

Introduction

Product Facts

- Lightweight, all-plastic and metal-shell connectors
- CPC connectors are UL 94V-0 rated and made of stabilized, heat resistant, self-extinguishing thermoplastic material
- Metal-shell CPC connector housings made of UL 94V-0 rated thermoplastic
- Operating temperature range: -40°C to +105°C
- Available in panel or chassis mount and free-hanging configurations
- Quick connect/disconnect capability with thread assist, positive detent coupling
- Built-in pin and socket protection
- Polarized for proper mating of connector halves
- Special connector configurations offer special solder and posted contacts, special receptacles with or without threaded inserts
- Full complement of optional accessories
- Recognized under the Component Program of Underwriters Laboratories Inc.  for 250 VAC, rms or 250 VDC, Service‡; Series 1 and Series 3 (600 V); Series 4 (600 V) and Series 2, Series 6 (250 V) File No. E28476

‡Select connectors are recognized for 600 volts service.

- Certified by Canadian Standards Association, File No. LR 7189 
- Produced under a Quality Management System certified to ISO 9001 
A copy of the certificate is available upon request.
- Certain products meet VDE Standard 062 

- Six connector series for different interconnection requirements:
- Series 1—Standard density, signal and low-current applications using durable Multimatch contacts (.062 [1.57] pin diameter)
 - Series 2—High density applications using Size 20 DM and 20 DF contacts (.040 [1.02] pin diameter)
 - Series 3—Low density, power applications with Type XII contacts capable of carrying up to 35 amperes of current
 - Series 4—Combination of standard and power density application with Type III+ and Type XII contacts 
 - Series 5—Power density application with Size 8 screw machined and precision formed contacts 
 - Series 6—Combination of standard and power density application with Type III+ and Size 8 contacts

- MIL-C-5015 Style Circular Plastic Connectors (CPC)
- Product Facts
- Intermateable with Metal-Shell sizes 20-14 and 18-10, MIL-C-5015 Style connectors
 - High impact resistant plastic housing made of UL 94V-0 rated material
 - Lightweight
 - Lower cost than standard MIL-C-5015 connectors
 - Industry accepted Type III+ pin and socket contacts, available on reels in strip form for high volume, low cost, automatic machine terminations, or in loose piece form for low volume, prototype or maintenance and repair
 - Improved alignment (U.S. Standard MIL-C-5015 Connectors) prevents mismatching with other housing insert arrangements
 - Recognized under the Component Program of Underwriters Laboratories Inc.,  File No. E28476
 - Certified by Canadian Standards Association, File No. LR 7189 

- Miniature CPC Connectors
- Product Facts
- Compact, high contact density, environmentally sealed connectors
 - Uses existing Mini-Universal MATE-N-LOK stamped and formed pin and socket contacts
 - Two shell sizes—available in 1 to 4 and 5 to 9 position configurations

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They are staffed with specialists well versed in Tyco Electronics products. They can provide:

- Technical Support
- Catalogs
- Technical Documents
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Restriction on the use of Hazardous Substances (RoHS)

At Tyco Electronics, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials.

Part numbers in this catalog are RoHS Compliant, unless marked otherwise. These products comply with European Union Directive 2002/95/EC as amended 1 January 2006 that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in

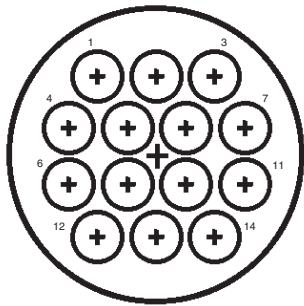
certain electrical and electronic products sold into the EU as of 1 July 2006.

Note - For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories. Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge

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Connector Series and Types

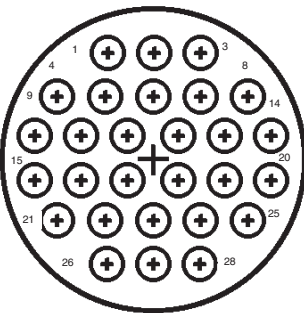


Series 1—Size 16 Contacts

Series 1 connectors permit the use of multiple combinations of signal and coaxial circuits in the same housing by accepting durable Multimate contacts. These pin and socket contacts include Type III+ and

subminiature coaxial contacts, interchangeable in the same Multimate contact cavity. Type III+ contacts (.062 [1.57] pin diameter) are capable of carrying a maximum of 13 amperes when crimped in wire.

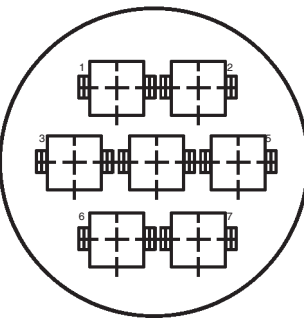
Type III solder contacts and posted contacts for pc board applications are also available. Many connector arrangements offer both standard and reverse sex contact loading—**from 4 thru 37 positions.**



Series 2—Size 20 Contacts

Series 2 connectors accept Size 20 DF (precision formed) and Size 20 DM (screw-machined) pin and socket contacts with a .040 [1.02] pin diameter. Size 20 DF contacts are available in crimp and solder versions, as well as a posted version

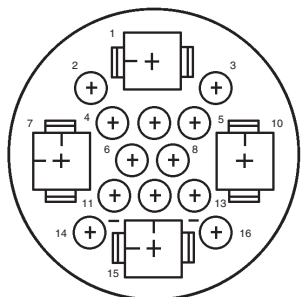
for wrap-type and pc board applications. Maximum current carrying capability is 7.5 amperes. Many connector arrangements offer both standard and reverse sex contact loading—**from 8 thru 63 positions.**



Series 3—Power Contacts

Series 3 connectors accept Type XII power contacts which can carry up to 25 amps per contact. These contacts will accommodate a wire size range of 16 to

10 AWG [1.4 to 5 mm²]. Two connector sizes are available in both standard and reverse sex connector arrangements **3 and 7 positions.**

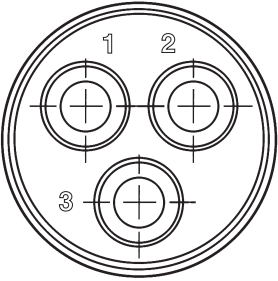


Series 4—Combination Size 16 and Power Contacts

Series 4 connectors accept Size 16 Multimate and Type XII power contacts, combining the signal and coaxial circuit capabilities of Series 1 connectors with the

power circuit capabilities of Series 3 connectors. Available in two connector sizes offering power mixing combinations totaling **16 and 22 positions.**

Connector Series and Types (Continued)



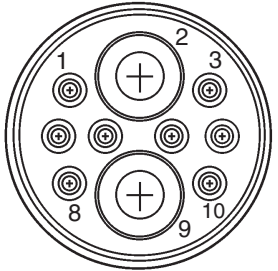
**Series 5—Power Contacts
.125 POWERBAND**

Series 5 connectors combine the revolutionary performance of the new AMP POWERBAND Contact, high current contact in configurations similar to the Series 3 connectors. AMP POWERBAND contacts offer the electrical

performance of the best Mil Spec Size 8 screw-machined contacts with the economy and productivity of strip-fed, precision formed contacts.

Series 5 connectors are environmentally sealable to meet IEC IP 65 and IP 67 specifications.

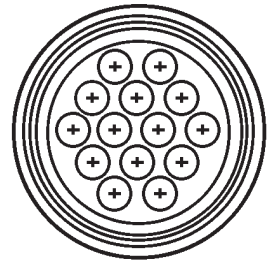
Rated at 600 VAC or VDC, 45 amperes maximum in a single contact, the connectors are available in free-hanging and panel-mount applications—**one connector configuration containing three .125 POWERBAND contacts.**



**Series 6—Combination,
Size 16 and .125
POWERBAND Contacts**

Series 6 combines the high current and environmental sealing capability of Series 5, POWERBAND contacts, and the reliability of signal carrying, low current Type III+ contacts.

This combination of power and signal contacts is offered in **one connector configuration containing two .125 POWERBAND contacts and eight Type III+ signal pin and socket contacts.**

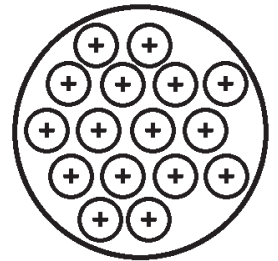


**MIL-C-5015 Style—Size 16
Contacts**

This new addition to the AMP Circular Plastic Connector Line is specifically designed to be **intermateable with Metal-Shell size 20-14 and 18-10, MIL-C-5015 Style connector systems.** The high impact resistant plastic housing offers the advantages of light weight

and lower cost than existing metal-shell connectors. In addition the connector design prevents mismating when used with other insert arrangements. As part of the AMP Multimate family of connectors, the MIL-C-5015 style connector offers the

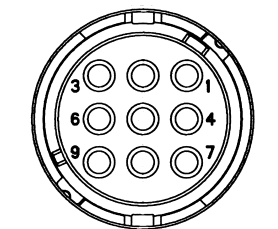
economies of crimp Type III+ pin and socket contacts in reel-mounted, strip-form for high volume automatic machine termination, as well as in loose piece-form for low volume, prototype or maintenance and repair.



**Metal-Shell, Circular
Plastic Connectors**

Metal-Shell CPC connectors consist of a black thermoplastic insert in a nickel-plated, zinc alloy shell. These connectors are currently available in

shell sizes 14, 22 and 28, and in two basic configurations consisting of plugs and square flange receptacles.



Miniature CPC Connectors

These compact connectors accept existing Mini-Universal MATE-N-LOK pin and socket contacts, 30-18 AWG [.05-.8 mm²].

Two shell sizes (8 or 11) are available, accommodating **from 1 to 4 and 5 to 9 positions.**

Featuring high contact density and IP67 sealing, these durable connectors are well suited for many wire-to-wire, wire-to-board, and wire-to-panel applications.

More information on the performance of AMP CPC and metal-shell CPC connectors is available by requesting the following AMP Product Specifications:

108-10024—CPC Connectors
108-10037—Type XII Contacts
108-10020—Size 20 DM and 20 DF Contacts
108-10040—Metal-Shell CPC Connectors
108-10042—Type III+ Contacts
108-1579—Sealed CPC Connectors with Removeable Contacts

Performance Characteristics — CPC and Metal-Shell CPC Connectors

Test Description	Procedure	Requirements
Maintenance Aging	Contacts removed and reinserted 10 times using applicable tools	No damage to contacts or housings. Contact retention maintained
Contact Retention	Axial load applied to contact to displace to the rear of the connector	Contacts remain in place when subjected to a minimum 10 lb. load*
Dielectric Withstanding Voltage (MIL-STD-1344, Method 3001)	Connectors subjected to 1500 volts rms at sea level	No breakdown or flashover
Thermal Shock	Connectors subjected to five cycles of temperature change (-55°C and +125°C)	No damage
Vibration (MIL-STD-202, Method 204, Test Condition B)	Connectors vibrated (wired and mated). Contacts wired in series with 100 milliamperes flowing during the test	No damage or loosening of parts. No interruption of electrical continuity longer than 10 microseconds
Physical Shock (MIL-STD-202, Method 213A, Test Condition A)	Connectors shocked 50 G (wired and mated). Contacts wired in series with 100 milliamperes flowing during the test	No damage or loosening of parts. No interruption of electrical continuity longer than 10 microseconds
Durability	Connectors mated and unmated 25 times with tin plated contacts and 500 times with gold plated contacts	No wear through damage to plating
Corrosion (Salt Spray) (MIL-STD-202, Method 101, Test Condition B)	Mated connectors subjected to 5% salt spray for 48 hours	No damage
Protection Against Solids	a. Test wire is pushed into mated connectors b. Mated connectors subjected to circulating talcum powder	a. Must not touch live parts b. No dust deposits observed on mating surfaces
Protection Against Water	Water is projected through jets against mated connector from any direction and then temporarily immersed in water	No water deposits shall be observed on mating surfaces of contacts or housings
Temperature Life	Mated connectors subjected to a temperature of +125°C for 200 hours	No damage
Insulation Resistance (MIL-STD-1344, Method 3003)	Measurement made between adjacent contacts with connector mated	5000 megohms minimum ambient temperature
Humidity (MIL-STD-202, Method 103, Test Condition B)	Mated connectors subjected to 10 days moisture test	Minimum insulation resistance of 100 megohms

*For size 16 contacts. Size 8 contacts 25 lb. load, min.

Environmentally Protected
Circular Plastic Connectors,
for Mated CPC Connectors
Utilizing Peripheral Seals
and either Wire Entry Seals
(for Discrete Wire
Applications) or Heat
Shrink Boots (for Jacketed
Cable Applications).
Available are Various
Sizes, Series 1, 5 and 6.

Levels of Protection for Electric Operating Material
According to IEC 60529 and IEC 60947, Appendix C

Internal Protection (IP)

Definition:

- **Per IEC 60947, Appendix C**—
Pertains to low voltage switchgear and
control gear.
- **Per IEC 60529**—Pertains to degrees
of protection provided by enclosures
(IP code).

Sample Designation:

(Where x is a numeral value), i.e. IP 65

IP Codes

IP Index Letter	<u>X₁</u> Degree of Protection against ingress of solid foreign objects		<u>X₂</u> Degree of Protection against ingress of water	
	Degree of Protection, X ₁	Protection against ingress of solid foreign objects	Degree of Protection, X ₂	Protection against ingress of water
		No Protection	0	No Protection
	1	Protection against objects >50mm diameter— including inadvertently touched by hands	1	Vertical Dripping— Protection against vertical drops of water
	2	Protection against objects >12.5mm—including fingers	2	Dripping <15°— Protection against dripping water when the enclosure is tilted 15° from vertical
	3	Protection against objects >2.5mm diameter including tools	3	Spraying at an angle up to 60° from vertical
	4	Protection against objects >1.0mm diameter— including grains	4	Splashing—Protection against water splashed from any direction
	5	Protection against ingress of solid foreign bodies	5	Jetting—Protection against water stream out of a nozzle, from any direction
	6	Protection against ingress of dust	6	Powerful Jetting—Protection against temporary flooding due to powerful jet streams out of a nozzle from any direction
			7	Temporary immersion—Protection against temporary immersion

Circular Plastic Connectors, Series 1 (Continued)

Square Flange Receptacles,
Right-Angle, Posted

with .045 [1.14] sq. solder tails.
For Higher Current Applications

Material and Finish

Housing—Thermoplastic, 94V-0 rated,
black

Location Wafer—Phenolic, black

Contact Posts—.000100 [0.00254]

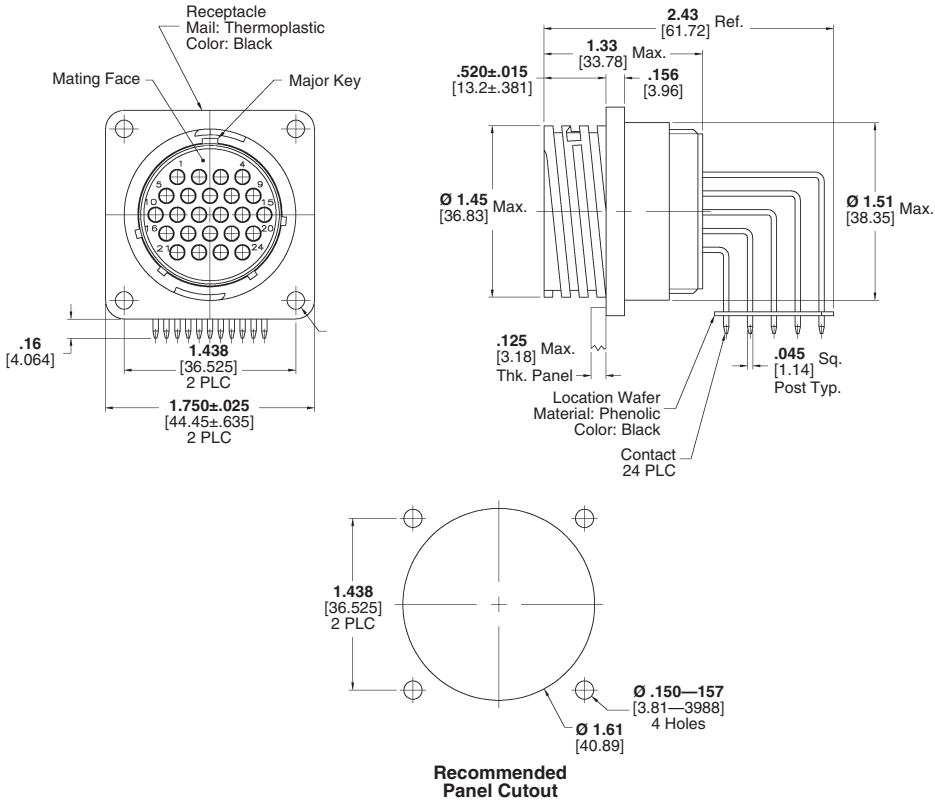
min. tin over .000100 [0.00254] min.
copper

Contact Body—

A—.000100 [0.00254] min. tin over
.000050 [0.00127] min. nickel

B—.000030 [0.000762] min. gold for a
length of .200 [5.08] min. from mating
end, with remainder gold flash, both
over .000050 [0.00127] min. nickel

Technical Documents—Page 80



Standard Sex (Posted Pin Contacts)

Arrangement No.	Receptacle Assemblies Mounting Holes	Contact Body Finish Code	Mating Plug Part No.
13-7	1776903-1	B	211399-1
17-16	1776904-1	B	206037-1
23-24	1776905-1	B	206837-1
23-37	1776906-1	B	206150-1

