.

Blanket Orders

Order a specific quantity of an Interpower product (e.g. 1,000 cord sets), lock in a price, and request shipments as needed throughout a 1-year time frame. Quantities and delivery dates may vary, according to the company's needs.

Scheduled Orders

Orders may be placed with pre-determined quantities and delivery dates over a 1-year period. For example: place an order for 1000 cord sets and request to have 250 delivered on January 15, April 15, July 15, and October 15.

No Minimum Order or Dollar Requirements

Interpower offers same day shipments on in-stock products with no minimum order or dollar requirements. Every part that we manufacture or sell can be purchased individually. Our manufacturing facilities are in Iowa, U.S.A.

Whether you need one piece or 1,000 pieces, our goal remains the same—to delight you.

Same Day Shipments

Interpower offers same day shipments on in-stock parts.

- In the United States—if you call before 5 p.m. Central Time and the part is in stock, we will ship your order out that same day.
- In the United Kingdom—if you call before 13:00 GMT and the part is in stock, we will ship your order out that same day.

We check every hour to see what new orders have been placed and get them ready for shipment. Since we have no minimum orders, we can ship one part or 100 parts or more.

Interpower offers a full product line of power system components with an extensive inventory. If you have a part that you're ordering and need something to complement it, check with Interpower for that as well—we may have it in inventory or we can obtain it or make it for you.



Interpower Offers:

- Same day shipments on in-stock products
- No minimum or dollar requirements
- Lock in your price with blanket or scheduled orders
- Specialized labeling options available
- All Interpower manufactured products are 100% tested
- Free technical support
- Value-added services available

For More Information...

Contact our Customer Service Departments in the United Kingdom or in the United States for assistance with price and delivery quotations, samples, and orders. Free technical support is available.

Interpower Components Ltd 10 Kelvin Drive Knowlhill, Milton Keynes Buckinghamshire MK5 8NH United Kingdom	International Numbers: Phone: +44 (0) 1908 295300 Fax: +44 (0) 1908 295301	Toll-Free Numbers (UK, Ireland, Germany, Switzerland, Austria): Freephone: 00800 5566 5566 Freefax: 00800 5655 5655
Email: uk@interpower.com		
Interpower Corporation Mailing: 100 Interpower Ave. Oskaloosa, Iowa 52577 United States	International Numbers: Phone: (641) 673-5000 Fax: (641) 673-5100	Toll-Free Numbers (US/CAN/PR/VI) Phone: (800) 662-2290 Fax: (800) 645-5360
Email: sales@interpower.com		

Visit Our Website: www.interpower.com