tyco

Electronics

AMP & ELCON Power Connectors & Interconnection Systems

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Catalog 1773096
Revised 8-05

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

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The dimensions, specifications, designs, construction, materials and processes in this catalog are for reference purposes only and are subject to change without notice. Please consult Tyco Electronics for the most current product information.

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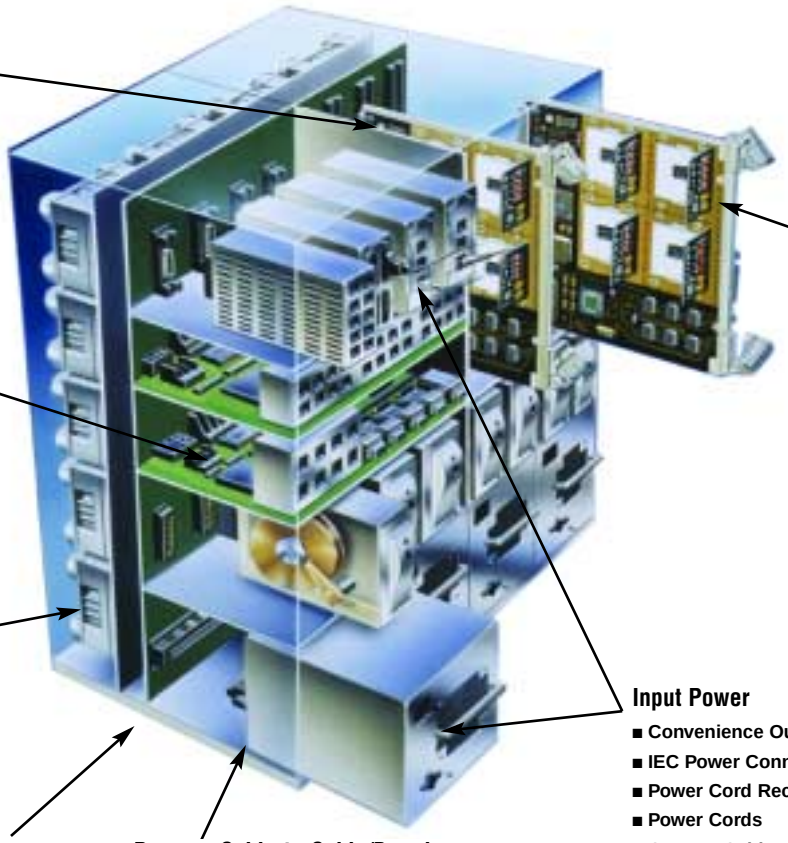
Products Listed in this Catalog



Integrated Backplane Power Systems
- Universal Power Modules
- Z-PACK Futurebus + Power Modules
- MULTIGIG RT Power Modules
- Guide Hardware
- Advanced TCA Power Connector

Mezzanine/Stacking
- Mini CROWN EDGE Products
- MULTI-BEAM XL Connectors

Bus Bar-to-Board
- CROWN EDGE Products
- CROWN CLIP Series Sockets
- Pluggable Bus Bar Connectors
- ICCON Connectors
- ELCON DRAWER Series Connectors
- Power Distribution Solutions (PDS)

Power – Board-to-Board
- MULTI-BEAM XL Connectors
- FLATPAQ Connectors
- MINIPAK Connectors
- CROWN EDGE Connectors
- Hybrid Power Twin Leaf Connectors
- SEC II Power Products
- ICCON Connectors

Power – Cable-to-Cable/Board
- MULTI-BEAM XL Cable Assemblies
- ELCON DRAWER Series
- AMP DRAWER Series
- AMP-DUAC/PL Products
- Universal MATE-N-LOK Family
- AMPINNERGY Product
- Power Lock/AMP Power Series
- CPC
- Mini Power Drawer (MPD)
- AMPOWER Wave Crimp System
- RAPID LOCK Connectors
- AMP Power Tap
- DOMINO Series Connectors
- HTS Power Connectors
- Universal Power Connector

VRM/Power Pods
- SEC II, Mini CROWN EDGE (32 Bit) Connectors
- Power POD Connectors

Laptops/Portable
- Battery Interconnects
- Coin Cell Battery Holder
- Multi-Directional Interface (MDI) Connectors
- DC – Power Jacks

Input Power
- Convenience Outlets
- IEC Power Connectors
- Power Cord Receptacles
- Power Cords
- Custom Cable Assemblies

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Product Selection Chart

	Application Style						Application Type		Current Level			Special Features			Standards	
Product Listing	Wire-to-Wire	Wire-to-Board	Board-to-Board	Card Edge	Battery	Bus Bar or Other	Power Only	Power & Signal	Low Current, Contacts <20A	Middle Current, Contacts 20A-50A	High Current, Contacts >50A	True Hot-Plug	Blind Mate	Low Inductance	Industry Standard	Page
MULTI-BEAM XL Connectors[1]	X	X	X				X	X	X	X		X	X		SSI (MPS, DPS)	11
MINIPAK Connectors			X					X		X			X			23
Mini CROWN EDGE Product				X				X		X				X	VRM 10.2, 11	27
FLATPAQ Product[1]			X					X		X		X	X			31
ICCON Product[1]		X	X				X			X						35
Universal Power Modules (UPM)	X		X				X		X			X			PICMG EXP.0	45
MULTIGIG RT Power Product			X				X		X							43
Z-PACK 2mm Futurebus + Product	X		X				X		X						IEC 61076-4-0X	47
AdvancedTCA Power Connectors	X		X					X	X						PICMG 3.0	53
ELCON Drawer Series	X	X						X	X	X	X	X	X			55
Mini Power Drawer (MPD)		X					X		X			X	X			77
Hybrid Blindmate Drawer	X							X	X				X			79
Special Blindmate Drawer	X	X						X	X				X			82
Standard Blindmate Drawer	X	X						X	X				X			86
Hybrid Mini-Drawer		X														90
AMP DUAC PL Product		X					X	X	X							96
DOMINO Product	X	X						X	X	X	X	X	X			110
RAPID LOCK Product		X				X	X				X					117
AMP Power Taps	X															120
CROWN EDGE Product				X		X		X		X		X				127
(SEC II) Card Edge[1]			X	X				X	X						VRM 8.5-10.1, ISA	135
Voltage Regulation Module (VRM)			X	X				X	X							139
SEC-II Power Product			X	X			X	X	X	X						142
Hybrid Power Twin Leaf		X	X	X				X	X						SSI (TPS)	144
Power Pod Connectors for Itanium II Processors			X	X										X	Itanium I, II	147
CROWN CLIP Series				X		X	X				X	X	X			149
Pluggable Bus Bar Product				X		X	X				X		X			153
AMPOWER Wave Crimp System	X	X					X	X		X			X			157
IEC Power Connectors (CORCOM)	X	X					X		X						IEC 320	175
Battery Interconnects		X	X		X		X		X							177
Coin Cell Battery Holders					X	X	X		X							192
Multi-Directional Interface (MDI) Connectors					X											196
DC Power Jacks		X					X		X							199
Power Cords	X	X					X		X	X	X					201
Custom Cable Assemblies	X	X		X	X	X	X	X	X	X	X	X	X			203

[1]Co-planar products

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Tyco Electronics Power Connector Technology

For years, Tyco Electronics has pioneered the development of new power interconnect technologies. As the industry leader in Power Interconnects, Tyco Electronics produces power connectors used in laptops through super computers, automobiles, telecommunications base stations, consumer appliances, power utility, industrial controls, locomotives and many other applications. The products in this catalog are focused on the higher performing power connectors used in the Computer and Telecommunications industries.

Some key factors in the design of these new connectors are the selection of the right contact and housing materials, platings and contact designs. Many of the older single or dual point of contact interconnects have been replaced with new/next generation designs which can offer significant reductions in contact resistance, insertion/mating force, connector size and total applied cost. In addition, several of the newest designs have significant increases in current and signal density all combined into a single power distribution connector.

As power delivery applications vary widely, Tyco Electronics also produces many variations of the products listed in this catalog for unique applications. If you don't find the product needed for your application, please feel free to contact our Product Information Center or your local Tyco Electronics Sales Engineers.

High Performance started with the ELCON CROWN BAND Power Contact Technology

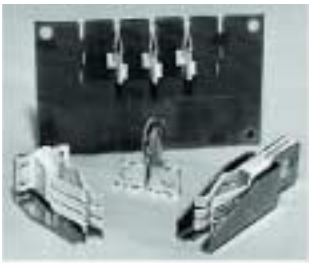
One of the popular technologies used in high current connects is based on the ELCON CROWN BAND Power Contact Technology. Made from high conductivity alloys and used with solid screw machined pin and socket contacts, these contacts deliver superior performance. Many of the high current Drawer Connectors in this catalog use this technology.

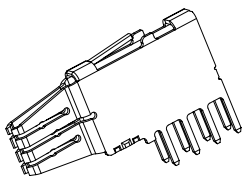
- 1/4th to 1/10th the Contact Resistance
- Maximum Contact Surface Area
- Low Voltage Drop, Low Temperature Rise
- Higher Cycle Durability
- Used in High Performance Pin & Socket Drawer Connectors
- Safety Agency Approved Hot-Plug Contacts Available

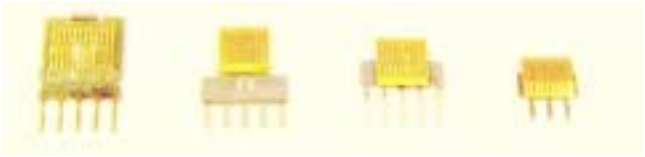
CROWN BAND Performance in Stamped & Formed Configurations

FLATPAQ Connectors, MINIPAK Connectors, CROWN EDGE Connectors, Mini CROWN EDGE Connectors, MULTI-BEAM XL Connectors, AMPOWER Wave Crimp Products, CROWN CLIP Sockets, Pluggable Bus Bar Products.

These product lines all utilize the multiple point of contact design. With the 6, 8, 10, 12 or more contact points per stamping, the contact resistance remains very low and the mating cycle durability remains high.







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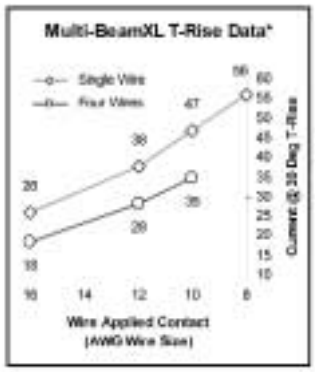
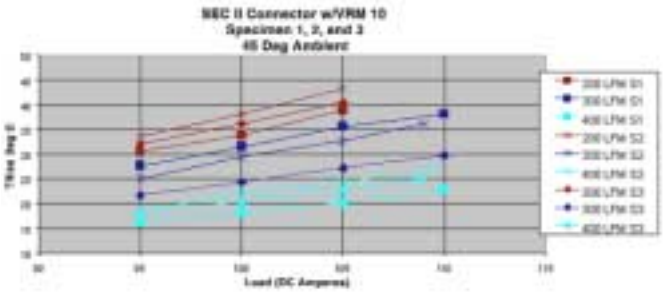
Extensive Product Qualification

Tyco Electronics has played a major role in influencing the industry to evaluate power connectors based upon End-Of-Design -Life conditions. This involves a variety of accelerated life tests used to determine the expected results of the power connectors after years of use in demanding applications.

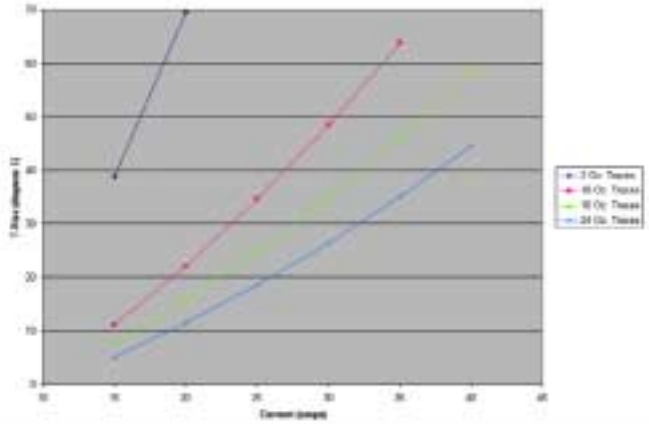


Temperature Rise charts using a single contact have been replaced with more useful data taken from tests of actual fully loaded connectors carrying their maximum current.

The tests are run with pre-stressed (end-of-life) connectors to provide worst case results based on the environmental exposure the connectors will see.



In many cases the common safety agency approvals are also provided. While these tests are typically far less stringent than Tyco Electronics' internal test sequences, they provide additional safety/regulatory information for end users to help them make the connector selection easier.

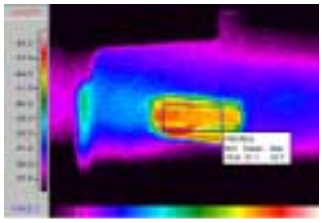


Shock & Vibration

Shock and vibration testing is used to verify the mechanical integrity of the connector system. Shock capability to test half-sine, saw-tooth, and trapezoidal waveforms up to 3000 g's. Vibration capability to test sinusoidal, random, sine-on-random, and narrow band random-on-random profiles up to 2000 Hz.

Thermal Image

Thermography is used to optimize the design and to pinpoint the exact hot spot on the contacts – to measure the true worst case temperature-rise. Then thermocouples are placed on the hot spot to confirm the temperature at the end-of-life conditions.



Durability and Hot-Plug Set-Up

Current Interrupt (hot-plug) tests are performed to customer-specific requirements to determine the ability of the connector to sustain repeated make & break cycles under load. Power generation capability up to 600 VDC.

Durability tests are performed in accordance with both industry (EIA 364-70) standards and Tyco Electronics documented test sequences. With this, the user knows exactly what was tested and how it was tested, in order to achieve the specified durability rating.

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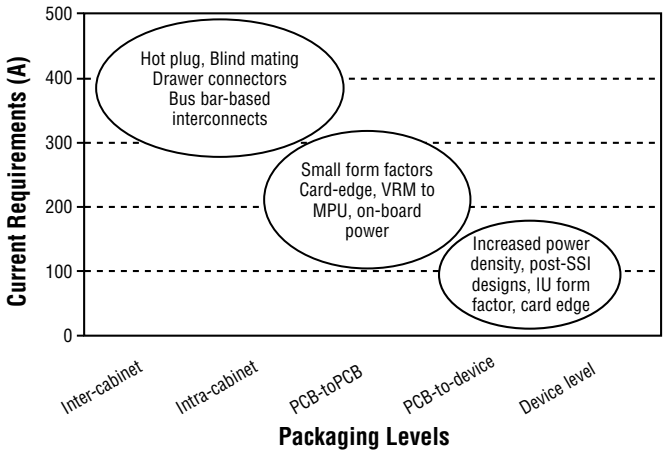
Tyco Electronics Delivers Both Industry Standard and Application-Specific Power Connectors



Industry or De-Facto Standard Products

- MULTI-BEAM XL Connectors (SSI Standard)
- Universal MATE-N-LOK Connectors
- VRM Card Edge Connectors (VRM 8.5 – 11.0)
- Universal Power Module (CPCI Express)
- AMP Power Series (50 – 350 Amp DC power)
- IEC Power Entry Modules (IEC 320)
- Power POD Connector (IA 64)

Application Specific Products

- Drawer Series (Top Drawer – Mini Drawer)
- CROWN EDGE & Mini CROWN EDGE Connectors
- FLATPAQ Connectors
- MINIPAK Connectors
- CROWN CLIP Connectors
- ICCON Connectors
- RAPID LOCK Connectors

Standards Activities / Safety Agency Approvals

Tyco Electronics has a broad line of power interconnects meeting the industry's most stringent safety standards:

Tyco Electronics End-Of-Design-Life (EODL) accelerated life testing has influenced many new standards for power interconnects.

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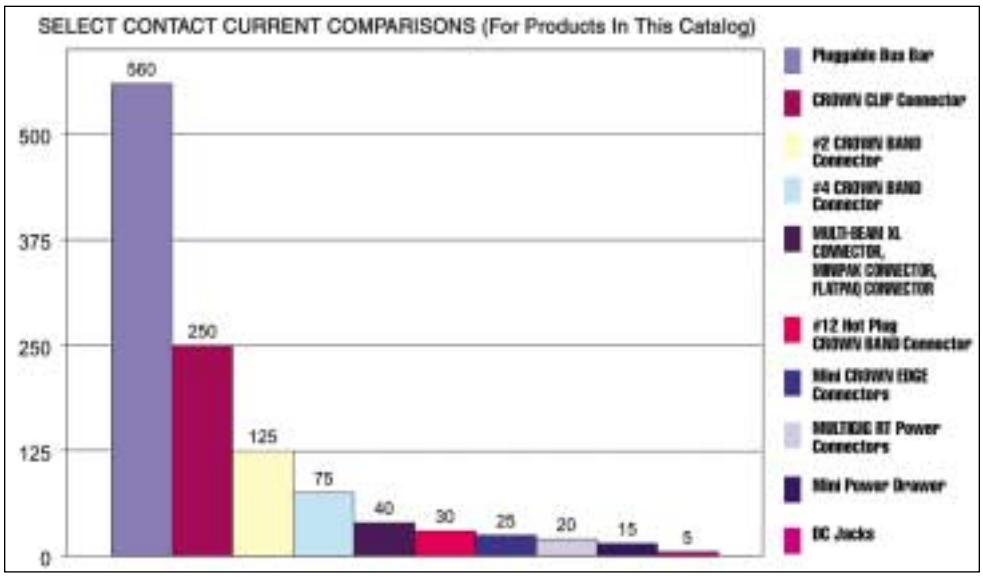
Current Carrying Capabilities

Tyco Electronics offers a wide range of power contacts, which handle up to 500 Amps. The total current capacity of each contact in a given connector is dependent upon the heat rise resulting from the combination of electrical loads of the contacts in the connector arrangement and the maximum ambient temperature in which the connector will be operating. Caution must be taken so that this combination of conditions does not cause the internal temperature of the connector to exceed the maximum operating temperature of the housing material. Several variables which must be considered when determining this maximum current capability for your application are:



- **Wire Size**—Larger wire will carry more current since it has less internal resistance to current flow and generates less heat. The wire also conducts heat away from the connector.
- **Connector Size**—In general, with more circuits in a connector, less current per contact can be carried.
- **Current Load Distribution**—Spreading those lines with greater current loads throughout the connector, particularly around the outer perimeter, will enhance heat dissipation.
- **Ambient Temperature**—With higher ambient temperatures, less current can be carried.

NOTE: The current ratings in this chart are based upon single contact loading and a 30° C temperature rise. More useful "fully loaded" ratings are available and are dependent upon the variables listed above.

Application-Specific Designs

In the shortest time to market in the industry.

If none of our standard products satisfies your requirements, Tyco Electronics can develop a design specific to your application. We will work closely with your engineers to fully understand the design requirements and develop an interconnect solution that meets your exact needs. After the concept and design stages, Tyco Electronics produces prototypes that perform both electrically and mechanically the same as production parts. These machined parts are used for testing, regulatory agency evaluations, and even as pre-production components, allowing the shortest lead time from concept to manufacturing in the industry.

Concept →

Tyco Electronics engineers work closely with the customer to fully understand the design requirements of the application.

Design →

A sketch drawing of the design concept is created for customer review, and the design is finalized only when it fully meets the requirements of the customer.

Prototypes →

Once the design is frozen, and while Tyco Electronics works on the molds and the connector assembly processes, Tyco Electronics builds prototypes that are identical to the production parts.

Production

By the time both Tyco Electronics and the customer are ready for mass production, all requirements for release to production, such as qualification testing and regulatory agency approval, have been cleared.

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Engineering Notes

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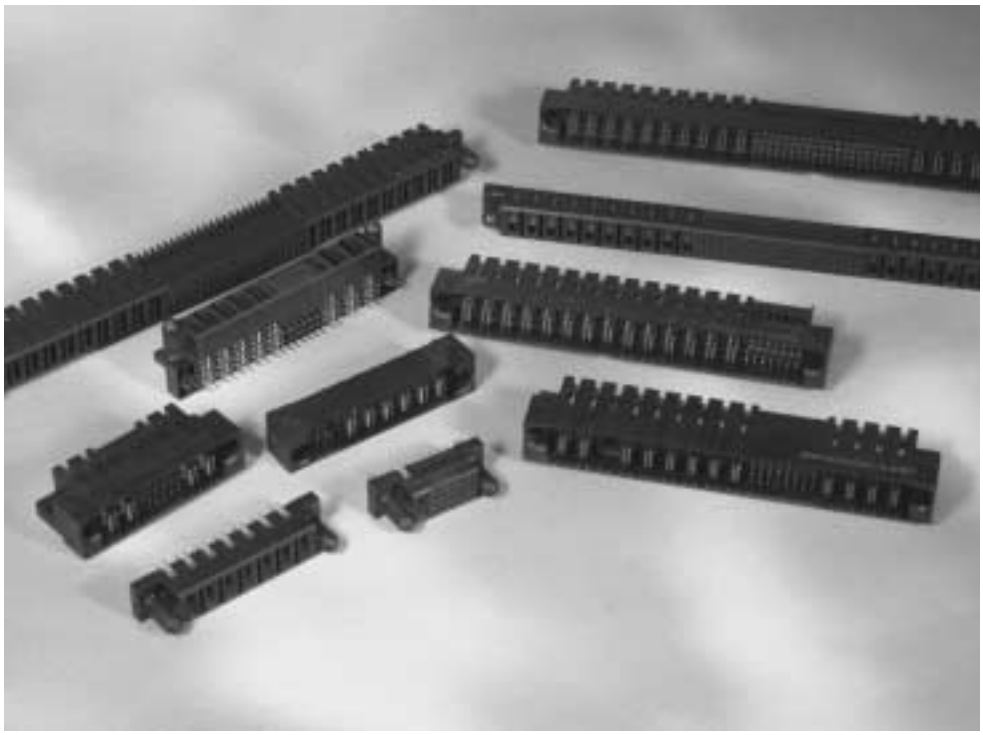
"New" MULTI-BEAM XL Power Distribution Connector System

Board Mount Connectors

Product Facts

- **Single-piece molded housings**
- **Custom configurable modular design**
- **AC and DC power in the same connector – Meets UL safety requirements.**
- **Current Interrupt ratings per UL 1977 – for "Hot-Plug" applications.**
- **Compact size - ideal for distributed DC power applications.**
- **Molded-in guide pins provide generous blind-mateability.**
- **Up to 3 levels of contact sequencing:**
  - **1st - Pwr/Gnd**
  - **2nd – Pwr & Signals**
  - **3rd – Trigger Signals**
- **Low Mating and Un-mating force**
- **Solder or press-fit termination to PCB.**
- **Meets SSI power connector requirements for DPS, MPS and HPS applications**
- **30 micro-inch [0.76 micro-meters] gold post-plated contacts for high reliability**
- **All MULTI-BEAM XL products in this section are RoHS compliant**



MULTI-BEAM XL is a blind-mateable board-to-board power distribution connector system. The heart of the MULTI-BEAM XL connector is the unique power contact which offers higher current ratings, lower contact resistance and lower mating forces than alternative designs. The connector is designed and manufactured in a modular approach and therefore allows the customer to select the number of power and signal contacts as well as the mating sequence of contacts they need for their specific application. The product is also available in versions complying to the Server Systems Infrastructure (SSI) Standard. The MULTI-BEAM XL product offers high reliability and high current density in a package designed specifically for modular hot-swappable power distribution systems.

MULTI-BEAM XL connectors are ideal for blind-mating in modular and rack mounted systems. The high performance design and heavy gold plated contacts meet requirements across many applications including Power Distribution for compact (1U) computer servers up through High-End Servers, Fault-tolerant Computers, Networking Equipment, Telecommunication Switches, Medical Instrumentation and Industrial Control equipment.

The compact design also meets the I/O needs of modern Modular and Hot-Swappable redundant (N+1) Power Supplies and Uninterruptible Power Supplies.

Technical Documents

Product Specifications—
108-1973

Application Specification—
114-13038

File # E28476

File # LR7189

For More Information

Internet
http://tycoelectronics.com

Check out product information at:
http://mbxl.tycoelectronics.com

Technical Support Center
1-800-522-6752

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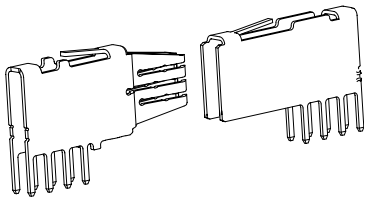
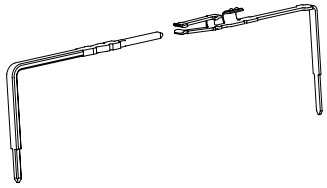
"New" MULTI-BEAM XL Power Distribution Connector System

Board Mount Connectors

Power Contacts

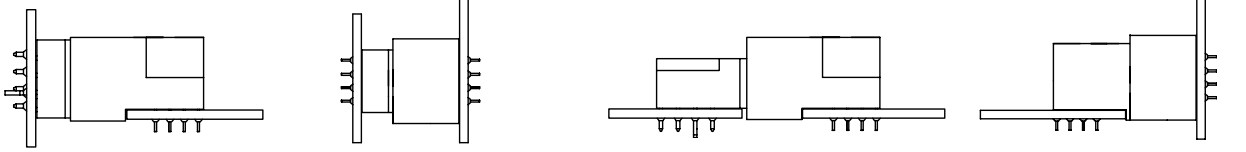


Signal Contacts



- **Improved MULTI-BEAM XL power contact design features eight independent beams which provide:**
  - **– Electrical performance - Parallel current paths yield a lower contact resistance.**
  - **– Mechanical performance – Tuned beam design provides low mating forces and high durability life cycles.**
  - **– Traditional Dual-Beam design also available**
- **Twin-beam signal receptacle contact design mates on milled surface, to reduce plating wear / and improve durability.**
- **MULTI-BEAM XL connector assures you of EXTRA LONG CONTACT WIPE.**
  - **– Power contacts feature up to 0.200″[5.08mm] minimum wipe.**
  - **– Shortest "trigger" signal contacts feature a minimum wipe of 0.100″ [2.54mm].**
- **MULTI-BEAM XL connectors provides EXPANDABLE LENGTH connectors.**
  - **– Overall length is expandable to accommodate up to 36 power contacts.**
  - **– Contact spacings are expandable to accommodate higher voltages and/or higher current requirements.**
- **Base metal made from high conductivity copper alloy (over 98% copper) offers superior performance compared to alternative materials (brass, phosphor bronze, beryllium copper, etc.) often used in power connectors.**
- **0.100″ [2.54mm] x 0.100″ [2.54mm] PCB contact grid.**

Application Flexibility



Vertical Receptacle Right-Angle Header

Vertical Receptacle Vertical Header

Right-Angle Receptacle Right-Angle Header

Right-Angle Receptacle Vertical Header

Contact Wipe

Contact Type	Description	Sequence	Minimum Wipe
Power (or GND) Contact	Make First Break Last (MFBL)	1	0.200″ [5.08mm]
Power Contact	Standard	2	0.150″ [3.81mm]
Signal Contact	Standard	2	0.150″ [3.81mm]
Signal (trigger) Contact	Make Last Break First (MLBF)	3	0.100″ [2.54mm]

The MLBF power contact and the Standard Signal contact are sequenced to mate at the same time ... sequence #2.

Product Configurations and Part Numbers

The connector configuration is described by reading Left-to-Right on the Header mating interface and Right-to-Left on the Receptacle mating interface. Custom configurations can be produced due to the modular design of the product. Some popular configurations are shown in the tables below.

Configuration Description: ACP indicates AC Power, P indicates DC Power, HDP indicates High Density Power, S indicates Signal. The corresponding contact spacing and voltage ratings are shown below.

ACP	P	HDP	S
0.300″ [7.62mm] spacing	0.250″ [6.35mm] spacing	0.200″ [5.08mm] spacing	0.100″ [2.54mm] grid
300 Volts*	150 Volts*	Connection to same voltage*	50 Volts*

* With circuit board designed to UL 1950, IEC 60950

Catalog 1773096
Revised 8-05

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Mexico: 01-800-733-8926
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Japan: 81-44-844-8013
UK: 44-141-810-8967

"New" MULTI-BEAM XL Power Distribution Connector System

Board Mount Connectors

Right Angle Receptacles

Configuration *	Part Number	Application	Overall Length ″ and [mm]	PCB Tail Type (Solder, Press-Fit)	Power Contact Sequencing
1P/24S/1P	6450160-3	SSI "DPS"	1.925″ [48.90mm]	Solder	No
2P/24S/2P	1-6450160-0	Distributed DC Power + Signal	2.250″ [57.15mm]	Solder	No
3P/24S/3P	6450570-2	Distributed DC Power + Signal	2.750″ [69.85mm]	Press-fit	Yes
3ACP/24S/5P	6450170-2	AC and DC Power + Signal	3.400″ [86.36mm]	Solder	Yes
3ACP/24S/6P	6450170-8	AC and DC Power + Signal	3.650″ [92.71mm]	Solder	Yes
5P/24S/6P	6450160-5	SSI "MPS"	4.350″ [110.49mm]	Solder	No
5P/32S/5P	6450560-2	Distributed DC Power + Signal	3.950″ [100.33mm]	Press-fit	No
7P/32S/7P	6450560-4	Distributed DC Power + Signal	4.350″ [110.49mm]	Press-fit	No
8P/28S	6450172-2	Distributed DC Power + Signal	3.350″ [85.09mm]	Solder	Yes
8P/32S/8P	6450160-1	AC and DC Power + Signal	5.450″ [138.43mm]	Solder	No
10P/84S/10P	6450160-6	AC and DC Power + Signal	7.750″ [196.85mm]	Solder	No
3ACP	6450173-1	AC Power	1.550″ [39.37mm]	Solder	Yes
8P	6450163-2	DC Power	2.650″ [67.31mm]	Solder	No
14P/32S	6450172-1	Distributed DC Power + Signal	4.950″ [125.73mm]	Solder	Yes
16S/4P	6450161-1	Distributed DC Power + Signal	2.050" [52.07mm]	Solder	No
24S/6P	6450161-2	Distributed DC Power + Signal	2.750" [69.85mm]	Solder	No
24S/8P	6450161-6	Distributed DC Power + Signal	3.250" [82.55mm]	Solder	No

* Custom configurations are available – see back page for instructions to have Tyco Electronics build your custom part.
[1] See pages 209, 210 for Non-RoHS to RoHS compliant part number cross reference.

Vertical Receptacles

Configuration *	Part Number	Application	Overall Length ″ and [mm]	PCB Tail Type (Solder, Press-Fit)	Power Contact Sequencing
1P/24S/1P	6450540-1	SSI "DPS"	1.925″ [48.90mm]	Press-fit	No
2P/24S/2P	6450140-5	Distributed DC Power + Signal	2.250″ [57.15mm]	Solder	No
3P/24S/3P	1-6450140-0	Distributed DC Power + Signal	2.750″ [69.85mm]	Solder	No
4P/24S/4P	6450150-6	Distributed DC Power + Signal	3.350″ [85.09mm]	Solder	Yes
4P/24S/3ACP	6450150-3	AC and DC Power + Signal	3.150″ [80.01mm]	Solder	Yes
3ACP/24S/5P	6450550-1	AC and DC Power + Signal	3.400″ [86.36mm]	Press-fit	Yes
5P/24S/6P	6450540-2	SSI "MPS"	4.350″ [110.49mm]	Press-fit	No
10P/84S/10P	6450140-4	Distributed DC Power + Signal	7.750″ [196.85mm]	Solder	No
10P/24S/12P	3-6450550-2	Distributed DC Power + Signal	5.800" [147.32mm]	Press-fit	Yes
3P	6450543-1	DC Power	1.400″ [35.56mm]	Press-fit	No
4P	6450543-5	DC Power	1.650" [41.91mm]	Press-fit	No
5P	6450553-1	DC Power	1.900″ [48.26mm]	Press-fit	Yes
6P	6450553-2	DC Power	2.050″ [52.07mm]	Press-fit	Yes
7P	6450543-3	DC Power	2.400″ [60.96mm]	Press-fit	No
8P/28S	6450142-3	Distributed DC Power + Signal	3.350″ [85.09mm]	Solder	No
14P/32S	6450152-1	Distributed DC Power + Signal	4.950″ [125.73mm]	Solder	Yes
24S/6P	6450551-1	Distributed DC Power + Signal	2.750" [69.85mm]	Press-fit	Yes
24S/3ACP	6450151-3	Distributed DC Power + Signal	2.200" [55.88mm]	Solder	Yes
24S/8P	6450541-5	Distributed DC Power + Signal	3.250" [82.55mm]	Press-fit	No

* Custom configurations are available – see back page for instructions to have Tyco Electronics build your custom part.
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"New" MULTI-BEAM XL Power Distribution Connector System

Board Mount Connectors

Right Angle Headers

Configuration *	Part Number	Application	Overall Length " and [mm]	PCB Tail Type (Solder, Press-Fit)	Signal Contact Sequencing
1P/24S/1P	6450330-1	SSI "DPS"	1.925" [48.90mm]	Solder	Yes
2P/24S/2P	6450120-2	Distributed DC Power + Signal	2.250" [57.15mm]	Solder	No
3P/24S/3P	6450130-6	Distributed DC Power + Signal	2.750" [69.85mm]	Solder	Yes
4P/24S/3ACP	6450130-4	AC and DC Power + Signal	3.150" [80.01mm]	Solder	Yes
3ACP/24S/5P	6450130-3	AC and DC Power	3.400" [86.36mm]	Solder	Yes
3ACP/24S/6P	1-6450130-4	AC and DC Power + Signal	3.650" [92.71mm]	Solder	Yes
5P/24S/6P	6450230-1	SSI "MPS"	4.350" [110.49mm]	Solder	Yes
5P/32S/5P	4-6450130-5	Distributed DC Power + Signal	3.450" [87.63mm]	Solder	Yes
6P/24S/6P	2-6450120-7	Distributed DC Power + Signal	4.250" [107.95mm]	Solder	No
8P/32S/8P	6450120-1	Distributed DC Power + Signal	5.450" [138.43mm]	Solder	No
10P/84S/10P	6450120-6	Distributed DC Power + Signal	7.750" [196.85mm]	Solder	No
10P/24S/12P	4-6450130-6	Distributed DC Power + Signal	5.800" [147.32mm]	Solder	Yes
16S/4P	6450231-1	Distributed DC Power + Signal	2.050" [52.07mm]	Solder	Yes
24S/6P	6450131-7	Distributed DC Power + Signal	2.750" [69.85mm]	Solder	Yes
24S/3ACP	6450121-3	Distributed DC Power + Signal	2.200" [55.88mm]	Solder	No
3ACP	6450123-3	AC Power	1.550" [39.37mm]	Solder	N/A
3P	6450123-1	DC Power	1.400" [35.56mm]	Solder	N/A
4P	6450123-2	DC Power	1.650" [41.91mm]	Solder	N/A
5P	6450123-6	DC Power	1.900" [48.26mm]	Solder	N/A
6P	6450523-2	DC Power	2.050" [52.07mm]	Press-fit	N/A
7P	6450123-5	DC Power	2.400" [60.96mm]	Solder	N/A
8P/28S	6450132-3	Distributed DC Power + Signal	3.350" [85.09mm]	Solder	Yes
14P/32S	6450132-4	Distributed DC Power + Signal	4.950" [125.73mm]	Solder	Yes

* Custom configurations are available – see back page for instructions to have Tyco Electronics build your custom part.
[1] See pages 209, 210 for Non-RoHS to RoHS compliant part number cross reference.

Vertical Headers

Configuration *	Part Number	Application	Overall Length " and [mm]	PCB Tail Type (Solder, Press-Fit)	Signal Contact Sequencing
1P/16S/1P	1-6450500-4	Distributed DC Power + Signal	1.650" [41.91mm]	Press-fit	Yes
1P/24S/1P	6450100-5	SSI "DPS"	1.925" [48.90mm]	Solder	Yes
2P/16S/2P	6450500-9	Distributed DC Power + Signal	2.150" [54.61mm]	Press-fit	Yes
2P/24S/2P	6450500-3	Distributed DC Power + Signal	2.350" [59.69mm]	Press-fit	Yes
3P/16S/3P	6450500-8	Distributed DC Power + Signal	2.650" [67.31mm]	Press-fit	Yes
3ACP/24S/3ACP	2-6450500-1	AC Power + Signal	3.150" [80.01mm]	Press-fit	No
4P/24S/4P	6450500-4	Distributed DC Power + Signal	3.350" [85.09mm]	Press-fit	Yes
5ACP/24S/5ACP	6450500-1	Distributed DC Power + Signal	4.350" [110.49mm]	Press-fit	Yes
7P/32S/7P	6450100-6	Distributed DC Power + Signal	4.350" [110.49mm]	Solder	No
24S/8P	6450501-2	Distributed DC Power + Signal	3.250" [82.55mm]	Press-fit	No
3ACP	6450503-3	AC Power	1.550" [39.37mm]	Press-fit	N/A
8P	6450503-1	DC Power	2.650" [67.31mm]	Press-fit	N/A

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UK: 44-141-810-8967

Board Mount Connectors

Specifications

Materials

Housing:	High temperature thermoplastic
Power contacts:	High Conductivity Copper alloy
Signal contacts:	Copper Alloy
Boardlocks:	Phosphor Bronze

Finish

Power and signal contacts:

30 microinches [0.76 micrometers] min. gold over 50 microinches [1.27 micrometers] min. nickel on mating surfaces, 100 microinches [2.54 micrometers] min. tin over 50 microinches [1.27 micrometers] min nickel at PCB terminations

Performance Specifications

Up to 55 amps per power contact, de-rated to 35 amps in equally energized (8 adjacent positions) connector.

Up to 4 amps per signal contact, de-rated to 1.5 amps in equally energized 24 position pin field.

Maximum continuous operating temperature 105°C

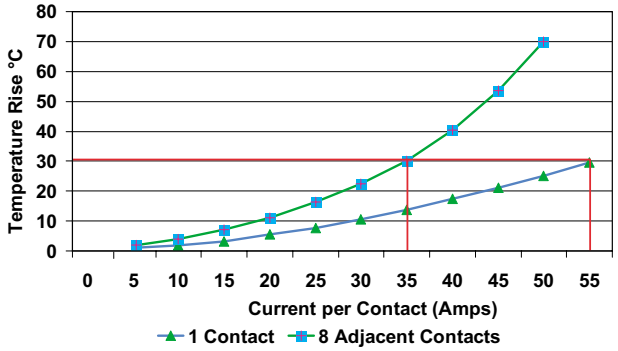
0.7 milli-ohm contact resistance

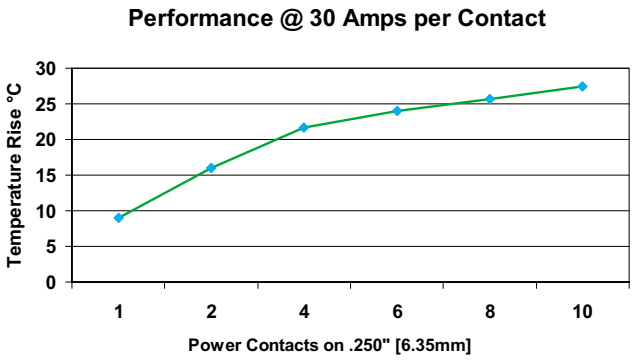
250 cycle durability

+/- 0.075″ [1.91mm] radial mis-alignment capability

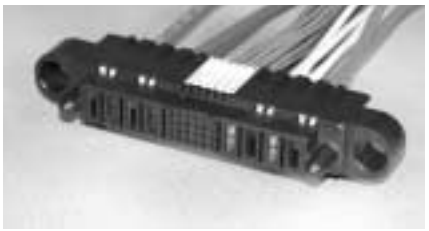
Minimum of 0.100″ [2.54mm] of contact wipe on shortest signal contact

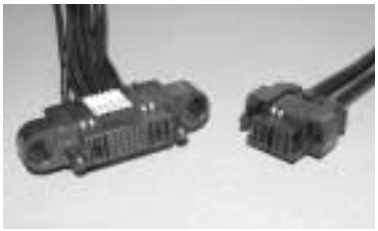
UL 94V-0 High-temperature thermoplastic housings





See Cable Connectors on the Following Pages





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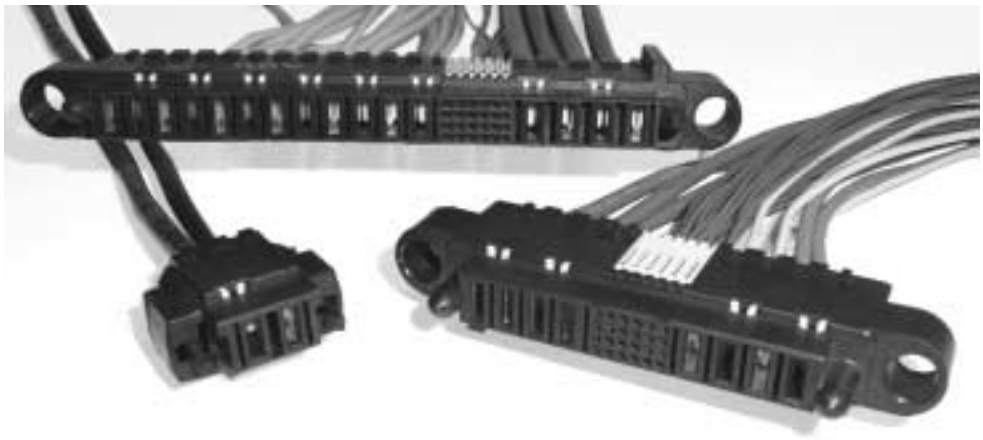
"New" MULTI-BEAM XL Power Distribution Connector System Cable Assemblies

Cable Assemblies



Product Facts

- **Single one-piece housing design**
- **Terminal Position Assurance (TPA) Secondary Locks on contacts assure no contact back-out.**
- **Pre-assembled made-to-order cable assemblies**
- **Installation to panel provides float in X, Y and Z directions**
- **Insulation crimp on all contacts**
- **30 microinch (.76 micrometers) gold plated contacts for high reliability**
- **Touch-safe design passes UL1977 and IEC 60950 finger probe test.**
- **AC and DC power in the same connector – meets UL & IEC safety requirements**
- **All MULTI-BEAM XL products in this section are RoHS compliant**

MULTI-BEAM XL Cable Assemblies allow designers freedom to connect power supplies and power distribution subassemblies in a wide variety of applications. Expanding beyond board-to-board applications the cable assemblies are available for both cable-to-board or panel mount applications and can terminate 8-16 AWG and 22-26 AWG wires all in one connector, without using adapter circuit boards. In addition, the power contacts are designed to be able to accept two-wire terminations which can further reduce harness complexity by reducing or eliminating mid-wire splices.

The use of high temperature glass filled housing materials, redundant contact retention and high conductivity contact materials allows the use of this connector in very high current density applications. The features work together to result in a highly durable and compact power connector, which offers industry leading minimum millivolt drop through the connection. The connector was designed to pass the UL 1977 and IEC 60950 finger probe test which makes the connector touch-safe. The insulation crimp adds further safety by keeping the insulation from being pulled away from the termination point. These features eliminate the need for a secondary cable clamp which often can be size prohibitive.

The cable connectors are designed to mate to the de-facto standard Tyco Electronics MULTI-BEAM XL Right Angle or Vertical PCB Headers. The combination of pcb and cable connections, both with mixed power and signal arrangements provides a universal power distribution connector systems.

The cable assemblies are all RoHS compliant, designed to specific customer requirements and manufactured in Tyco Electronics' cable assembly manufacturing facilities.

Technical Documents

Product Specifications—
108-2157

Application Specification—
114-13112

For More Information

Internet
http://tycoelectronics.com

Check out product information at:
http://mbxl.tycoelectronics.com

Technical Support Center
1-800-522-6752

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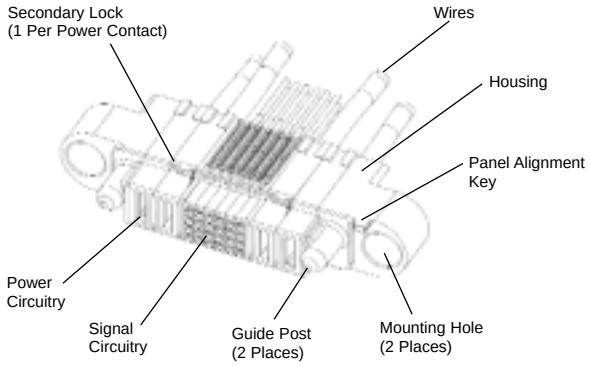
UK: 44-141-810-8967

Configurations/Applications

Floating Panel-Mount Receptacle

- 0.060" [1.52] Nominal Float in X, Y and Z direction
- For modular installation of large power distribution systems
- Single connector replaces multiple power and signal connectors

Floating Panel-Mount Cable Receptacle (2P + 24S + 2P)

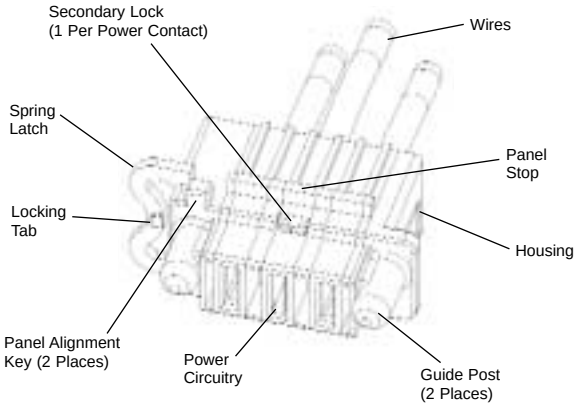


PMT Series

Slide- to-Lock Receptacle

- 0.030" [0.76] nominal float in X and Y direction
- Ideal for modular installation of smaller systems requiring less space and less float – such as fan trays.
- Replaces connectors which use multiple low power contacts to carry the total current.
- Power only or Power Plus signal mixed.

Slide-to-Lock Cable Receptacle (3 ACP)

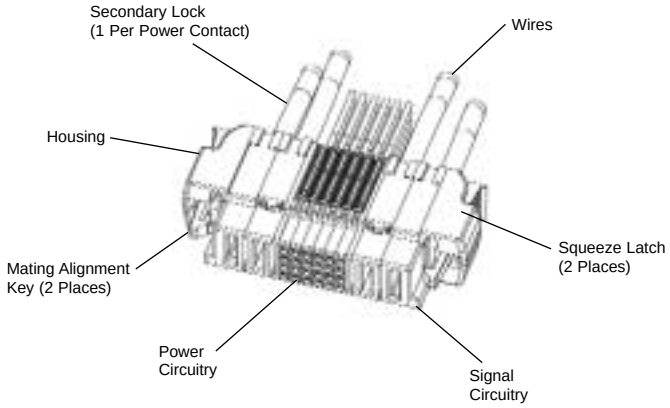


STL Series

Cable-to-Board

- Easy to mate/disconnect with squeeze-to-release latches
- Mates to right angle or vertical MULTI-BEAM XL STR headers
- Replaces two traditional connectors (1 signal and 1 power) with just 1 connector.

Squeeze-to-Release Cable Receptacle (2P + 24S +2P)



STR Series

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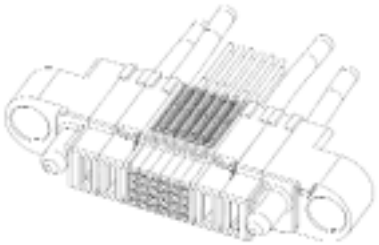
"New" MULTI-BEAM XL Power Distribution Connector System Cable Assemblies

Panel Mount Receptacles

Product Facts

- High strength glass-filled housing materials
- Expandable/modular housing design
- PMT Series floats +/- 0.060" [1.52] in X, Y and Z directions
- STL series floats 0.030" [0.76] in X and Y directions
- Mounting Hardware Kits: #1600914-1 Standard, #1600914-3 High Force



X, Y, Z Floating Receptacle

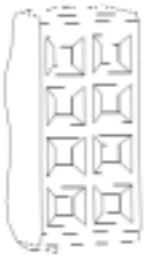
Slide-to-Lock Receptacle

Part numbers shown identify the main receptacle connector housing. Additional components (contacts, contact locks, etc.) are used to complete the cable assembly. This product is only sold as part of a completed cable assembly.

Power and Signal Module Specifications

Power Module Widths:	Module Designation	Maximum Wire Size AWG [mm²]	Max. Insulation Dia. inches [mm]
0.300 [7.62] (ACP)	300 (ACP)	8 [10.5]	0.272 [6.91]
0.250 [6.35] (P)	250 (P)	10 [6.6]	0.215 [5.46]
0.200 [5.08] (HDP)	200 (HDP)	12 [2.6]	0.156 [3.96]
Signal Module Width	**Module Designation**	**Wire Range AWG [mm²]**	**Insulation Range inches [mm]**
0.200 [5.08] (8 Contacts)	Signals	22-26 [0.14-0.32]	0.036-0.054 [0.91-1.37]

Power Module



Signal Module

Configurations/Part Numbers

Available Configurations	Part Numbers			
	PMT Series	STL Series	Mating PCB Headers	
			Vertical	Right Angle
3ACP	1600606-2	1761419-1	6450503-3	6450123-3
4P	—	1761419-4	6450503-4	—
4ACP	—	1761419-3	6450503-5	—
5P	1600606-1	1761419-2	—	6450123-6
1P/16S/1P	1-1600636-3	1761819-4	1-6450500-4	—
1P/24S/1P	1600636-9	—	6450100-5	6450330-1
2P/16S/2P	1-1600636-0	—	6450500-9	—
2P/24S/2P	1600636-2	1761819-2	6450500-3	1-6450330-4
3P/16S/3P	1600636-8	—	6450500-8	—
3ACP/24S/3ACP	1-1600636-4	—	—	—
4P/24S/4P	1-1600636-5	—	6450500-4	—
5ACP/24S/5ACP	1600636-1	—	6450500-1	—
7P/48S/7P	1-1600606-6	—	—	3-6450120-4

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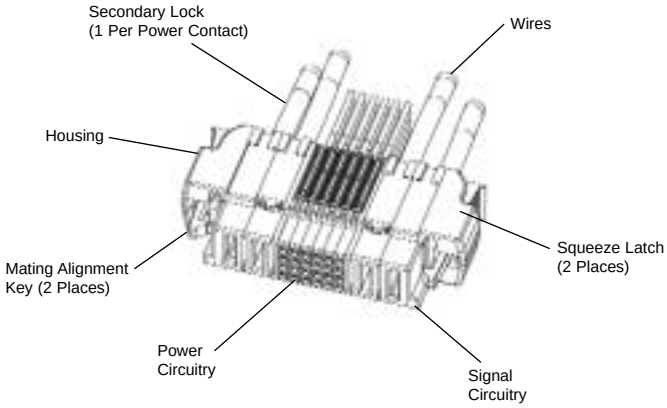
"New" MULTI-BEAM XL Power Distribution Connector System Cable Assemblies

Cable-to-Board Squeeze-to-Release Receptacles

Product Facts

- High strength glass-filled housing
- Pre-installed squeeze-to-release latches.
- Expandable/Modular housing design
- Mates to Tyco Electronics Vertical or Right Angle PCB Headers

Squeeze-to-Release Cable Receptacle (2P + 24S +2P)



STR Series

Technical Documents:

Product Specification

108-2157

Application Specification

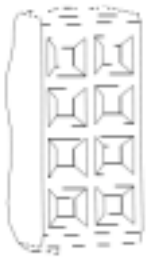
114-13112

Part numbers shown identify the connector housing with the latches pre-installed. Additional TPA/secondary components are used to complete the cable assembly.

Power and Signal Module Specifications

Power Module Widths:	Module Designation	Maximum Wire Size AWG[mm²]	Max. Insulation Dia. inches [mm]
0.300 [7.62] (ACP)	300 (ACP)	8 [10.5]	0.272 [6.91]
0.250 [6.35] (P)	250 (P)	10 [6.6]	0.215 [5.46]
0.200 [5.08] (HDP)	200 (HDP)	12 [2.6]	0.156 [3.96]
Signal Module Width	**Module Designation**	**Wire Range AWG[mm²]**	**Insulation Range inches [mm]**
0.200 [5.08] (8 Contacts)	Signals	22-26 [0.14-0.32]	0.036-0.054 [0.91-1.37]

Power Module



Signal Module

Configurations/Part Numbers

Available Configurations	Part Numbers		
	STR Series	Mating PCB Headers	
		Vertical	Right Angle
2ACP	1600798-2	6450509-1	6450129-1
3P	1600798-3	6450509-2	6450129-2
3ACP	1600798-5	—	—
4P	1600798-4	6450109-1	6450129-3
6P	1600798-1	6450509-3	—
1P/12S/1P	1-1600788-3	—	6450128-4
1P/24S/1P	1600788-8	6450108-4	6450128-1
2P/16S/2P	1-1600788-0	1-6450508-1	—
2P/24S/2P	1600788-1	—	6450128-2
3ACP/24S/3ACP	1-1600788-2	1-6450508-3	—
4P/24S/4P	1-1600788-4	1-6450508-4	—

Catalog 1773096
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South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Specifications

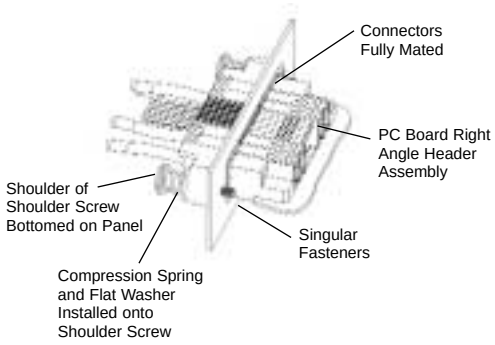
Product Specifications

Power Contacts –
50 Amps on single 8 AWG wire

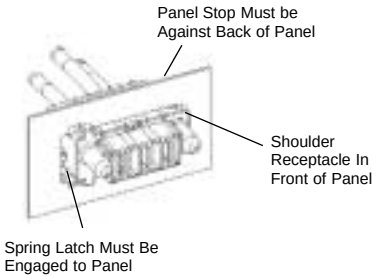
Signal Contacts –
5 Amps on single 22 AWG wire
0.050" [1.27] minimum float in X, Y and Z direction

Sequenced Mating –
3 Levels Pwr/Grnd, Pwr & Signal, Signal 250 Cycle Durability

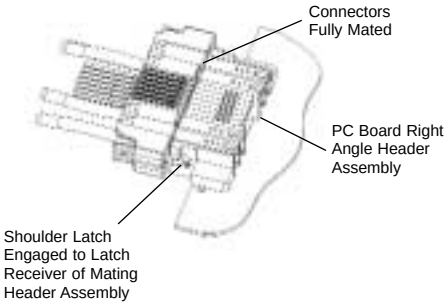
Installed Connector Illustration



PMT Series



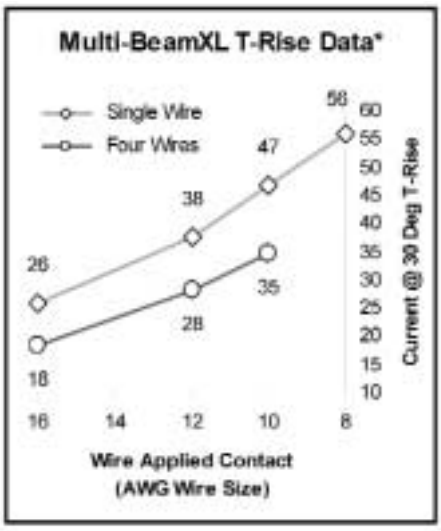
STL Series



STR Series

Additional temperature-rise data available, contact Tyco Electronics Product Engineering.

Current/temperature rise data shown – from End-Of-Life qualification test.



For more information see the product website @ http://mbxl.tycoelectronics.com

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Revised ?-05

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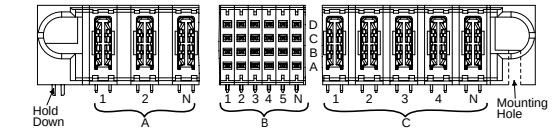
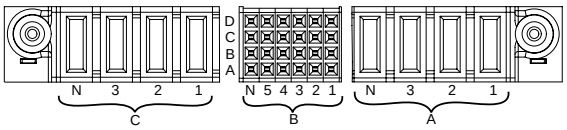
"New" MULTI-BEAM XL Connectors Custom Configuration Worksheet

PCB Mount



Header/Plug (Right Angle Shown)



Receptacle (Vertical Shown)

Cable Mount

XYZ Floating

Slide-to-Lock

To create a unique configuration for MULTI-BEAM XL Connectors simply complete this worksheet and forward it to your Tyco Electronics sales engineer.

1. Application ☐ Board-to-Board ☐ Cable-to-Board

2. Gender ☐ Plug (Male) ☐ Receptacle (Female)

3. Orientation
Cable Only → ☐ Blind Mate specify Floating or Slide-to-Lock receptacle ☐ Latching
PCB Only → ☐ Right Angle ☐ Vertical

4. Termination (Cable Only)

Power	☐ 8 AWG	☐ 10 AWG	☐ 12 AWG	☐ 14 AWG
Signal	☐ 22 AWG	☐ 24 AWG	☐ 26 AWG	

5. Termination Style (PCB Only)

☐ Solder tail .090″ [2.29mm]	☐ Press-Fit .115″ [2.92mm]*
☐ Solder tail .135″ [3.43mm]	☐ Press-Fit .135″ [3.43mm]*
☐ Solder tail .165″ [4.19mm]	☐ Press-Fit .165″ [4.19mm]*

*header only

6. Mounting to PCB
☐ Hold Downs (one on either end)
☐ .122″[3.10mm] Mounting holes (Accepts #4 screws, right angle connectors only)
☐ .150″[3.81mm] Mounting holes (Accepts #6 screws, right angle connectors only)

7. Select # of Contacts

Section A: (Power Contacts)
___ Enter # of Power Contacts (Loaded with standard length Power Contacts)
___ Enter the position(s) to be loaded with Pre-mate contact (Receptacles only) (Mate-First-Break-Last) (i.e. #1,#3, etc.)

Contact Centerline Spacings:
☐ .200″[5.08mm] (HDP)
☐ .250″[6.35mm] (P)
☐ .300″[7.62mm](ACP)

Section B: (Signal Contacts)
___ Enter # of Signal Contacts (Multiples of 8 are standard, i.e. 16, 24, 32...)
___ Enter the Positions with Post-Mate Contacts (Mate-Last-Break-First, Headers only)
Note: Row A is standard (i.e. A1, A3, etc.)

Section C: (Power Contacts)
___ Enter # of Power Contacts (Loaded with standard length Power Contacts)
___ Enter the positions to be loaded with Pre-Mate Contacts (Receptacles only) (Mate-First-Break-Last, i.e. #1, #3, etc.)

Contact Centerline Spacings:
☐ .200″[5.08mm] (HDP)
☐ .250″[6.35mm] (P)
☐ .300″[7.62mm](ACP)

8. Additional Requirements

_____

_____

9. Customer Information

Name: _____ **Company:** _____ **Location:** _____

Phone: _____ **Fax:** _____ **e-mail:** _____

(Submit to your local Tyco Electronics Sales Engineer)

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Engineering Notes

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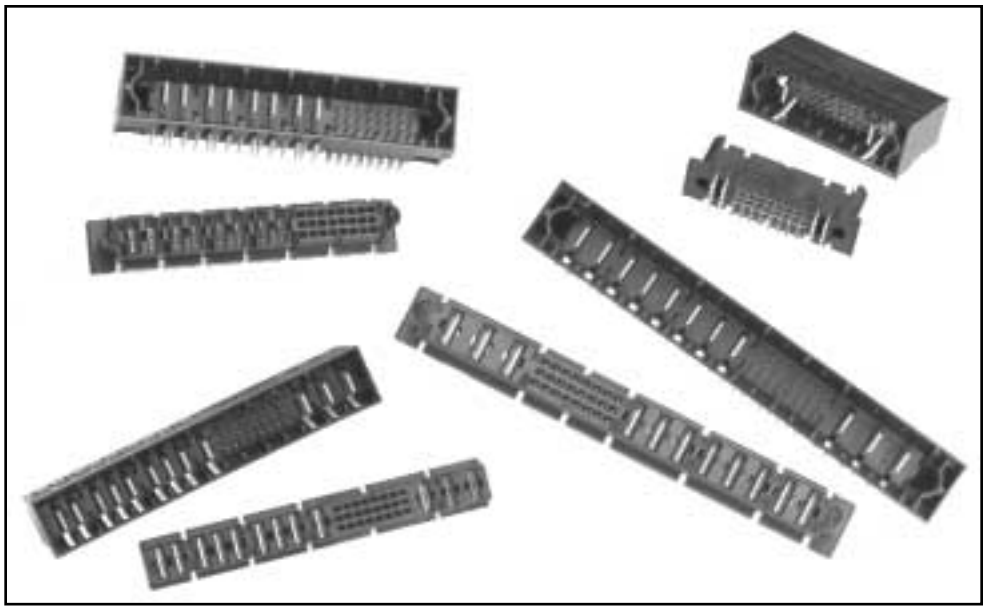
MINIPAK High-Density Board-to-Board Power Connectors

Product Facts

- High current per linear inch
- Various configurations to meet requirements using less board space
- Built-in alignment feature
- Shrouded insulator design
- Meets safety regulatory requirements
- All MINIPAK products in this section are RoHS compliant

Typical Applications

- Telecom and computer applications
- Routers
- Servers,mini and supercomputers
- Removable battery packs
- Uninterruptible power systems (UPS)
- Hot-swap N+1 power distribution



MINIPAK connectors are a family of board-to-board power connectors designed to deliver more current using less board real estate.

This goal is achieved by combining ELCON high-performance contact technology with high-density packaging, and an innovative two-pole DualBlade contact that allows splitting 4.5mm pitch contacts into multiple voltage rails.

Product Highlights

High-performance CROWN BAND contact technology.

For the ultimate in current carrying capacity, MINIPAK connectors use ELCON CROWN BAND contact. To achieve its superior electrical performance,the CROWN BAND contact mounts to the board through a 10 pin DIP footprint, and has a design that ensures the most points of contact at the mating interface for less contact resistance. Current ratings for any given configuration will depend on contact layout,pitch,and thickness of copper on the board.

Tight 4.5 mm contact pitch for highest current density.

In MINIPAK connectors, contact pitch can be as tight as 4.5mm,allowing the highest power density for a board-to-board power connector. Contact spacings of 6.0 and 7.5mm are also available and can be combined to meet the DC current and voltage spacing requirements of the application using the least possible space on the board (see sample configuration sketch on page 1B3).The 4.5mm pitch allows a very dense form factor ideal for space-constrained power designs.The AC input side supports 250VAC voltage spacing.

MINIPAK connectors offer a combination of power contacts on 4.5,6.0 and 7.5mm pitch,signal contacts and alignment guides to meet different output current and voltage requirements while using the least possible space on the board.

Wide selection of configurations.

MINIPAK connectors are available in numerous contact configurations. Which of the MINIPAK connector configurations is most suited for your application will depend on requirements such as AC input current and voltage, DC output currents and voltage spacings,number of signal contacts, board mounting style,and available board space.

Tyco Electronics can also tool custom MINIPAK connector configurations if needed.

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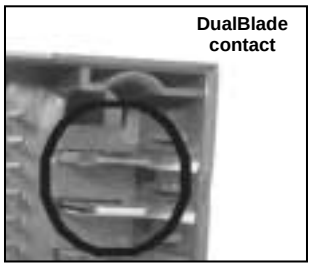
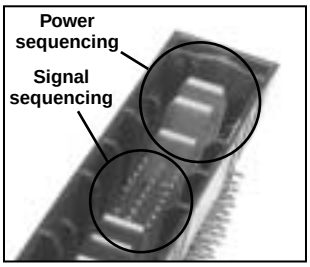
MINIPAK High-Density Board-to-Board Power Connectors



DualBlade contact for more density and flexibility.

The DualBlade contact is a two-pole blade that allows splitting into multiple voltage rails 4.5mm pitch contact blocks that would otherwise be bussed together due their extreme proximity between contacts. Each side of the DualBlade contact can carry approximately 20A[1].

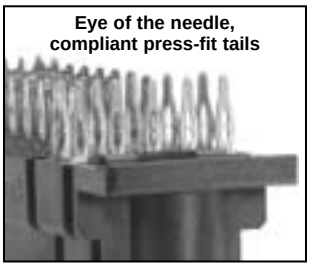
[1] Current rating will vary depending oncontact layout,quantity and spacing.



Power and signal sequencing.

Sequencing of both power and signal contacts is available to allow use of MINIPAK connectors for hot-swapping of power supplies[2]. To specify your sequencing requirements, download the “MINIPAK Connector Configuration Form" on page 26.

[2] Not intended for current interruption.

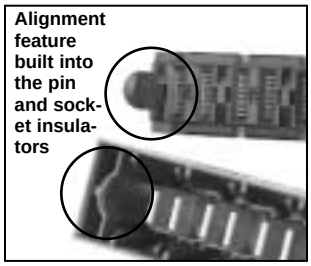


Multiple choices for termination to the board.

MINIPAK connectors can be mounted on the board or backplane using solder or press-fit tails[3]. Truly compliant eye of the needle press-fit tails are used to provide reliable solderless mounting.

Solder tails are available in two lengths to support boards of different thicknesses. See dimensions under CONNECTOR MOUNTING on next page.

[3] Press-fit tails available only on the socket side.



Guides for extra alignment.

In addition to the blind mating capabilities built into the MINIPAK connector housing, a robust guide feature is available for designs that need improved gatherability due to the mechanical requirements of the design.

Fully shrouded housing and probe-proof socket contacts.

For full protection of the power contacts,MINIPAK pin housing connectors are fully shrouded and the socket contacts are recessed to be finger probe-proof. The AC socket contacts are further recessed into the socket cavity to offer compliance with UL 1950/IEC 950 safety requirements.

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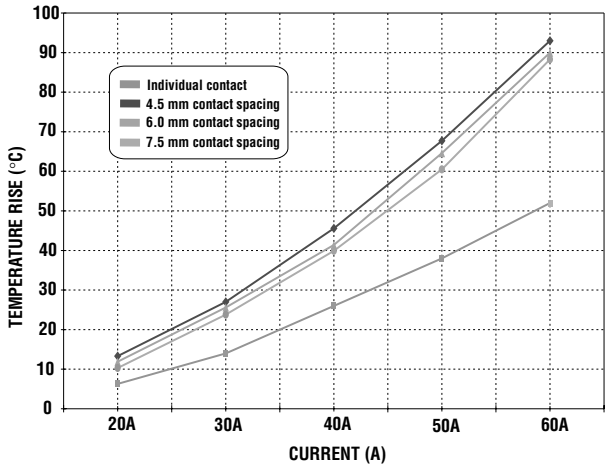
Material	
Insulators	PPA, UL 94V-0 flammability rated, color black
Socket contacts	Phosphor bronze alloy
Signal pins	Brass alloy
Power blades	Copper alloy
Plating	
Contacts	Selective 30µ in. gold over nickel
Terminals	Tin over nickel
Environmental/Mechanical	
Connector operating temperature range	-40°C to +130°C
Mating forces	Power: 1.5lb/contact typical
	Signal: 0.2lb/contact typical
Tooling	Press fixture recommended for compliant press-fit sockets. Consult Tyco Electronics Customer Service for details.
Electrical	
Contact current rating	Individual power contact: 65A max.[1]
Voltage ratings	AC Power: 125/250VAC, signal & DC power: up to 60V
Insulation resistance	5000Ω at 500V DC for 2 minutes, per MIL-STD 1344, Method 3003
Dielectric strength	Power 1,500VAC, signal 250VAC; for 1 minute, per MIL-STD 1344, Method 3001

[1]This is the UL rating for an individual power contact. Current rating for any given configuration with multiple contacts will depend on contact layout, quantity and spacing.

Contact current ratings

The graph to the right shows the current carrying capabilities of an individual power contact,and that of multiple contacts at 4.5, 6.0 and 7.5mm contact spacing.

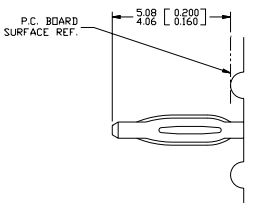


Safety regulatory agency compliance

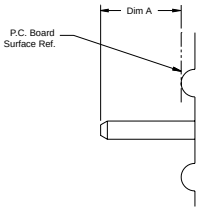
MINIPAK connectors have been evaluated and found to comply with the UL1977 standard and the CSA standard C22.2 No.182.3-M1987. Tyco Electronics will work with customers to obtain application-speci fic regulatory certifications if needed.

CONNECTOR MOUNTING

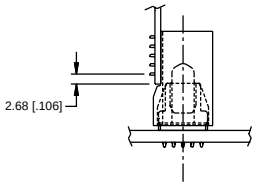
Termination Tails



Compliant press-fit for .093" min. thick PCB



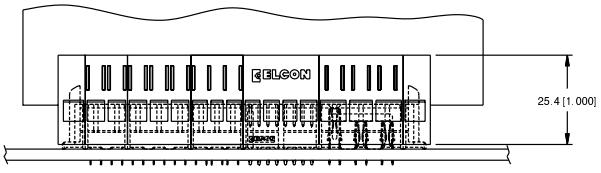
Solder tail



Mating Condition

Dimension "A"

Long Tail	Short Tail
5.08 – 4.06mm (.200 – .160")	3.56 – 2.54mm (.140 – .100")



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MINIPAK Connector Configurations

Nomenclature: AC =AC input, S =Signal contacts, DC =DC input/output (individual contacts unless noted as "common")

MINIPAK Product Configuration Form

ⓐ Enter your information on the table to the right.
ⓑ Specify the design requirements for your MINIPAK configuration in steps 1 through 5 shown below.
ⓒ Sign, date and return this form by fax to your Tyco Electronics Sales Representative.

Tyco Electronics will recommend a MINIPAK connector configuration based on the specified requirements and issue a Customer Drawing for your approval.

This drawing will have a unique part number specific to your configuration, which you should reference whenever you make an inquiry or place an order.

Enter customer information here		
Company	Location	
Contact Name	Title	
Telephone ( )	Fax ( )	
Signature	EMail Address	
	Estimated Production Qty. (Required)	Date

Sign, date and FAX back to 650-361-3223

1 AC INPUT

❑ No AC input required ❑ 250VAC spacing

2 SIGNAL CONTACTS

❑ No signal contacts required ❑ 6 contacts ❑ 24 contacts ❑ 30 contacts ❑ Other: ___

❑ Signal sequencing required (two pin lengths available; write requirements under NOTES below.)

3 DC INPUT/OUTPUT

Write the current, voltage and sequencing requirements for each of the DC lines required by your application. Tyco Electronics will use this information to configure the DC side of your MINIPAK connector with the appropriate number of contacts and contact spacing.

		DC Requirements							
		DC1	DC2	DC3	DC4	DC5	DC6	DC7	DC8
Current (A)									
Voltage (V)									
Blade length	Standard								
	Prenate								

4 BOARD MOUNTING STYLE

Straight socket (choose one)

❑ Short solder tail (.062" thick boards)
❑ Long solder tail (.093/.125" thick boards)
❑ Compliant press-fit tails (.093" min. thick board recommended)

Right angle blade (choose one)

❑ Short solder tail (for .062" thick boards)
❑ Long solder tail (.093/.125" thick boards)

5 OTHER REQUIREMENTS

❑ Alignment guides required
❑ Connector length restriction, if any: _____" (_____mm)

For further clarity, you can attach a sketch to this form if necessary.

❑ Sketch attached: ___ pages

NOTES:

CUSTOM MINIPAK CONNECTOR CONFIGURATIONS

If the standard MINIPAK connector configuration does not meet your application requirements, Tyco Electronics may be able to tool a custom MINIPAK connector solution depending on your requirements and production volume. Please consult Customer Service for details.

This custom MINIPAK connector was designed for very high power and signal density by combining the high-density form factor of MINIPAK connectors with an upper row of signal contacts that are terminated on the back of the connector to a low-cost ribbon cable interconnection.

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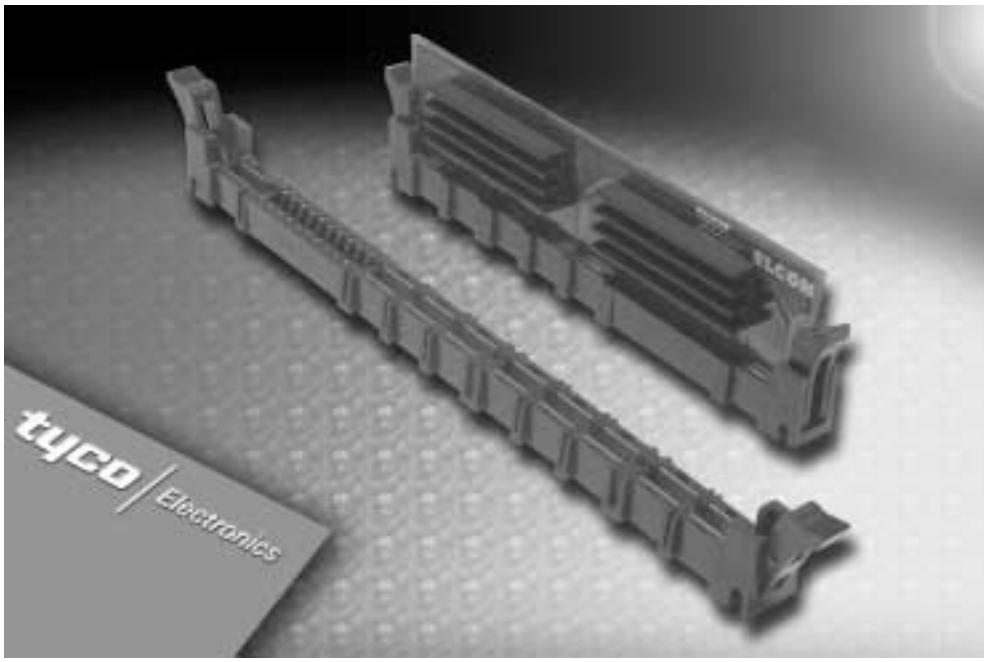
"New" Mini CROWN EDGE High Current Power Connectors for 1U/2U Pluggable VRMs

Product Facts

- Low profile, open housing design
- ELCON high-performance CROWN BAND contacts deliver 25A each
- High-density power designed for VRM 10.2 and beyond
- Multiple power and signal contacts allow flexible power pcb trace layouts
- SMT, pc tail and press-fit terminations
- Mating blade for board-stacking interconnection also available
- All Mini CROWN EDGE connector part numbers in this section are RoHS compliant

Typical Applications

- 1U/2U VRM interconnections
- Servers and workstations
- VRM-to-MPU power delivery
- Stacked boards



This is a family of low-profile, high-current power connectors for pluggable 1U and 2U Voltage Regulator Modules (VRM). All Mini CROWN EDGE connectors use ELCON high-performance CROWN BAND true power contacts, capable of 25A each. While there is a Mini CROWN EDGE connector configuration specifically designed for VRM 10.2 that can carry up to 150A, other layouts capable of 200A or more are also available.

Product Highlights

True power contacts, higher currents

In contrast with other VRM connectors, this is a true power interconnect that uses ELCON CROWN BAND power contacts that deliver 25A each (see CURRENT RATINGS chart). As a result, Mini CROWN EDGE connectors can deliver high-density power that meets the requirements of VRM 10.2 applications and beyond.

Various termination styles to PCB

Termination to the board can be surface mount (SMT), solder tail, or compliant press-fit. Solder tail termination is available in two lengths, to accommodate various PCB thicknesses. To provide a reliable current path to the board, Mini CROWN EDGE connectors use proven eye-of-the-needle style press-fit compliant tails.

Low loop inductance levels

The short path of the CROWN BAND power contacts translates into low loop inductance levels, making Mini CROWN EDGE connectors suitable for voltage regulators with high slew rates such as those used in recent VRM-to-MPU power delivery architectures.

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"New" Mini CROWN EDGE High Current Power Connectors for 1U/2U Pluggable VRMs

Cutout view showing CROWN BAND power contacts

Flexible power arrangements

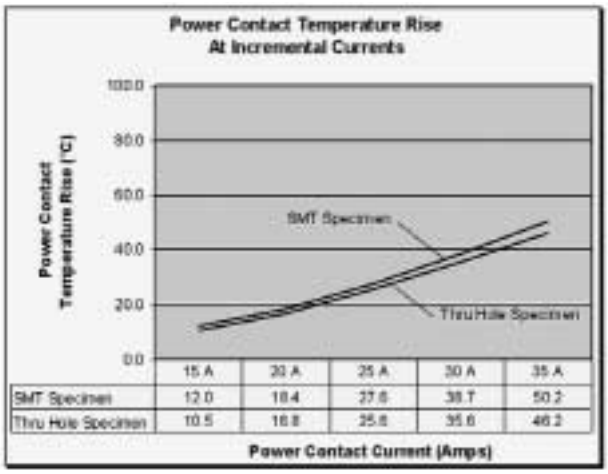
In contrast with other VRM interconnects where U-shaped contacts are used, in Mini CROWN EDGE connectors all power contacts are isolated from each other, allowing the design engineer flexibility in laying out multiple voltage rails and returns.

Robust, low-profile housing design

Mini CROWN EDGE connectors feature a low profile housing design that leaves more room for placement of components on the VRM board. Rigorous shock and vibration testing shows that the two latches used to hold the VRM are robust enough to safely hold 2U height modules.

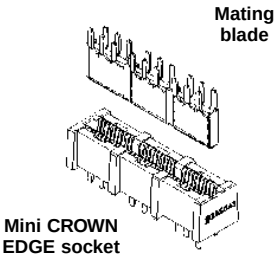
Current Ratings

As shown on the chart below, Mini CROWN EDGE power contacts are rated at 25A at 30°C temperature rise.



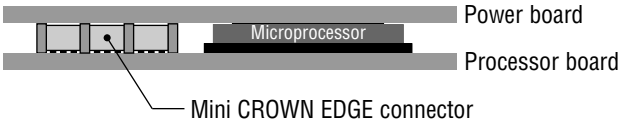
OTHER applications

A mating blade that allows certain Mini CROWN EDGE configurations to be used as a stacked board power interconnection device is also available.



Sample of stacked board application

In this application, a Mini CROWN EDGE connector is used in close proximity to the MPU for delivery of high-current from a power board stacked over the processor board.



Product Specifications

Materials		
Insulators	High Temperature Thermoplastic, UL 94V-0 flammability rated, color black	
Contacts	Copper Alloy	
Finishes		
Contacts	Selectively plated gold (30 uin minimum) with tin on terminations, all over nickel	
Electrical		
Current Rating Power Contacts	UL	30 Amp, per UL 1977, para 16
	CUR/CSA	25 Amp
Signal Contacts	UL	3 Amp, per UL 1977, para 16
	CUR/CSA	2 Amp
Contact resistance	Power	2 MΩ maximum initial, (3 MΩ maximum after 250 cycles durability), at 25A
	Signal	10 MΩ maximum initial, (15 MΩ maximum after 250 cycles durability)
Dielectric Strength		1,500 VDC for 1 minute, per UL 1977, para 17.3b
Mechanical		
Durability	250 Cycles, per EIA-364-9C	
Shock	per EIA-364-27B, Test Condition H	
Vibration	per EIA-364-28D, Test Condition VII	
Operating Temperature	-40° to +105°C	
Temperature Life	105°C for 96 hours, per EIA-364-17B, Method C	
Recommended PCB Hole, Compliant Press Fit and Solder tail	Finished hole: 0.040 +/- .0030" dia. (1.02 +/- .08 mm dia.) Drilled hole: 0.0453 +/- .0005" dia. (1.15 =/- .013 mm dia.) Copper Plate: 0.0010" (.025 mm) min. per surface Tin Plate: 0.0003" (.008 mm) min. per surface	
Marking	Connectors are marked with manufacturer's logo, part number and lot code	

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Revised 8-05

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"New" Mini CROWN EDGE Connector Configurations

General Dimensions

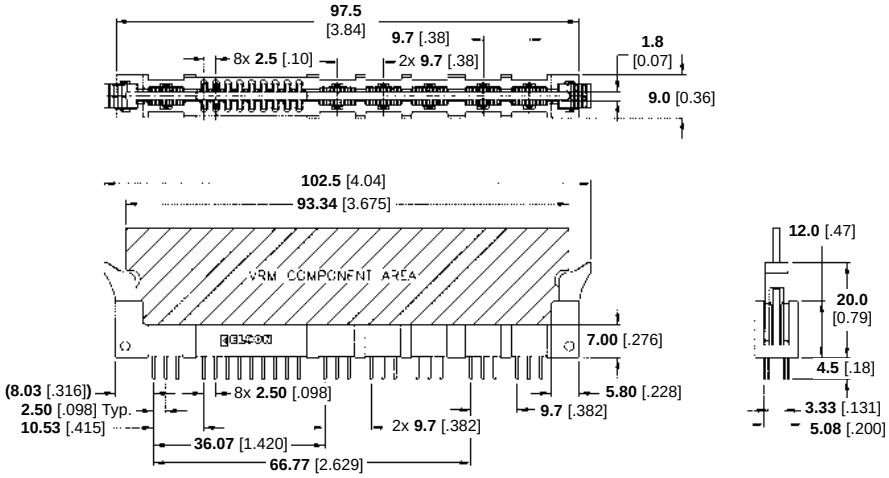
Mini CROWN EDGE connectors are available in several form factors designed to meet diverse application requirements. For other available Mini CROWN EDGE Connector configurations, please check our website at http://www.tycoelectronics.com or consult Tyco Electronics.

Configuration: P6S9

Meets Intel VRM 10.2 specifications
Power contacts x 12
Signal contacts x 18
Mating board thickness: 0.062"

Reference Part Numbers:

Solder tail, 4.5 mm (0.18")
1651826-1
Solder tail, 3.0 mm (0.12")
1651929-1
Surface Mount
1766336-1
Compliant Press-fit 3.8 mm (0.15")
1766436-1

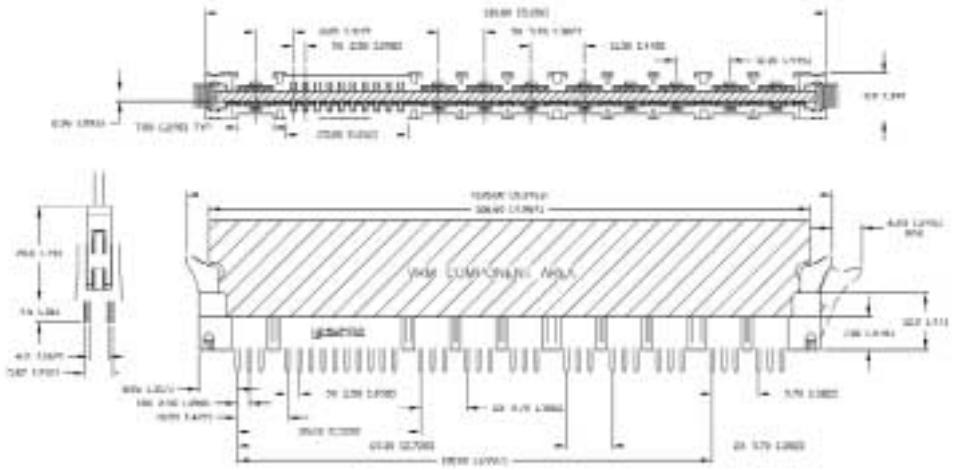


Configuration: P9S10

Meets AMD K8 specifications
Power contacts x 18
Signal contacts x 20
Mating board thickness: 0.093"

Reference Part Numbers:

Solder tail, 4.5 mm (0.18")
1766442-1
Solder tail, 3.0 mm (0.12")
1651864-1
Compliant Press-fit 3.8 mm (0.15")
1766443-1



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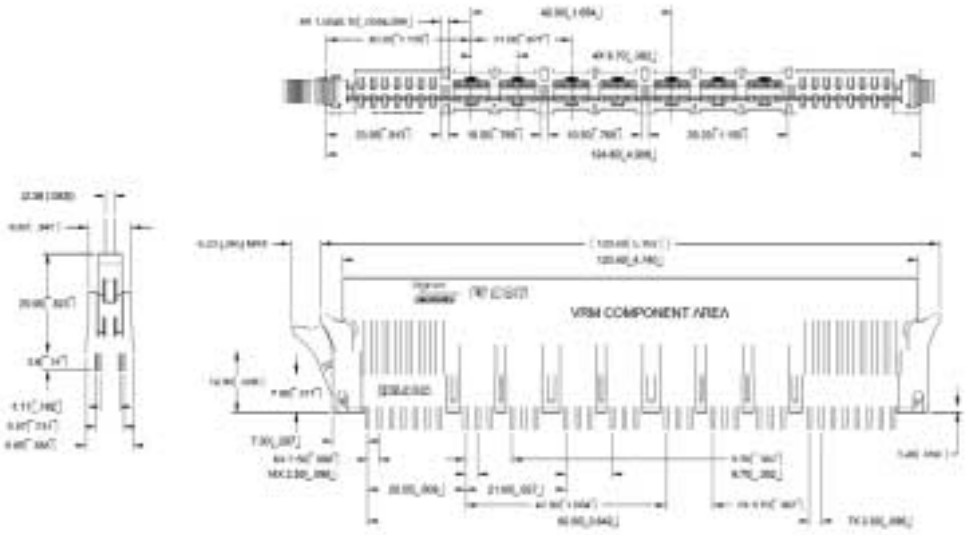
Mini CROWN EDGE Connector Configurations

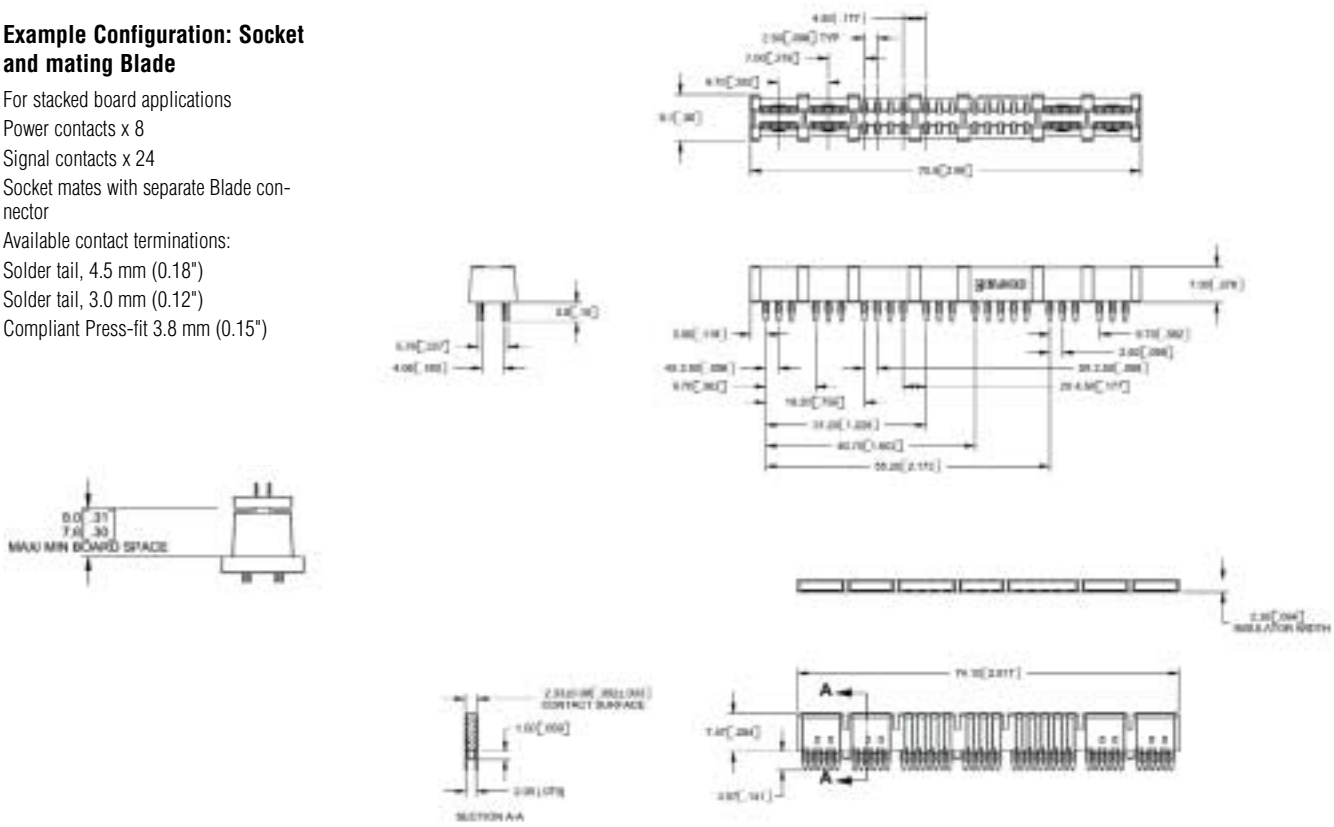
Configuration: P7S15

Meets AMD K9 specifications
Power contacts x 14
Signal contacts x 30
Mating board thickness: 0.093"
Reference Part Numbers:
Solder tail, 4.5 mm (0.18")
1766308-1



Example Configuration: Socket and mating Blade

For stacked board applications
Power contacts x 8
Signal contacts x 24
Socket mates with separate Blade connector
Available contact terminations:
Solder tail, 4.5 mm (0.18")
Solder tail, 3.0 mm (0.12")
Compliant Press-fit 3.8 mm (0.15")



Custom Layouts:

Shown above are some of the currently tooled Mini CROWN EDGE connector layouts. If none of them meets your application requirements, Tyco Electronics can design a custom layout based on your specifications.

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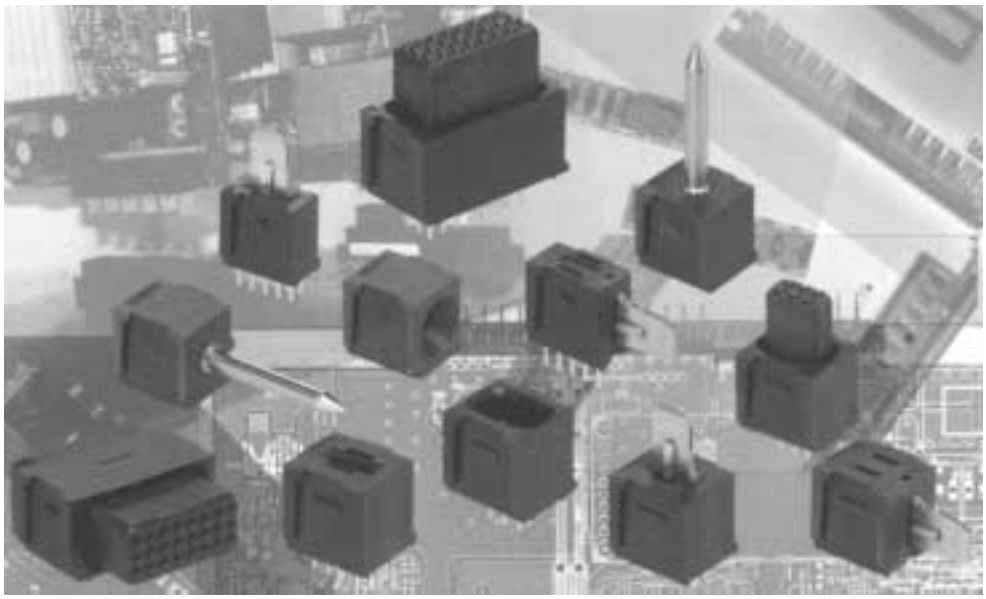
FLATPAQ True Hot-Plug Board-to-Board Power Connectors

Product Facts

- 45 Amp high-performance ELCON CROWN BAND power contacts
- True hot-plug power contacts available for current interruption under load
- Versatile modular design allows customized configuration to meet your specific application requirements
- Perpendicular, parallel and co-planar styles available
- Sequenced mating of power and signal contacts
- Solder and compliant press-fit termination to the board
- Unique active guide modules double as alignment guide and power contact
- All FLATPAQ Products in this section are RoHS compliant

Typical Applications

- Board-to-board power interconnections
- Hot-swap N+1 power distribution for telecommunications, servers and mini-computers
- Uninterruptible power systems (UPS)
- Removable battery packs



FLATPAQ connectors provide hot-pluggable AC and DC power in board-to-board applications. Customized configurations of up to 45 A power contacts, signal & logic lines, and guides (both active and passive) are enabled by the assembly of various standard modules. This allows the designer to specify guidance for blind mating situations, contact mating sequence, spacing for voltage ratings, and current interruption under load (true Hot-Plug), to meet custom design requirements without incurring any tooling expense.

Product Highlights

Highly Configurable

FLATPAQ connectors are custom configurable using standard modules that can be arranged in any order to meet the application requirements. It is even possible to have both power blades and power sockets in the same connector side. Using off-the-shelf, modular components enables quick turnaround of sample requests, typically within one week, to allow your design to move forward on schedule.

High-performance ELCON Power Contacts

FLATPAQ socket modules use proven CROWN BAND technology, for low insertion and extraction forces, minimal voltage drop and reduced temperature rise. The latest generation contacts are 45 A USR rated (32.5A CNR) and can handle even higher currents when mounted on boards with 5 oz copper traces or on bus bars.

Hot Pluggable socket contacts are rated at 35 A USR, 20 A CNR. Both Hot Plug and regular sockets can be mixed in the same connector (as can both power blades and power sockets).

Standard power modules utilize the same contacts as the MINIPAK Connectors for cost effectiveness. The original "float" mounted blade modules are still available where physically isolating the blade from the PCB solder joints is desired.

24 position straight mount Signal socket modules are now available in a cost effective 1 A design.

Power and Signal Sequencing

Power contacts are available in Standard, Premate and Postmate lengths to meet your power sequencing requirements. Signal contacts have Standard and Premate length options, consult Customer Service for details.

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FLATPAQ Connector Product Highlights (Continued)

Various Contact Termination Styles

All connectors are available in two lengths of solder termination, .115" (2.9 mm) nominal for 0.062" (1.6 mm) thick boards, and 0.177" (4.5 mm) for 0.093" (2.4 mm) and 0.125" (3.18 mm) boards.

Straight mount socket connectors are also available with compliant 'Eye of the Needle' design press-fit terminals for 0.093" (2.4 mm) minimum thickness boards and bus bars. Tyco Electronics will provide details of the recommended pressing fixture for each assembly.

All terminations fit 0.040 +/- .0030" (1.02 =/- .08 mm) diameter plated through holes.

Alignment Guides and Mounting Ears

FLATPAQ Connector alignment guides improve gatherability in blind mate situations and can be either electrically active (35 A rated) or passive. Passive guides should be used in conjunction with mounting ears when placed at the end of the connector. Mounting ears should also be considered on right angle mounted connectors.

Finished Connector Drawing

Tyco Electronics will provide a Customer Drawing showing all envelope dimensions and PCB mounting pattern based on the configuration indicated using the layout sheet available at www.tycoelectronics.com. See page 1D4 for details on completing the layout sheet. A drawing with general contact sequencing and alignment information is available; please contact Customer Service for a copy.

Safety Regulatory Agency Compliance

FLATPAQ connector has been evaluated by safety regulatory agencies for use in data, signal, control and power applications. Consult Customer Service for details.

This is a custom connector called SERVERPAK that was specifically designed for high-end PC servers.

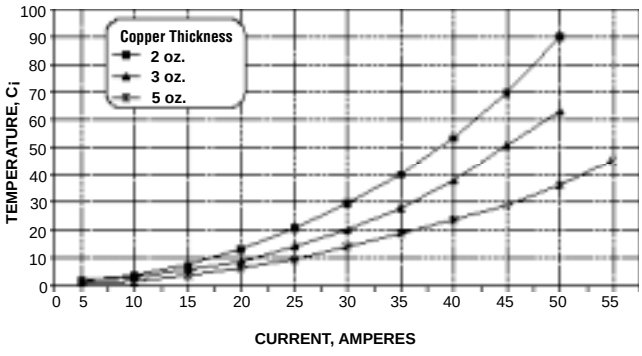
Custom FLATPAQ Connector Designs

Tyco Electronics has tooled a number of cost effective and robust one-piece insulators for popular configurations. Should your requirement match one of these layouts, it will be offered as an alternative to the modular assembly. And if none of our existing solutions meet your application, Tyco Electronics can design a custom FLATPAQ interconnect based on your specifications. We work closely with our customer's engineers to fully understand the design requirements and develop an interconnect solution that meets your exact needs. Consult Customer Service for more details.

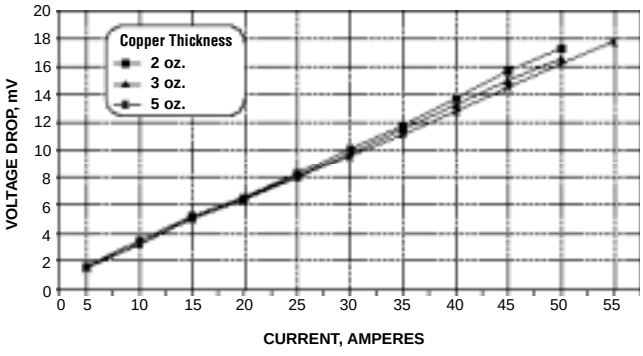
Electrical Performance

The graphs below show the performance of the FLATPAQ contact design in terms of temperature rise against current. Tests were performed on 250 V power modules mounted on PC boards with 2 oz, 3 oz, and 5 oz copper traces.

Temperature Rise



Voltage Drop



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FLATPAQ Connector Product Specifications

Materials		
Insulators	PPA, UL 94V-0 flammability rated, color black	
Power Blades	Copper alloy	
Power Sockets	Phosphor Bronze	
Hot Plug Power Sockets & Active Guide Sockets	Crown Bands: Beryllium Copper Holder: Phosphor Bronze	
Signal Pin Contacts	Solder termination: Brass	
	Press fit: Phosphor Bronze	
Signal Socket Contacts	1 Amp: Phosphor Bronze 3 Amp: Beryllium Copper	
Passive Guide Pin	Brass	
Active Guide Pin	Copper alloy	
Finishes		
Contacts	Selectively plated gold (30 µ in. minimum) with tin on terminations, all over nickel	
Passive Guide Pin	Nickel	
Active Guide Pin	Silver	
Electrical		
Current Rating Power Contacts	UL/TUV	45 Amp
	CUR/CSA	32.5 Amp
Current Rating, Hot Plug Power Contacts	UL/TUV	35 Amp at 250V, 50 cycles
	CUR/CSA	20 Amp at 250V, 50 cycles
Signal Contacts, 1 Amp	UL	1 Amp, 250 VAC
	CUR/CSA	1 Amp, 250 VAC
Signal Contacts, 3 Amp	UL/TUV	3 Amp, 250 VAC
	CUR/CSA	2.5 Amp, 250 VAC
Contact resistance	Power	2 mΩ maximum initial, (3 mΩ maximum after 500 cycles durability), at 35A per MIL-STD-1344, Method 3004
	Signal	15 mΩ maximum initial, (30 mΩ maximum after 500 cycles durability), at 100mA, 20 mV, per MIL-STD-1344, Method 3002
Insulation Resistance		5,000 MΩ minimum at 500VDC for 2 minutes, per MIL-STD-1344, Method 3003
Dielectric Strength		1,500 VDC for 1 minute, per MIL-STD-1344, Method 3001
Mechanical		
Insertion Force	Power Signal	4.0 lbf (17.8 N) maximum 5.0 ozf (1.4 N) maximum, using .0305" (.775mm) diameter steel test pin
Extraction Force	Power Signal	1.0 lbf (4.4 N) minimum 0.5 ozf (0.1 N) minimum, using .0295" (.749mm) diameter steel test pin
Contact Retention (in insulator)	Power Signal	10.0 lbf (44.4 N) minimum 5.0 lbf (22.2 N) minimum
Durability		500 Cycles, per MIL-STD-1344, Method 2016
Operating Temperature	-40 to +105° C	
Recommended PCB Hole	Finished hole: 0.040 +/- .0030" dia. (1.02 +/- .08 mm dia.) Drilled hole: 0.0453 +/- .0005" dia. (1.15 +/- .013 mm dia.) Copper Plate: 0.0010" (.025 mm) min. per surface Tin Plate: 0.0003" (.008 mm) min. per surface	
Press Fit Tooling	Press fixture is recommended for compliant press fit assemblies. Consult Tyco Electronics for tool drawing	
Marking	Connectors are marked with manufacturer's logo, part number and lot code	

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How to Specify Your Modular FLATPAQ Connector

In order to build your Modular FLATPAQ connector, it is necessary to specify all application-specific requirements such as required modules, their order, termination, and sequencing. For this purpose, a Modular FLATPAQ Connector layout form such as the one shown below is available. Just complete the form and send it to Elcon Customer Service at Tyco Electronics. We will then generate a Customer Use Drawing for you to check and approve prior to connector production. Samples are also available upon request.

❶ Enter your contact information, including signature and date.

❷ Indicate the connector layout by filling in the FP number of each module required in the boxes, one per box. Use one form per mated pair. The left to right order of the modules should match the mating face views of the connector. When laying out right angle assemblies, make sure that you look at the mating face with the termination tails facing downwards.

❸ For solder terminated assemblies, indicate the tail length for each half of the connector using the checkboxes to the right of the layout grid.

Sample Modular FLATPAQ Connector Layout Form

FLATPAQ Connector Layout

INSTRUCTIONS

❶ Indicate the connector layout by filling in the FP number of each module required in the boxes, one per box. Use one form per mated pair.

❷ The left to right order of the modules should match the **mating face views** of the connector. **When laying out right angle assemblies**, make sure that you look at the mating face with the termination tails facing downwards.

❸ **For solder terminated assemblies**, indicate the tail length for each half of the connector using the checkboxes to the right of the layout grid.

FAX TO ELCON AT (650-361-3223)		
Company	Location	
Contact name	Title	
Telephone ( )	Fax ( )	
Signature	Email address	
	Quantity required	Date

Upon receipt of this form, Elcon will generate a Customer Use Drawing for you to check and approve prior to connector production.

Write the "FP" numbers to indicate the layout of one half of the connector assembly, matching the left to right order with the mating face view of the connector (right angle assembly tails facing downwards).

FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	Solder tail options
														☐ .115" (2.9 mm); .062" thick boards ☐ .177" (4.5 mm); .093/.125" boards

Write the "FP" numbers to indicate the layout of the mate to the above assembly, matching the left to right order with the mating face view of the connector (right angle assembly tails facing downwards).

FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	Solder tail options
														☐ .115" (2.9 mm); .062" thick boards ☐ .177" (4.5 mm); .093/.125" boards

AVAILABLE FLATPAQ MODULES

RIGHT ANGLE MOUNT

250V Power Modules

FP151 Standard Blade FP105 Float, standard
FP152 Premate Blade FP106 Float, premate
FP153 Postmate Blade FP107 Float, postmate
FP104 Hot Plug Socket
FP512 Spacer, 250 V

600V Power Modules

FP155 Standard Blade FP121 Float, standard
FP156 Premate Blade FP122 Float, premate
FP157 Postmate Blade FP123 Float, postmate
FP514 Hot Plug Socket
FP120 Spacer, 600 V

Signal Modules

FP302 24-pin
FP303 24-pin socket
FP314 6-pin
FP315 6-pin socket

Notes: All modules are solder tail termination unless indicated as compliant Press Fit. Select solder tail length using check boxes to the right of the connector layout grid above. 0.093" or thicker boards are recommended for compliant Press Fit termination style. Consult Customer Service for signal module sequencing. See catalog for benefits of Hot Plug and Float options.

Mounts

FP500 Left flange mount
FP501 Right flange mount

Guides

Right angle guide sockets FP506 Passive FP516 Active
FP507 Right angle passive guide pin

STRAIGHT MOUNT

250V Power Modules

FP150 Socket, Solder FP250 Socket, Press Fit FP100, Hot Plug, Solder FP200 Hot Plug, Press Fit
FP161 Standard Blade FP101 Float, Standard
FP162 Premate Blade FP102 Float, premate
FP163 Postmate Blade FP103 Float, postmate
FP511 Spacer, 250 V

600V Power Modules

FP154 Socket, Solder FP254 Socket, Press Fit FP116, Hot Plug, Solder FP216 Hot Plug, Press Fit
FP165 Standard Blade FP117 Float, Standard
FP166 Premate Blade FP118 Float, premate
FP167 Postmate Blade FP119 Float, postmate
FP513 Spacer, 600 V

Signal Modules

FP300 24-pin FP400 24-pin, Press Fit
FP318 24-pin socket FP418 24-pin skt, Press Fit FP301 24-pin skt, 3A rated FP401 24-pin skt, 3A, Press Fit
FP312 6-pin FP412 6-pin, Press Fit
FP313 6-pin socket, 3A rated FP413 6-pin skt, 3A, Press Fit

Mounts

FP500 Left flange mount
FP501 Right flange mount

Guides

FP502 Straight passive guide socket
Straight guide pins FP503 Passive FP515 Active, M3 FP517 Active, 4-40

■ How to Obtain Modular FLATPAQ Connector Layout Forms

Modular FLATPAQ Connector layout forms can be obtained directly from Customer Service or through your Tyco Electronics Sales Engineer. They can also be downloaded from the website; at http://www.tycoelectronics.com.

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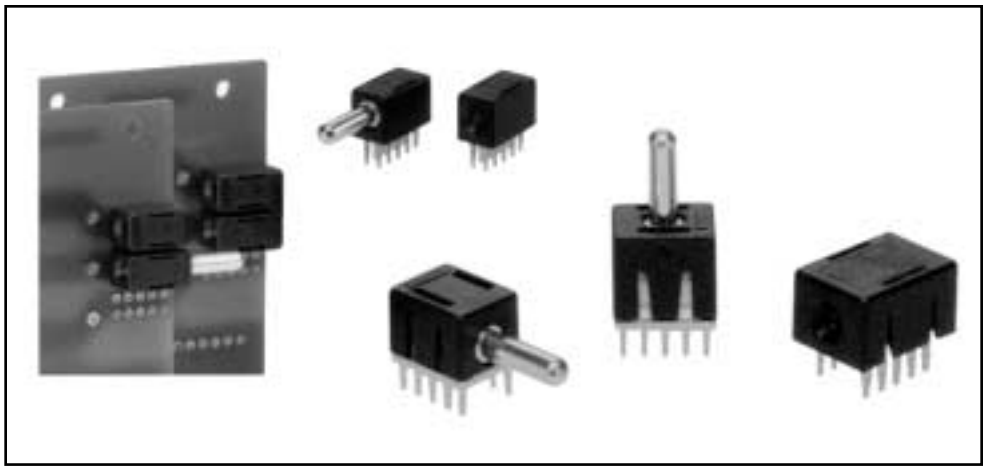
ICCON Single Pole Power Connectors

Product Facts

- Uses high-performance Crown contact
- 35A current rating
- True compliant press-fit and solder tails
- Pin locking feature option
- Standard DIP footprint .300 x .100 and SLIMLINE ICCON Connector .100 x .100
- Insulator rated at 105 C, UL 94V-0
- Meets US, Canadian and European safety regulatory requirements
- #8 AWG wire size
- Parallel and perpendicular
- Sequencing capability
- All ICCON Products in this section are RoHS compliant

Typical Applications

- Power distribution
- Board-to-board interconnection
- Board-to-busbar interconnection
- Board-to-wire interconnection
- High-density power designs
- Board stacking



ICCON connectors provide a reliable high current power interconnection with quick connect/disconnect function for space constrained motherboard-daughterboard, cable-board and board-busbar power delivery applications.

Product Highlights

High Performance Contact

ICCON connectors use ELCON CROWN BAND Contact, a multifingered spring which provides a greater surface contact area, thus ensuring small millivolt drop, minimum heat generation and very low insertion and extraction forces.

Optional Locking Feature

The optional locking feature provides minimum 5 lbs. (2.21kg) retention force to improve connection integrity, securing against accidental unmating in harsh mechanical conditions.

Support for Multiple Mounting Styles

ICCON connectors are available with press-fit or solder tails for mounting on both PC bards and bus bars. Tyco Electronics uses eye of the needle true compliant tails for the most reliable mounting using solderless techniques. Each ICCON connector has a 10 pin DIP footprint for convenient industry standard mounting

Mating with Discrete Contracts

For further versatility, ICCON connector products can mate with discrete contacts, available in a variety of termination types.

SLIMLINE ICCON Connectors

With a footprint close to 30% smaller than the standard ICCON connector products, the SLIMLINE ICCON connector products allow integrating more components in less board real estate, providing substantial space savings compared to connectors of this type in the same performance range.

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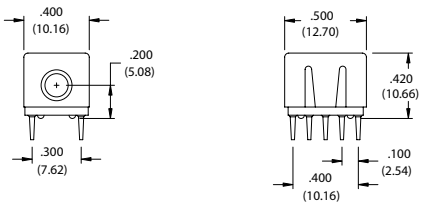
Standard DIP Connectors (.300 x .100 footprint) (ICCON Connectors)

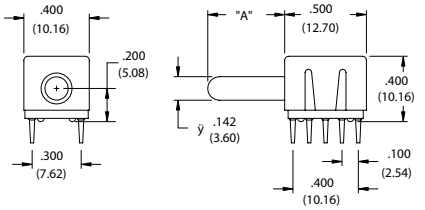
R/A Receptacle

6643232-1, solder
6643272-1, compliant



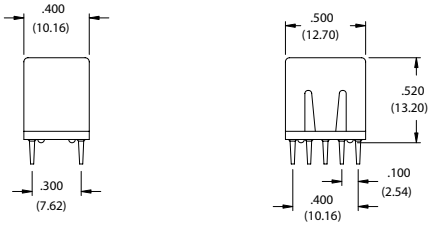
R/A Pin

For Part Numbers and "A" Dimension
See Table Below



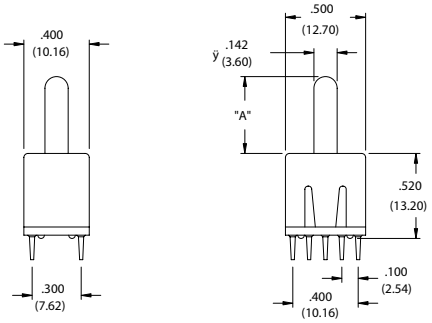
Vertical Receptacle

6643264-1 Through Hole, solder
6643247-1 Closed, Solder
6643269-1 Through Hole, compliant



Vertical Pin

For Part Numbers and "A" Dimension
See Table Below



Right Angle Pins Solder tail	Compliant	Locking Style	Length "A"
6643281-1	6643275-1	Non-Lock	.470 [11.93]
6643276-1	6643273-1	Lock	.470 [11.93]
6643431-1	6643442-1	Non-Lock	.570 [14.48]
6643432-1	6643443-1	Non-Lock	.750 [19.05]
6643433-1	6643444-1	Non-Lock	1.000 [25.40]
6643434-1	6643445-1	Non-Lock	1.250 [31.75]
6650785-1	6643446-1	Non-Lock	1.500 [38.10]
6643435-1	6643447-1	Non-Lock	1.750 [44.45]

Vertical Pins Solder tail	Compliant	Locking Style	Length "A"
6643283-1	6643274-1	Non-Lock	.470 [11.93]
6643266-1	6643271-1	Lock	.470 [11.93]
6643436-1	6643449-1	Non-Lock	.570 [14.48]
6643437-1	6643450-1	Non-Lock	.750 [19.05]
6643438-1	6643451-1	Non-Lock	1.000 [25.40]
6643439-1	6766439-1	Non-Lock	1.250 [31.75]
6643440-1	6766440-1	Non-Lock	1.500 [38.10]
6643441-1	6766441-1	Non-Lock	1.750 [44.45]

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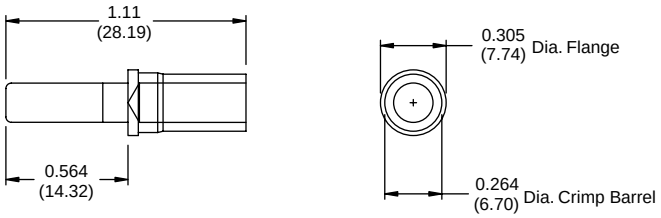
Japan: 81-44-844-8013
UK: 44-1908-574289

Discrete Contacts (ICCON Connectors)

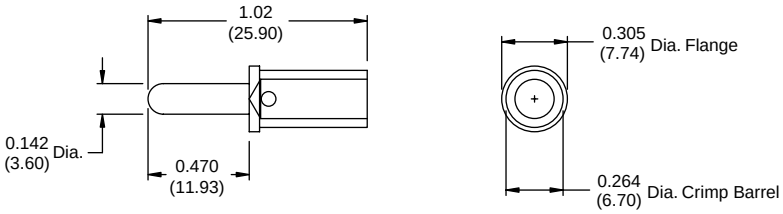
Crimp Socket

6648317-1 #8 AWG



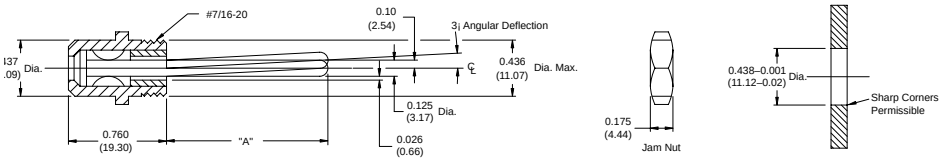
Crimp Pins

1766163-1 #8 AWG Non-Lock
1766160-1 #8 AWG Lock
1766816-1 #10 AWG Non-Lock
1766161-1 #10 AWG Lock

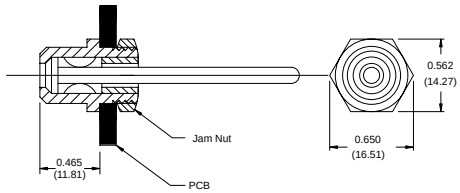


Board Mount Pin – Floating

6643252-1 "A" = 1.250 (31.75)
6643253-1 "A" = 1.350 (34.29)

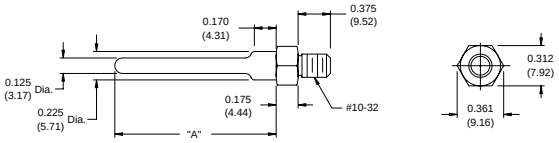


Mounting Requirements



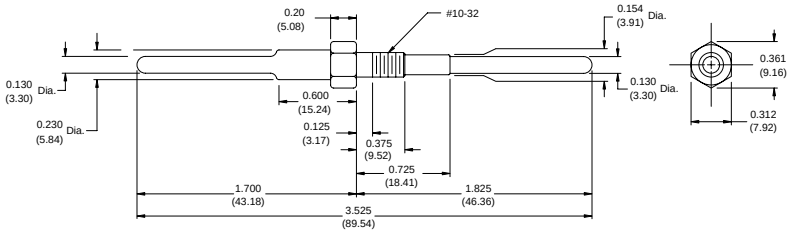
Board Mount Pin

1766815-1 "A" = 1.250 (31.75)
1766157-1 "A" = 1.350 (34.29)



Double-Ended Board Mount Pin

1766817-1



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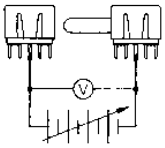
Electrical Performance (ICCON Connectors)

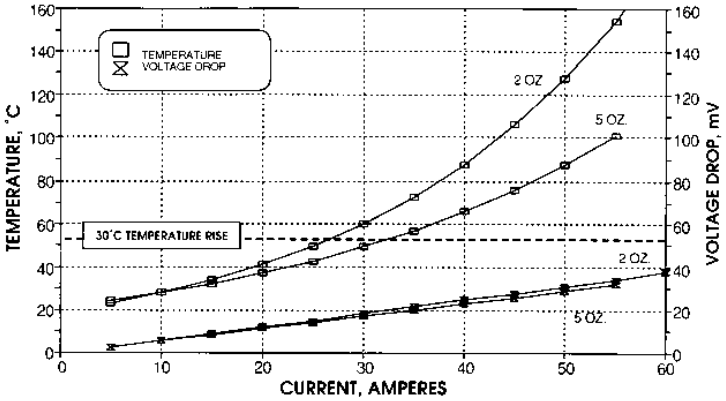
Right Angle Socket

6643232-1

Right Angle Pin

6643281-1



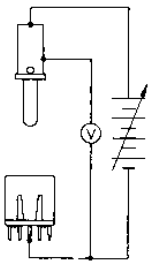


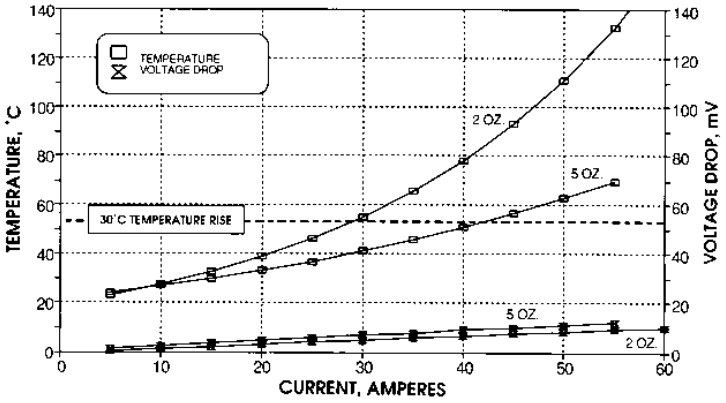
Vertical Socket

6643264-1

Discrete Pin

1766163-1





Specifications

Finishes		
Crowns		Gold plated over nickel
Pin Contacts		Silver over nickel
Material		
Housing		Polyester, 30% glass-filled, UL 94V-0 black
Body		Metal Alloy
Pin Contacts		Brass
Crowns		Beryllium Copper
Electrical		
Ratings	UL (USR)	35A at 250V
	UL (CNR)	25A at 250V

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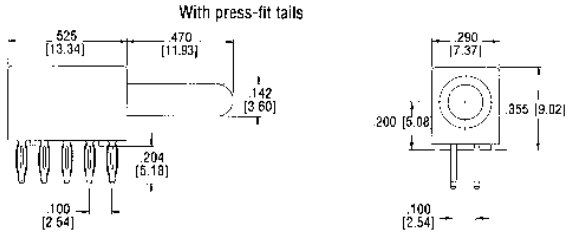
SLIMLINE ICCON Connectors (.100 x .100 Footprint)

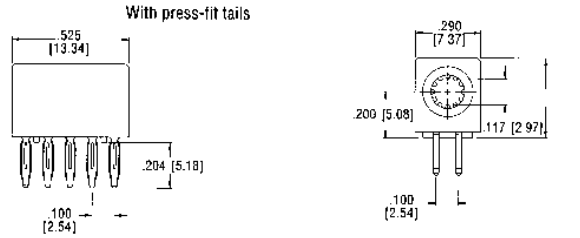
Parallel Pin

6643228-1 Solder
6643227-1 Solder w/Locking Feature
6643222-1 Compliant
6643223-1 Compliant w/ Locking Feature



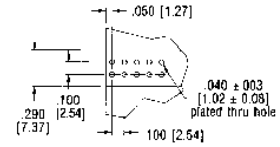
Parallel Socket

6643229-1 Solder
6643220-1 Press-Fit

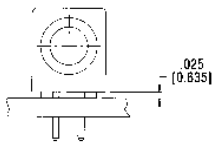


Connector Mounting

The SLIMLINE ICCON Connector is optimized for a board thickness of .093" (2.38 mm), but can be successfully used on boards from .062" to .125" (1.58 mm to 3.17 mm)



Recommended PCB Layout
(common for PCB and press fit tails)



Spacing between body and PCB

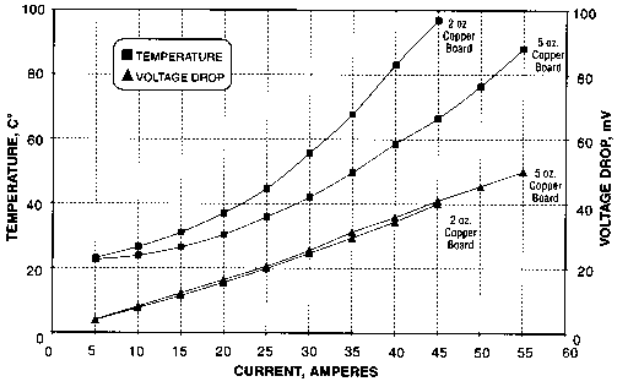
Specifications

Finishes		
Crowns		Gold plated over nickel
Pin Contacts		Silver over nickel
Material		
Housing		Polyester, 30% glass-filled, UL 94V-0 black
Body and pin contacts		Brass
Crowns		Beryllium Copper
Electrical		
Ratings	UL (USR)	35A at 250V
	UL (CNR)	25A at 250V
	TUV	35A at 250V
Voltage drop at UL rating		27.2mV

Contact System Performance, SLIMLINE ICCON Connector

Current Ratings vs. mV Drop/Temperature Rise

Non-locking version, mounted on 2 oz. and 5 oz. copper boards



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Custom ICCON Connector Products

In addition to the flexibility offered with standard ICCON connector products, the basic technology and standard components may also be packaged to suit specific customer needs. Some examples of custom packages are given below.

Snap-Lock Sockets

Discrete pins are generally offered with or without a locking feature. A locking feature for a discrete socket is provided by a special two piece molding (94 V-0). This enables the socket to snap over a locking pin, and provides a 5 lb withdrawal force. The molding will also lock into a panel or holder of .125 (3.18) thickness.

1643279-1 Black
1643279-2 Red
1643279-3 Blue

Press-Fit Discrete Contacts

Pins and sockets of the type shown are designed for press-fit to board or bus bar, and allow plug-in removal of a variety of board mount components, discrete contacts, and flat-pack power supplies. Each socket contains a CROWN BAND contact, ensuring high current capacity and minimum loss, and accommodating misalignment.

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Mini Power Modules

Product Facts

- **Hard Metric design compatible with Z-PACK 2mm HM, Z-PACK HM-Zd, MULTIGIG RT and FUTUREBUS + Connectors**
- **Sequenced contact options for "make-first-break-last" applications**
- **Compliant press-fit connections to PCB**
- **High Durability 250 Cycles – MULTIGIG RT, UPM Connectors 100 Cycles – FUTUREBUS + Connectors**
- **Optional Guide Pins & Sockets for blind-mate applications**
- **Bellcore approved (contact Tyco Electronics for specific part numbers)**
- **AND**
- **Recognized to US and Canadian requirements under the Component Recognition program of Underwriters Laboratories, File #E28476**
- **Produced under a Quality Management System certified to ISO 9001**

  A copy of the certificate is available upon request.

The Tyco Electronics Mini Power Module family of products are designed specifically to compliment the Hard Metric board-to-board backplane interconnects. These products include, MULTIGIG RT, Z-PACK 2mm HM, Z-PACK HM-Zd, FutureBus + and other Connectors. Available in "Standard" and "Reverse" orientations, the power modules can provide touch-safe protection (per IEC 60950) to either side of the connection (backplane or daughter card.)

Both the headers and receptacle offer compliant pin connections to the pcb. The Universal Power Module and MULTIGIG RT Connectors use the ACTION PIN Contact compliant design to provide maximum surface connection to the plated through hole. The range of products offers power contacts rated as low as 3 amps per contact (FUTUREBUS + Connectors) up through 20 Amps per contact (MULTIGIG RT Connectors). In addition, the newest products offer high conductivity contacts which improve the current carrying capacity by as much as 50%.

The low contact normal force, available lubricated surface coating (UPM) and high conductivity materials combine to produce a high durability cycle rating and high current density. In addition, the high temperature housing and contact materials make these power modules suitable for a wide variety of applications including modular hot-swap power supplies used in computer, telecommunications, medical, and industrial equipment.

Generous alignment features designed into the housings on the Min. Power Drawer Connector and optional guidance hardware make these Power Modules ideal for blind-mating applications.

Need more information?

Call Technical Support.

Technical Support is staffed with specialists well versed in Tyco Electronics products. They can provide you with:

- Technical Support
- Catalogs
- Technical Documents
- Product Samples
- Tyco Electronics Fax Service – Product information faxed immediately
- Tyco Electronics Authorized Distributor Locations

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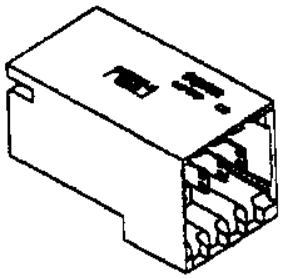
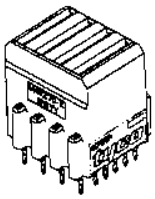
Mini Power Modules for PCB-to-PCB Power Distribution

MULTIGIG RT Power Modules

The newest of the power modules. Designed specifically for use with Tyco Electronics 2mm Backplane Connectors. Suitable for 0.8mm Card Spacing and made from high conductivity copper alloys, these power modules offer improved power density and high cycle life. The distribution to the pcb is through **six ACTION PIN compliant tails** which offer maximum surface area contact to the plated through hole. The design offers electrical protection with its sacrificial contact design and mechanical protection by recessing the power contacts. Contacts are rated for up to 20 Amps per contact, which delivers up to **120 Amps per linear inch**. Three contact mating lengths are available, in 1.5mm sequence levels.

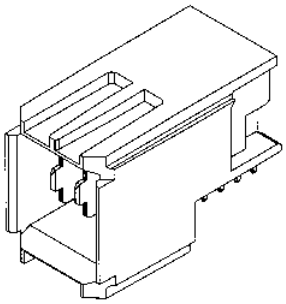


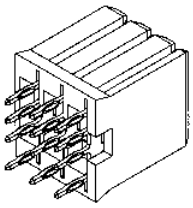


- Designed for Hot Plug Operation
- 6 pcb tails per contact

Universal Power Modules (UPM)

Also designed to complement Tyco Electronics 2mm Backplane Connectors. The design meets IEC 60950 touch-safe requirements by reversing the orientation as compared to the Futurebus + Power Modules. The touch-safe receptacle is applied to the "hot" side, which is typically the backplane side of the connection. Offered in both a Standard Power grade, rated at 10 Amps per contact and High Power grade which carries 15 Amps per contact – resulting in up to **100 Amps per linear inch**. Hot-plug design and low normal force provide high durability and high reliability. Three contact mating lengths are available in 1.6mm sequence levels. Multiple contact sequence patterns are available.

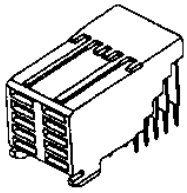


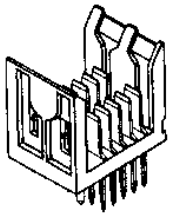


- Lubricated for Environmental Protection
- Designed for Hot-Plug
- 4 pcb Tails per Contact

Z-PACK 2mm Futurebus + Power Modules

The power modules, designed to IEC 61076-4-OX, are used along with Tyco Electronics Futurebus + Backplane Connectors. The contacts are rated for 3 Amps and fully loaded will carry approx. 50 Amps per linear inch. Three contact mating lengths available in 0.75mm increments.





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UK: 44-141-810-8967

"NEW" MULTIGIG RT Power Right Angle Headers

Material and Finish:

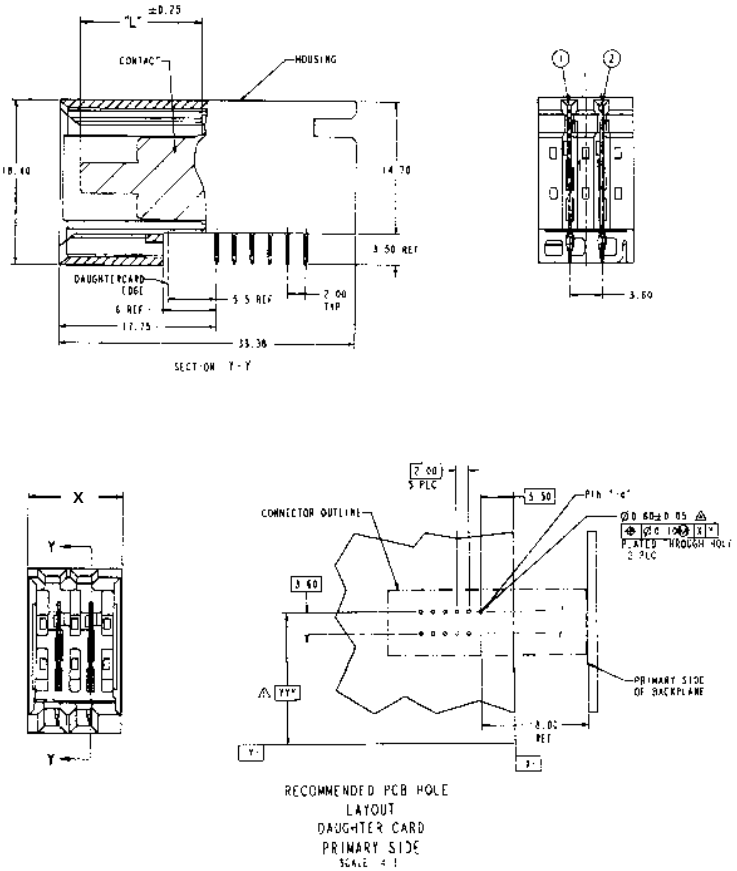
Housing — Liquid Crystal Polymer
Contacts — Phosphor Bronze
Plating — 0.00127 (.000050) min gold in mating area. 0.00127 (.000050) min. tin on pcb tail over 0.00127 (.000050) min. nickel over all

Related Product Data:

Guiding Hardware (Optional) — page 50, 51
Seating Tooling —
Headers - No tool required
- Flat Rock
Receptacles - See application specification

Technical Documents:

Product Specification
108-2062
Application Specification
114-13062



No. Positions	Dimension X	Sequence*	Part Number*
2	0.417 [10.6]	L,L	1410279-7
		M,L	1410279-8
		S,L	1410279-9
		S,S	1-1410279-0
		S,M	1-1410279-1
		M,M	1-1410279-2
4	0.701 [17.8]	L,L,L,L	1-1410271-1
		M,L,L,M	1-1410271-2
		S,L,L,M	1-1410271-3
		S,L,L,S	1-1410271-4
		S,M,L,M	1-1410271-5
		M,M,M,M	1-1410271-6
		S,M,M,S	1-1410271-7
		S,S,S,S	1-1410271-8
		M,S,S,M	2-1410271-0

Sequencing reads left-to-right along mating face.
L (long) = 0.541 [13.75], M (medium) = 0.482 [12.25], S (short) = 0.423 [10.75]
*Part Numbers are RoHS compliant.

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

"NEW" MULTIGIG RT Power Vertical Receptacle

Material and Finish:

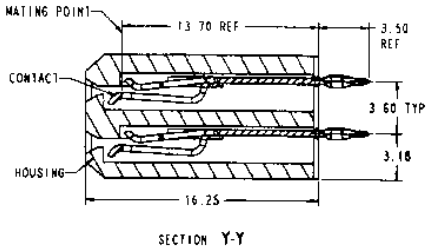
Housing — Liquid Crystal Polymer
Contacts — Phosphor Bronze
Plating — 0.00127 (.000050) min gold in mating area. 0.00127 (.000050) min. tin on pcb tail over 0.00127 (.000050) min. nickel over all

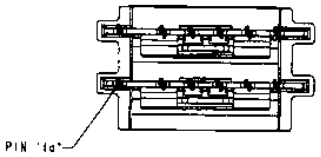
Related Product Data:

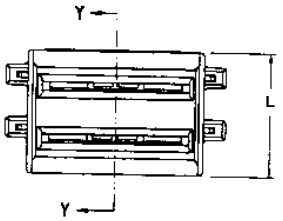
Guiding Hardware (Optional) — page 50, 51
Seating Tooling —
Headers - No tool required
- Flat Rock
Receptacles - See application specification

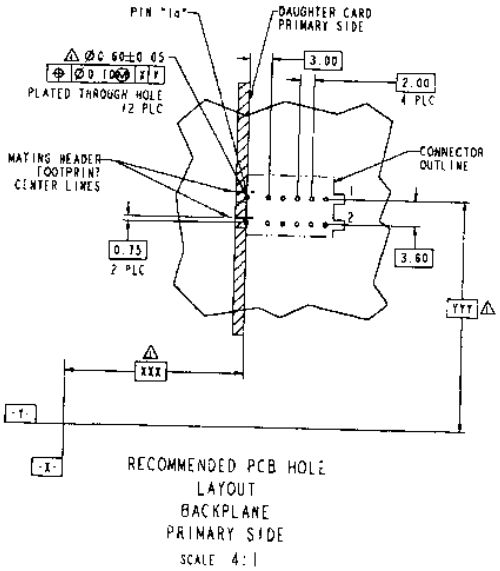
Technical Documents:

Product Specification
108-2062
Application Specification
114-13062









No. Positions	Dimension L	Part Number*
2	0.333 [8.45]	1410278-2
4	0.616 [15.65]	1410270-2

*Part Numbers are RoHS compliant.

Catalog 1773096
Revised 8-05

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Universal Power Module (UPM) – Right-Angle Header

Material and Finish:

Housing — PBT
Natural color UL 94V-0
Contacts —
Standard Power –
Phosphor Bronze
High Power –
High Conductivity Copper Alloy
Plating – 0.00127 (.000050) min. gold in mating area, 0.0050 (.000020) min. tin-lead on ACTION PIN post area, with entire contact underplated 0.00127 (.000050) min. nickel
Notes: 1. Environmental lubrication pre-applied
2. RoHS compliant parts have tin plated ACTION PIN posts

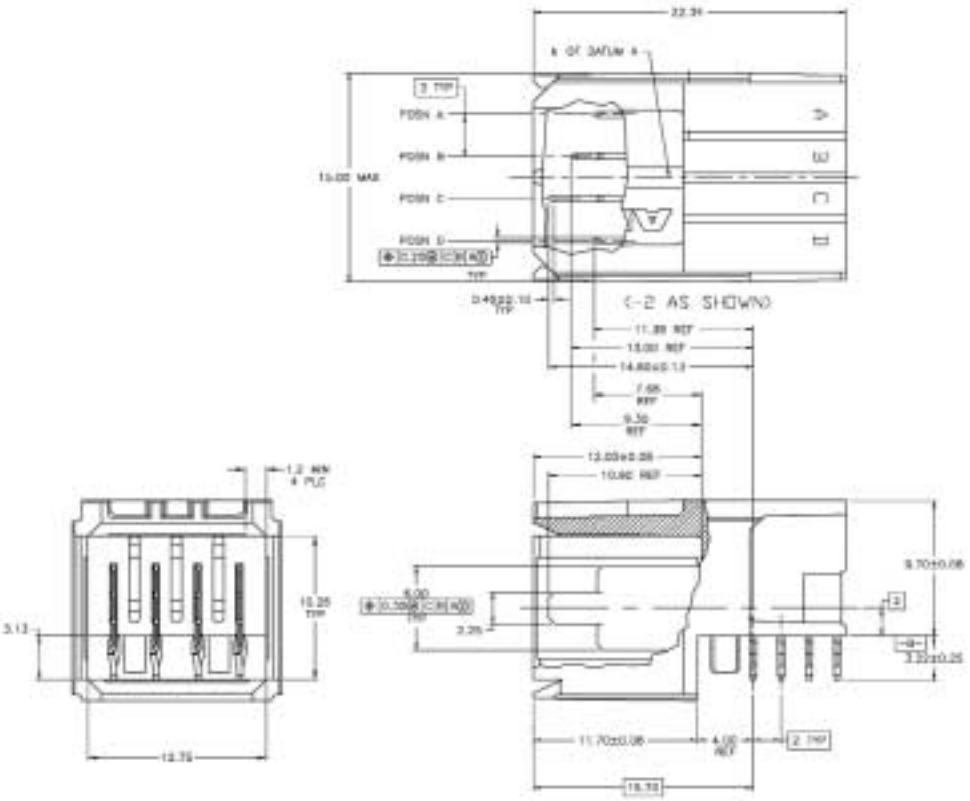
Related Product Data:

Durability — 250 cycles
Guiding Hardware (Optional) — page 50, 51
Seating Tooling —
Header
Seating Tool 224441-1
Board Support Fixture 224442-1
Receptacle
Seating Tool 224421-1
Board Support Fixture 217602-1

Technical Documents:

Product Specification
108-1651
Application Specification
114-1103

Instruction Sheet
408-4169 (Receptacle
Seating Tool 224421-X



Number Positions	Dimensions L	Standard Power 10 Amps/Contact Sequence* Pattern	Part Number	High Power 15 Amps/Contact Sequence* Pattern	Part Number (RoHS Compliant)
3	0.472 [12.0]	L,L,L	223961-1	M,M,M	5-5223961-1
		M,L,M	223963-1	M,L,M	5-5223961-2
		**	**	**	**
4	0.591 [15.0]	L,L,L	646954-1	M,M,M	120954-1
		S,M,L,S	646954-2	L,M,S	120954-2
		**	**	**	**
5	0.709 [18.0]	L,L,L	646955-1	M,M,M	120955-1
		M,M,M,M,L	646955-2	M,M,L,M,M	120955-2
		**	**	**	**
6	0.827 [21.0]	L,L,L,L,L,L	646956-1	M,M,M,M,M,M	120956-1
		L,M,M,M,M,L	646956-2	L,M,S,S,S,S	120956-2
		**	**	**	**
7	0.945 [24.0]	L,L,L,L,L,L,L	646957-1	M,M,M,M,M,M,M	120957-1
		**	**	L,S,S,L,S,S,L	120957-2
8	1.063 [27.0]	L,L,L,L,L,L,L,L	646958-1	M,M,M,M,M,M,M,M	120958-1
		L,S,L,S,L,S,L,S	646958-2	L,M,S,S,S,S,S,S	120958-2

*Sequencing Reads left-to-right along mating face.
L (long) = 0.429 [10.9], M (medium) = 0.366 [9.3], S (short) = 0.302 [7.68]
** Other sequence patterns available. See on-line customer drawing.

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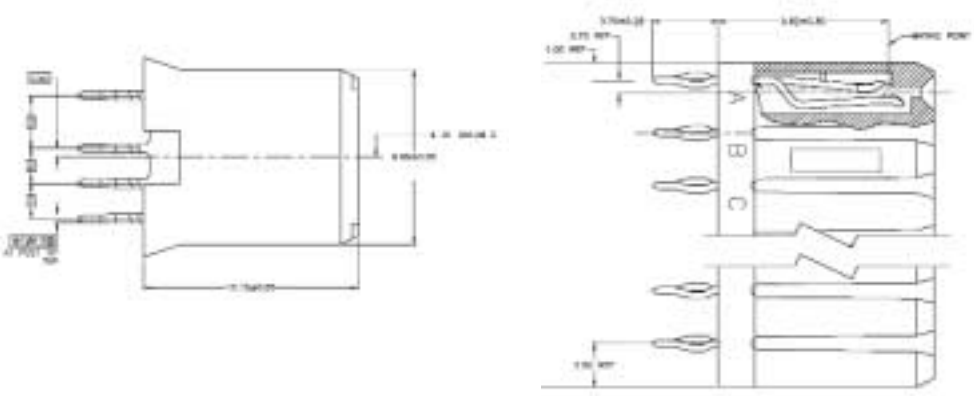
Japan: 81-44-844-8013
UK: 44-141-810-8967

Universal Power Module (UPM) – Vertical Receptacle

Material and Finish:

Housing — PBT
Natural color
UL 94V-0
Contacts —
Standard Power –
Phosphor Bronze
High Power –
High Conductivity Copper Alloy
Plating – 0.00127 (.000050) min. gold in mating area, 0.0050 (.000020) min. tin-lead on ACTION PIN post area, with entire contact underplated 0.00127 (.000050) min. nickel
Notes: 1. Environmental lubrication pre-applied
2. RoHS compliant parts have tin plated ACTION PIN posts



Related Product Data:

Durability — 250 cycles
Mating Force — 1.0N per contact
Unmating Force — .5N per contact
Guiding Hardware (Optional) — page 50, 51
Seating Tooling —
Header
Seating Tool 224441-X
Board Support Fixture 224442-1
Receptacle
Seating Tool 224421-1
Board Support Fixture 217602-1

Technical Documents:

Product Specification
108-1651
Application Specification
114-1103

Instruction Sheet
408-4169 (Receptacle
Seating Tool 224421-X

No. Circuit Positions	Standard Power 10 Amps/Contact Part Numbers	High Power 15 Amps/Contact Part Numbers (RoHS Compliant)
3	223955-2	5-5223955-2
4	223995-1	120953-1
5	223995-2	120953-2
6	223995-3	120953-3
7	223995-4	120953-4
8	223995-5	120953-5

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UK: 44-141-810-8967

Z-PACK 2mm Futurebus + Power Modules, Vertical Pin Assemblies

Pin Assemblies with Solder Leads and Compliant Press-Fit Leads

Material and Finish:

Housing — Liquid crystal polymer

Pin Contacts — Phosphor bronze, mating surface plating conforms to all testing specified for Telcordia Uncontrolled Environment, with entire contact underplated with 0.00127 min. nickel. See customer drawing for specific lead plating.

Related Product Data:

Current Rating — 5 Amperes per contact

Mating Force — 2.4N per contact max.

Unmating Force — 0.3N per contact max.

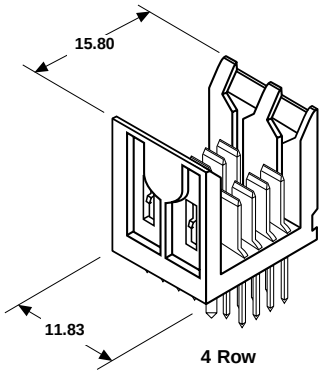
Durability — 250 cycles

Technical Documents:

Product Specification
108-1441

Application Specification
114-1075

Instruction Sheets
408-6927, 408-4157, 408-4488



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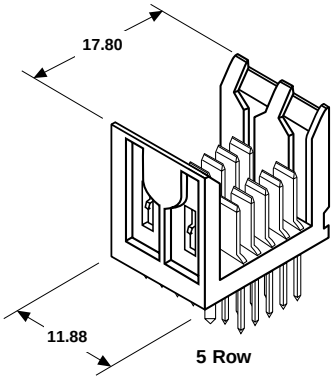
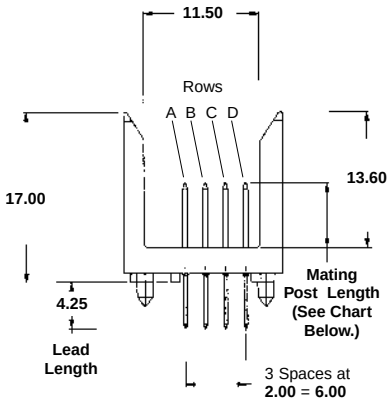
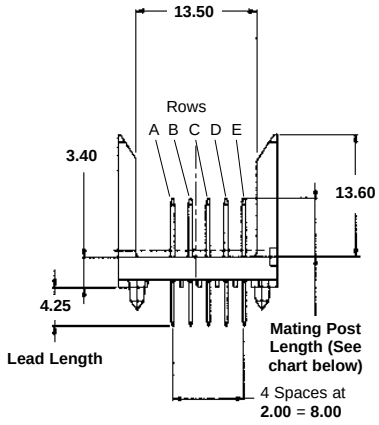


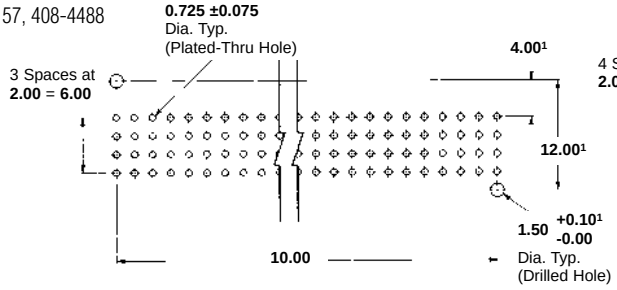
5 Row



Solder Leads

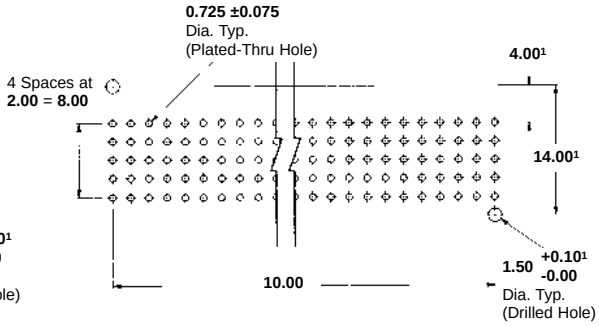


Solder Leads



Recommended PC Board Hole Layout per IPC-D-300, Type II, Class C (Component Side)

[1]Dimensions apply to solder lead versions only.



Recommended PC Board Hole Layout per IPC-D-300, Type II, Class C (Component Side)

[1]Dimensions apply to solder lead versions only.

Number of Positions	Mating Post Length	Part Numbers		
		Solder Tails	Press-Fit	Seating Tool
8	0.256 [6.5]	536600-1	536603-1	58512-1
	0.315 [8]	—	536620-1	—
10	0.256 [6.5]	—	536642-1	1214224-1
	0.315 [8]	—	536642-7	—

Notes: Contact Tyco Electronics for additional sizes
For contact load variations (sequenced or select-load pins), use worksheet on page 49 to define specific requirements.

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UK: 44-141-810-8967

Z-PACK 2mm Futurebus + Power Modules, Right Angle Receptacles

Right-Angle Receptacle Assemblies with Solder Leads and Compliant Press-Fit Leads

Material and Finish:

Housing — Liquid crystal polymer

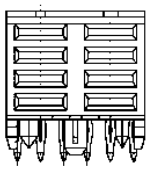
Receptacle Contacts — Phosphor bronze, mating surface plating conforms to all testing specified for Telcordia Uncontrolled Environment, with entire contact underplated with 0.00127 min. nickel. See customer drawing for specific lead plating.

Technical Documents

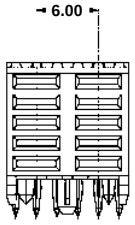
Product Specification
108-1441

Application Specification
114-1075

Instruction Sheets
408-6927



4 Row



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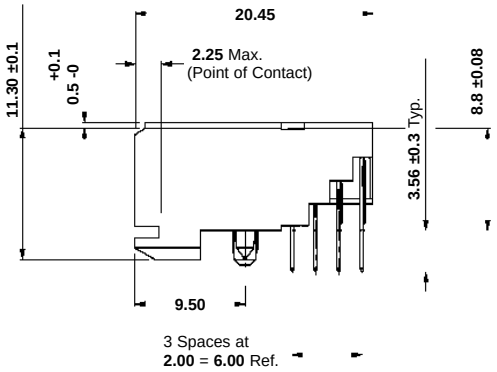
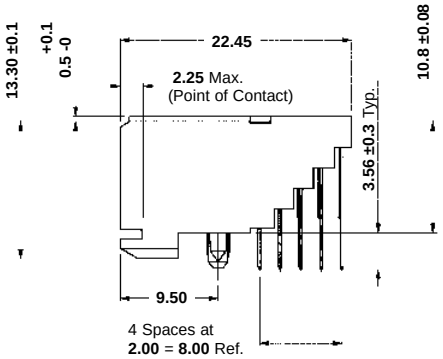
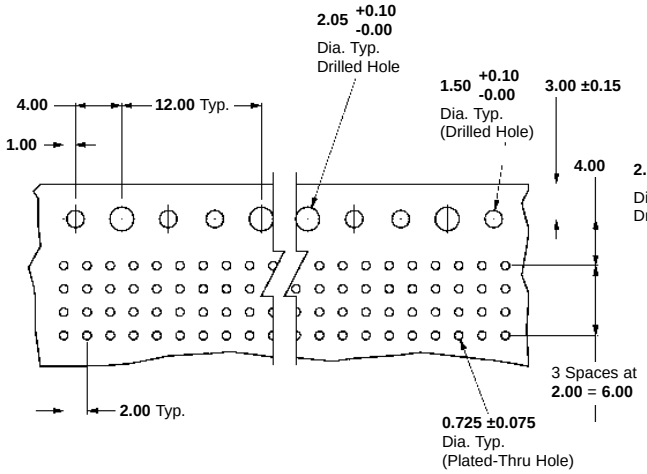
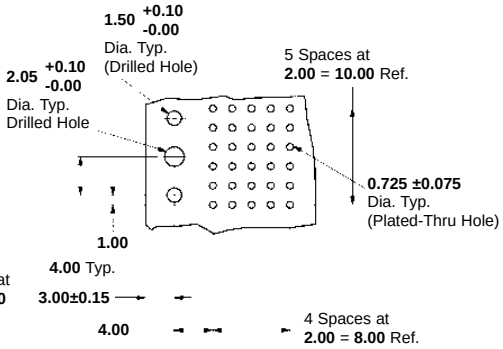


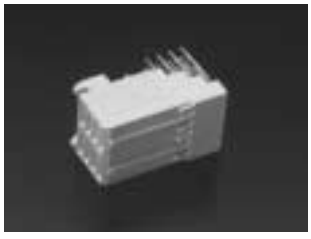




Recommended PC Board Hole Layout per IPC-D-300, Type II, Class C (Component Side)



Recommended PC Board Hole Layout per IPC-D-300, Type II, Class C (Component Side)



Number of Positions	Solder Tail Length 0.107 [2.73]	Part Numbers		
		0.139 [3.53]	Press-Fit 0.140 [3.56]	Seating Tool
8	536607-1	536613-1	536614-1	Industry Standard Flat Rock
10	223092-1	223093-1	536649-1	Industry Standard Flat Rock

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Custom Loading Worksheet for Mini Power Modules

Any of the Mini Power Modules can be made available with selectively loaded or sequenced contact arrangements. Complete the form below and discuss with your local Tyco Electronic Sales Engineer to get started. Minimum order quantities apply.

Step 1

Select Product

☐ MULTIGIG RT Product
- ☐ 2 Position
- ☐ 4 Position

Universal Power Modules (UPM)
- ☐ 3 Position
- ☐ 4 Position
- ☐ 5 Position
- ☐ 6 Position
- ☐ 7 Position
- ☐ 8 Position

FB Power

Z-PACK 2mm Futurebus + Power Products
- ☐ 4 Row
- ☐ 5 Row

MUTIGIG RT Product
- ☐ L, Long Blade – 0.541 [13.75]
- ☐ M, Medium Blade – 0.482 [12.25]
- ☐ S, Short Blade – 0.423 [10.75]

Universal Power Modules (UPM)
- ☐ L, Long Blade – 0.429 [10.9]
- ☐ M, Medium Blade – 0.366 [9.3]
- ☐ S, Short Blade – 0.303 [7.7]

Z-PACK 2mm Futurebus + Power Products
- ☐ L, Long Blade – 0.315 [8.0]
- ☐ S, Short Blade – 0.256 [6.5]

Note: Mating Length Symbols

Step 2

Write-in Mating Length Symbol (L,M,S) per blade

MULTIGIG RT Products

Circuit Position / Mating Length

1	2	3	4

Universal Power Module (UPM)

Circuit Position / Mating Length

A	B	C	D	E	F	G	H

Z-PACK 2mm Futurebus + Power Products

- ☐ Solder Tail
- ☐ Press Fit
- ☐ 4 Row (Enter mating length symbols in Rows A through D)
- ☐ 5 Row (Enter mating length symbols in Rows A through E)

	A	B	C	D	E
1					
2					

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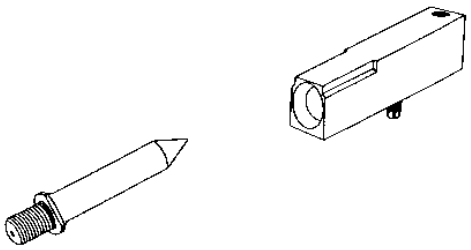
Japan: 81-44-844-8013
UK: 44-141-810-8967

Backplane and Co-Planar Guide Modules

Standard Guide Modules

Stainless Steel Pin
Die Cast Receptacle
Multiple thread lengths available
Gatherability +/-0.100"

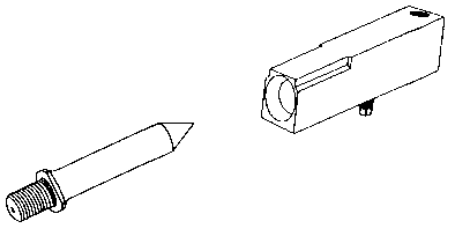
Seating Tool 224440-1
Board Support Fixture 217603-1



Type	Vertical Guide Pin Part Number RoHS Compliant	Right-Angle Guide Module Part Number
M4, 6.2mm thread length	223956-1	223957-1 (as shown)
M4, 7.5mm thread length	223982-1	
M4, 12.7mm thread length	223969-1	
8-32, 12.7mm thread length	223969-4	223979-1 (with dual mounting Position)
M4, 9.2mm thread length	223969-7	

Keyed Guide Modules

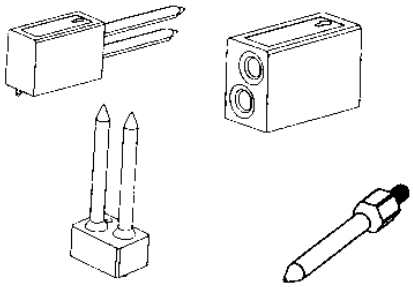
Die Cast Pin and Receptacle
Keyed to prevent mis-mating daughter cards
Multiple thread lengths available
Gatherability +/-0.100"



Type	Part Number		
	Right-Angle Guide Module		Vertical Pin
	4-40	M2.5	
0°	223986-1	120913-1	223985-1
90°	223986-3	120913-3	
180°	223986-5	120913-5	
225°	223986-6	120913-6	

AdvancedTCA Guide Modules

Die Cast Pins and Receptacles
Keyed to prevent mis-mating daughter cards
Twin Pins – provide more keying options
Meets PICMG 3.0 Specifications
Gatherability +/-0.50"



Type	Part Number		
	Both Pins Keyed 0°	Top Pin Keyed 270° Bottom Pin Keyed 90°	Not Keyed
Right Angle pin long	1-1469372-1	3-1469372-7	—
Vertical pin short	1-1469387-1	3-1469387-7	—
Vertical pin long	1-1469388-1	3-1469388-7	—
Right-Angle Receptacle	1-1469373-1	3-1469373-7	1469374-1
Single pin rear assembly	—	—	1469269-X*

*-X Identified by PCB thickness. See customer drawing for details.

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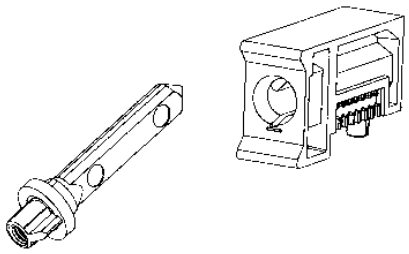
UK: 44-141-810-8967

Backplane and Co-Planar Guide Modules (Continued)

10.8 Guide Modules

Rugged design – to support heavier cards
Better gatherability +/-3.5mm
10.8mm width
Die Cast Pin
Die Cast Receptacle
ESD Ground Option
RoHS Compliant

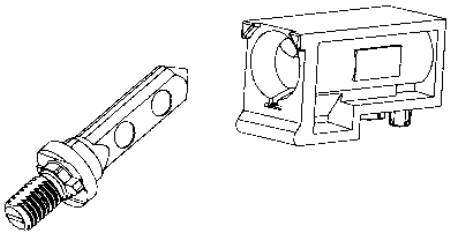


Type	Part Number			
	Right-Angle		Vertical Pin	
	with ESD	without ESD	Internal M3.5 thread	External M5 threads
0	1410297-1	1410546-1	1410548-2	1410773-X*
90	1410297-3	1410546-3		
180	1410297-5	1410546-5		
225	1410297-6	1410546-6		

*See customer drawing for dash numbers.

9.0 VITA 46 Guide Modules

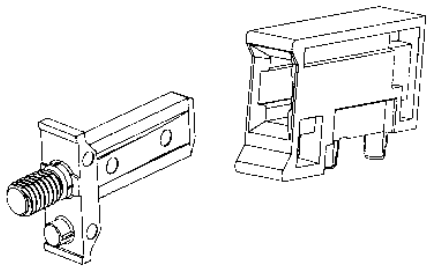
Die Cast Pins and Receptacles
Keyed to prevent mis-mating daughter cards
Meets VITA 46 Specification
Gatherability +/-3.5mm
RoHS Compliant



Type	Part Number			
	Right-Angle	10mm	Vertical Pin thread depth	
			11.6mm	13.1mm
0°	1469492-1	1469491-2	1469491-3	1469491-4
90°	1469492-3			
270°	1469492-7			

7.2 Thin Guide Modules

Die Cast Pin and Receptacle
7.2mm width
Gatherability +/-2.5mm
RoHS Compliant



Part Number		
Right-Angle	Vertical Pin thread length	
	8.7mm	11.6mm
1410714-2	1410710-1	1410710-3

Catalog 1773096
Revised 8-05

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UK: 44-141-810-8967

Engineering Notes

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"NEW" AdvancedTCA Power Connector

Product Facts

- **Designed to PICMG 3.0 Standard**
- **High conductivity copper alloy on Size 16 power contacts**
- **.76 micro-meters (30 micro-inch) gold over 1.27 micrometers [50 micro-inch] nickel plating at contact interface.**
- **Gold-thickness controlled on inside of socket and outside of pin – at contact interface points.**
- **RoHS compliant**
- **Stainless steel spring provides contact normal force - resists relaxation at elevated temperatures.**
- **Eye-Of-Needle compliant press-fit termination**
- **No special tools needed to seat connectors to pcb – standard Flat-Rock seating tools.**
- **Additional pcb retention hardware not required.**

Technical Documents

Product Specification—
108-2216

Industry Standard—
PICMG 3.0, Rev. 2.0

Introduction:

Tyco Electronics supplies both the power and the signal connectors specified in the Advanced Telecommunications Computer Architecture (AdvancedTCA) Standard. This standard (PICM 3.0) is one of the latest standards addressing future telecommunications needs. The AdvancedTCA Power Connector, designated for use in Zone 1 per PICMG 3.0, combines 8 High Conductivity Size 16 pin & socket contacts along with 22 Size 22 pin & socket contacts, plus guidance into a compact interface. Both connector halves feature proven compliant press-fit contacts for easy solder-less termination to printed circuit boards.

Based on years of reliable long-term field installations the power contact design is based upon Tyco Electronics' famous Type III+ contact design. By adding the use of a high conductivity copper alloy and the low-force Eye-Of-Needle compliant pin section, the new contact delivers both ease of installation (with flat-rock seating tools) as well as industry-leading current carrying capability. The power contacts are capable of carrying 16 amps per contact and the signals are capable of carrying 2 amps per contact.

The housing design also offers improvements compared to other industry alternatives. The lead-in design for the contact cavities provides better resistance from contact stubbing. The contact retention has also been designed to eliminate the need for additional hardware sometimes used to hold the connectors to the pcb after pressing in to the pcb.

The result is a connector which is easy to install, meets all the PICMG 3.0 performance requirements and stays retained to the pcb without the additional labor required to add hardware.

AdvancedTCA and ATCA are trademarks of the PCI Industrial Computer Manufacturers Group.

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"NEW" AdvancedTCA Power Connector (Continued)

AdvancedTCA Power Connectors (zone 1)

Front Board Connector Right Angle, Compliant Press Fit
Part Number 1766500-1

Material and Finish

Insulators – Thermoplastic, glass reinforced, UL 94V-0

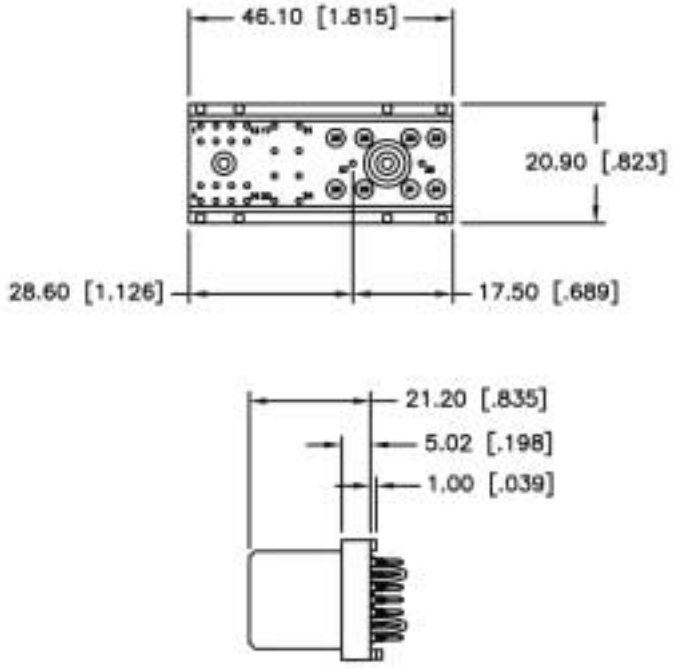
Signal Pins – Copper alloy

Power Contacts – High conductivity copper alloy, plated 0.00076 [.000030] min. gold in mating area over 0.00127 [.000050] min. nickel

Compliant PCB Tails – 0.0030 – 0.0043 [.000120 - .000170] tin plated, matt finish

Notes:

1. Mounting hardware - self tapping screw (customer supplied) can be used but not required
2. Positions 1-4 not populated and reserved for future use.



Backplane Connector Straight, Compliant Press Fit
Part Number 1766501-1

Material and Finish

Insulators – Thermoplastic, glass reinforced, UL 94V-0

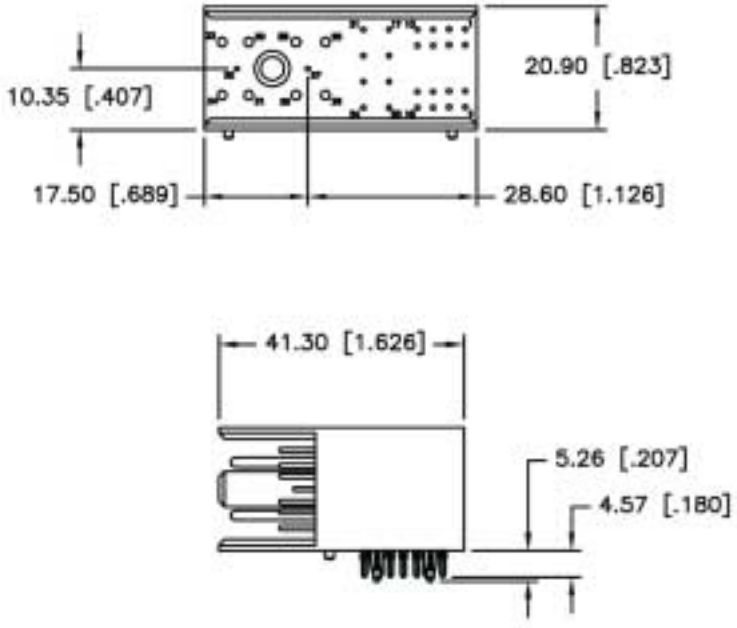
Signal Pins – Copper alloy

Power Contacts – High conductivity copper alloy, plated 0.00076 [.000030] min. gold in mating area over 0.00127 [.000050] min. nickel

Compliant PCB Tails – 0.0030 – 0.0043 [.000120 - .000170] tin plated, matt finish

Notes:

1. Mounting hardware - self tapping screw (customer supplied) can be used but not required
2. Positions 1-4 not populated and reserved for future use.



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ELCON Drawer Series Connectors
True hot-plug, blind-mating mixed signal and power connectors

Product Facts

- High performance Crown contacts
- Low millivolt drop, minimal temperature rise
- Float mount for improved gatherability (blind mating)
- True hot pluggability for current interruption under load
- Sequenced mating for power and signal
- Crimp, PCB tail, compliant press-fit and threaded terminations

Typical Applications

- Low noise power supplies
- Switch-mode power supplies (SMPS)
- Power factor-correcting (PFC) power supplies
- Systems requiring mounting to backplane or chassis
- Redundant (N + 1) power systems
- "Live" hot plug power supplies
- All ELCON Drawer connectors in this section are RoHS compliant.

The Drawer Series family of mixed power and signal connectors is designed for an unlimited array of applications that use drawer-type, true hot plug power supply units. Contacts for AC IN and DC OUT power, logic and signal are all housed in robust one piece insulators that have built-in or optional mating guides for improved gatherability and mating polarization. Key features include Tyco Electronics high performance Crown contact, true hot pluggability, sequenced mating, probe-proof contacts, and support for various termination styles.

Product Highlights

High Performance CROWN Contact

Tyco Electronics ELCON CROWN BAND contact consists of a fingered barrel with the flexibility and conductivity to deliver excellent electrical and mechanical performance. This results in consistent insertion and extraction forces, and maximum surface contact area for low voltage drop and minimal heat generation.

Support for True Hot Pluggability

True hot pluggability is supported through the use of gold-plated size #12 contacts specially designed to achieve current interruption under load as defined by safety regulatory agencies. This contact has been evaluated and found to comply with UL, CSA and TUV safety regulatory standards.

Standard Contacts

Tyco Electronics ELCON Drawer Series connectors use standard contacts in all its housings, resulting in lower cost and fewer part numbers. Contacts are available in crimp, PCB tail, threaded and press-fit termination styles, meeting a wide range of connector mounting requirements.

Many Standard Designs

Numerous Drawer connectors have been tooled over the years and are available to all our customers for use in their applications. All these connectors can be configured with different contact layouts, terminations and mating sequencing schemes to meet application-specific requirements.

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UK: 44-1908-574289

ELCON Drawer Connector Product Highlights (Continued)

3mm diameter test probe in accordance with IEC 435
Protective cap (insulator)

Probe-proof Double Crown Contacts

The size #0 contacts used in the Top Drawer, Double Drawer, Dual Power and Quad Power connectors are also available in a probe-proof Double Crown version. These contacts are specially suited for operator-serviced power supplies that require extra safety protection.

Signal/power sequencing

All signal and some power contacts are available in various lengths to allow multiple levels of sequencing, thus giving the engineer further design flexibility.

Mating polarization

To ensure positive housing mating of connectors, polarization is provided in the form of molded-in guide posts or pre-installed guide pins.

Regulatory Agency Certifications

Tyco Electronics ELCON Drawer Series connectors have been evaluated and found to comply with the UL1977 standard and the CSA standard C22.2 No. 182.3-M1987, and to the TÜV standard EN60950.

Tyco Electronics can also work with the customer to obtain application-specific regulatory certifications if needed.

Wide Array of Standard Contacts

ELCON Drawer connectors support various termination styles, including crimp for cable, solder tail and compliant press-fit for mounting to PCB, and internal/external threads for termination to lugs and/or busbars. See table below for details.

Contact size	Termination				
	PC tail	Press-fit	Crimp	Threaded	
				Internal	External
#20	•	•	•		
#16	•	•	•		
#12	•	•	•		
#8	•	•	•	•	•
#4			•	•	•
#0			•	•	•

Application-Specific Designs

If none of our standard Drawer connectors satisfies your requirements, Tyco Electronics can develop an ELCON connector design specific to your application. We will work closely with your engineers to fully understand the design requirements and develop an interconnect solution the meets your exact needs. After the concept and design stages, Tyco Electronics produces prototypes that perform both electrically and mechanically the same as production parts. These machined parts are used for testing, regulatory agency evaluations and even as pre-production components, allowing the shortest lead time from concept to manufacturing in the industry.

Concept →

Tyco Electronics engineers work closely with the customer to fully understand the design requirements.

Design →

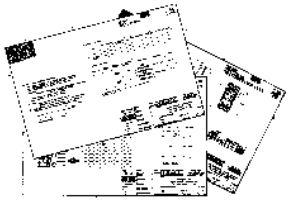
A sketch drawing of the design concept is created for customer review, and the design is finalized only when it fully meets the requirements of the customer.

Prototypes →

The design frozen and work on the mold tools starts. Meanwhile, Tyco Electronics builds prototypes that are identical to the production parts.

Production

By the time the customer is ready for production, all requirements for release to production, such as qualification and regulatory agency approval, have been cleared.



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How to Tailor Your ELCON Drawer Connector

If you selected a standard Drawer connector for your application, before placing an order you need to specify your application-specific requirements, such as housing type, contact loading, and termination style. Layout forms for all standard Drawer connectors, such as the one shown below, are available online at http://www.tycoelectronics.com or can be obtained from Tyco Electronics customer service for this purpose. Complete a form for the pin and socket side of your connector as indicated in the instructions and fax it to Tyco Electronics customer service. We will issue a unique part number specific to your configuration, which you can then use to place orders. Samples and Customer Drawings are also available upon request.

2 Series Identifier: Connector name or base housing part number shown here.

3 Customer Information: Use to fill in your contact information and quantities required.

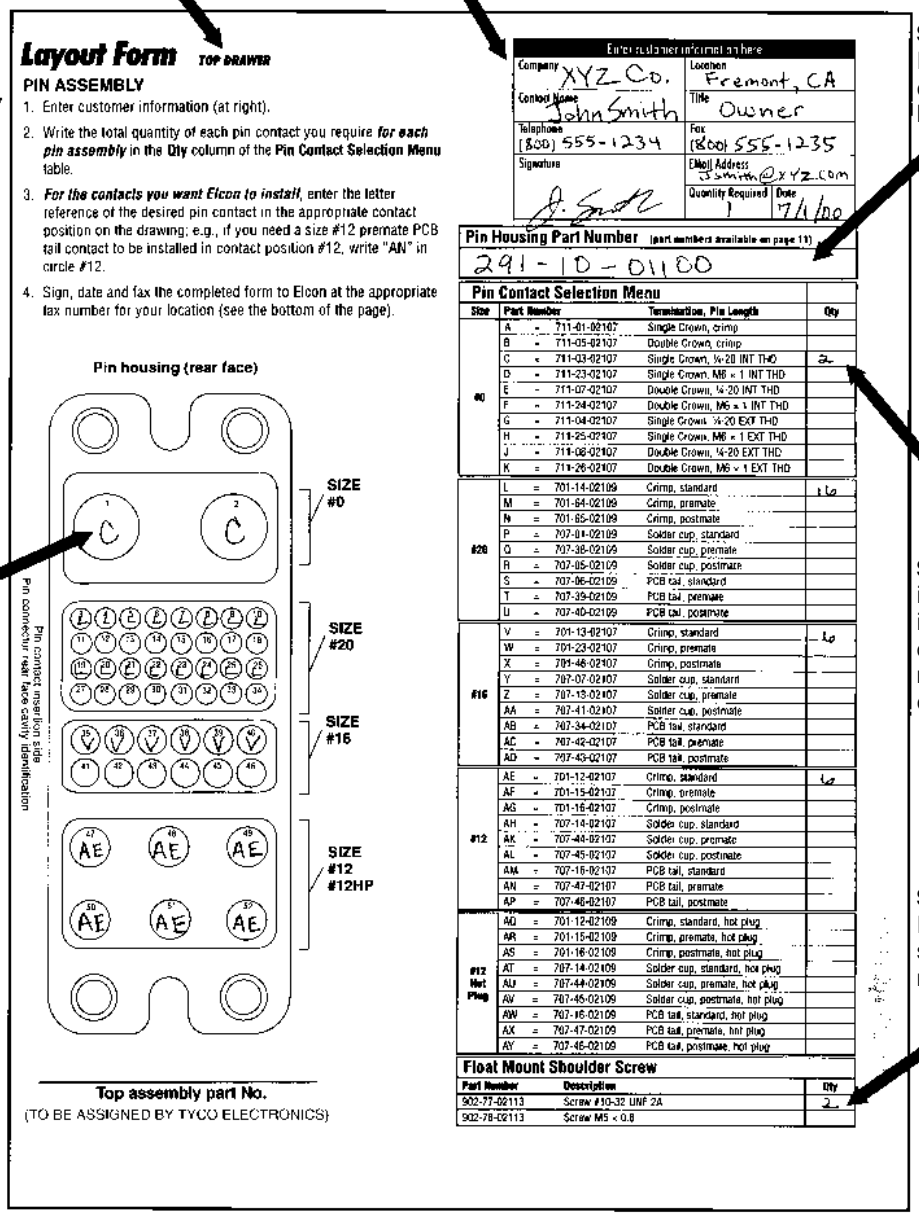
4 Housing Selection: Indicate the desired housing by part number.

1 Instructions: Shows detailed instructions on how to fill in the Layout Form.

5 Contact Selection: Fill in this column to indicate the contacts you need and their quantities.

6 Contact position: Contacts other than those that have crimp termination can be preloaded in the factory. This drawing is used to indicate in what positions the contacts should be loaded.

7 Float Mount Shoulder Screw: Indicate quantity of shoulder screws required here.



Layout Form TOP DRAWER

PIN ASSEMBLY

1. Enter customer information (at right).
2. Write the total quantity of each pin contact you require ***for each pin assembly*** in the **Qty** column of the **Pin Contact Selection Menu** table.
3. ***For the contacts you want Elcon to install***, enter the letter reference of the desired pin contact in the appropriate contact position on the drawing; e.g., if you need a size #12 premate PCB tail contact to be installed in contact position #12, write "AN" in circle #12.
4. Sign, date and fax the completed form to Elcon at the appropriate fax number for your location (see the bottom of the page).

Enter customer information here

Company: XYZ Co.	Location: Fremont, CA
Contact Name: John Smith	Title: Owner
Telephone: (800) 555-1234	Fax: (800) 555-1235
Signature: J. Smith	EMail Address: jsmith@xyz.com
	Quantity Required: 1
	Date: 7/1/00

Pin Housing Part Number (part numbers available on page 11): 291-10-01100

Pin Contact Selection Menu

Size	Part Number		Termination, Pin Length	Qty
#0	A	=	711-01-02107 Single Crown, crimp	
	B	=	711-05-02107 Double Crown, crimp	
	C	=	711-03-02107 Single Crown, ¼-20 INT THD	2
	D	=	711-23-02107 Single Crown, M6 × 1 INT THD	
	E	=	711-07-02107 Double Crown, ¼-20 INT THD	
	F	=	711-24-02107 Double Crown, M6 × 1 INT THD	
	G	=	711-04-02107 Single Crown, ¼-20 EXT THD	
	H	=	711-25-02107 Single Crown, M6 × 1 EXT THD	
	J	=	711-06-02107 Double Crown, ¼-20 EXT THD	
	K	=	711-26-02107 Double Crown, M6 × 1 EXT THD	
#20	L	=	701-14-02109 Crimp, standard	40
	M	=	701-64-02109 Crimp, premate	
	N	=	701-65-02109 Crimp, postmate	
	P	=	707-01-02109 Solder cup, standard	
	Q	=	707-38-02109 Solder cup, premate	
	R	=	707-05-02109 Solder cup, postmate	
	S	=	707-06-02109 PCB tail, standard	
	T	=	707-39-02109 PCB tail, premate	
	U	=	707-40-02109 PCB tail, postmate	
#16	V	=	701-13-02107 Crimp, standard	40
	W	=	701-23-02107 Crimp, premate	
	X	=	701-46-02107 Crimp, postmate	
	Y	=	707-07-02107 Solder cup, standard	
	Z	=	707-13-02107 Solder cup, premate	
	AA	=	707-41-02107 Solder cup, postmate	
	AB	=	707-34-02107 PCB tail, standard	
	AC	=	707-42-02107 PCB tail, premate	
	AD	=	707-43-02107 PCB tail, postmate	
#12	AE	=	701-12-02107 Crimp, standard	40
	AF	=	701-15-02107 Crimp, premate	
	AG	=	701-16-02107 Crimp, postmate	
	AH	=	707-14-02107 Solder cup, standard	
	AK	=	707-44-02107 Solder cup, premate	
	AL	=	707-45-02107 Solder cup, postmate	
	AM	=	707-15-02107 PCB tail, standard	
	AN	=	707-47-02107 PCB tail, premate	
	AP	=	707-48-02107 PCB tail, postmate	
#12 Hot Plug	AQ	=	701-12-02109 Crimp, standard, hot plug	
	AR	=	701-15-02109 Crimp, premate, hot plug	
	AS	=	701-16-02109 Crimp, postmate, hot plug	
	AT	=	707-14-02109 Solder cup, standard, hot plug	
	AU	=	707-44-02109 Solder cup, premate, hot plug	
	AV	=	707-45-02109 Solder cup, postmate, hot plug	
	AW	=	707-15-02109 PCB tail, standard, hot plug	
	AX	=	707-47-02109 PCB tail, premate, hot plug	
	AY	=	707-48-02109 PCB tail, postmate, hot plug	

Float Mount Shoulder Screw

Part Number	Description	Qty
902-77-02113	Screw #10-32 UNF 2A	2
902-78-02113	Screw M5 × 0.8	

Pin housing (rear face)

SIZE #0 SIZE #20 SIZE #16 SIZE #12 #12HP

Pin contact insertion side

Pin connector rear face cavity identification

Top assembly part No.
(TO BE ASSIGNED BY TYCO ELECTRONICS)

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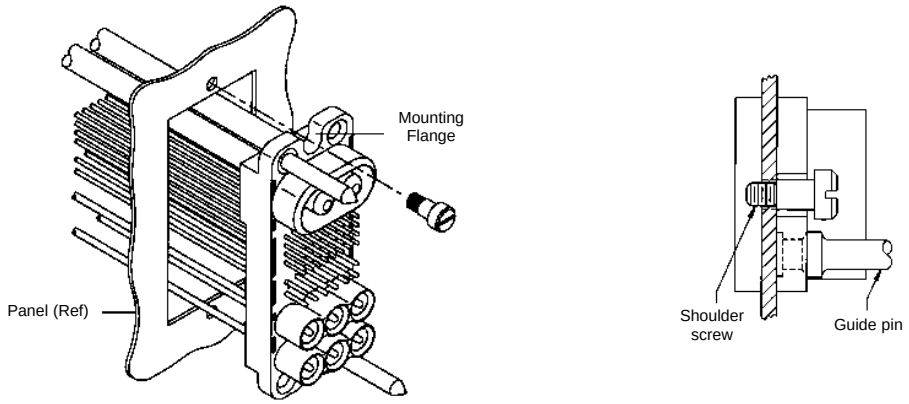
ELCON Drawer Connector Mounting

All Drawer Series connectors can be fixed mounted or float mounted using the designated shoulder screws to allow improved gatherability for blind mating of the connector. Panel cut out dimensions are shown on the Customer Drawing specific to your Drawer Connector.

Panel Float Mounting

When float-mounting to a pen or chassis, use the stainless steel shoulder screws specified in the Layout Sheet or Customer Drawing specific to your Drawer connector. Shown in the sketch below is an example of how the Top Drawer connector is float-mounted to a panel.

Float Mount of Top Drawer (example)

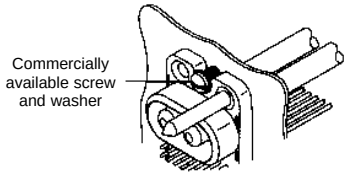


Panel Fixed Mounting

As a rule of thumb, Drawer connectors can be fix-mounted to a panel, in two ways: (1) by attaching a screw through the top and bottom mounting flange of the housing; or (2) by attaching a screw into a threaded guide pin (for those connectors that have one). An example of each case is shown in the sketches below.

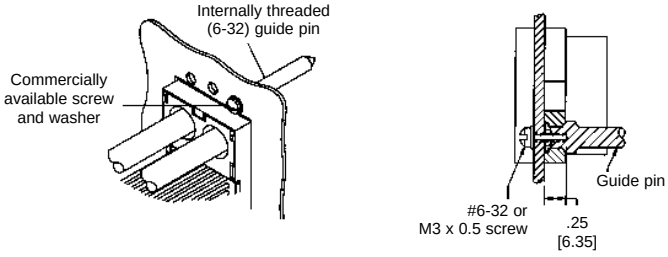
Screw through mounting flange of housing

Fix to the panel by attaching a commercially available screw and a washer through the top and bottom mounting flange of the housing.



Screw into thread of guide pin (when applicable)

You can optionally fix-mount housings that have a guide pin by attaching a commercially available screw and washer into the thread on the back of the guide pin, as shown in the figures below.



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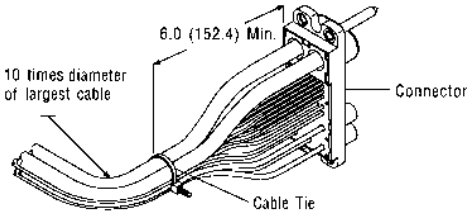
ELCON Drawer Connector Mounting

Strain relief and wire dress

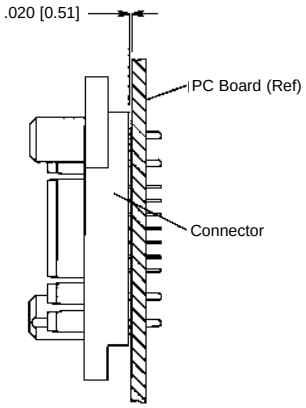
If required, wires can be bundled together and supported with cable ties. Wires must not be stretched or confined in any way that would restrict the floating action of the connectors. Therefore, the wires must remain perpendicular to the connector and avoid an excessively sharp bend radius. The minimum recommended distance for the cable tie, and the minimum bend radius of a wire bundle are shown in the figure to the right.



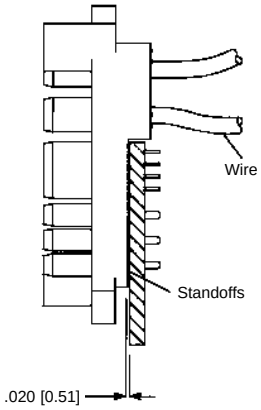
PCB Fixed Mounting

When mounting to a PC board, the connector standoffs must be seated on the board. Hold-downs are recommended to ensure stability during the soldering procedure. PCB mount hole patterns are shown on the Customer Drawing specific to your Drawer connector.

Flush PCB mount Drawer connectors

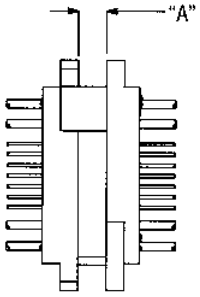


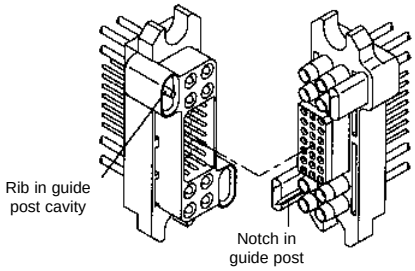
Drawer connectors with cabled AC IN



Connector Engagement

To ensure proper mating of the connector when the power supply unit is fully engaged into the system, the gap between the pin and socket (shown as dimension "A" in the sketch below) must be within the limit specified in the Customer Drawing for your Drawer connector. Failure to meet this requirement may compromise contact wipe. Refer to the Customer Drawing for details. Drawer connectors are polarized and will only mate in the correct orientation (see sketch below).





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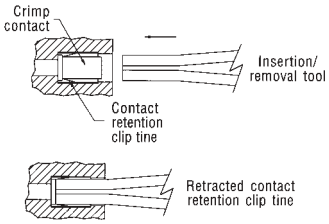
ELCON Drawer Connector Tooling

Insertion/Removal Tools: Industry standard plastic insertion/removal tooling is compatible with all crimp contacts for pin and socket removal. The following tools are available from ELCON.

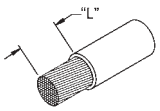


Insertion/removal tools available from ELCON

Part Numbers	Size	Color Code
6643917-1	Size #20 removal tool	Red/White
6643916-1	Size #16 I/R tool	Blue/White
6643915-1	Size #12 I/R tool	Yellow/White
6643914-1	Size #8 I/R tool	Red
6643922-1	Size #4 I/R tool	Blue
6643921-1	Size #0 removal tool	Light Yellow

Note: PCB tail contacts are non-removable.

Wire strip length: If inserting stranded wire into crimp style contacts, please use the table below to determine the proper strip length of the wire.



Contact Size	Wire Size AWG	"L" + .020 [0.51]	
		inches	mm
#20	#24 - #20	0.210	5.33
#16	#20 - #16	0.270	6.86
#12	#14 - #12	0.270	6.86
#8	#10* - #8	0.500	12.70
#4	#6* - #4	0.500	12.70
#0	#2* - #0	0.600	15.24

*Ref: MS3348 "Contact Bushing, Electric, Wire Barrel"

Crimp Tools: The following table lists applicable MIL-STD crimp tools for contacts

Size	Type	MIL-STD
12 - 24	Crimp Tool	M22520/1-01
	Turret head/locator	M22520/1-02
8 - 10	Crimp Tool	M22520/23-01
	Indenter head	M22520/23-02
	Locator	M22520/23-09
4	Crimp Tool	M22520/23-01
	Indenter head	M22520/23-04
	Locator	M22520/23-11
0	Crimp Tool	M22520/23-01
	Indenter head	M22520/23-05
	Locator	M22520/23-13

Crimp Termination Wire Sizes: The following table shows crimp rear release contacts and their respective wire sizes when crimped with applicable industry standard terminal tools.

Contact Size	Wire Range	
	AWG	mm^2
#20	20 - 24	0.241 - 0.616
#16	16 - 18	0.963 - 1.23
#12	12 - 14	1.94 - 2.98
#8	10 - 8	4.74 - 8.61
#4	4 (1)	21.60
#0	1/0	53.00

Note: (1) Consult Tyco Electronics for smaller wire sizes in #4 contacts

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Japan: 81-44-844-8013
UK: 44-141-810-8967

ELCON Drawer Product Specifications

Materials			
Housing		Polyester, 30% glass-filled, UL 94V-0 black	
Crimp Contacts		Copper alloy, C14500	
PCB Tails		Brass, CDA 36000	
Socket Contact Hoods (when applicable)		305 corrosion resistant steel	
Size #12 hoods, Hot Plug		Beryllium copper, CDA 17300 HT	
Crown contacts		Beryllium copper, CDA 17200 HT	
Plating			
Size #20 and #12HP		Gold plated per MIL-G-45204 over nickel	
Sizes #0, #4, #8, #16 and non-HP #12		Silver plated per QQ-S-365 over nickel	
Hot Plug hoods and pin contacts		Gold plated per MIL-G-45204 over nickel	
Socket Contact Hoods (when applicable)		Passivated	
Mechanical			
Typical Insertion Forces of individual contacts	Size #20	0.2 lb.	0.09 kg
	Size #16	2.3 lb.	1.04 kg
	Size #12	2.9 lb.	1.32 kg
	Size #12 Hot Plug	2.9 lb.	1.32 kg
	Size #8	4.4 lb.	2.00 kg
	Size #4	3.8 lb.	1.72 kg
	Size #0	4.7 lb.	2.13 kg
	Size #0 w/double Crown	4.8 lb.	2.18 kg
Typical Extraction Forces of individual contacts	Size #20	0.1 lb.	0.05 kg
	Size #16	0.7 lb.	0.32 kg
	Size #12	1.9 lb.	0.86 kg
	Size #12 Hot Plug	1.9 lb.	0.86 kg
	Size #8	2.4 lb.	1.07 kg
	Size #4	3.0 lb.	1.36 kg
	Size #0	3.0 lb.	1.36 kg
	Size #0 w/double Crown	3.5 lb.	1.59 kg
Electrical			
Typical Voltage drop of individual contacts	Size #20	1.7 mV at 5A	
	Size #16	3 mV at 15A	
	Size #12	4.2 mV at 35A	
	Size #12 Hot Plug	4.7 mV at 35A	
	Size #8	6.5 mV at 75 A	
	Size #4	8.4 mV at 125A	
	Size #0	6.3 mV at 200A	
	Size #0 w/double Crown	5.6 mV at 200A	
Insulator dielectric strength		1,500 VDC for 1 minute, per MIL-STD 1344, Method 3001	

Regulatory Agency Evaluations

Contacts	CSA-22.2 No. 0-M91 182.30 M1987 (CNR)	UL 498 and UL 1977 (USR)	European Standard EN60950
AWG #20	4A / 250V	5A / 250V	5A / 250V
AWG #16	10A / 250V	15A / 250V	15A / 250V
AWG #12 Top Drawer	25A / 600V	35A / 600V	35A / 600V
AWG #12 Others	25A / 250V	35A / 250V	35A / 250V
AWG #12 with sockets	25A / 250V	35A / 250V	35A / 120V
Size #12 hot plug	25A / 250V	25A / 250VAC 35A / 120V	25A / 250VAC
Size #8	55A / 250V	75A / 250V	75A / 250V
Size #0 with single or double Crown	150A / 250V	200A / 250V	200A / 250V
Size #0 using bus bar	—	200A / 250V	200A / 250V
Size #4	100A / 250V	125A / 250V	—

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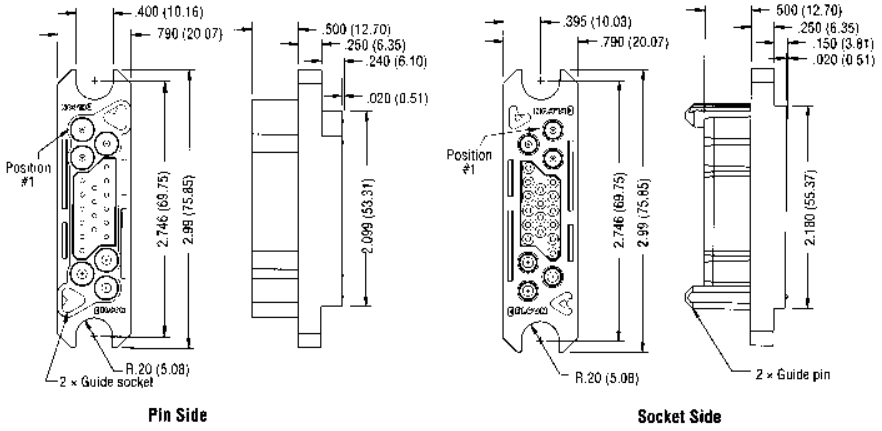
ELCON Drawer Series Connectors

Mini Drawer

Dimensions—
2.99" x 0.79" (75.9 x 20.1 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—
Size 12 / 16 x 6 contacts
Size 20 x 16 contacts
Current Rating—Up to 35 Amps per size 12 contact
Contact Features—Hot Plug size 12 contact option
Contact Sequencing—Multi-level for power and signal
Contact Terminations—
Size 12: Crimp and PCB tail
Size 16: Crimp and PCB tail
Size 20: Crimp and PCB tail



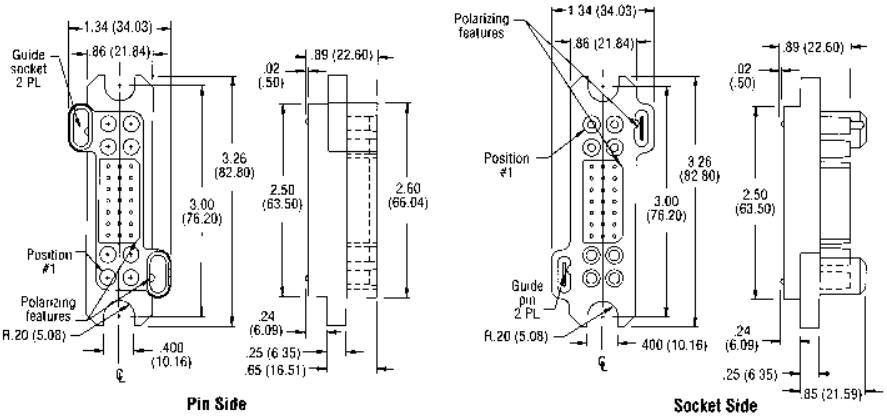
Pin Side — Socket Side

Base Housing Part Numbers

Pin Housing		Socket Housing	
1648110-1	Size 12 + Size 20 + Size 12	1648115-1	Size 12 + Size 20 + Size 12
1648111-1	Size 16 + Size 20 + Size 16	1648116-1	Size 16 + Size 20 + Size 16
1648112-1	Size 12 + Size 20 + Size 16	1648117-1	Size 12 + Size 20 + Size 16

Lower Drawer (catalog or 499-037)

Dimensions—
3.26" x 1.34" (82.8 x 34.0 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—
Size 12 / 16 x 8 contacts
Size 20 x 21 contacts
Current Rating—Up to 35 Amps per size 12 contact
Contact Features—Hot Plug size 12 contact option
Contact Sequencing—Multi-level for power and signal
Contact Terminations—
Size 12: Crimp and PCB tail
Size 16: Crimp and PCB tail
Size 20: Crimp and PCB tail



Pin Side — Socket Side

Base Housing Part Numbers

Pin Housing		Socket Housing	
1648203-1	Size 12 + Size 20 + Size 12	1648206-1	Size 12 + Size 20 + Size 12
1648204-1	Size 16 + Size 20 + Size 16	1648207-1	Size 16 + Size 20 + Size 16
1648205-1	Size 12 + Size 20 + Size 16	1648208-1	Size 12 + Size 20 + Size 16

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UK: 44-1908-574289

ELCON Drawer Series Connectors

75A Middle Drawer

Dimensions—
3.31" x 1.31" (84.1 x 33.3 mm)

Housing Variations—See Part Numbers

Guides and Polarization—Built in

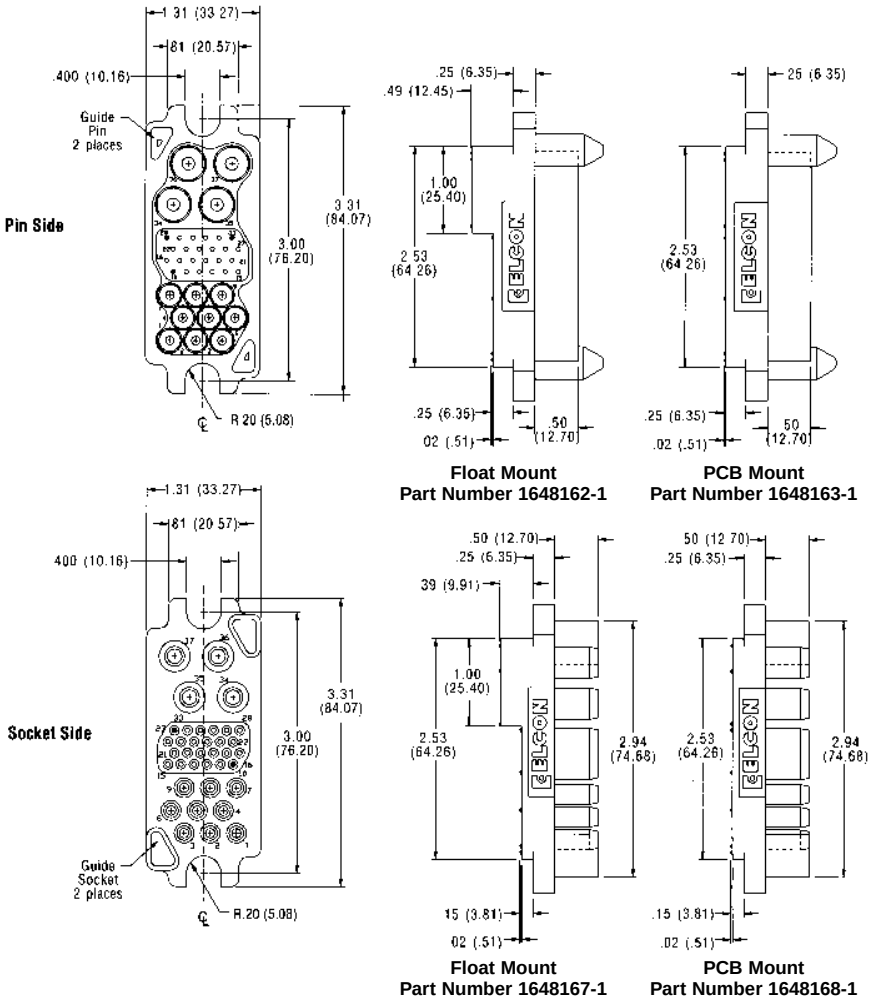
Available Contacts—
Size 8 x 4 contacts
Size 12 x 9 contacts
Size 20 x 24 contacts

Current Rating—Up to 75 Amps per size 8 contact

Contact Features—Hot Plug size 12 contact option

Contact Sequencing—Multi-level for power and signal

Contact Terminations—
Size 8: Crimp, internal/external thread and PCB tail
Size 12: Crimp and PCB tail
Size 20: Crimp and PCB tail



Base Housing Part Numbers

Pin Housing		Socket Housing	
1648162-1	Float Mount	1648167-1	Float Mount
1648163-1	PCB Mount	1648168-1	PCB Mount

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ELCON Drawer Series Connectors

125A Middle Drawer

Dimensions—
3.15" x 1.31" (80.0 x 33.3 mm)

Housing Variations—See Part Numbers above

Guides and Polarization—Built in

Available Contacts—
Size 4 x 2 contacts
Size 12 x 6 contacts
Size 20 x 32 contacts

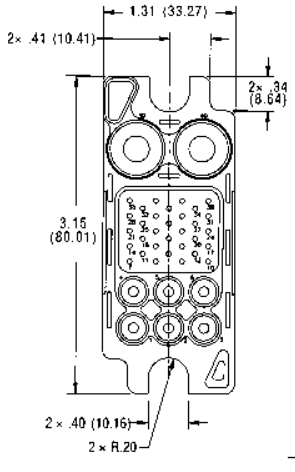
Current Rating—Up to 125 Amps per size 4 contact

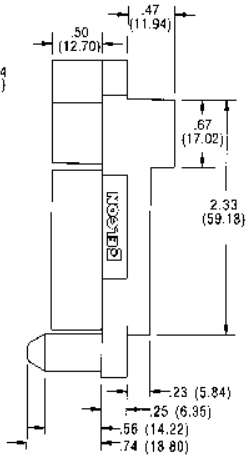
Contact Features—Hot Plug size 12 contact option

Contact Sequencing—Multi-level for power and signal

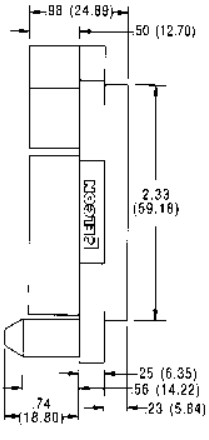
Contact Terminations
Size 4: Crimp and internal/external thread
Size 12: Crimp and PCB tail
Size 20: Crimp and PCB tail

Pin Side



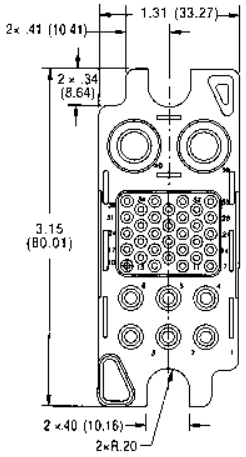


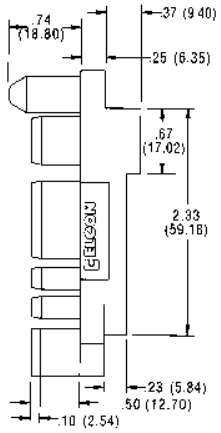
Float Mount
Part Number 1648151-1



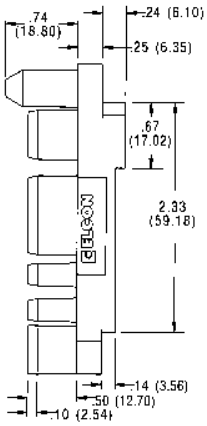
PCB Mount
Part Number 1648152-1

Socket Side





Float Mount
Part Number 1648156-1



PCB Mount
Part Number 1648157-1

Base Housing Part Numbers

Pin Housing		Socket Housing	
1648151-1	Float Mount	1648156-1	Float Mount
1648152-1	PCB Mount	1648157-1	PCB Mount

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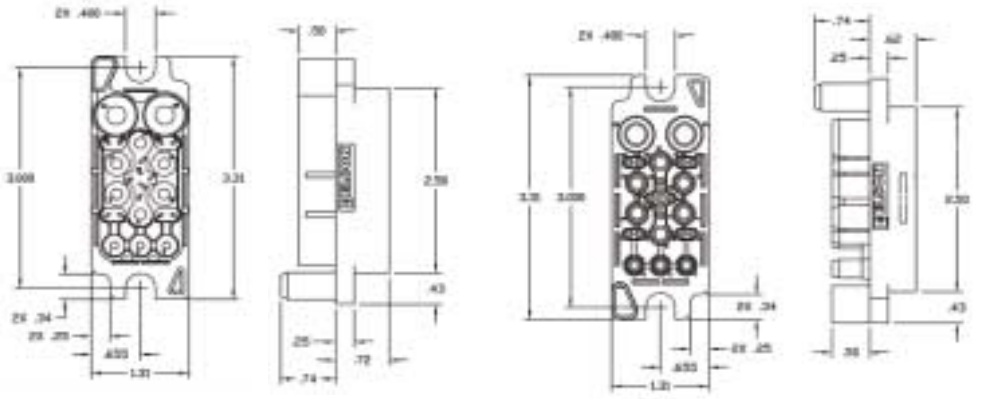
ELCON Drawer Series Connectors

200A Middle Drawer

Dimensions—
3.31" x 1.31" (84.1 x 33.3 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—
Size 4 x 2 contacts
Size 8 x 6 contacts
Size 12 x 3 contacts
Size 20 x 14 contacts
Current Rating—Up to 125 Amps per size 4 contact
Contact Features—Hot Plug size 12 contact option
Contact Sequencing—Multi-level for power and signal
Contact Terminations—
Size 4: Crimp and internal/external thread
Size 8: Crimp, internal/external thread and PCB tail
Size 12: Crimp and PCB tail
Size 20: Crimp and PCB tail

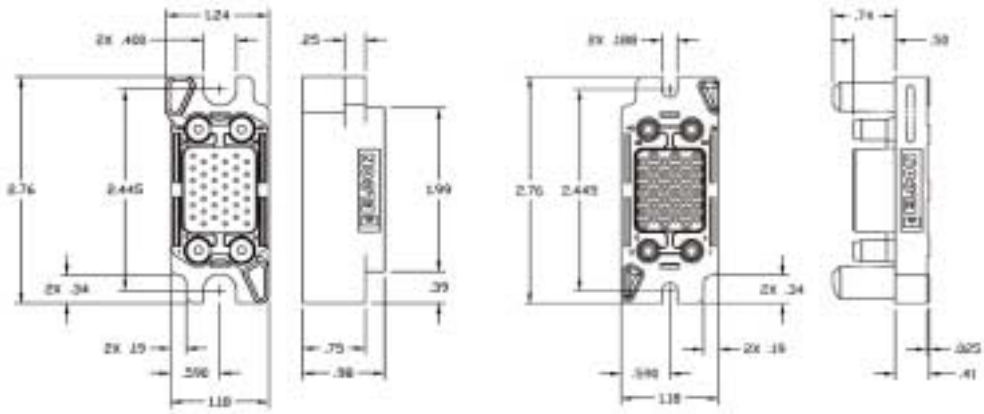


Base Housing Part Numbers

Pin Housing	Socket Housing
1648134-1	1648135-1

Square Drawer

Dimensions—
2.76" x 1.24" (70.1 x 31.5 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—
Size 12 x 4 contacts
Size 20 x 36 contacts
Current Rating—Up to 35 Amps per size 12 contact
Contact Features—Hot Plug size 12 contact option
Contact Sequencing—Multi-level for power and signal
Contact Terminations—
Size 12: Crimp and PCB tail
Size 20: Crimp and PCB tail



Base Housing Part Numbers

Pin Housing	Socket Housing
1648132-1	1648133-1

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ELCON Drawer Series Connectors

Top Drawer

Dimensions—
4.24" x 1.60" (107.8 x 40.7 mm)

Housing Variations—Various guide pin configurations available.

Guides and Polarization—Optional Steel Guide Pins with either #6-32 or M3 internal thread

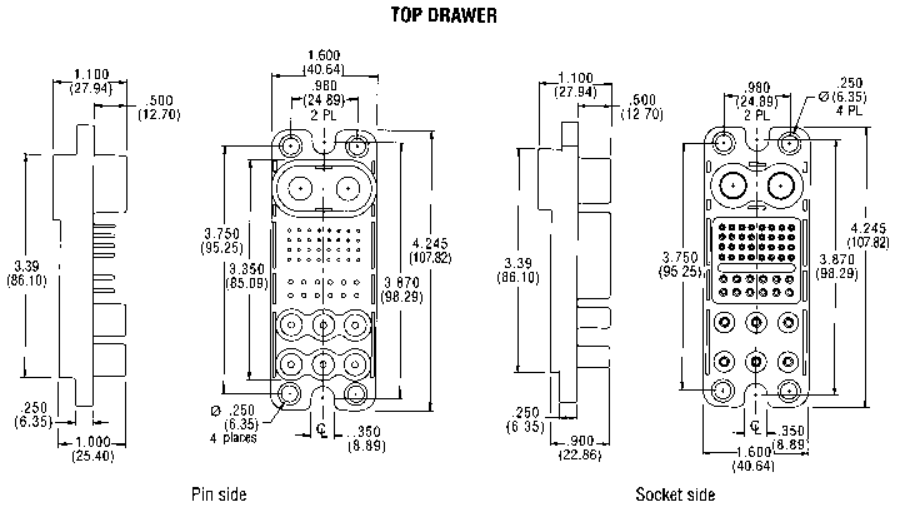
Available Contacts—
Size 0 x 2 contacts
Size 12 x 6 contacts
Size 16 x 12 contacts
Size 20 x 32 contacts

Current Rating—Up to 200 Amps per size 0 contact

Contact Features—Hot Plug size 12 contact option
Probe-proof size 0 contact option

Contact Sequencing—Multi-level for power and signal

Contact Terminations—
Size 0: Crimp and internal/external thread
Size 12: Crimp and PCB tail
Size 16: Crimp and PCB tail
Size 20: Crimp and PCB tail



Base Housing Part Numbers

Pin Housing	Socket Housing
1648183-1	1648186-1

Optional guide posts are available for improved alignment. Consult Customer Service for details.

Double Drawer

Dimensions—4.24" x 1.60" (107.8 x 40.7 mm)

Housing Variations—Various guide pin configurations available.

Guides and Polarization—Optional Steel Guide Pins with either #6-32 or M3 internal thread

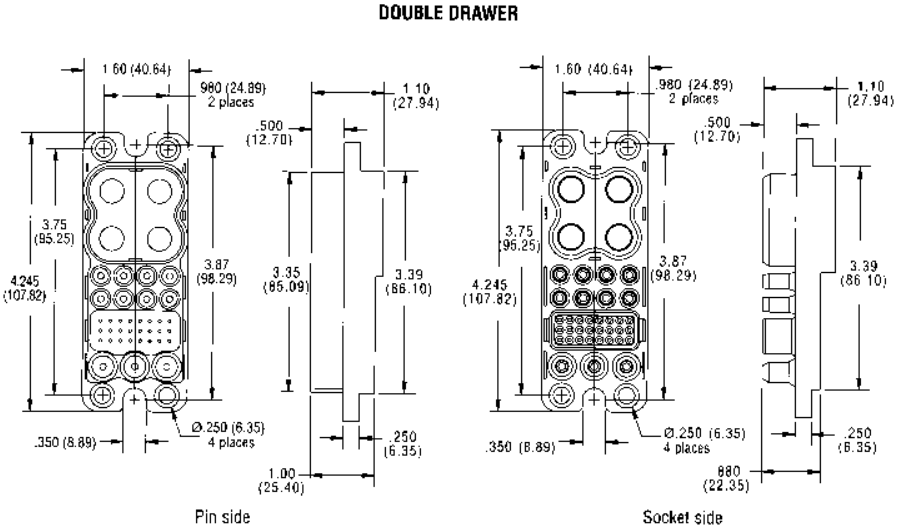
Available Contacts—
Size 0 x 4 contacts
Size 12 x 11 contacts
Size 20 x 24 contacts

Current Rating—Up to 200 Amps per size 0 contact

Contact Features—Hot Plug size 12 contact option
Probe-proof size 0 contact option

Contact Sequencing—Multi-level for power and signal

Contact Terminations—
Size 0: Crimp and internal/external thread
Size 12: Crimp and PCB tail
Size 20: Crimp and PCB tail



Base Housing Part Numbers

Pin Housing	Socket Housing
1648552-1	1648578-1

Optional guide posts are available for improved alignment. Consult Customer Service for details.

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ELCON Drawer Series Connectors

DualPower Drawer

Dimensions—
1.80" x 1.60" (45.7 x 40.7 mm)

Housing Variations—Various guide pin configurations available.

Guides and Polarization—Optional Steel Guide Pins with either #6-32 or M3 internal thread

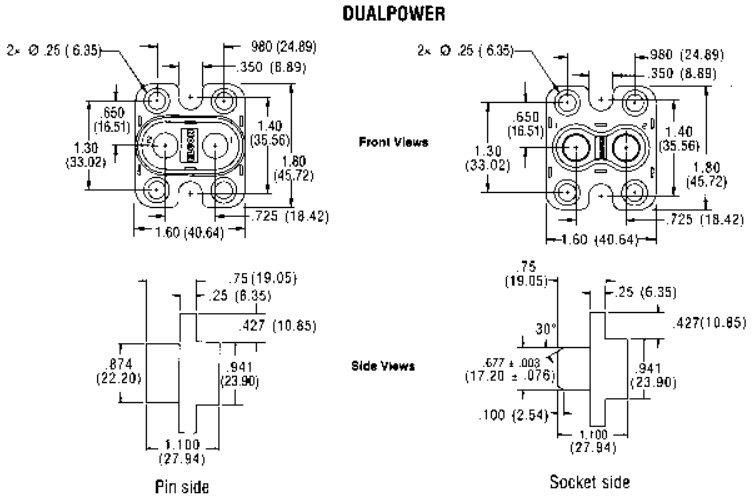
Available Contacts—Size 0 x 2 contacts

Current Rating—Up to 200 Amps per contact

Contact Features—Probe-proof size 0 contact option

Contact Sequencing—Standard only

Contact Terminations—
Size 0: Crimp and internal/external thread



Base Housing Part Numbers

Pin Housing	Socket Housing
1648549-1	1648575-1

Optional guide posts are available for improved alignment. Consult Customer Service for details.

QuadPower Drawer

Dimensions—
2.50" x 1.60" (63.5 x 40.7 mm)

Housing Variations—Various guide pin configurations available.

Guides and Polarization—Optional Steel Guide Pins with either #6-32 or M3 internal thread

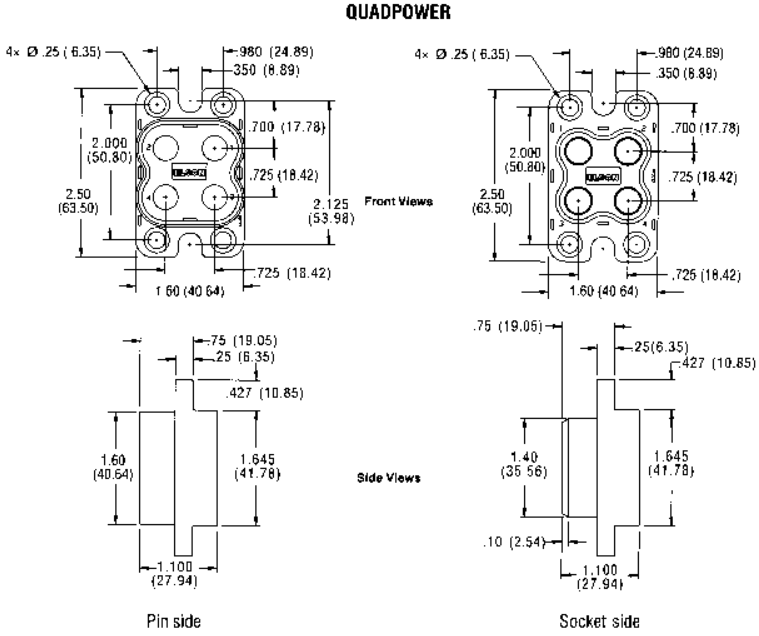
Available Contacts—Size 0 x 4 contacts

Current Rating—Up to 200 Amps per contact

Contact Features—Probe-proof size 0 contact option

Contact Sequencing—Standard only

Contact Terminations—
Size 0: Crimp and internal/external thread



Base Housing Part Numbers

Pin Housing	Socket Housing
1648548-1	1648574-1

Optional guide posts are available for improved alignment. Consult Customer Service for details.

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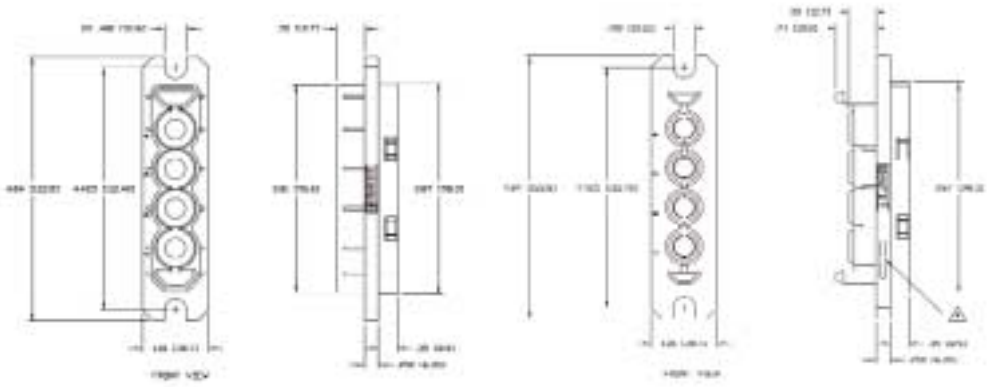
Japan: 81-44-844-8013
UK: 44-1908-574289

ELCON Drawer Series Connectors

In-Line QuadPower Drawer

Dimensions—
4.84" x 1.21" (122.8 x 30.7 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—Size 0 x 4 contacts
Current Rating—Up to 200 Amps per contact
Contact Features—Probe-proof size 0 contact option
Contact Sequencing—Standard only
Contact Terminations—
Size 0: Crimp and internal/external thread

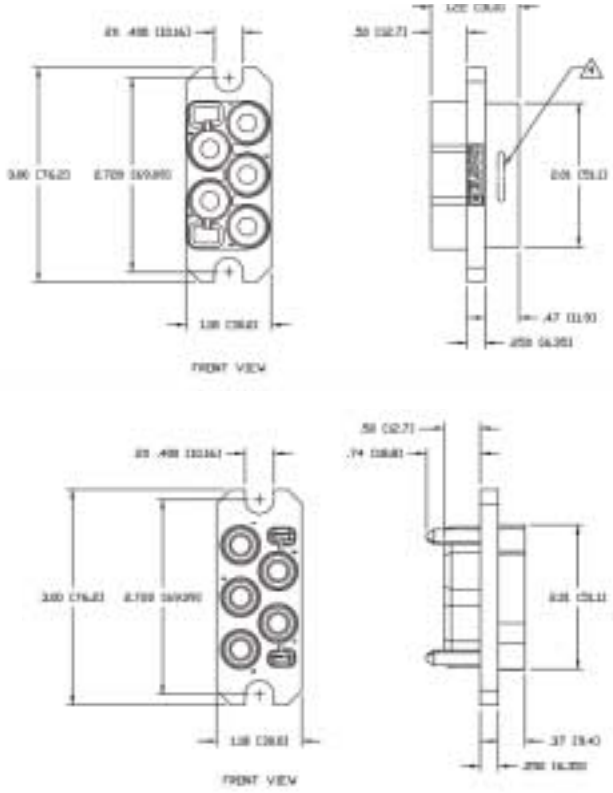


Base Housing Part Numbers

Pin Housing	Socket Housing
1651493-1	1651494-1

W5 Power Drawer

Dimensions—
3.00" x 1.18" (76.2 x 30.0 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—Size 4 x 5 contacts
Current Rating—Up to 100 Amps per contact
Contact Features—Probe-proof size 0 contact option
Contact Sequencing—Standard only
Contact Terminations—
Size 4: Crimp and internal/external thread



Base Housing Part Numbers

Pin Housing	Socket Housing
1651457-1	1651458-1

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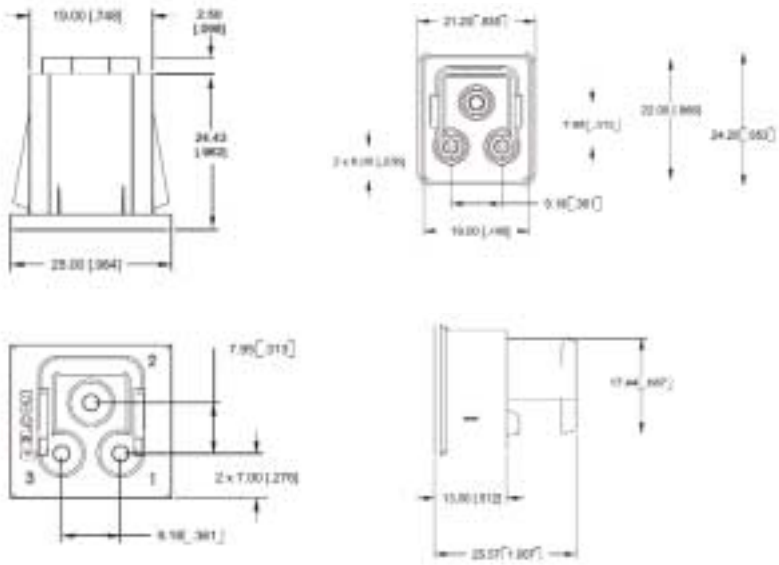
UK: 44-1908-574289

ELCON Drawer Series Connectors

P3S0 Drawer

Dimensions—
0.99" x 0.95" (25.0 x 24.0 mm)
Housing Variations—See Part Numbers
Cable Socket to Panel Mount Pin
Guides and Polarization—
Polarization only
Available Contacts—Size 12 x 3 contacts
Current Rating—Up to 35 Amps per size 12 contact
Contact Features—Hot Plug size 12 contact option
Contact Sequencing—Multi-level for power
Contact Terminations—
Size 12: Crimp only

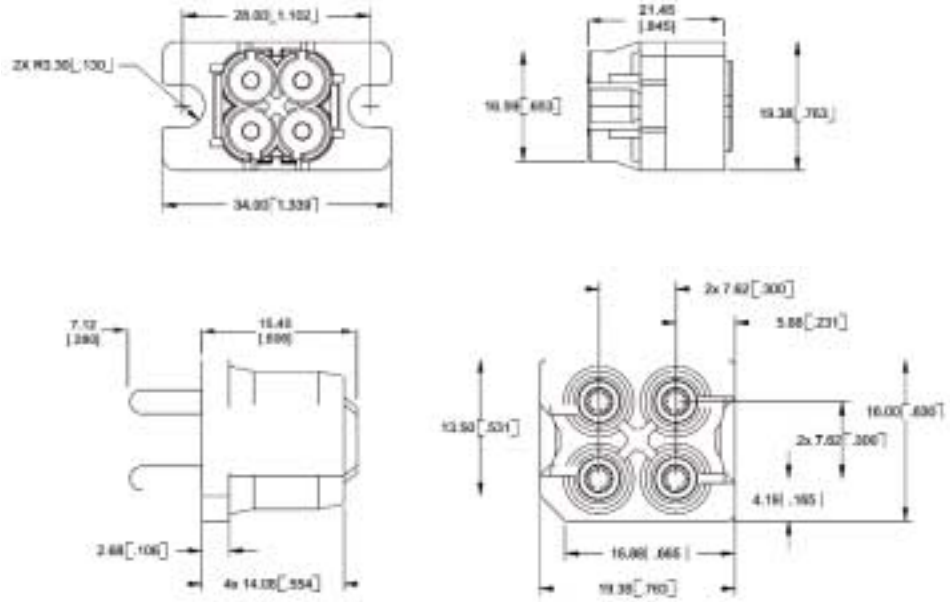


Base Housing Part Numbers

Pin Housing	Socket Housing
1766447-1	1766448-1

P4S0 Drawer

Dimensions—
1.34" x .76" (34.0 x 19.4 mm)
Housing Variations—See Part Numbers
Cable Pin to PCB Mount Socket
Guides and Polarization—
Polarization only
Available Contacts—Size 12 x 4 contacts
Current Rating—Up to 35 Amps per size 12 contact
Contact Features—Hot Plug size 12 contact option
Contact Sequencing—Multi-level for power
Contact Terminations—
Size 12: Crimp Pin and PCB tail Socket



Base Housing Part Numbers

Pin Housing	Socket Housing
1766449-1	1766450-1

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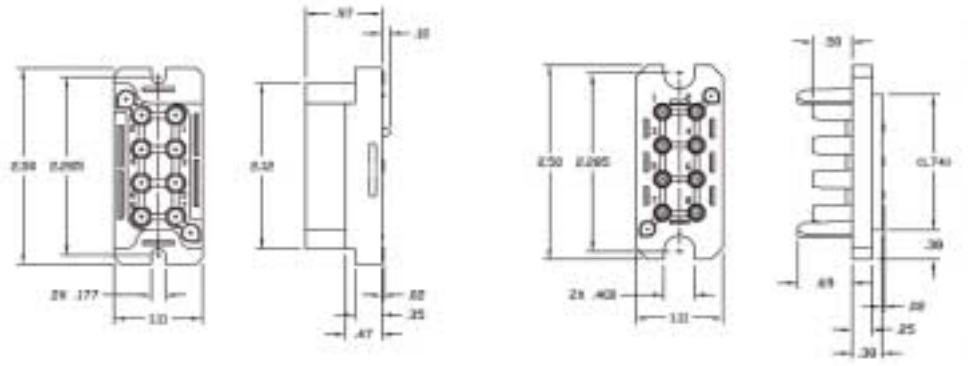
ELCON Drawer Series Connectors

HV8P Drawer

Dimensions—
2.50" x 1.11" (63.5 x 28.2 mm)
Housing Variations—See Part Numbers
600 V High Voltage Design
Guides and Polarization—Built in
Available Contacts—Size 12 x 8 contacts
Current Rating—Up to 35 Amps per size 12 contact
Contact Features—Hot Plug size 12 contact option
Contact Sequencing—Multi-level for power
Contact Terminations—
Size 12: Crimp and PCB tail

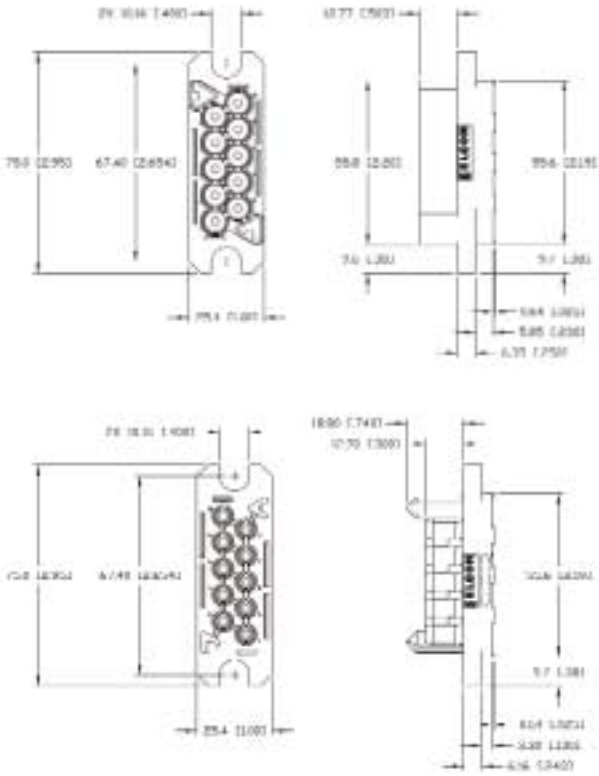


Base Housing Part Numbers

Pin Housing	Socket Housing
1648127-1	1648128-1

P10S0 Drawer

Dimensions—
2.96" x 1.00" (75.0 x 25.4 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—Size 12 x 10 contacts
Current Rating—Up to 35 Amps per size 12 contact
Contact Features—Hot Plug size 12 contact option
Contact Sequencing—Multi-level for power
Contact Terminations—
Size 12: Crimp and PCB tail



Base Housing Part Numbers

Pin Housing	Socket Housing
1648568-1	1648596-1

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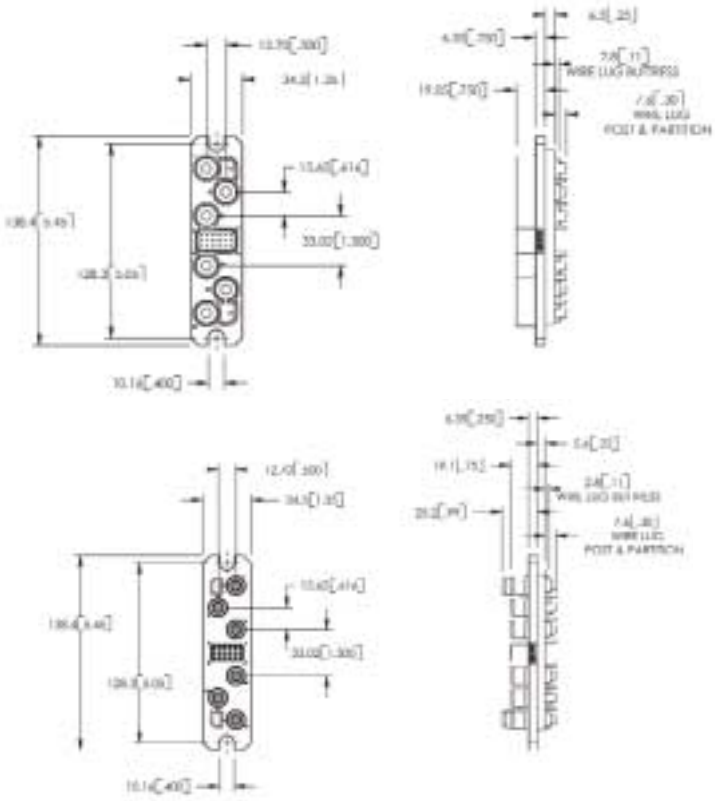
ELCON Drawer Series Connectors

P6S18 Drawer

Dimensions—
5.45" x 1.35" (138.4 x 34.3 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—
Size 4 x 6 contacts
Size 20 x 18 contacts
Current Rating—Up to 100 Amps per size 4 contact
Contact Features—Standard
Contact Sequencing—Multi-level for power and signal
Contact Terminations—
Size 4: Crimp and internal/external thread
Size 20: Crimp and PCB tail

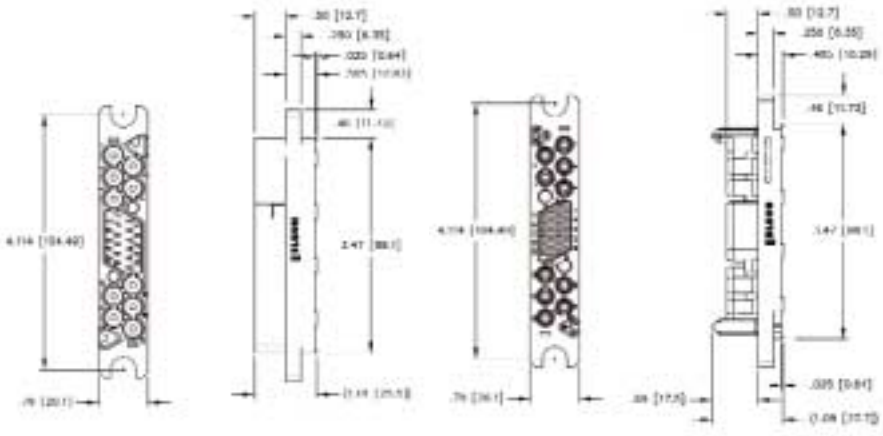


Base Housing Part Numbers

Pin Housing	Socket Housing
1766451-1	1766452-1

P10S22 Drawer

Dimensions—
4.12" x 0.79" (104.5 x 20.1 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—
Size 12 x 10 contacts
Size 20 x 22 contacts
Current Rating—Up to 35 Amps per size 12 contact
Contact Features—Hot Plug size 12 contact option
Contact Sequencing—Multi-level for power and signal
Contact Terminations—
Size 12: Crimp and PCB tail
Size 20: Crimp and PCB tail



Base Housing Part Numbers

Pin Housing	Socket Housing
1648211-1	1648212-1

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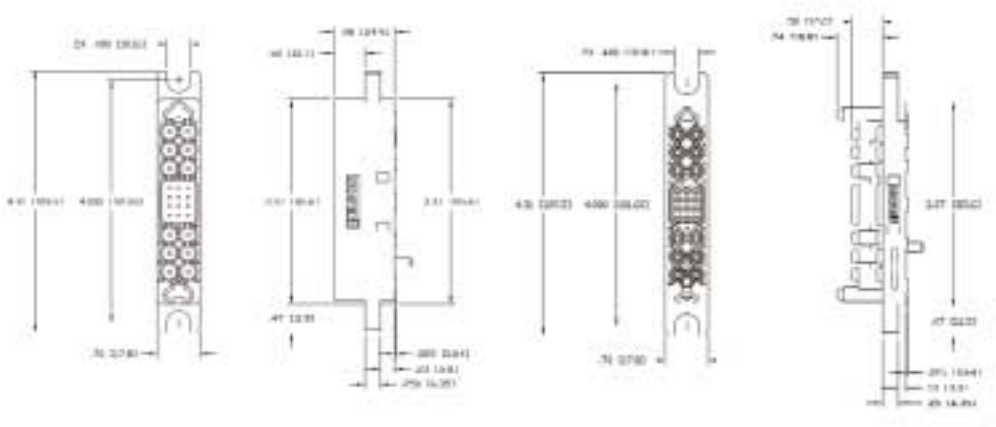
ELCON Drawer Series Connectors

P12S12 Drawer

Dimensions—
4.31" x 0.70" (109.5 x 17.8 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—
Size 16 x 12 contacts
Size 20 x 12 contacts
Current Rating—Up to 15 Amps per size 16 contact
Contact Features—Standard only
Contact Sequencing—Multi-level for power and signal
Contact Terminations—
Size 16: Crimp and PCB tail
Size 20: Crimp and PCB tail

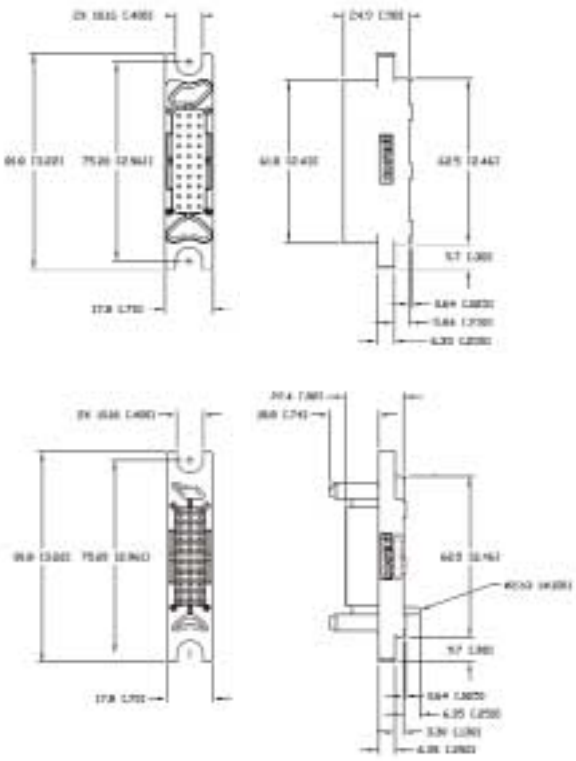


Base Housing Part Numbers

Pin Housing	Socket Housing
1651202-1	1651203-1

P0S30 Drawer

Dimensions—
3.22" x 0.70" (81.8 x 17.8 mm)
Housing Variations—See Part Numbers
Guides and Polarization—Built in
Available Contacts—Size 20 x 30 contacts
Current Rating—Up to 5 Amps per size 20 contact
Contact Features—Standard only
Contact Sequencing—Multi-level for signal
Contact Terminations—
Size 20: Crimp and PCB tail



Base Housing Part Numbers

Pin Housing	Socket Housing
1651204-1	1651205-1

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ELCON Drawer Standard Contacts

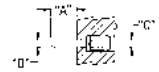
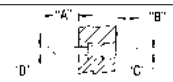
The Drawer Series uses standard contacts across the product line. This section shows the standard contacts available in different sizes and various lengths and termination styles, with their respective part numbers.

Non-Standard Contacts

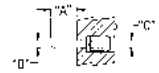
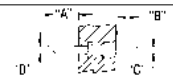
Contacts with pin lengths and terminations other than standard are available. Consult customer service if your design requires contacts different from the ones shown in this catalog.

Pin Side Contacts

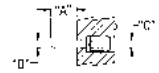
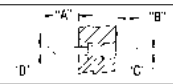
Contact Size #20 - For use in most drawer connectors

Termination Type	Contact Part Number	Dimensions	A		B		C		D	
			in	mm	in	mm	in	mm	in	mm
Crimp, standard	1650155-1		0.32	[8.12]	—	—	0.050	[1.27]	0.040	[1.01]
Crimp, premate	1650161-1		0.47	[11.93]	—	—	0.050	[1.27]	0.040	[1.01]
Crimp, postmate	1650162-2		0.27	[6.85]	—	—	0.050	[1.27]	0.040	[1.01]
PCB tail, standard	1650283-1		0.32	[8.12]	0.16	[4.06]	0.040	[1.01]	0.040	[1.01]
PCB tail, premate	1650065-1		0.47	[11.93]	0.16	[4.06]	0.040	[1.01]	0.040	[1.01]
PCB tail, postmate	1650226-1		0.27	[6.85]	0.16	[4.06]	0.040	[1.01]	0.040	[1.01]

Contact Size #16 - For use in MINI DRAWER, LOWER DRAWER, TOP DRAWER, and P12S12

Termination Type	Contact Part Number	Dimensions	A		B		C		D	
			in	mm	in	mm	in	mm	in	mm
Crimp, standard	1766196-1		0.33	[8.38]	—	—	0.067	[1.70]	0.062	[1.57]
Crimp, premate	1766198-1		0.48	[12.19]	—	—	0.067	[1.70]	0.062	[1.57]
Crimp, postmate	1766199-1		0.29	[7.36]	—	—	0.067	[1.70]	0.062	[1.57]
PCB tail, standard	1766222-1		0.33	[8.38]	0.16	[4.06]	0.062	[1.57]	0.062	[1.57]
PCB tail, premate	1766223-1		0.48	[12.19]	0.16	[4.06]	0.062	[1.57]	0.062	[1.57]
PCB tail, postmate	1766818-1		0.29	[7.36]	0.16	[4.06]	0.062	[1.57]	0.062	[1.57]

Contact Size #12 - For use in MINI DRAWER. LOWER DRAWER, 75A, 125A and 200A MIDDLE DRAWER; SQUARE DRAWER, TOP DRAWER & DOUBLE DRAWER; P3S0 AND P4S0, HV8P, P10SO, P10S22

Termination Type	Contact Part Number	Dimensions	A		B		C		D	
			in	mm	in	mm	in	mm	in	mm
Crimp, standard	1766193-1		0.43	[10.92]	—	—	0.100	[2.54]	0.094	[2.38]
Crimp, premate	1766195-1		0.46	[11.68]	—	—	0.100	[2.54]	0.094	[2.38]
Crimp, postmate	1766196-1		0.39	[9.90]	—	—	0.100	[2.54]	0.094	[2.38]
PCB tail, standard	1766198-1		0.43	[10.92]	0.21	[5.33]	0.094	[2.38]	0.094	[2.38]
PCB tail, premate	1766250-1		0.46	[11.68]	0.21	[5.33]	0.094	[2.38]	0.094	[2.38]
PCB tail, postmate	1766249-1		0.39	[9.90]	0.21	[5.33]	0.094	[2.38]	0.094	[2.38]

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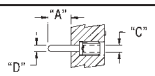
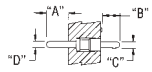
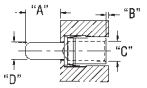
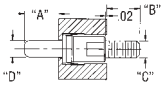
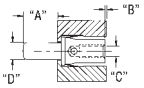
ELCON Drawer Standard Contacts

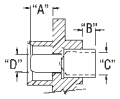
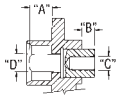
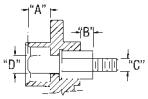
Contact Size #8 - For use in 75A and 200 A MIDDLE DRAWER

Termination Type	Contact Part Number	Dimensions	A		B		C		D	
			in	mm	in	mm	in	mm	in	mm
Crimp, standard	1766192-1		0.43	[10.92]	—	—	0.18	[4.57]	0.142	[3.60]
Crimp, premate	1766197-1		0.48	[12.19]	—	—	0.18	[4.57]	0.142	[3.60]
PCB tail, standard	1766262-1		0.43	[10.92]	0.27	[6.85]	0.142	[3.60]	0.142	[3.60]
PCB tail, premate	1766263-1		0.48	[12.19]	0.27	[6.85]	0.142	[3.60]	0.142	[3.60]

Contact Size #4 - For use in 125A and 200A MIDDLE DRAWER. P6S18 Drawer, W5 POWER

Termination Type	Contact Part Number	Dimensions	A		B		C		D	
			in	mm	in	mm	in	mm	in	mm
Crimp, Standard	1766232-1		0.51	[12.95]	0.03	[7.62]	0.29	[7.36]	0.25	[6.35]
External Thread	1766812-1		0.51	[12.95]	0.48	[12.19]	1/4 - 20 UNC	—	0.25	[6.35]
M5 Internal Thread	1766283-1		0.51	[12.95]	0.02	[.508]	—	M5 x 1	0.25	[6.35]

Contact Size #0[1] - For use in TOP DRAWER, DOUBLE DRAWER, DUALPOWER & QUADPOWER, IN-LINE QUADPOWER

Termination Type	Contact Part Number	Dimensions	A		B		C		D	
			in	mm	in	mm	in	mm	in	mm
Crimp	1766811-1		0.495	[12.57]	0.25	[6.35]	0.453	[11.50]	0.357	[9.06]
Probe-proof crimp[2]	1766819-1		0.430	[10.92]	0.25	[6.35]	0.453	[11.50]	0.357	[9.06]
1/4 - 20 x .050 DP Internal thread	1766230-1		0.495	[12.57]	0.25	[6.35]	1/4 - 20	—	0.357	[9.06]
M6 x 1 x 12.7 mm DP Internal thread	1766274-1		0.495	[12.57]	0.25	[6.35]	—	M6x1	0.357	[9.06]
1/4 - 20 x .050 DP Probe-proof/internal thread[2]	1766269-1		0.430	[10.92]	0.25	[6.35]	1/4/20	—	0.357	[9.06]
M6 x 1 x 12.7 mm DP Probe-proof/Internal thread[2]	1766275-1		0.430	[10.92]	0.25	[6.35]	—	M6x1	0.357	[9.06]
1/4 - 20 x .050 DP External thread	1766268-1		0.495	[12.57]	0.25	[6.35]	1/4 - 20	—	0.357	[9.06]
M6 x 1 x 12.7 mm DP External thread	1766231-1		0.495	[12.57]	0.25	[6.35]	—	M6x1	0.357	[9.06]
1/4 - 20 x .050 DP Probe-proof/external thread[2]	1766270-1		0.430	[10.92]	0.25	[6.35]	1/4 - 20	—	0.357	[9.06]
M6 x 1 x 12.7 mm DP Probe-proof/external thread[2]	1766276-1		0.430	[10.92]	0.25	[6.35]	—	M6x1	0.357	[9.06]

Notes: [1]Contact Elcon for alternate contact terminations.
[2]Use only with probe-proof socket contacts.
[3]Crimp and threaded contact are insertable/removable.

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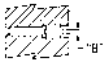
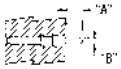
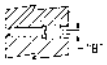
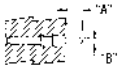
ELCON Drawer Standard Contacts

Socket Side Contacts

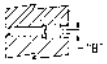
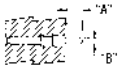
Contact Size #20

Termination Type	Contact Part Number	Dimensions	A in	A mm	B in	B mm
Crimp	1648325-1		—	—	0.050	[1.27]
PCB Tail	1648382-1		0.16	[4.06]	0.040	[1.01]

Contact Size #16

Termination Type	Contact Part Number	Dimensions	A in	A mm	B in	B mm
Crimp	6648319-1		—	—	0.067	[1.70]
PCB Tail	6648383-1		0.16	[4.06]	0.062	[1.57]

Contact Size #12

Termination Type	Contact Part Number	Dimensions	A in	A mm	B in	B mm
Crimp	6648318-1		—	—	0.100	[2.54]
Hot Plug Crimp	1648384-1					
PCB Tail	6648374-1		0.21	[5.33]	0.094	[2.38]
Hot Plug PCB Tail	1648387-1					

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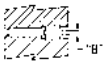
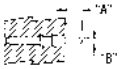
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-1908-574289

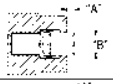
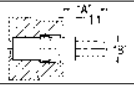
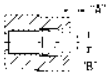
ELCON Drawer Standard Contacts

Socket Side Contacts

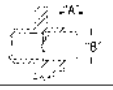
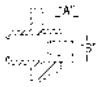
Contact Size #8

Termination Type	Contact Part Number	Dimensions	A in	A mm	B in	B mm
Crimp	6648317-1		—	—	0.18	[4.57]
PCB Tail	6648400-1		0.27	[6.85]	0.142	[3.60]

Contact Size #4

Termination Type	Contact Part Number	Dimensions	A in	A mm	B in	B mm
Crimp, Standard	6648434-1		0.10	[2.54]	0.29	[7.36]
External Thread	6648435-1		0.61	[15.49]	1/4 - 20 UNC	—
M5 Internal Thread	6648335-1		0.11	[2.79]	—	M5 x 1

Contact Size #0[1]

Termination Type	Contact Part Number	Dimensions	A in	A mm	B in	B mm
Crimp	6648405-1		0.25	[6.35]	0.453	[11.50]
Probe-proof crimp[2]	6648418-1		0.25	[6.35]	0.453	[11.50]
1/4 - 20 x .050 DP Internal thread	6648416-1		0.25	[6.35]	1/4 - 20	—
M6 x 1 x 12.7 mm DP Internal thread	6648428-1		0.25	[6.35]	—	M6x1
1/4 - 20 x .050 DP Probe-proof/internal thread[2]	6648419-1		0.25	[6.35]	1/4 - 20	—
M6 x 1 x 12.7 mm DP Probe-proof/Internal thread[2]	6648429-1		0.25	[6.35]	—	M6x1
1/4 - 20 x .050 DP External thread	6648417-1		0.25	[6.35]	1/4 - 20	—
M6 x 1 x 12.7 mm DP External thread	6648430-1		0.25	[6.35]	—	M6x1
1/4 - 20 x .050 DP Probe-proof/external thread[2]	6648420-1		0.25	[6.35]	1/4 - 20	—
M6 x 1 x 12.7 mm DP Probe-proof/external thread[2]	6648431-1		0.25	[6.35]	—	M6x1

Notes: [1]Contact Elcon for alternate contact terminations.
[2]Use only with probe-proof Pin contacts.
[3]Crimp and threaded contact are insertable/removable.

Catalog 1773096
Revised 8-05

www.tycoelectronics.com

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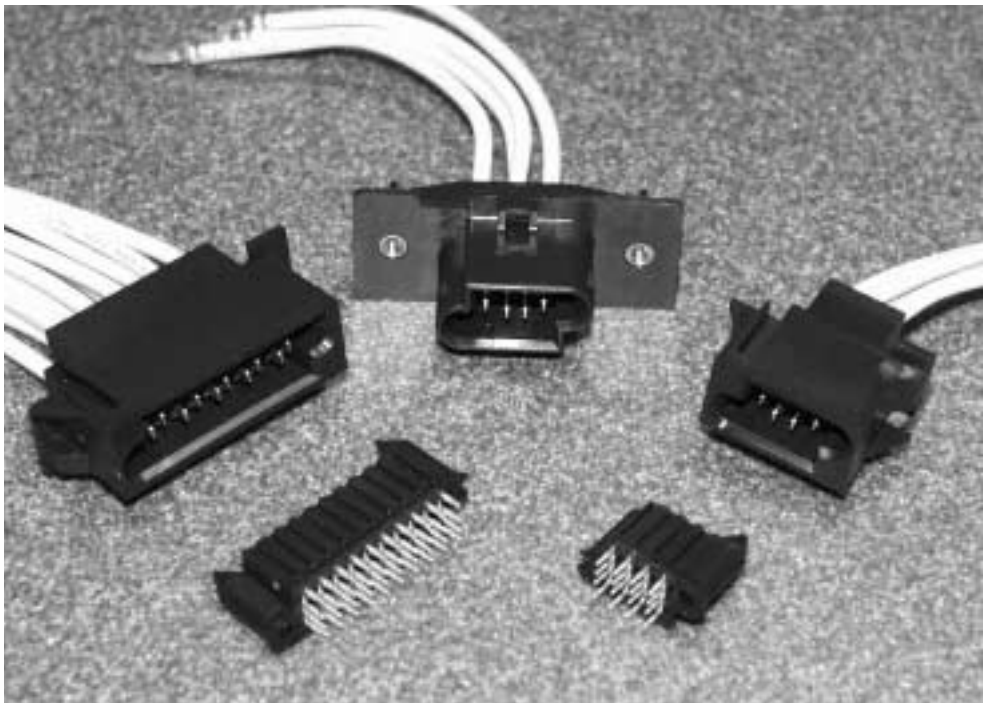
Miniature Power Drawer (MPD) Connector

Product Facts

- High mating cycle life
- Low Mating and Un-mating force (< 0.2lbs per contact)
- Single-piece molded housing
- Molded-in guide pins provide generous blind-mateability
- Sizes: 3 – 10 positions
- Compact size is ideal for distributed DC power applications.
- Two Levels of contact sequencing
- One contact for either solder or press-fit termination
- Hardware - Less or traditional shoulder bolt mounting
- Minimum of .160 inches contact wipe on shortest contact.
- All MPD connectors in this section are RoHS compliant



The new Miniature Power Drawer connector combines a high density power interface in a blind-mateable wire-to-board connector. The MPD contact interface has been previously qualified to requirements similar to BellCore GR-1217 in board-to-board applications. Now available in a crimp-to-wire version, the contacts are rated for up to 15 Amps on 14 AWG wire. In addition, the MPD contacts are designed to meet UL 1977 Hot-Plug requirements for up to 7.8 Amps at 48VDC.

The connection consists of a vertical pcb mountable receptacle and a panel mounted floating plug. The vertical receptacle pcb tails are designed for use in either through-hole solder or press-fit applications. The float-mount plug is easily installed from the inside of the chassis without any additional hardware, lending itself to easy assembly of pre-made cable assemblies. Additionally, the staggered wire exit pattern permits the maximum number of contact interfaces in the least amount of connector volume.

The compact design is ideal for bringing power to small rack-mounted devices such as 1U Computer Servers and Telecommunications Switches. The 3mm centerline satisfies UL 1977 safety requirements for 48 VDC distributed power applications. For higher voltage applications such as AC input, the contacts can be selectively loaded to handle up to 300 V AC or DC.

Specifications

Up to 15 amps per contact

250 mating cycle durability

+/- 1.25mm radial mis-alignment capability. (Total float is 2.5mm!)

1.6mm sequencing distance – ideal for modular sheet metal construction applications

Minimum of 3mm contact wipe on shortest power contact

Maximum continuous operating temperature – 105°C

UL 94 V-0 High-temperature thermoplastic housings

Technical Documents:

Product Specification
108-1998

Application Specification
114-13067

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UK: 44-141-810-8967

Miniature Power Drawer (MPD) Connector

Crimp Contacts

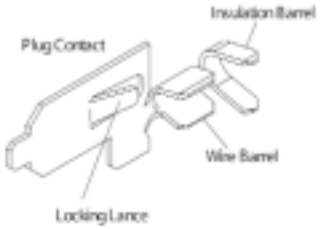
Current Ratings:

Standard Power - 10 Amps
High Power - 15 Amps

Materials/Finish:

Standard Power
Crimp Blade Contacts – Brass
- Receptacle Contacts – Phos. Bronze.
- 0.38µm Gold over 1.27µm Nickel

High Power
Blades – High Conductivity Cu Alloy
Receptacle – High Conductivity Cu Alloy
1.27µm Gold over 1.27µm Nickel
Contact Mating Length (min.)
Type A – 4.6mm
Type B – 3.0mm
Hot Pluggability
With High Current Contacts only
250 Cycles – 7.8 Amps @ 48VDC
NOTE: All contacts are Sn plated in the crimp barrel or Sn in pcb interface.



Crimp Blade Contacts

Wire Size	Type	Cycles	Mating Length	Part Number Strip / Loose Piece
18-20 AWG	Standard Power	100	A	1489128-8 / 1-1489128-4
			B	1489128-7 / 1-1489128-3
	High Power	250	A	1-1489128-0 / 1-1489128-6
			B	1489128-9 / 1-1489128-5
14-16 AWG	Standard Power	100	A	Contact Tyco Electronics
			B	
	High Power	250	A	
			B	

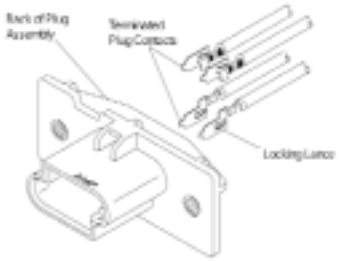
Heavy Duty Miniature (HDM) Applicator for AMP-O-LECTRIC Model G Machine - #1385248-3.
PRO-CRIMPER Hand Tool #354940-1, Die set # 91363-2

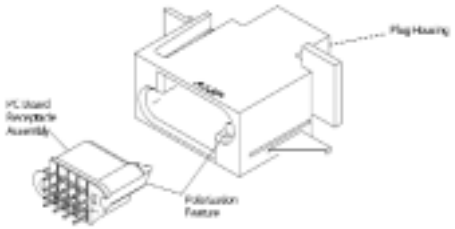
Plugs and Receptacles

Materials

UL 94V-0 Thermoplastic
105°C Max. Operating temperature

Notes:
Vertical PCB Mt. Receptacles supplied with press-fit ACTION PIN contacts.





Number of Positions	Part Number			
	Panel Mt.Plug		PCB Mt. Receptacles	
	Snap-In	Shoulder Bolt	Standard Power	High Current
3	1489127-1	—	1489715-1	1-1489715-1
4	1489127-2	1489701-1	1489715-2	1-1489715-2
5	1489127-3	—	1489715-3	1-1489715-3
6	1489127-4	—	1489715-4	1-1489715-4
7	1489127-5	—	1489715-5	1-1489715-5
8	1489127-6	—	1489715-6	1-1489715-6
9	1489127-7	—	1489715-7	1-1489715-7
10	1489127-8	—	1489715-8	1-1489715-8

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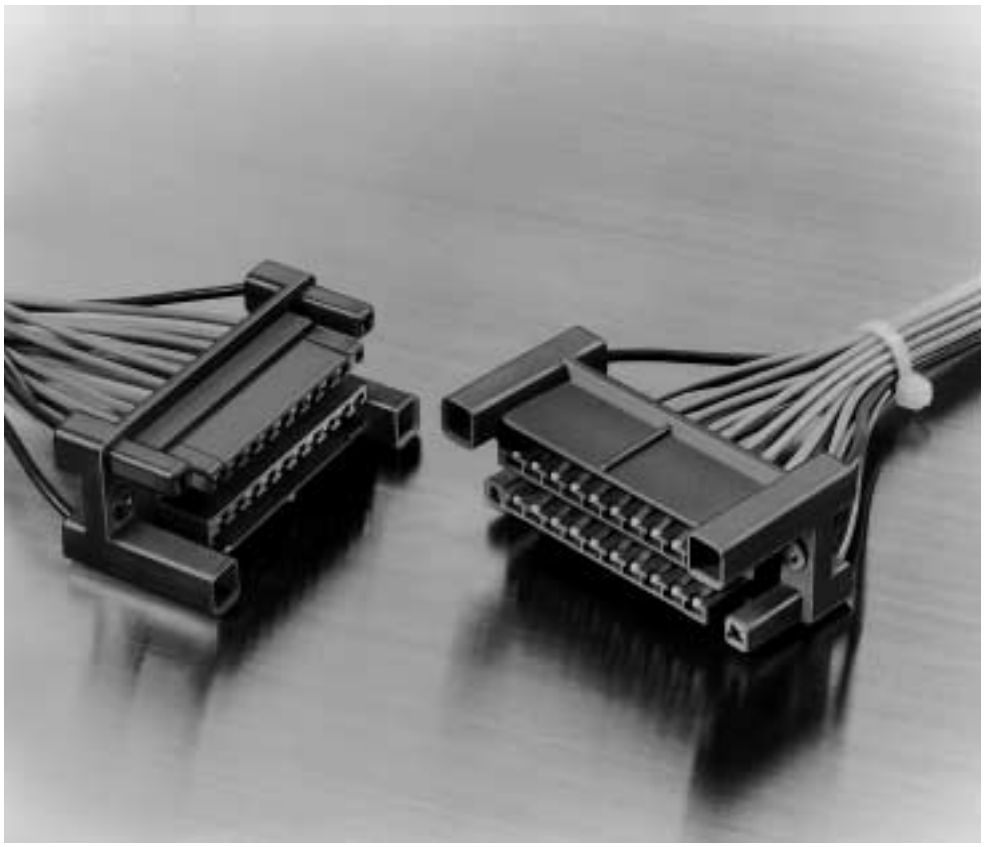
UK: 44-141-810-8967

Hybrid Blindmate Drawer Connectors

Product Facts

- **High current circuits and signal circuits can be mixed in the same connector**
- **High current circuits use MIC connector contacts located at four corners of the housing**
- **Signal circuits use Standard Drawer Connector contacts**
- **24 positions**
- **Hermaphroditic housing can be mated with top and bottom turned while maintaining polarity**



AMP Hybrid Drawer Connectors offer high current and signal circuits mixed in the same connector system.

High current circuits use MIC connector contacts which are located at the four corners of the housing.

Signal circuits use the same hermaphroditic crimp snap-in contacts that are used in the Standard Drawer Connector.

The hermaphroditic housings are available in a popular 24-position size. These housings can be mated with top and bottom turned while maintaining polarity.

Performance Specifications

Voltage Rating: 250 VAC

Current Rating (Max.):
Signal Circuit (Drawer);
4 amperes—24 AWG [0.2mm^2] Wire
5 amperes—22 AWG [0.3-0.4mm^2] Wire
7 amperes—20 AWG [0.5-0.6mm^2] WIre
Power Circuit (MIC);
10 amperes

Low Level Resistance:
Signal Circuit (Drawer);
10 milliohms max. (Initial)
20 milliohms max. (Final)

Power Circuit (MIC);
3 milliohms (Initial)
6 milliohms (Final)

Dielectric Withstanding Voltage:
5000 milliohms (Initial)
2000 milliohms (Final)

Operating Temperature:
–20°C to +120°C

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UK: 44-141-810-8967

Hybrid Blindmate Drawer Connectors (Continued)

Housings (Hermaphroditic), 24-positions

Material:

Housing—Glass-filled polybutylene terephthalate (PBT), blue

Bushing—Brass, zinc-plated

Related Product Data:

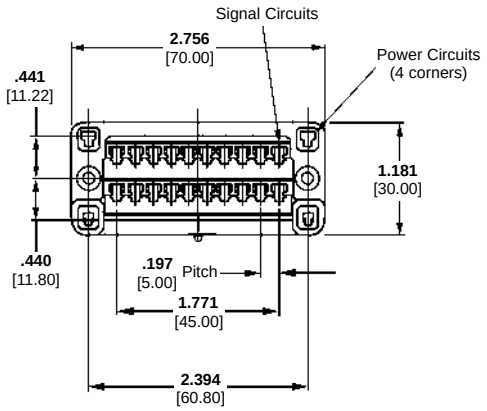
Performance Specifications—page 79

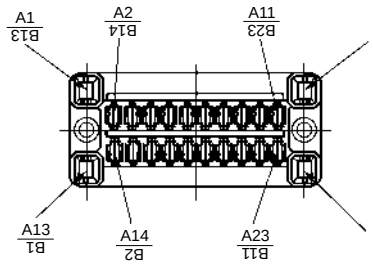
MIC Contacts—page 81

Crimp Snap-In Contacts—page 81

Technical Documents

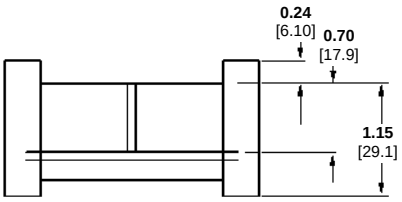
AMP Product Specification 108-5371

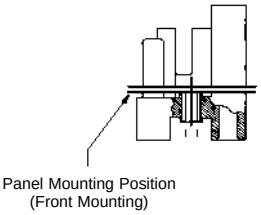




Note: Reverse figures show circuit numbers.

(Example = $\frac{A1}{B13}$ The hole used for No. 1 circuit is used for No. 13 on the reverse side.)

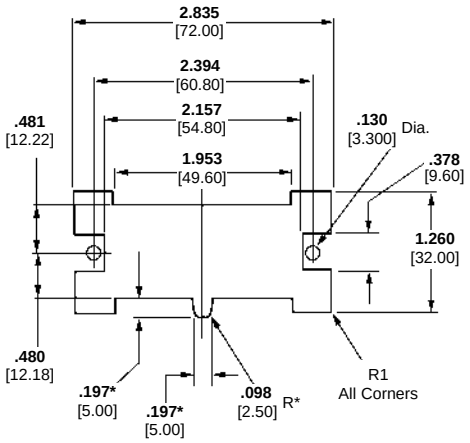




Floating of Bushing	Housing Part Numbers
Up- and downward = 0.05 [.002] Circumferential = 0.14 [.006]	176916-1
Up- and downward = 0.30 [.012] Circumferential = 0.80 [.031]	176916-2

Upward and downward = Axial clearance
Circumferential = Floating

Recommended Panel Cutout



*Dimensions applicable for rear mounting.

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Hybrid Blindmate Drawer Connectors (Continued)

MIC Contacts (Used for Power Circuits)

Material and Finish:

Phosphor bronze, plated .000030 [0.00076] gold in contact area, remainder of contact gold flash, with entire contact underplated nickel

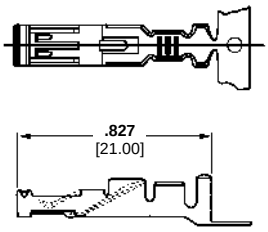
Related Product Data:

Performance Specifications—page 79

Housings—page 80

Technical Documents

AMP Instruction Sheets
408-089J, 408-369J, 408-370J



Wire Size Range		Insulation Diameter	Part Numbers		Hand Tool
			Receptacle Contact		
AWG	mm²		Strip Form	Loose Piece	
20-14	0.5-2.0	**.087-.134** 2.20-3.40	170286-4	170289-3	755338-1* 755339-1

***Part Number 755338-1** is used on wire for automotive application; **Part Number 755339-1** is used on other types of wire.

Extraction Tool **Part Number 723735-1**

Crimp Snap-In Contacts (Hermaphroditic, Used for Signal Circuits)

Material and Finish:

Phosphor bronze, plated gold in contact area (for length of .236 [6.0] from tip), with entire contact underplated nickel

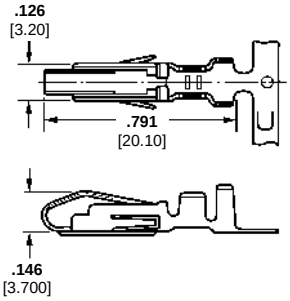
Related Product Data:

Performance Specifications—page 79

Housings—page 80

Technical Documents

AMP Instruction Sheets
408-097J, 408-151J



Wire Size Range		Insulation Dia. Range	Part Numbers			Hand Tool
			Contact		Applicator for AMP-O-LECTRIC Machine*	
AWG	mm²		Strip Form	Loose Piece		
24-20	0.2-0.6	**.060-.077** 1.50-1.95	170311-1	170313-1	567324-2	724632-1
20-16	0.5-1.4	**.071-.130** 1.80-3.30	170484-1	170485-1	567241-2	724787-1

*Applicators are for Model "K" machines. Consult AMP for applicators for other bench machines and lead-making machines.

Notes: For applicable wire, use wire specified in UL 1015 or 1007.

Extraction Tool **Part Number 723986-1**

Tab Contacts

Material and Finish:

Brass, plated .000030 [0.00076] gold in contact area, with entire contact underplated nickel

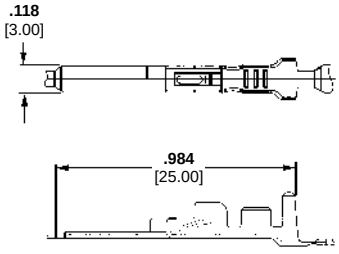
Related Product Data:

Performance Specifications—page 79

Housings—page 80

Technical Documents

AMP Instruction Sheets
408-144J, 408-369J, 408-370J



Wire Size Range		Insulation Diameter	Part Numbers		Hand Tool
			Tab Contact		
AWG	mm²		Strip Form	Loose Piece	
20-14	0.5-2.0	**.087-.134** 2.20-3.40	170221-4	170222-3	755338-1* 755339-1

***Part Number 755338-1** is used on wire for automotive application; **Part Number 755339-1** is used on other types of wire.

Extraction Tool **Part Number 724763-1**

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Revised 8-05

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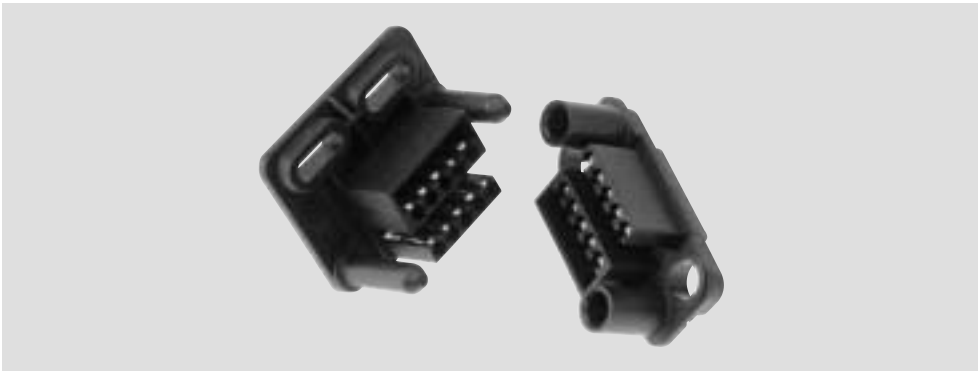
Special Blindmate Drawer Connectors (uses AMP-LEAF Contacts)

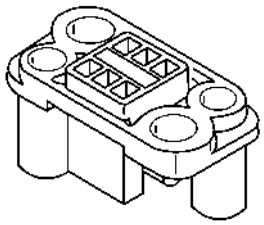
Product Facts

- **Blindmate connectors accept AMP-LEAF crimp snap-in and solder dip contacts**
- **Contacts are phosphor bronze, gold-over-nickel plated**
- **6 and 10 positions**
- **Housings made of polybutylene terephthalate (PBT)**

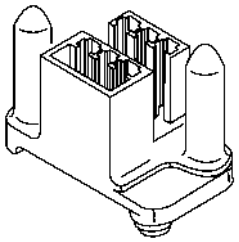


Special Blindmate Drawer Connectors are available in 6- and 10-position configurations and provide wire-to-board and wire-to-wire connection capabilities. These connectors offer the integrity of AMP-LEAF contacts with maximum travel wiping action.

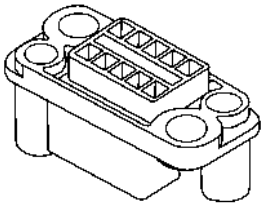
Housings feature molded-in guide pins and diagonally aligned sockets for correct polarization and to facilitate blindmating. The PC header guide pins extend through the PC board to secure the header to the board prior to soldering.



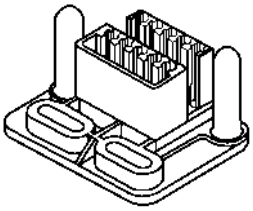
6-Position Socket Housing
(Accepts AMP-LEAF
Crimp Snap-In Contacts)



6-Position PC Board Header Housing
(Fully loaded with AMP-LEAF
Solder Dip Contacts)



10-Position Socket Housing
(Accepts AMP-LEAF
Crimp Snap-In Contacts)



10-Position Header Housing
(Accepts AMP-LEAF
Crimp Snap-In and
Solder Dip Contacts)

Performance Specifications

Current Rating:
4 amperes (max.)—26-22 AWG
[0.12-0.4mm^2] wire

Voltage Rating: 50 VDC

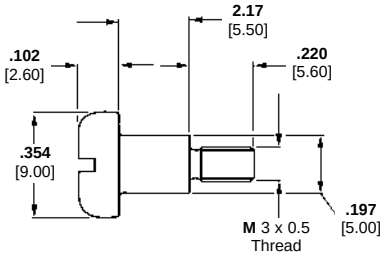
Temperature Rating:
–10°C to +80°C

Mounting Screw (2 Required per Socket Housing)

Part Number 343404-1

Material and Finish:

Steel, plated bright zinc chromate



Catalog 1773096
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Japan: 81-44-844-8013
UK: 44-141-810-8967

Special Blindmate Drawer Connectors (Continued)

Socket Housing, 6 Positions

Part Number 343886-1

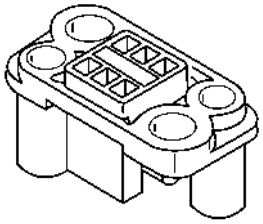
Accepts the following AMP-LEAF Crimp Snap-In Contacts:

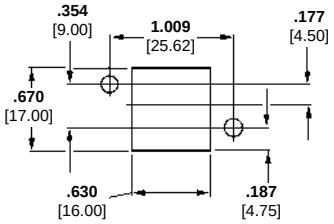
583990-3 (loose piece)
583204-2 (strip form)

Contacts must be ordered separately.

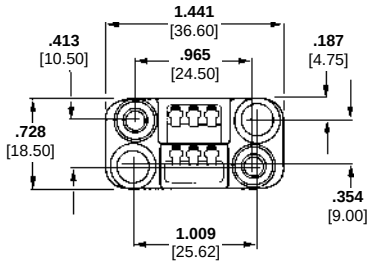
Material:

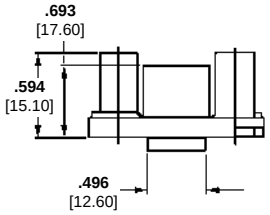
Glass-filled polybutylene terephthalate (PBT), black





Recommended Panel Cutout





PC Board Header Housing, 6 Positions with Board Retention

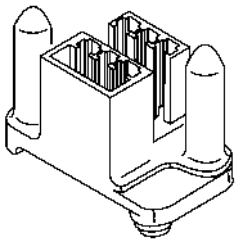
Part Number 343887-1

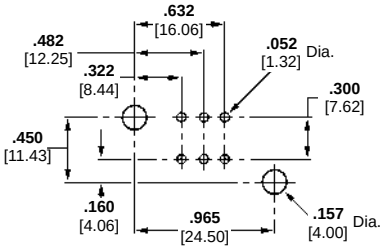
Accepts AMP-LEAF Crimp Snap-In Contact 343371-1 and Solder Dip Contact 583294-2

Contacts must be ordered separately; refer to contact specification pages for details.

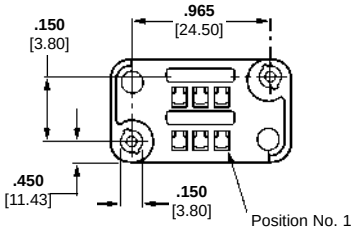
Material:

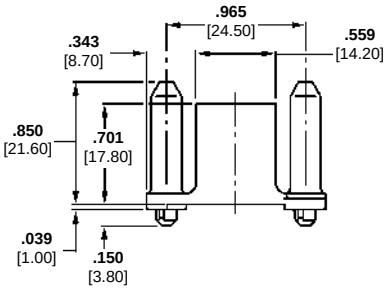
Glass-filled polybutylene terephthalate (PBT), black





Recommended PC Board Layout





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UK: 44-141-810-8967

Special Blindmate Drawer Connectors (Continued)

Socket Housing, 10 Positions

Part Number 343348-1

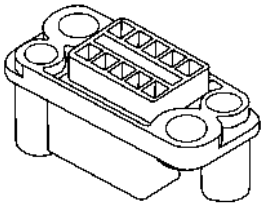
Accepts the following AMP-LEAF Crimp Snap-In Contacts:

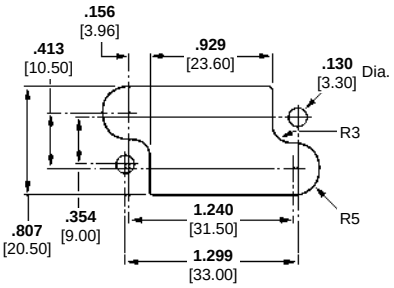
343371-1 (strip form)
583204-2 (strip form)

Contacts must be ordered separately.

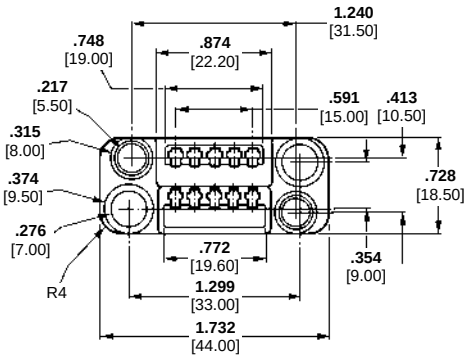
Material:

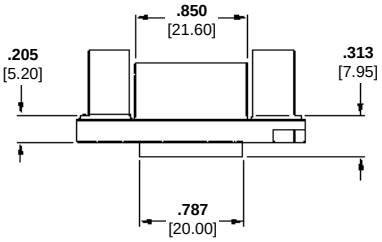
Glass-filled polybutylene terephthalate (PBT), black





Recommended Panel Cutout





Header Housing, 10 Positions

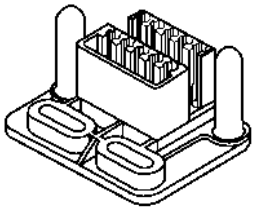
Part Number 343347-1

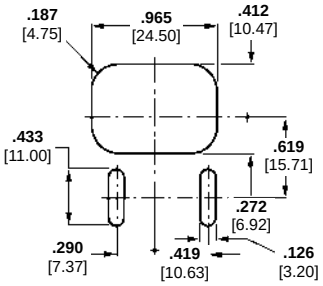
Accepts AMP-LEAF Crimp Snap-In Contact 343371-1 and Solder Dip Contact 583294-2

Contacts must be ordered separately: refer to contact specification pages for details.

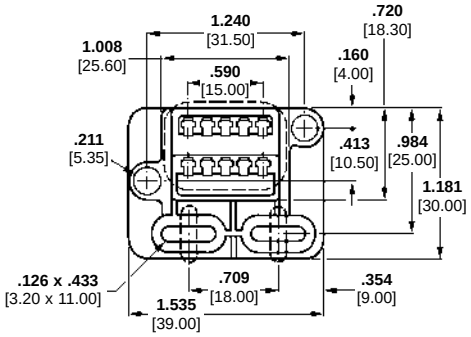
Material:

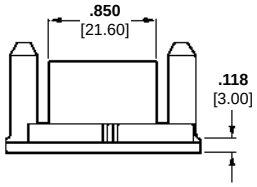
Glass-filled polybutylene terephthalate (PBT), black





Recommended Panel Cutout





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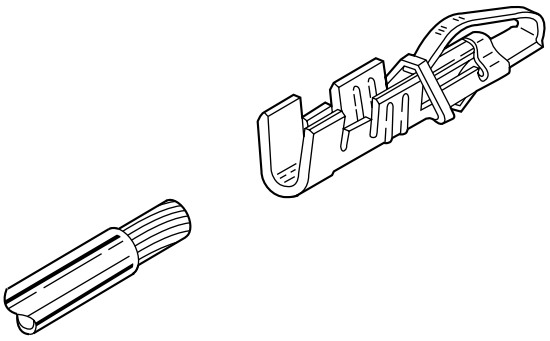
Special Blindmate Drawer Connectors (Continued)

Crimp, Snap-In Contacts

Material and Finish:

Phosphor bronze, plated as follows:
Plating A—.000100-.000200 [0.00254-0.00508] tin (lubricant must be used)
Plating B—.000030 [0.00076] min. gold in mating area, gold flash on remainder of contact, with entire contact underplated .000050 [0.00127] min. nickel
Plating C—.000015 [0.00038] min. gold in mating area, gold flash on remainder of contact, with entire contact underplated .000050 [0.00127] min. nickel
Plating D—.000030 [0.00076] min. gold over .000050 [0.00127] min. nickel in mating area, remainder of contact gold flash over .000015 [0.00038] min. nickel
Plating E—.000030 [0.00076] min. gold in mating area, with entire contact underplated .000050 [0.00127] min. nickel
Plating F—.000015 [0.00038] min. gold in mating area, with entire contact underplated .000050 [0.00127] min. nickel



Wire Range AWG/mm²	Insulation Range		Part Numbers				
	Single Wire	Double Wire	Contact		Contact Finish	Applicator for AMP-O-LECTRIC Machine*	Hand Tool
			Loose Piece	Strip Form			
26-22 0.12-0.4	**.050-.064** 1.27-1.63	—	583990-3	583204-2	B	466366-2	90028-3
			—	343371-1	D		
22-18 0.3-0.9	**.055-.080** 1.40-2.03	**.120** 3.05 Max.	—	583361-2	A	466367-2	90017-3 (1 #22-20) 90028-3 (2 #22) 90101-3 (1 #20)
			583989-3	583361-3	B		
			583989-4	583361-4	C		
			—	583555-4	E		
			—	583555-6	F		
16 1.25-1.40	**.108** 2.74 Max.	**.080-.160** 2.03-4.06	583991-3	60151-6	B	466368-2	90031-8 (2 #18) 90101-3 (2 #20) 90101-3 (1 #16)

*Applicators are for AMP-O-LECTRIC Model "K" machines. Consult Tyco Electronics for applicators for other bench machines and lead-making machines.

Notes: 1. Shorting contacts are available, consult Tyco Electronics.
2. Contacts and housings to accommodate .093 [2.36] thick PC boards can be made available, consult Tyco Electronics.

Technical Documents:

Product Specifications
108-9013, 108-9043
Application Specification
114-9003
Instruction Sheets
408-6591, 408-7045, 408-7622, 408-7623, 408-7624, 408-7625, 408-7626
Crimp Inspection Sheet
CI 8050-33

Hand Crimping Tool

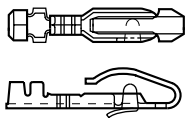
Contact Extraction Tool

Part Number	
Extraction Tool	Used with Housings
465195-1	480110-2, -5 480142-2, -3 582140-5 582147-5 582264-2 582500-2 582963-2 583167-3 583280-1 583617-1 583680-1 583685-1 583722-1 583723-1 583724-1 583725-1 583726-1
465195-2	480133-2

Dummy Contact

Material:

Phosphor bronze



Plain Finish—
Part Number 66084-1
Tin Finish—
Part Number 66084-2
Gold Finish—
Part Number 66084-3

Technical Documents:

Instruction Sheet 408-7037

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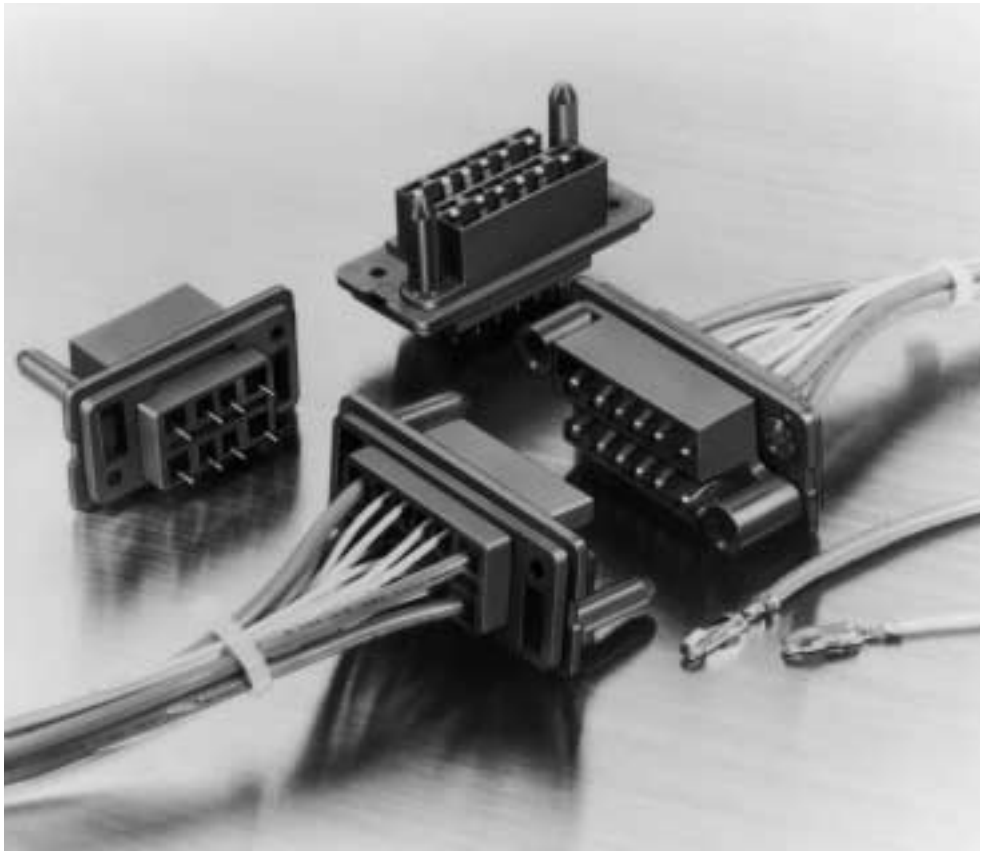
Blindmate Drawer Connectors

Product Facts

- **Designed for rack and panel applications**
- **Durable—withstands multiple mating/unmating**
- **Low insertion and withdrawal force**
- **Hermaphroditic contacts**
- **Accepts signal and power contacts**
- **Provides excellent creep distance**
- **Mated connectors dust-proof**
- **Configurations available in 8, 12, 16, 20 and 24 positions**
- **Contacts accept wire sizes 24-14 AWG [0.2-2.0mm²]**
- **Accept wire insulation diameter—.059-.154 [1.5-3.9]**
- **Recognized under the Component Program of the Underwriters Laboratories Inc.**



AMP Drawer Connectors are designed as an economical rack and panel connector. They are used in copying machines, control panels, power distribution boards, industrial equipment, power supplies and other electronic equipment.

Blindmate drawer connectors feature excellent durability and feature low insertion and withdrawal force. Leaf-type hermaphroditic contacts ensure reliable, positive contact.

Contacts are on .197 [5.00] centerlines for signal circuits, and .260 [6.60] centerlines for power circuits (2-circuits at each end of the double row of contacts) for a total of 4. Row-to-row spacing is .390 [9.90].

Housings are made of UL 94V-0 rated thermoplastic and feature molded-in guide pins and sockets for positive connector mating.

Other features include wire outlets which provide for sufficient creep distance, plus mated assemblies are completely dust-proof.

Additional economies are achieved through the use of strip-form contacts suitable for high-speed automatic machine terminations. For prototype, maintenance and repair applications, contacts are available in loose piece for easy termination with Tyco Electronics hand crimping tools.

Performance Specifications

Voltage Rating: 250 VAC

Current Rating:
4 amperes—24 AWG [0.2mm²] Wire
5 amperes—22 AWG [0.3-0.4mm²] Wire
7 amperes—20 AWG [0.5-0.6mm²] Wire
8 amperes—18 AWG [0.8-0.9mm²] Wire
12 amperes—16 AWG [1.25-1.4mm²] Wire
15 amperes—14 AWG [2.0mm²] Wire

Contact Resistance:
10 milliohms max. (Initial)
20 milliohms max. (Final)

Insulation Resistance:
5000 milliohms min. (Initial)
2000 milliohms min. (Final)

Dielectric Withstanding Voltage:
2000 VAC/1 minute

Operating Temperature:
–20°C to +120°C (Includes T-Rise)

Insertion/Extraction Force:
Insertion—4 kg max. (Initial)—16-position
Extraction—0.7 kg min. (Initial)—16-position

Durability:
Tested to 1000 Mate/Unmate cycles

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Blindmate Drawer Connectors (Continued)

Plug Connectors, PC Board Mount

Material and Finish:

Housing—Glass-filled polybutylene terephthalate (PBT), blue, 94V-0 rated

Contacts—Phosphor bronze, plated gold in contact area over nickel underplating; board mount tails are brass, plated tin over steel underplating

Related Product Data:

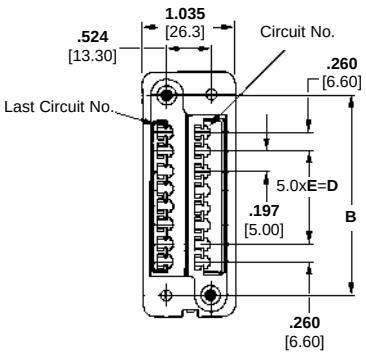
Performance Specifications—page 86

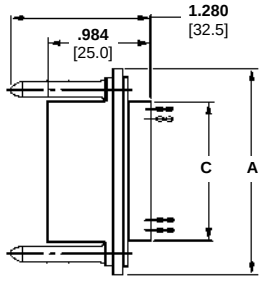
Mating Receptacles—page 88

Technical Documents

AMP Product Specification 108-5125

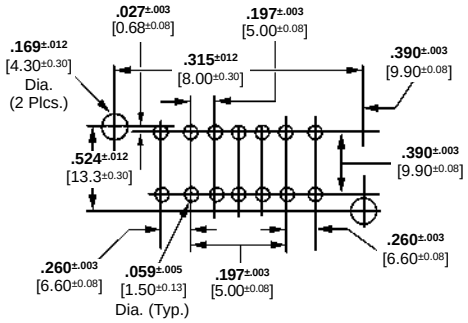
AMP Application Specification 114-5044





No. of Pos.	Dimensions					Plug Connector Part Numbers
	A	B	C	D	E	
8	**2.016** 51.2	**1.500** 38.0	**1.055** 26.8	**.197** 5.00	1	172653-2
12	**2.409** 61.2	**1.890** 48.0	**1.449** 36.8	**.591** 15.0	3	172653-3
16	**2.803** 71.2	**2.283** 58.0	**1.843** 46.8	**.984** 25.0	5	172653-1

Note: To ensure proper contact alignment, connectors must be mated during the soldering process.



Recommended PC Board Layout

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Blindmate Drawer Connectors (Continued)

Housings for Crimp Snap-In Contacts

Material:

Polybutylene terephthalate (PBT), blue, 94V-0 rated

Related Product Data:

Performance Specifications—page 86

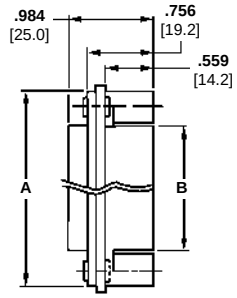
Crimp Snap-In Contacts—page 89

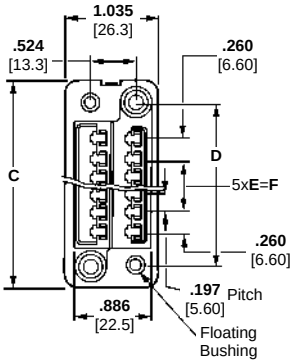
Panel Cutout—page 89

Technical Documents

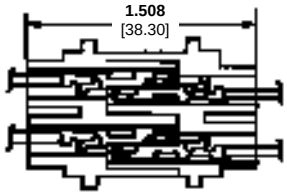
AMP Product Specification 108-5125

AMP Application Specification 114-5044

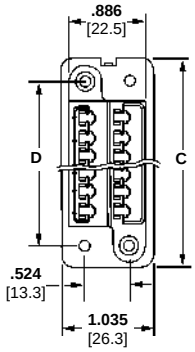


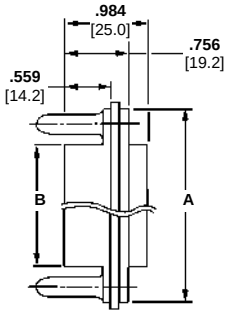


Receptacle



Mated Pair





Plug

No. of Pos.	Dimensions						Receptacle		Plug	
	A	B	C	D	E	F	Floating Bushing Size	Part Numbers	Panel Mount Hole Diameter	Part Numbers
8	**1.858** 47.20	**1.055** 26.80	**2.016** 51.20	**1.500** 38.00	1	**.197** 5.00	**.118** 3.00	172070-1	**.130** 3.30	172063-1
							.157 4.00	172070-3	**.169** 4.30	172063-3
12	**2.252** 57.20	**1.449** 36.80	**2.410** 61.20	**1.890** 48.00	3	**.591** 15.00	**.118** 3.00	172069-1	**.130** 3.30	172061-1
							.157 4.00	172069-3	**.169** 4.30	172061-3
16	**2.657** 67.20	**1.843** 46.80	**2.803** 71.20	**2.283** 58.00	5	**.984** 25.00	**.118** 3.00	172068-1	**.130** 3.30	172059-1
							.157 4.00	172068-3	**.169** 4.30	172059-3
20	**3.039** 77.20	**2.236** 56.80	**3.197** 81.20	**2.677** 68.00	7	**1.378** 35.00	**.157** 4.00	172033-3	**.169** 4.30	172032-3
24	**3.433** 87.20	**2.630** 66.80	**3.591** 91.20	**3.071** 78.00	9	**1.772** 45.00	**.118** 3.00	172625-1	**.130** 3.30	172624-1
							.157 4.00	172625-3	**.169** 4.30	172624-3

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UK: 44-141-810-8967

Blindmate Drawer Connectors (Continued)

Crimp Snap-In Contacts (Hermaphroditic)

Material and Finish:

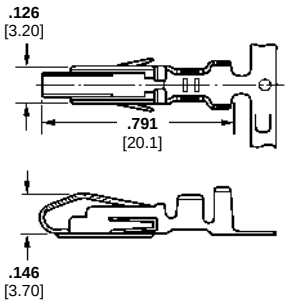
Phosphor bronze, plated gold in contact area (for length of .236 [6.0] from tip), with entire contact underplated nickel

Related Product Data:

Performance Specifications—page 86
Housings—page 88

Technical Documents

AMP Instruction Sheets
408-097J, 408-098J, 408-151J



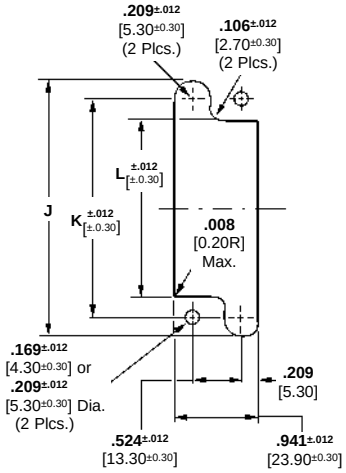
Wire Size Range		Insulation Dia. Range	Part Numbers			
			Contact		Applicator for AMP-O-LECTRIC Machine*	Hand Tool Numbers
AWG	mm²		Strip Form	Loose Piece		
24-20	0.2-0.6	**.059-.077** 1.50-1.95	170311-1	170313-1	567324-2	724632-1
20-16	0.5-1.4	**.071-.130** 1.80-3.30	170484-1	170485-1	567241-2	724787-1
18-14	0.8-2.0	**.091-.154** 2.30-3.90	170312-1	170314-1	567325-2	724639-1

*Applicators are for Model "K" machines. Consult Tyco Electronics for applicators for other bench machines and lead-making machines.

Notes: 1. For applicable wire, use wire specified in UL 1015 or 1007.
2. Contacts for 18-14 AWG [0.8-2.0mm²] wire are used at the four corners of the connector as power contacts (8 required per assembly).

Extraction Tool **Part Number 723986-1**

Recommended Panel Cutout



Rear Panel Mount

No. of Pos.	Rear Panel Mount Dimensions		
	J	K	L
8	**1.913** 48.60	**1.500** 38.00	**1.110** 28.20
12	**2.307** 58.60	**1.890** 48.00	**1.504** 38.20
16	**2.701** 68.60	**2.283** 58.00	**1.898** 48.20
20	**3.094** 78.60	**2.677** 68.00	**2.291** 58.20
24	**3.488** 88.60	**3.071** 78.00	**2.685** 68.20

Note: Mounting holes of .209 [5.30] dia. are used when mounting receptacle housings with .157 [4.0] long floating bushings and the mating plug housings. Panel thickness is .063 [1.60]. Panel cutout shown above is for use with plug housings. For receptacle housings, use the mirror-image cutout.

Catalog 1773096
Revised 8-05

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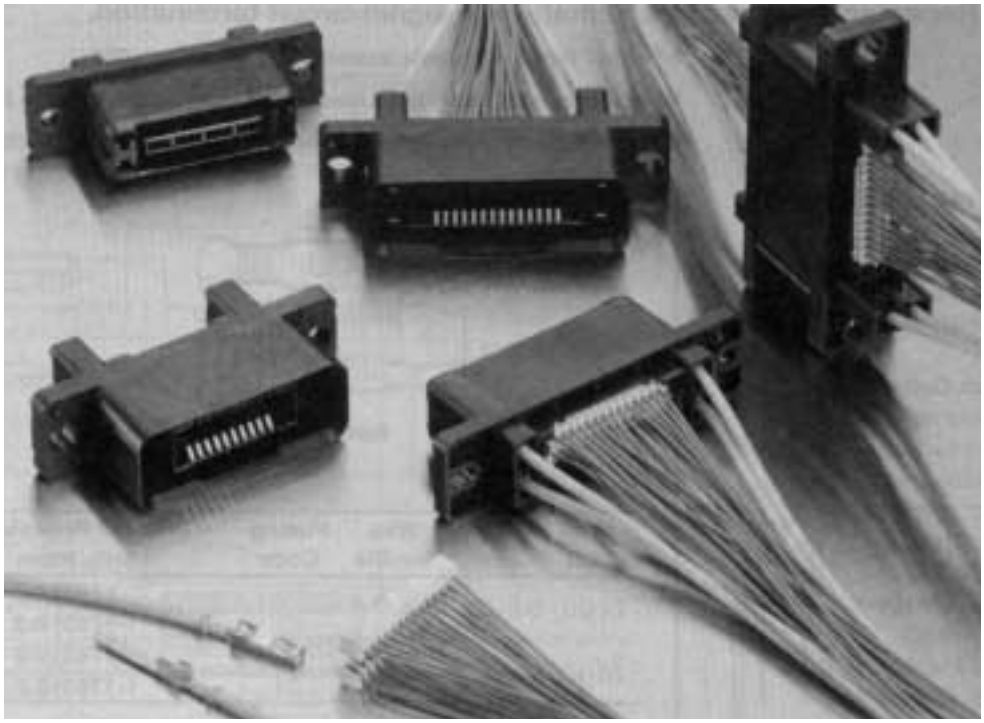
South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Hybrid Mini-Drawer Connectors

Product Facts

- **Combine signal circuits and power circuits into one connector.**
- **Power circuits can be used for high current of up to 15A**
- **Signal circuits accept CT connector in the back, reducing harnessing costs.**
- **Power circuits use crimp-type tab and receptacle contacts.**
- **Meet requirements for creepage distance and spatial distance for primary power supply as set forth in IEC-950, safety specifications for business machines and OA equipment. Creepage distance on active power side: 5mm**
  Spatial distance on active power side: 4.5mm



Product Specification

108-60022

Application Specification

114-5182

Hybrid Mini-Drawer Connectors are designed for use in rack and panel application to serve as an I/O connector for copying machines, laser-beam printers and other OA equipment. They provide an economical means of combining into one connector signal circuits and power circuits which were packaged separately in the past.

A major design feature of these Hybrid Mini-Drawer Connectors is that Mini-Drawer Connectors mate with one another on the connector mating side and in the back, signal circuits accept a pre-terminated CT receptacle connector.

Also, for power circuits, crimp-type power contacts are used by inserting them into the four corners of Mini-Drawer Connector.

The housing has an integrated guide-pin and socket to facilitate mating of the connector halves. Provision is also made to prevent dust from entering.

This product line includes:

- 12-position connector (4 positions for power and 8 positions for signal circuits)
- 24-position connector (4 positions for power and 20 positions for signal circuits)
- 32-position connector (4 positions for power and 28 positions for signal circuits)

Drawer Connectors are available in the following types depending on application: For details contact our Sales Department

- Mini-Drawer Connectors
- Standard Drawer Connectors
- High Current Drawer Connectors.

Performance Data

Voltage Rating:

250V AC (power)
30V AC (signal)

Current Rating

15A max. (power)
2A max. (signal)

Contact Resistance

10mm Ω max. (power)
40mm Ω max. (signal)

Insulation Resistance

100M Ω max.

Dielectric Withstanding Voltage

1.8KV AC/min. (power)
1.0KV AC/min. (signal)

Durability 3,000 cycles min.

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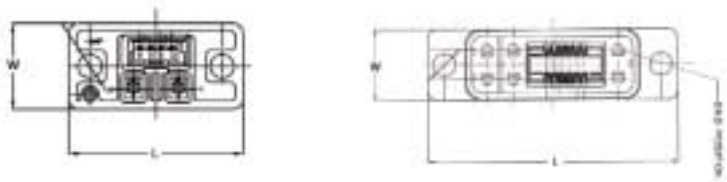
UK: 44-141-810-8967

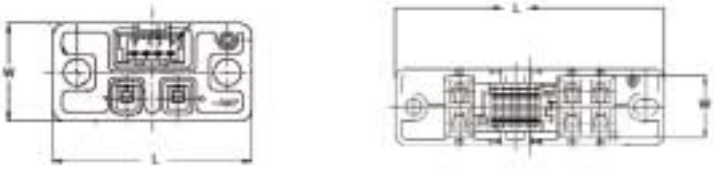
Hybrid Mini-Drawer Connectors (Continued)

New Standard Width

Plugs



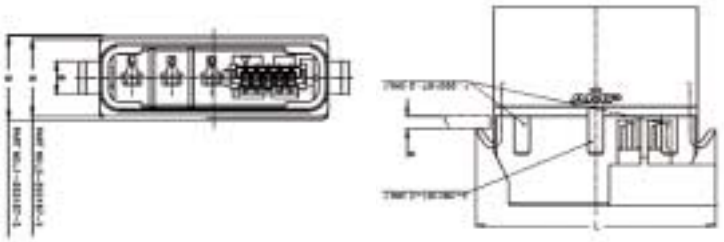
Receptacles



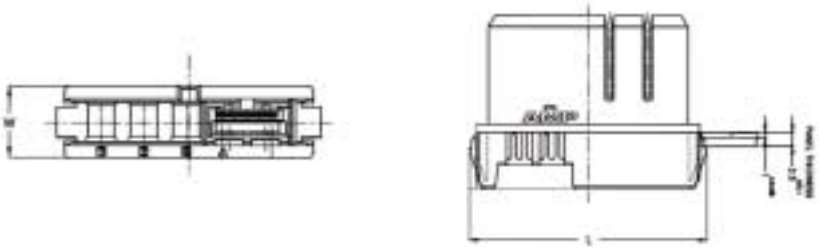
Type	Part Number	Number of Power Contacts	Number of Signal Contacts	L	W
Plug	292180-1	2	4	33	16.4
Receptacle	292184-1	2	4	33	16.4
Plug	1-292183-2	6	12	67	19
Receptacle	1-292186-2	6	12	67	19

New Slim Width

Plugs



Receptacles



Type	Part Number	Number of Power Contacts	Number of Signal Contacts	L	W
Plug	1-292187-2	3	5	47.5	15
Receptacle	2-292190-2	3	5	43.5	12
Plug	3-292187-2	4	5	54.5	13.5
Receptacle	4-292190-2	4	5	50.5	12
Plug	2-292189-3	3	7	51.5	15
Receptacle	1-292192-3	3	7	47.5	12

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Japan: 81-44-844-8013
UK: 44-1908-574289

Hybrid Mini-Drawer Connectors (Continued)

Power Contacts

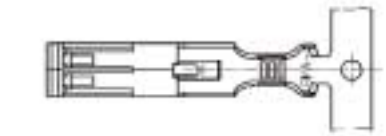
Material

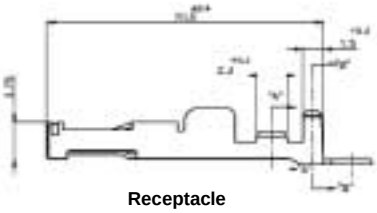
Copper alloy
For finish, see table below.

Finish Codes

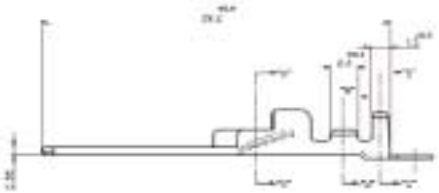
1) Over nickel underplated, contact area: gold plated, crimp area: tin plated
2) Tin plated all over.

Hand Tool AWG #20-24
Part No. 934199-1 (411-5662)
AWG #16-20
Part No. 934198-1 (411-5661)





Receptacle



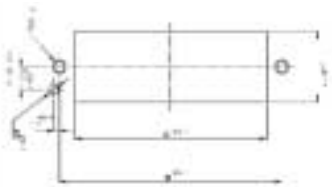
Tab

Receptacle Assembly

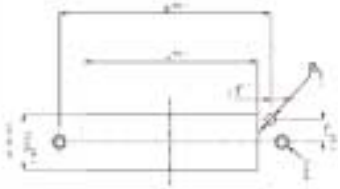
Material and Finish

Housing – Thermoplastic, black
Contact – Copper alloy, gold plated on mating side over nickel underplate, tin plated on CT mating side over nickel underplate.

Wire Range		Wire Ins. Dia.	Plating Code	Receptacle Part Number	Tab Part Number
AWG	mm²			Strip Form	Strip Form
24-20	0.2-0.5	1.4-2.6	1	179317-2	179322-2
			2	1-179317-2	1-179322-2
20-16	0.5-1.25	1.6-2.8	1	179316-2	179321-2
			2	1-179316-2	1-179321-2

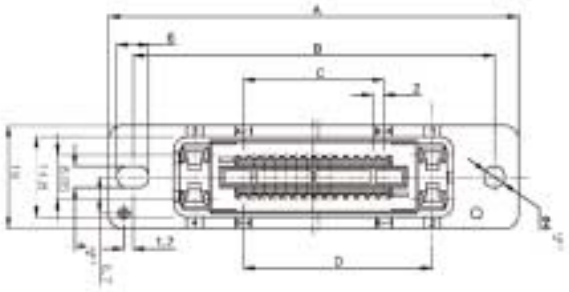


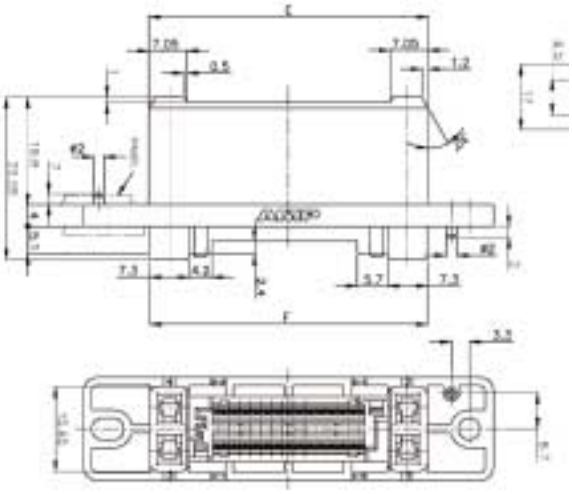
Side V

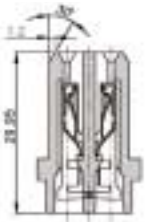


Side W

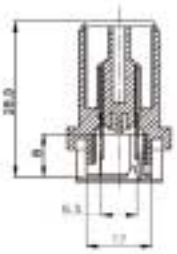
Panel Cutout







Section X-X



Section Y-Y

No. of Pos. (Power/ Signal)	Dimensions								Mini-Drawer Receptacle Assembly Part No.	Required Number of Power Contact	Required Number of CT Connector
	A	B	C	D	E	F	G	H			
12 (4-8)	56.0	47.0	6.0	24.1	31.8	31.4	38.0	32.4	292185-8	4	4 Pos. x 2
24 (4-20)	68.0	59.0	18.0	36.1	43.8	43.4	50.0	44.4	2-292185-0	4	10 Pos. x 2
32 (4-28)	76.0	67.0	26.0	44.1	51.8	51.4	58.0	52.4	2-292185-8	4	14 Pos. x 2

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Japan: 81-44-844-8013
UK: 44-141-810-8967

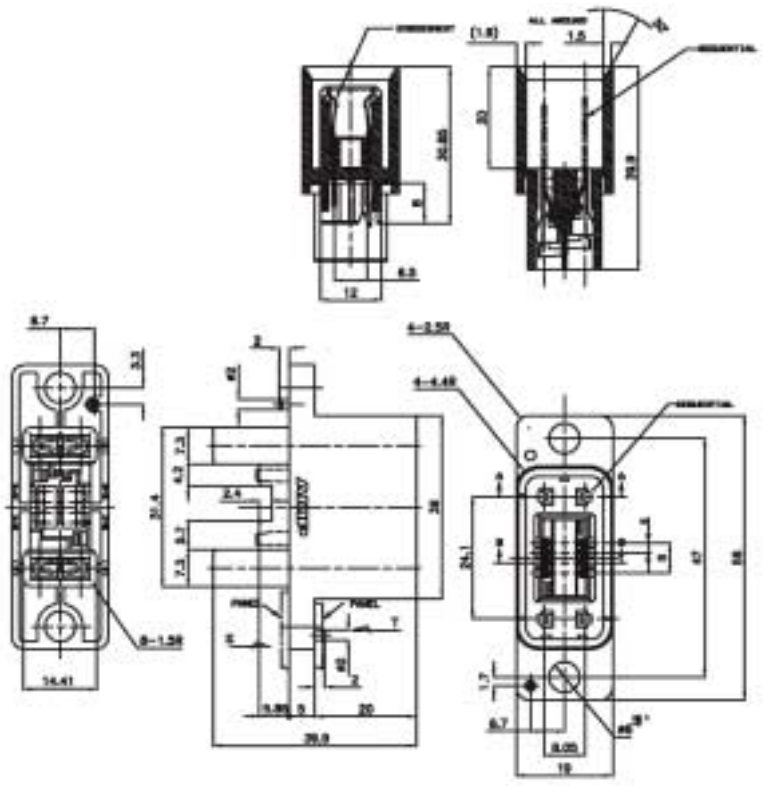
Hybrid Mini-Drawer Connectors (Continued)

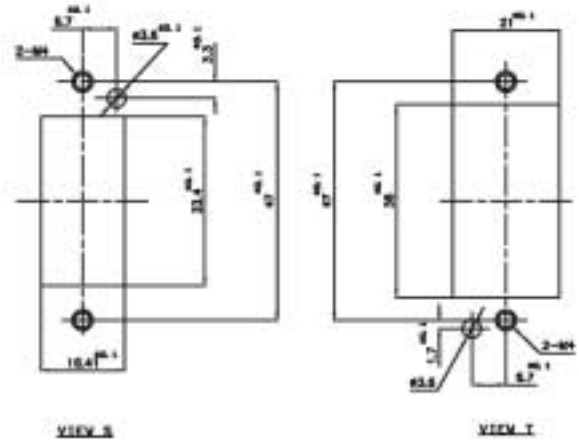
Plug Assembly

Material and Finish

Housing – Thermoplastic, black UL94V-0

Contact – Copper alloy, gold plated on mating side over nickel underplate, tin plated platen on CT mating side over nickel underplate.





Panel Cutout

No. of Pos. (Power/ Signal)	Dimensions								Mini-Drawer Receptacle Assembly Part No.	Required Number of Power Contact	Required Number of CT Connector
	A	B	C	D	E	F	G	H			
12 (4-8)	56.0	47.0	6.0	24.1	36.0	31.4	33.4	38.0	292182-8	4	4 Pos. x 2
24 (4-20)	68.0	59.0	18.0	36.1	48.0	43.4	45.4	50.0	2-292181-0**	4	10 Pos. x 2
32 (4-28)	76.0	67.0	26.0	44.1	56.0	51.4	53.4	58.0	2-292181-8	4	14 Pos. x 2

*12-Position connector is provided with sequential feature in one power circuit position. Other connector sizes have sequential feature in power circuits and signal circuits.

**Optional part numbers offer sequential mating – see customer drawings for details.

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UK: 44-141-810-8967

Hybrid Mini-Drawer Connectors (Continued)

CT Receptacle Connectors to Mate with Signal Circuit Terminator with Insulation Displacement Contacts

Receptacle Assemblies (Wire Application Side)

Material and Finish

Housing – UL94V-0 rated, glass-filled P.B.T. see chart below for color.

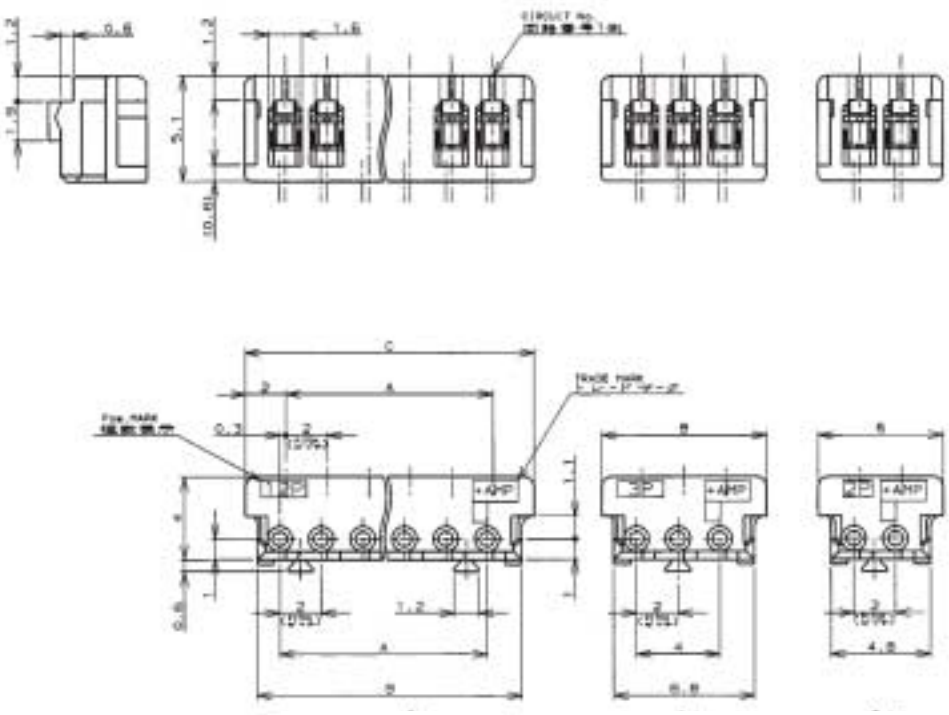
Contact – Pre-tinned phosphor bronze

Wire Size: AWG #28-26 (0.08-0.15mm²)

Insulation Dia.: 0.85-1.05mm

Wire Size: AWG #24 (0.20-0.22mm²)

Insulation Dia: 0.95-1.05mm² (For AWG #24 wire, see notes under the table)



4-15 Postions 3 Postion 2 Postion

No. of Positions	Dimensions			Part Number	
				Receptacle Assembly**	
	A	B	C	AWG #28-26*	AWG #24***
2	2.0	4.8	6.0	173977-2	2-179694-2
3	4.0	6.8	8.0	173977-3	2-179694-3
4	6.0	8.8	10.0	173977-4	2-179694-4
5	8.0	10.8	12.0	173977-5	2-179694-5
6	10.0	12.8	14.0	173977-6	2-179694-6
7	12.0	14.8	16.0	173977-7	2-179694-7
8	14.0	16.8	18.0	173977-8	2-179694-8
9	16.0	18.8	20.0	173977-9	2-179694-9
10	18.0	20.8	22.0	1-173977-0	3-179694-0
11	20.0	22.8	24.0	1-173977-1	3-179694-1
12	22.0	24.8	26.0	1-173977-2	3-179694-2
13	24.0	26.8	28.0	1-173977-3	3-179694-3
14	26.0	28.8	30.0	1-173977-4	3-179694-4
15	28.0	30.8	32.0	1-173977-5	3-179694-5

* The color of housing is natural. Other colors available include blue, yellow and black. For details contact our Sales Department

** For wire to be used, contact our Sales Department as there are wires that have been tested by us and can be recommended for your use.

*** The color of housing is gray.

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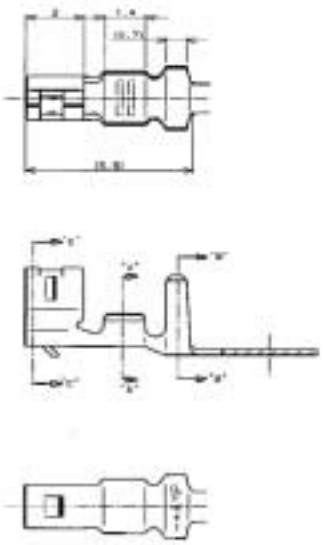
Hybrid Mini-Drawer Connectors (Continued)

CT Receptacle Contacts to Mate with Signal Circuit Termination with Crimp Type Contacts

Receptacle Contact



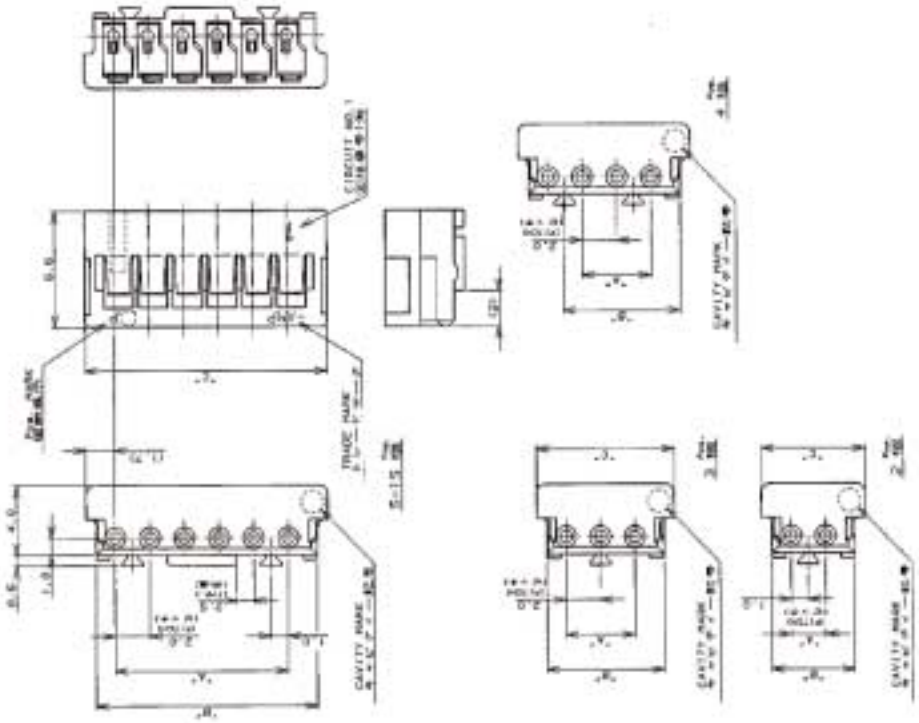
Wire Size AWG (mm2)	Insulation Dia. (mm)	Material and Finish	Part Number		
			Strip Form	LP	Hand Tool
30-26 (0.05-0.12)	0.65-1.35	Phosphor bronze (0.20mm thickness), tin plated	179609-1	—	234169-1 (411-5711)
26-22 (0.12-0.35)	0.93-1.5		179227-1	179518-1	91572-1 (408-8547)

Note: Loose piece contacts, being small in size, are supplied in the form of a comb with 10 pieces on 7.5mm pitch. There is a slit at the root of each contact and it can be snapped off easily.

Receptacle Housing

Material:

UL94-0 rated, 66 nylon, natural color (white)



4-15 Postions 3 Postion 2 Postion

No. of Positions	Dimensions			Part Number
	A	B	C	Receptacle Assembly*
2	2.0	4.8	6.0	179228-2
3	4.0	6.8	8.0	179228-3
4	6.0	8.8	10.0	179228-4
5	8.0	10.8	12.0	179228-5
6	10.0	12.8	14.0	179228-6
7	12.0	14.8	16.0	179228-7
8	14.0	16.8	18.0	179228-8
9	16.0	18.8	20.0	179228-9
10	18.0	20.8	22.0	1-179228-0
11	20.0	22.8	24.0	1-179228-1
12	22.0	24.8	26.0	1-179228-2
13	24.0	26.8	28.0	1-179228-3
14	26.0	28.8	30.0	1-179228-4
15	28.0	30.8	32.0	1-179228-5

* The color of housing is natural. Other colors available include blue, yellow and black. For details contact our Sales Department

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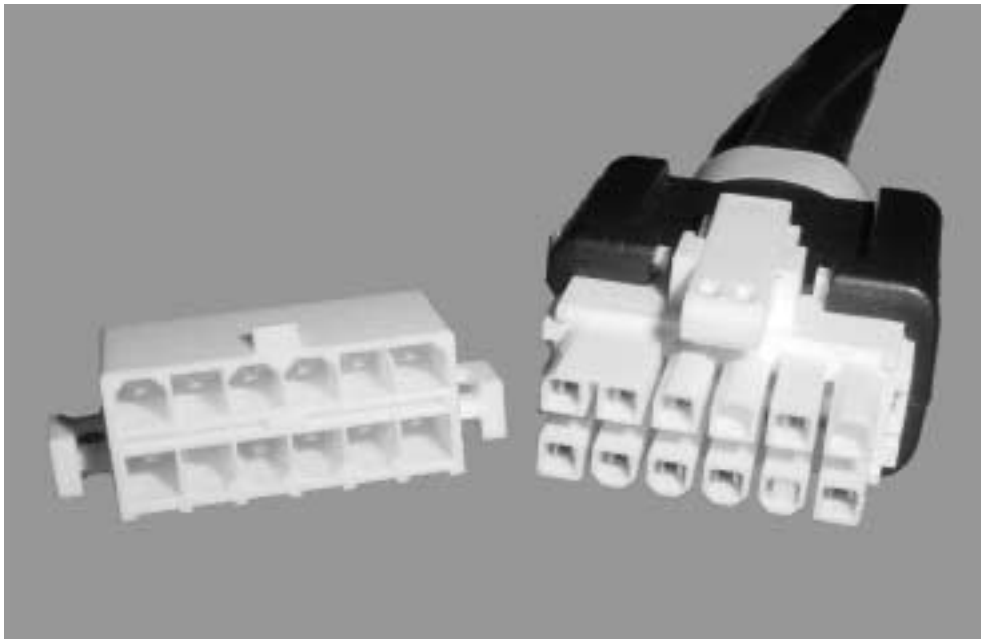
"NEW" AMP-DUAC/PL Connectors



Product Facts

- **Wire to board connection system**
- **Improved DUAL-ACTION Contact Design – provides better contact lead-in and reduces contact mating force.**
- **Sequenced contacts available for Mate-first Break-last operation**
- **4, 6 and 12 position right-angle headers and free hanging receptacles**
- **4.2mm x 5.5mm centerline**
- **Receptacle contacts designed for 26-22 AWG stranded wire**
- **Recognized under Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR7189**

Technical Documents

Product Specifications
108-1646

Application Specifications
114-6067-Crimping Contacts

Qualification Test Report
501-394

Performance Data

Voltage Rating – 600 VAC

Current Rating – 9 amps maximum in 2 position application

Low Level Resistance – 10 megohms max.

Dielectric Withstanding Voltage – 1500 VAC/min.

Insulation Resistance – 1000 Megohms minimum

Operating Temperature – -55°C to + 105°C [-67°F to +221°F]

The latest addition to the 4.2mm Wire-to-Board Power Connectors is the AMP-DUAC/PL Connector. This product uses the industry proven AMP-DUAC contacts with the addition of several housing improvements to offer significant overall improvements in connector reliability. The product is available in both component form and as fully assembled custom cable assemblies.

The AMP-DUAC/PL housings are designed to guarantee that all electrical contacts are fully seated. The "PL" refers to "Positive Locking" of the contacts. It is also referred to as terminal position assurance. Contacts are inserted into the receptacle housing and the contact lock is installed to lock all the contacts into position. If any one of the contacts is not fully inserted, the Contact Lock cannot be installed. This feature eliminates a common concern of operator fatigue and the resulting contact back-out, which occurs when a contact is not installed properly. An improved mounting flange has also been added for more secure printed circuit board mounting.

Finally, the housings have been re-designed to provide an improved latch, which offers a metal spring instead of the original plastic spring/latch. An extended latch arm is also available for hard to reach installations or where the connectors are stacked in close proximity.

All the housings are polarized to prevent mis-mating.

Catalog 1773096
Revised 8-05

www.tycoelectronics.com

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Japan: 81-44-844-8013
UK: 44-141-810-8967

AMP-DUAC/PL PCB Headers

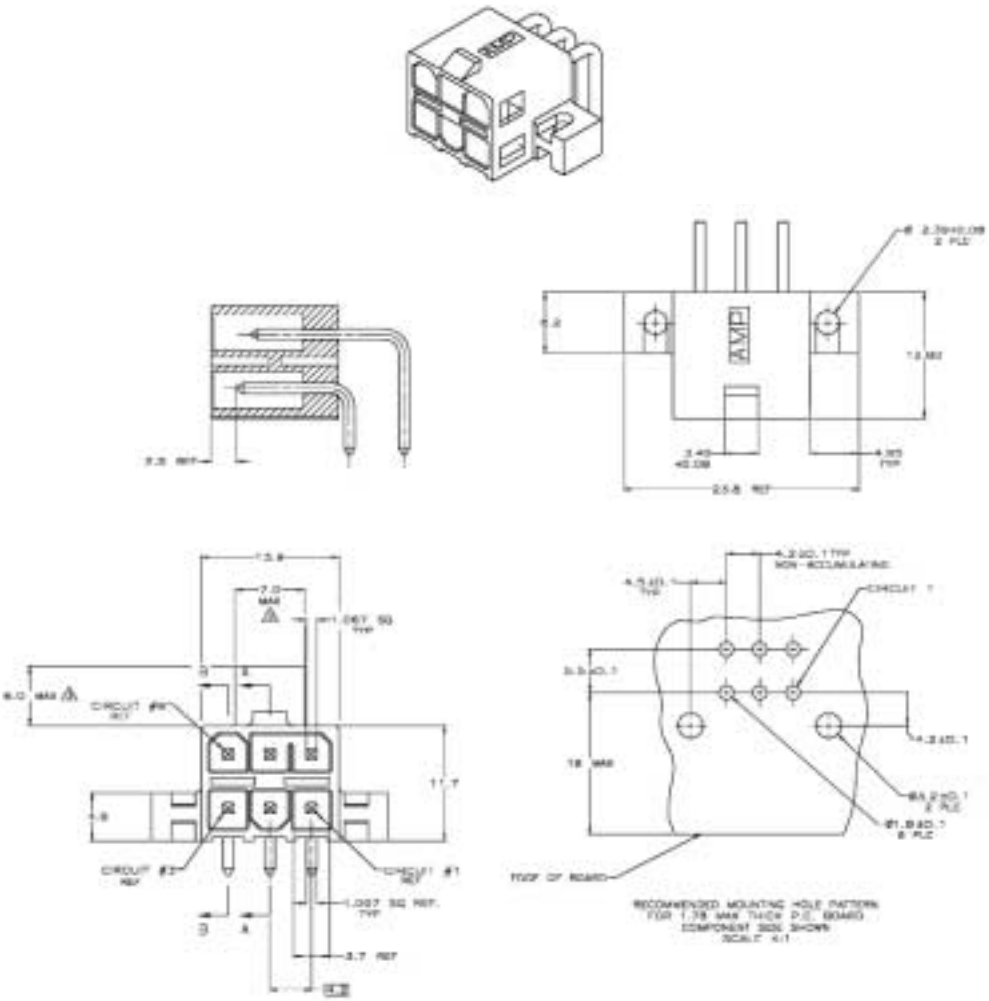
Material

Housings – Nylon, UL 94V-0

Color, white

Contacts: Brass, tin/lead

Finish: 0.00038 [0.00030] gold in mating area, tin/lead in solder tail, all over 0.00127 [0.000050] nickel



No. Positions	Make-First Break-Fast Position #	Part Number
4	All Standard Length 3	794172-2
		794172-3
6	All Standard Length 3	794173-2
		794173-3
12	All Standard Length 4	794176-2
		794176-3

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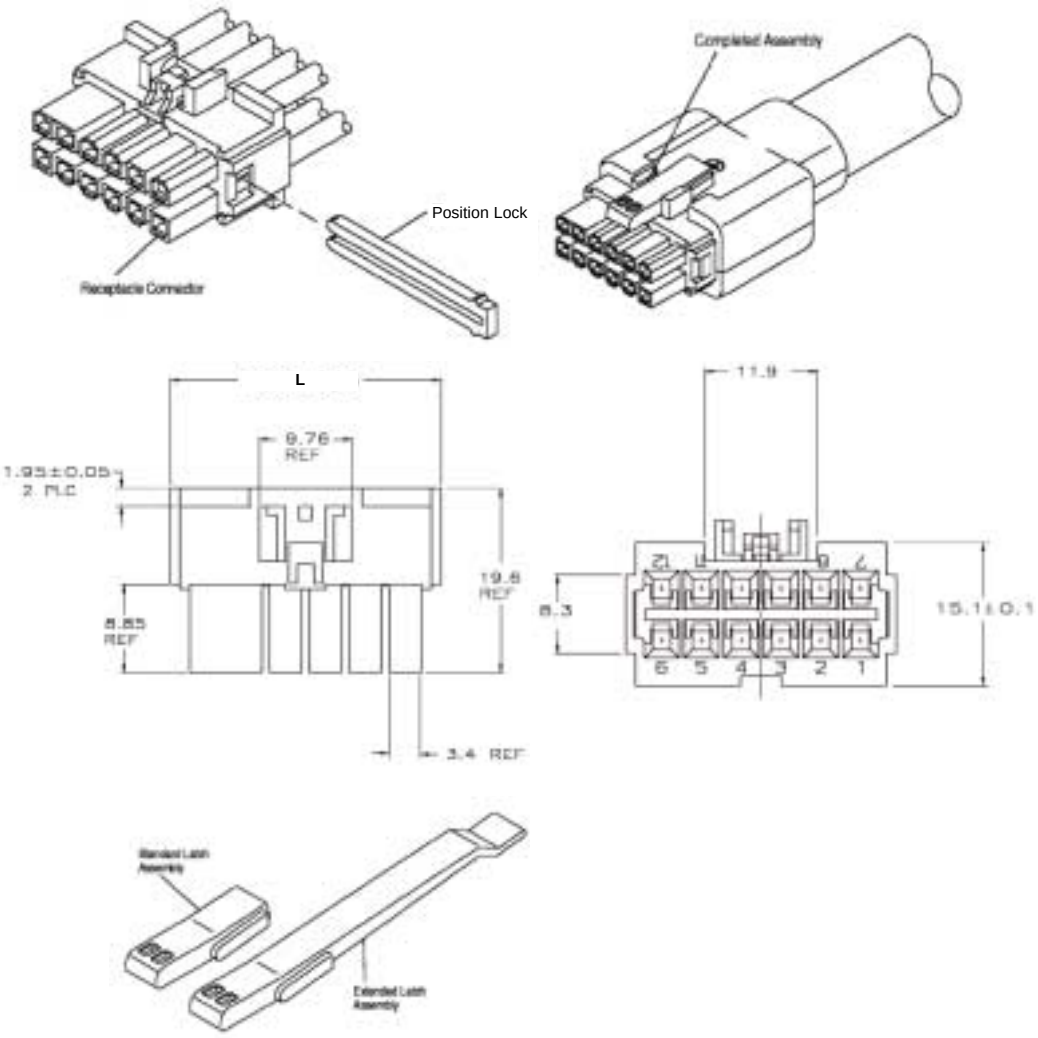
AMP-DUAC/PL Receptacles

Housings: Nylon, UL94V-0
Color: White
Technical documents: Page 2I1



No. Positions	Dimension L	Part Numbers		
		Housing	Standard Latch	Extended Latch
4	15.9	794152-1*	794150	794149
6	20.1	794153-1		
12	28.6	794156-1		

*Latch items ordered separately
Optional keying plug - Part No. 794144-1

Note: Position Lock Required - use one per housing - Part No. 794145-3

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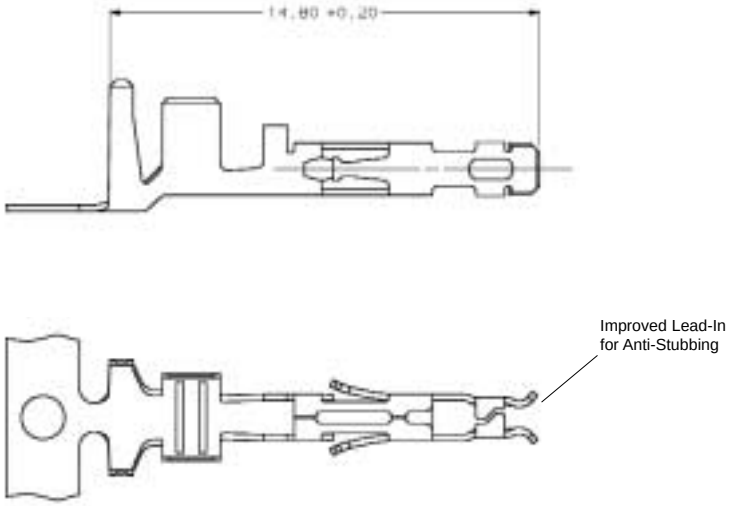
AMP-DUAC/PL Contacts

Materials: Phosphor Bronze
Finish: Pre-tin Plated



Contacts, Female

Technical Documents

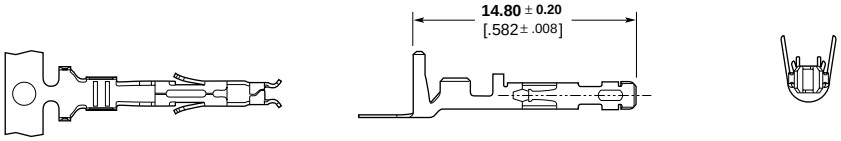
Product Specification
108-1699 AMP-DUAC Header

108-19099 AMP-DUAC Receptacle

Application Specification
114-19048 AMP-DUAC Receptacle contact

114-6067 for crimping contacts

Used in receptacle housings.



Female Contact

Wire Size Range AWG [mm²]	Ins. Dia. Range	Plating	Part Number	
			Strip	L/P
22-18 [.3-.8]	**1.5-2.4** .059-.094	Tin	106529-2	1-106529-2
26-22 [.12-.3]	**1.3-1.75** .047-.069	Tin	106528-2	1-106528-2
2@18 [.8]	**3.3** Total Max. .130	Tin	794418-1	—
22-18 [.3-.8]	**1.5-2.4** .059-.094	Gold	794138-3	794141-3
26-22 [.12-.3]	**1.3-1.75** .047-.069	Gold	794139-3	794142-3
2@18 [.8]	**3.3** Total Max. .130	Gold	794140-3	—

Application Equipment: Hand Tool 734202-2
Extraction Tool 188688-1

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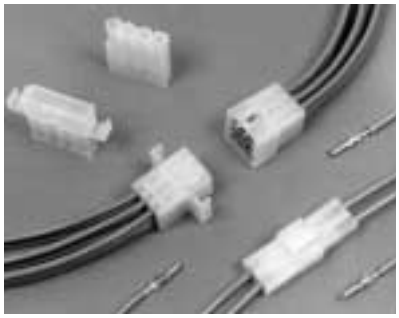
Soft Shell Pin & Socket Connectors

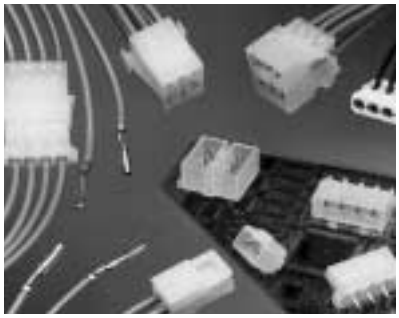
Product Facts

AMP .093 and .062 Commercial Pin and Socket Connectors



- Economical grade, wire-to-wire connectors
- Dual contact locking lances provide optimum contact stability
- Panel mount or free-hanging versions
- Voltage rating: 250 VAC or VDC
- Standard density (.093" diameter pin contact), .198" centerline, 1-15 positions;
- 13 A rating
- High density (.062" diameter pin contact), .145" centerline, 1-9 positions; 7 A rating

AMP Commercial MATE-N-LOK Connectors

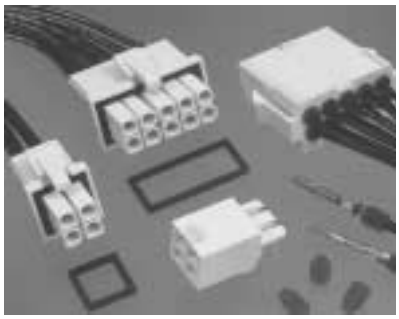


- Standard density, wire-to-wire and wire-to-board connectors
- .200" centerline
- 1-16 positions
- Panel mount or free hanging
- Ratings: 19 A, 250 VAC
- Hot side is egg-crated for safety
- Locking devices are integral part of design

AMP Universal MATE-N-LOK and Universal MATE-N-LOK II Connectors

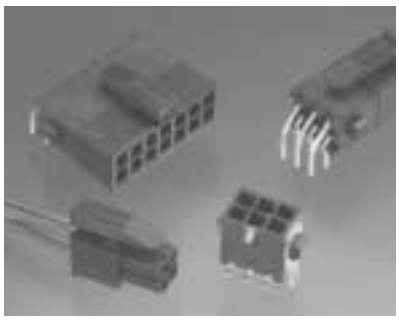
- .250" centerline; 1-15 and 2-15 positions, respectively
- Standard density, wire-to-wire and wire-to-board capability
- Panel mount or free hanging
- Ratings: 19 A, 600 VAC or VDC
- Contacts protected in the housings
- Seals available for splash protection (Universal MATE-N-LOK Connectors only)

AMP Mini-Universal MATE-N-LOK and Mini-Universal MATE-N-LOK 2 Connectors



- High density, .163"centerline; 1-24 and 2-24 positions, respectively
- Wire-to-wire and wire-to-board capability
- Ratings: 600 VAC or VDC; 9.5 A and 10.5 A, respectively
- Contacts protected in the housings
- Seals available for splash protection (Mini-Universal MATE-N-LOK Connectors only)

AMP Micro MATE-N-LOK 3mm Connectors



- High density, wire-to-wire and wire-to-board connectors
- 3 mm centerline, 2-24 positions
- Ratings: 5 A, 250 VAC
- Dual beam receptacle contact design for improved reliability
- Panel mount or free hanging
- PCB headers are available in vertical and right-angle versions; thru-hole or surface mount

For more Information Order Catalog 82181, "Soft Shell Pin and Socket Connectors"

Catalog 1773096
Issued 8-05

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AMPINNERGY Wire-to-Wire (WTW) Connectors

Product Facts

- **Rated to 600 VAC (RMS)**
- **Flame retardant housings 94V-0**
- **Housings, adapters, and power terminals keyed for proper assembly**
- **Stackable housings provide easy wire routing**
- **Built-in interlocking features better resist shock and vibration**
- **Usable as in-line, panel and surface mount connector**
- **Available in six different colors for circuit coding**
- **Two power terminals accommodate 10-12 AWG and 14-16-18 AWG wire**
- **UL Recognized, File No. E28476**
- **CSA Certified, File No. LR7189**
- **VDE Registered #5133**

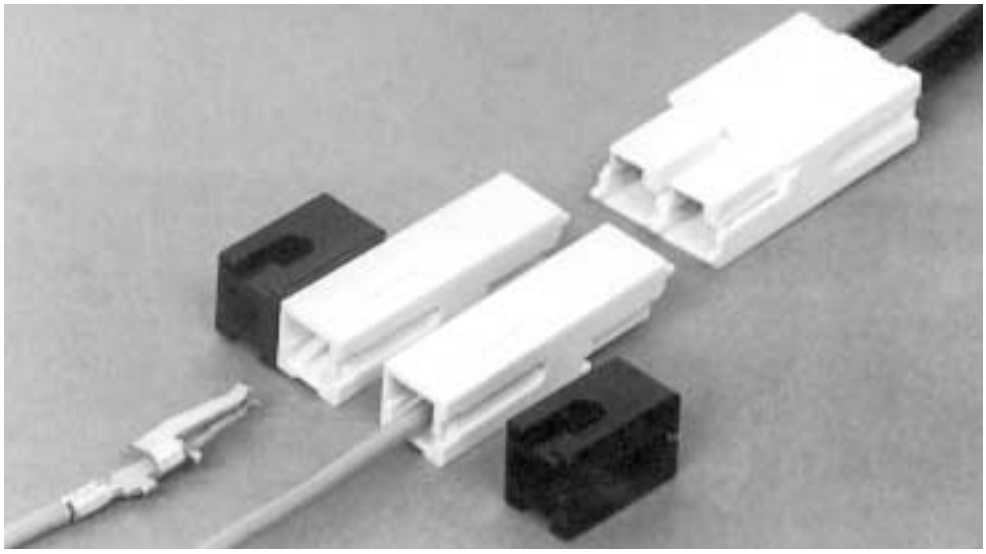
Technical Documents

Product Specification
108-1373 AMPINNERGY WTW Connectors

Application Specification
114-6051

Instruction Sheets
408-3277 AMPINNERGY Wire-To-Wire Stackable Connectors

408-3198 Inspection of AMPINNERGY System Power Contacts



AMPINNERGY WTW Connectors provide a reliable and efficient means of interconnecting conductors to carry up to 600 VAC in power circuits or networks.

These Connectors consist of mating hermaphroditic, flame retardant polycarbonate housings into which terminated power contacts are inserted. Stackable in four directions through the use of molded interlocking keyways, the connectors make wire routing and dressing orderly and easy. Depending upon conductor size and number of conductors in the connector configuration, the current rating ranges from 10 to 55 amperes.

For more information, request Catalog 1308885.

Catalog 1773096
Issued 8-05

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AMPINNERGY Wire-to-Board (WTB) Connectors

Product Facts

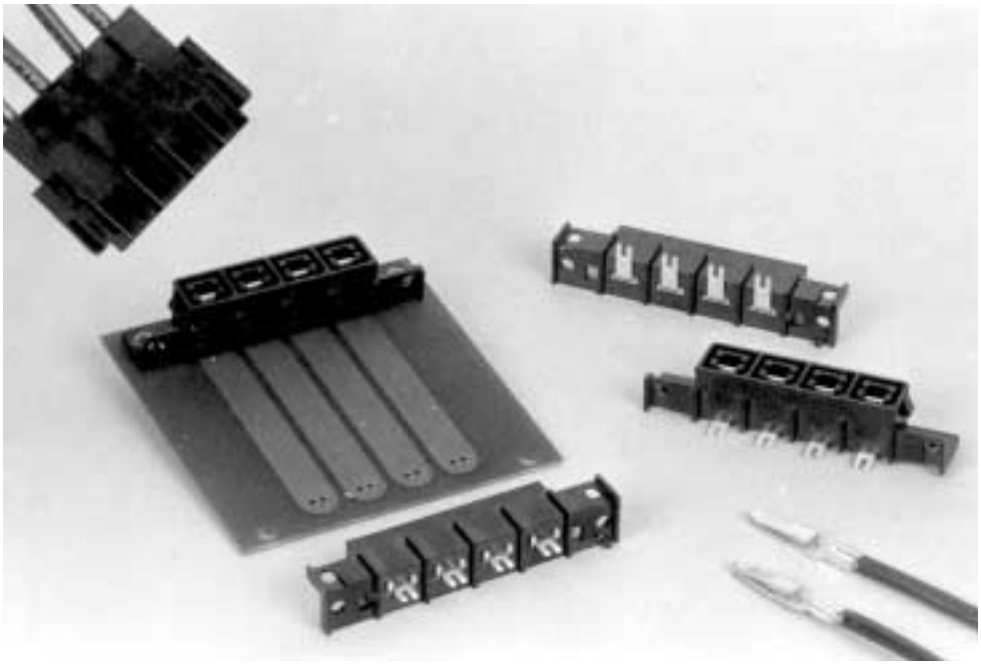
- **Ratings: 600 VAC (RMS), current rating 12-35 amps**
- **Receptacles polarized to plug**
- **Receptacles and plugs available in 2 through 8 positions**
- **Vertical receptacle polarized to PCB**
- **Receptacle contacts have dual solder posts for efficient heat dissipation, low millivolt drop and mechanical strength**
- **Receptacles may be mounted on PCBs .062" to .125" thick**
- **Plugs have positive latching to receptacles**
- **Removable crimp contacts latch firmly in plug**
- **Crimp contacts accommodate 10-12 AWG or 14-16-18 AWG conductors**
- **UL Recognized, File No. E28476**
- **CSA Certified, File No. LR7189**

Technical Documents

Product Specification
108-1349 AMPINNERGY WTB Connectors

Application Specification
114-6044 AMPINNERGY WTB Connectors

Instruction Sheets
408-3236 Installation of AMPINNERGY WTB Connectors
408-3198 Inspection of AMPINNERGY Contacts



AMPINNERGY WTB Connectors provide a convenient and efficient means of delivering up to 600 VAC to component printed circuit boards and other power distribution devices in computers and peripherals, telephone systems and appliances. These connectors also have automotive and industrial applications.

Both the vertical and right-angle receptacles are polarized for mating to the plugs.

For more information, request Catalog 1308885.

Catalog 1773096
Issued 8-05

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Circular Connectors for Commercial Signal and Power Applications

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: -55°C to +125°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 2, Series 4, Series 5 and Series 6 (250 V)
  File No. E28476

‡Select connectors are recognized for 600 volts service.

- Certified by Canadian Standards Association, File No. LR 7189
- Certain products meet VDE Standard 0627

- Produced under a Quality Management System certified to ISO 9001

  A copy of the certificate is available upon request.

Connector series for different interconnection requirements:

- 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

Type XII, Precision Formed, Crimp Contacts

Male

Female

High Current Type XII Crimp Contacts

High Current Type XII Socket

High Current Type XII Pin

For more information, request Catalog 82021.

Catalog 1773096
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Circular Connectors for Commercial Signal and Power Applications

Connector Series and Types

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.**

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.**

Metal-Shell, Circular Plastic Connectors (Series 3 and 4)

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.**

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Type XII, Precision Formed, Crimp

Test Current Rating

Silver or Gold—35 amperes ‡

Tin Lead—15 amperes ‡

‡Single contact, free-air test current; not to be construed as contact rating current. Use only for testing.

Male

Female

High Current Type XII Crimp Contacts

An initial T-Rise test in free air has shown a 60 amp capability with a 30° T-Rise with 8 gage wires.

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High Current Products (Louvertac Contacts)

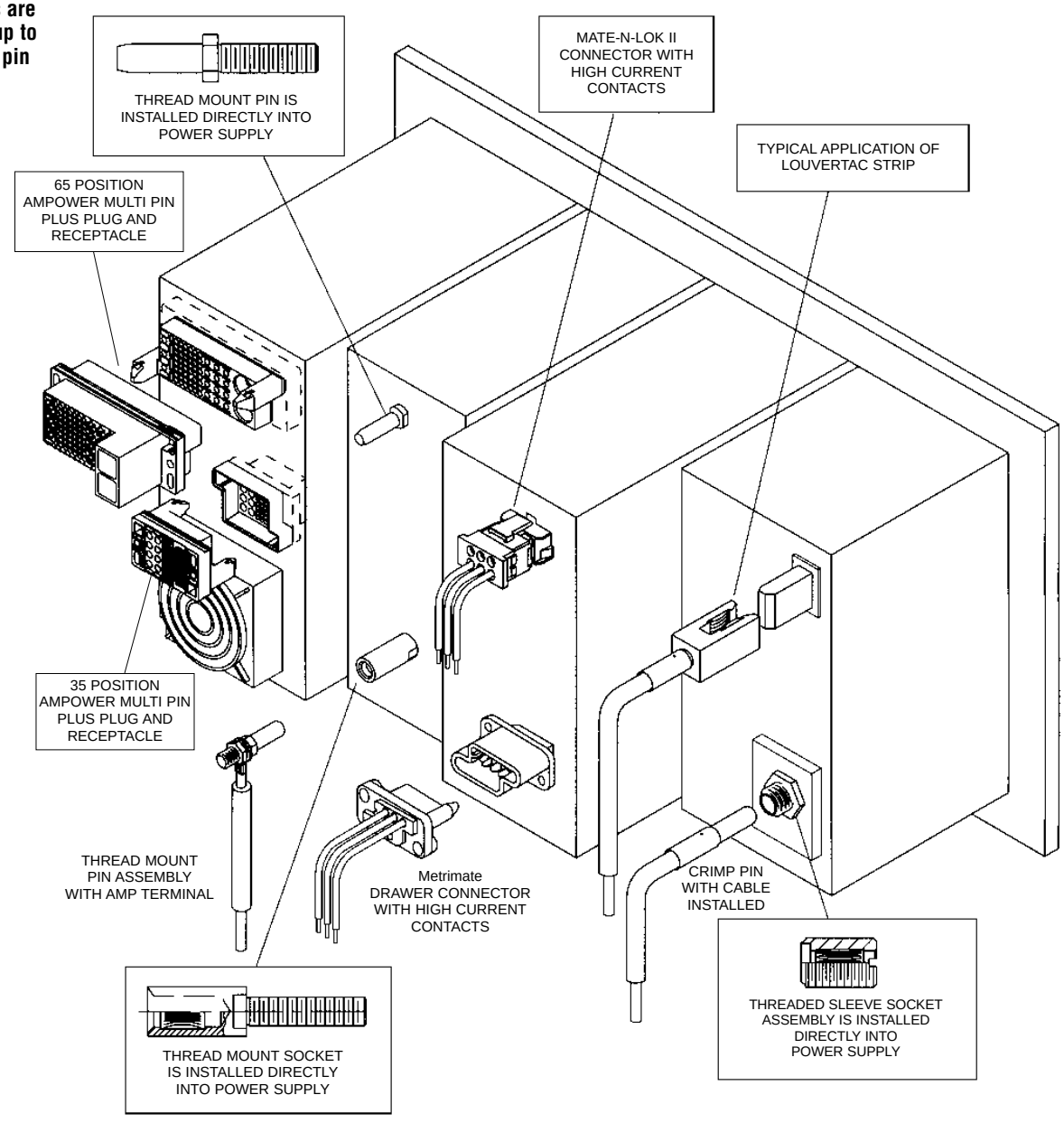
Product Facts

- **Pins and sockets have low insertion force**
- **High current ratings with very low resistance**
- **All plated products are gold or silver plated**
- **Louvertac bands have a temperature range from –196°C to +200°C available**
- **Formed bands are available for up to 1.250 [31.75] pin diameter**

The transfer of high current with manageable insertion and withdrawal forces has always presented a challenge to the connector industry.

Louvertac bands provide a unique means of transferring high amperage with a resultant space and weight savings. Tyco Electronics Corporation offers a wide range of pin and socket sizes for your applications. Strip and formed Louvertac bands are also offered for customer use in their own contact design. The wide variety of flat and formed male and female bands provide the ability to design electrical connections more inexpensively and quickly. Louvertac products are your high current applications solution.

The variety of pins and sockets available from Tyco Electronics Corporation provide a quick and simple solution to most high current applications.



For more information, request Catalog 64141.

Catalog 1773096
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Power Lock Connectors

Product Facts

- **High current handling capability: 31 or 53 amperes maximum depending on application (reference product specs)**
- **Modular housings for multiple connector applications**
- **Assortment of mounting accessories available**
- **Interlock between adjacent housings to assist assembly**
- **Precision formed contacts available in strip form for high-speed automatic machine application or loose piece for hand tool application**
- **Integral stainless steel locking spring in housing for contact retention and reliable contact performance**
- **Choice of silver or gold plated copper contacts**
- **Housing of impact resistant thermoplastic**
- **Accepts wire size range 18-6 AWG [0.8-15 mm²]**
- **Positive electrical continuity provided by self-cleaning wiping action of mated contacts**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR7189**

AMP Power Lock Connectors have hermaphroditic housing and contact designs. The hermaphroditic housings are also modular in design and permit the clustering of connectors of the same series. Housings are made of impact resistant thermoplastic with stainless steel locking springs for contact stability. Terminals are available in strip and loose piece form with a material choice of silver, or gold plated copper. Contacts for Series I Connectors accept a wire size range of 18-12 AWG [0.8-3 mm²] and contacts for Series II Connectors accept a wire size range of 10-6 AWG [6-15 mm²]. Both insert easily into housings where integral locking springs provide positive retention.

AMP Power Lock Connectors can be adapted to most high current applications and may be used as free-hanging, surface mounted and thru-panel mounted connectors, or when posted contacts are used, they can be used on printed circuits.

Precision formed contacts are available in strip form for automatic machine application, providing maximum production and minimum assembly time.

Technical Documents

Product Specifications
108-11026 Series I
108-11043 Series II

Instruction Sheets
408-2624 Series I Housings
408-2928 Series I Contacts
408-2597 Series II Housings
408-3196 Series II Contacts

Application Specification
114-6032 Series II

For more information, request Catalog 65864.

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"New" AMP Power Series Connectors

Product Facts

- Single-pole and 2-pole (battery) quick connect/disconnect connectors
- Eight Series, based on approximate current-carrying capability:
  - Series 15/30/45 (Single-Pole)
  - Series 50 (2-Pole Battery)
  - Series 50 Finger Probe Resistant (FPR)
  - Series 75 (Single-Pole)
  - Series 120 (Single- and 2-Pole)
  - Series 175 (2-Pole Battery)
  - Series 180 (Single-Pole)
  - Series 350 (2-Pole Battery)
- Voltage rating: 600 V AC/DC
- Color-coded housings, UL 94V-0
- Hermaphroditic (genderless) housings reduce inventory
- Modular, single-pole housings are stackable in four directions
- Polarity (+ and -) molded into 2-pole housings promotes proper wiring
- Mechanical keys help prevent two different color-coded housings from mating
- Stainless steel retaining springs secure contacts in housings
- Stamped and formed, open barrel contacts (6-20 AWG) on reels for automatic and semiautomatic machine termination
- Loose piece, cold-headed contacts (6 AWG – 300 MCM) for manual and hydraulic hand tools; reducing bushings accommodate smaller wire sizes
- Compatible with industry standard crimp tooling from PICO Corporation (http://www.picotools.com)
- Connectors intermateable with similar connectors from other manufacturers

- Series 15/30/45, single-pole connectors designed to meet Amateur Radio Emergency Service (ARES)/Radio Amateur Civil Emergency Service (RACES) Standard Power Connector requirements
- Accessories available for mounting, vibration protection, and strain relief
- Component Recognized by Underwriters Laboratories Inc. to US and Canadian Standards, File No. E28476

c UL us

AMP Power Series Connectors provide a durable, quick connect/disconnect means to transmit "power" levels of current and voltage (15-275 A, 600 V AC/DC).

This product family is primarily comprised of single-pole and 2-pole (battery) connector housings, crimp snap-in contacts, and accessories. Housings are offered in various colors. Two-pole housings have different polarization configurations; with the exception of black housings, each color identifies a different keying configuration. In general, only like color housings will mate. Contacts are either cold-headed or stamped and formed, depending upon the connector Series.

AMP Power Series Connectors are divided into eight Series, based on approximate current-carrying capability.

Applications

AC/DC Power Supplies and Charging Systems, Rechargeable Batteries, Material Handling Equipment (e.g. forklift trucks), Electric Vehicles (e.g., golf carts, sweepers, wheelchairs), Office Furniture/Panels, Amateur Emergency Radios, and Industrial Equipment

Technical Documents

See next page for technical documents.

Catalog 1773096
Issued 8-05

www.tycoelectronics.com

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C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

"New" AMP Power Series Connectors

Technical Documents

Various technical documents are available for your use:

Product Specifications describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

108-1349 AMPINNERGY WTB Connectors
108-1373 AMPINNERGY WTW Connectors
108-2104 AMP Power Series 50 Connectors
108-2149 AMP Power Series 15 Connectors
108-2150 AMP Power Series 30 Connectors
108-2151 AMP Power Series 45 Connectors
108-2152 AMP Power Series 75 Connectors
108-2153 AMP Power Series 120 Connectors
108-2154 AMP Power Series 175 Connectors
108-2155 AMP Power Series 180 Connectors
108-2156 AMP Power Series 350 Connectors

Application Specifications describe requirements for using the product in its intended application and/or crimping information. They are intended for the Packaging and Design Engineer and the Machine Setup Person.

114-6044 AMPINNERGY WTB Connectors
114-6051 AMPINNERGY WTW Connectors
114-13071 AMP Power Series 50 (Double-Pole) and 75 (Single Pole) Connector Assemblies
114-13107 AMP Power Series 120 (Single- and Double-Pole) Connector Assemblies
114-13118 AMP Power Series 175 (Double-Pole) and 180 (Single-Pole) Connector Assemblies
114-13119 AMP Power Series 350 (Double-Pole) Connector Assemblies
114-13127 AMP Power Series 15, 30 and 45 (Single-Pole) Connector Assemblies
114-13149 AMP Power Series 180 (Single-Pole) Connector Assemblies

Instruction Sheets provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

408-3198 Inspection of AMPINNERGY System Power Contacts
408-3236 Installation of AMPINNERGY WTB Connectors
408-3277 AMPINNERGY Wire-To-Wire Stackable Connectors
408-8636 AMP Power Series 50 Connector Assemblies
408-8868 AMP Power Series 175 and 350 Connector Assemblies with Cable Clamp Kits
408-4557 Heavy Duty Cable Cutter Hand Tool 605743-1
408-4559 Heavy Duty Cable Cutter Hand Tool 605744-1
408-4561 Heavy Duty Cable Cutter Hand Tool 6057469-1
408-8540 Crimp Tool 1526955-1
408-9688 Cable Stripper/Slitter Tool 606700-1
408-9816 Handling of Reeled Products

Test Summary

502-1136 50/75 Product Evaluation
502-1160 15/30/45 Product Evaluation
502-1166 120 Product Evaluation
502-1167 120 Competitive Evaluation
502-1172 AMP Power Series 175/180 Product Evaluation
502-1173 AMP Power Series 350 Product Evaluation

Customer Manual

409-5128 AMP-O-LECTRIC Model K Terminator Machine 1-471273-2

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UK: 44-141-810-8967

DOMINO Series Connectors

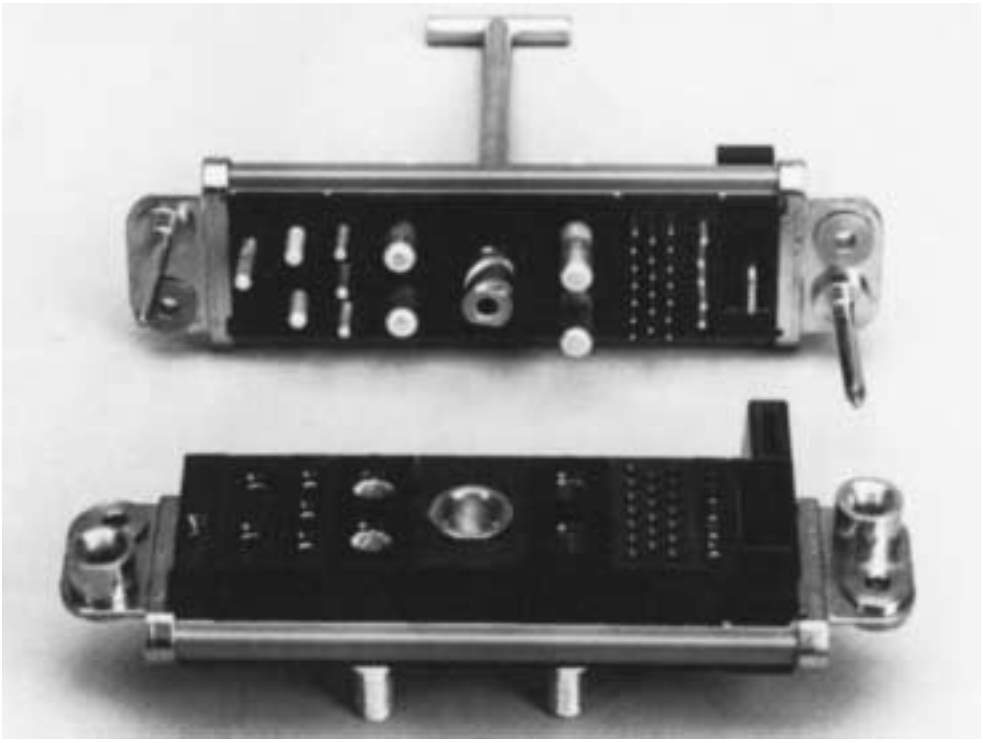
Hot Plug High Current Modular Power Connectors

Key Features

- Modular construction
- Blind mating
- High current CROWN BAND contacts
- Logic/Signal
- Locking system
- Uses ELCON Drawer contacts

Typical Applications

- Power Supplies
- Telecommunications
- Automatic Test Equipment
- Computer Hardware
- Process Control
- Uninterruptible Power Systems
- All DOMINO Products in this section are RoHS compliant.



The ELCON DOMINO System is a modular high-current connector system consisting of interchangeable modules which can provide AC, DC, logic and signal, float mounting, and pin sequencing. All DOMINO modules incorporate CROWN BAND technologies, tried and tested under the most arduous conditions. The high current capabilities virtually eliminate the need for bussing or splitting current, with resulting space savings and economies.

The DOMINO connector system allows the user to configure a connector specific to an application, from off-the-shelf components. It can be purchased as separate modules and assembled by the user, but is more generally ordered as a connector assembly using an assembly part number which Tyco Electronics assigns to a specific configuration. Consult Tyco Electronics for assistance in laying out a new connector. If required, DOMINO connector assembly is simple: once the locking rails are cut to size, the only tool required is a Phillips screwdriver for tightening the end-caps.

Most DOMINO contacts are the same as used in ELCON Drawer connectors. Modules A through E and R are sold as housings with retention clips; the contacts are ordered separately. See pages xx for available contact options and plating information, page xx for tooling. Modules K, L, and M are sold pre-loaded with contacts. DOMINO assemblies are shipped complete with contacts.

The DOMINO system is ideal for use with hot-pluggable power supplies of the type employed for load-sharing and/or redundant power for computer systems. Current interruption capability is standard in the L module and an available option in the A module.

The CROWN BAND contact is a small louvered cylindrical receptacle of Beryllium Copper. Manufactured on progressive dies to allow consistent, even insertion and withdrawal forces, its design ensures maximum surface contact area for minimum voltage drop and minimum heat generation. CROWN BAND contacts also provide excellent shock and vibration resistance.

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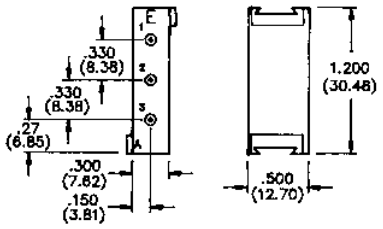
DOMINO Modules

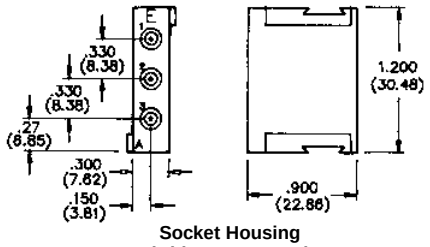
A Modules – 3 x #12 Power Contacts, Hot Plug option available

Note: Supplied without contacts. Crimp insertable/removable, PCB insertable/non-removable

Specifications: Contact rating 35 Amps UL/TUV, 20 Amps CSA, 250V; Hot plug 35 Amps UL/TUV, 30 Amps CSA, 120 V ac, 50 cycles; Fully loaded module nominal forces: insertion 9.2 lbs, extraction 5.5 lbs (Hot plug insertion 11.5 lbs, extraction 6.4 lbs)



Pin Housing
(without contacts)
Part Number 1648461-1

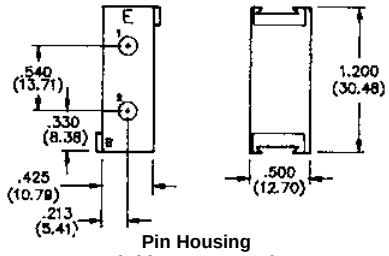


Socket Housing
(without contacts)
Part Number 1648466-1

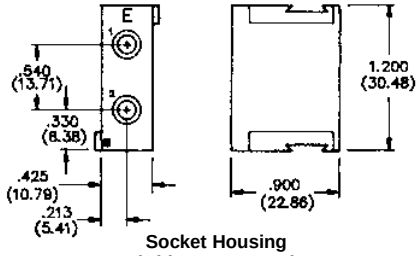
B Modules – 2 x #8 Power Contacts

Note: Supplied without contacts. Crimp insertable/removable, PCB insertable/non-removable

Specifications: Contact rating 75 Amps UL/TUV, 40 Amps CSA, 250V; Fully loaded module nominal forces: insertion 6.7 lbs, extraction 3.9 lbs



Pin Housing
(without contacts)
Part Number 1648462-1

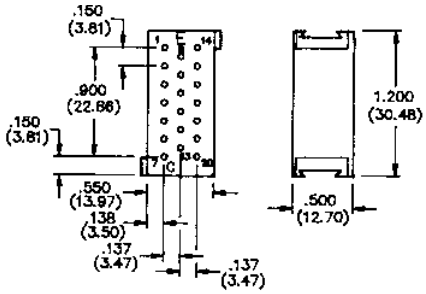


Socket Housing
(without contacts)
Part Number 1648467-1

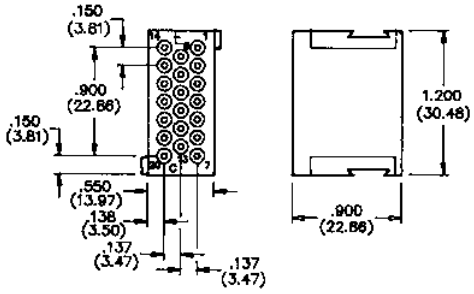
C Modules – 20 x #20 Signal Contacts

Note: Supplied without contacts. Crimp insertable/removable, PCB insertable/non-removable

Specifications: Contact rating 5 Amps UL/TUV, 4 Amps CSA, 125V; Fully loaded module nominal forces: insertion 2.4 lbs, extraction 2.6 lbs



Pin Housing
(without contacts)
Part Number 1648463-1

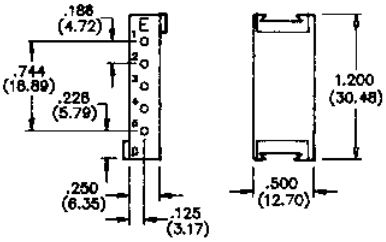


Socket Housing
(without contacts)
Part Number 1648468-1

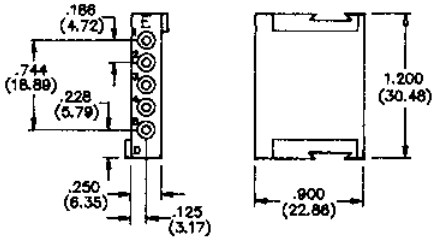
D Module – 5 x #16 Power Contacts

Note: Supplied without contacts. Crimp insertable/removable, PCB insertable/non-removable

Specifications: Contact rating 15 Amps UL/TUV, 10 Amps CSA, 125V; Fully loaded module nominal forces: insertion 18.6 lbs, extraction 13.0 lbs



Pin Housing
(without contacts)
Part Number 1648464-1



Socket Housing
(without contacts)
Part Number 1648469-1

Catalog 1773096
Revised 8-05

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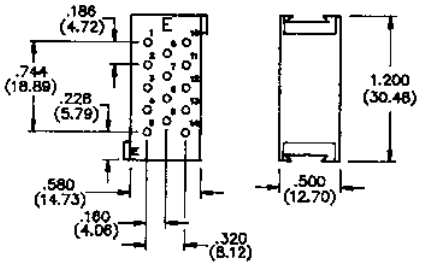
DOMINO Modules

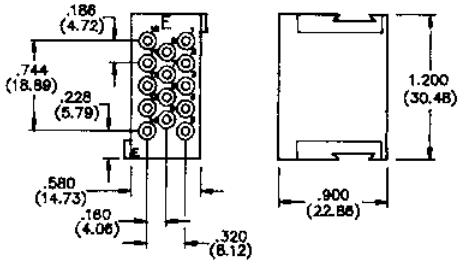
E Modules – 14 x #16 Power Contacts

Note: Supplied without contacts. Crimp insertable/removable, PCB insertable/non-removable

Specifications: Contact rating 15 Amps UL/TUV, 10 Amps CSA, 125V; Fully loaded module nominal forces: insertion 43.1 lbs, extraction 33.7 lbs



Pin Housing
(without contacts)
Part Number 1648465-1

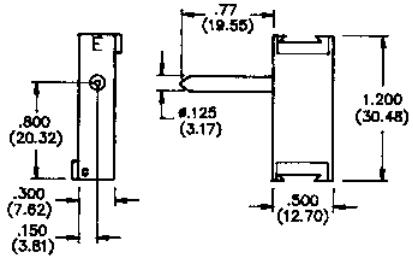


Socket Housing
(without contacts)
Part Number 1648470-1

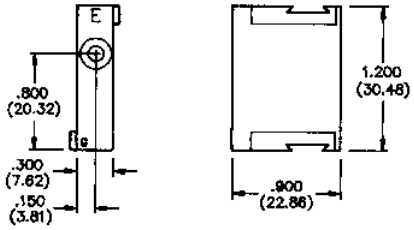
G Modules - Non-electrical Guide Module

Note: May be turned through 180 in the horizontal plane

Specifications: Guide pin type 303 Stainless Steel, passivated



Guide Pin
Part Number 1648505-1

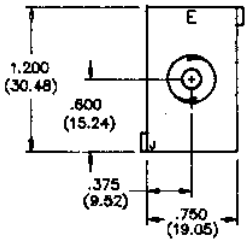


Guide Socket
Part Number 1648473-1

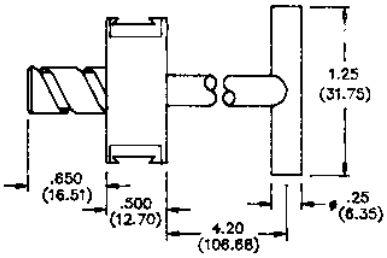
J Modules – Jackscrew Locking Module

Note: Select socket side to match desired orientation of T-handle in locked position

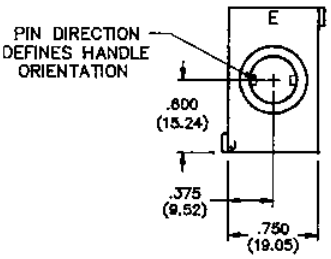
Specifications: Corrosion resistant Steel



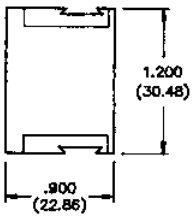
Pin Side
4.20" T-Handle Part
Number 1648482-1



Pin Side
Screwdriver Slot
Part Number 1648485-1



Parallel Socket Side
Part Number 1650679-1

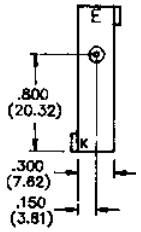


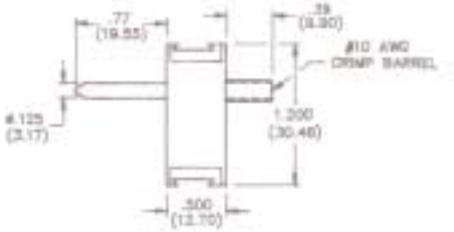
Perpendicular Socket Side
Part Number 1650680-1

K Modules – Electrically Active Ground/Guide Module

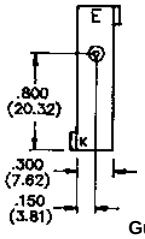
Note: May be turned through 180 in the horizontal plane. Use Crimp Tool PN 1766453-1

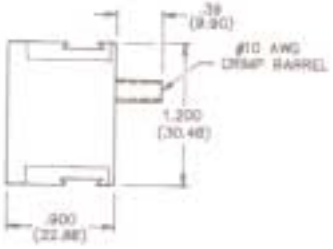
Specifications: Contact rating 40 Amps UL/TUV, 15 Amps CSA, 250V; Fully loaded module nominal forces: insertion 3.0 lbs, extraction 1.3 lbs





Guide Pin
 # 10 AWG Crimp
Part Number 1648508-1





Guide Socket
 # 10 AWG Crimp
Part Number 1648476-1

Catalog 1773096
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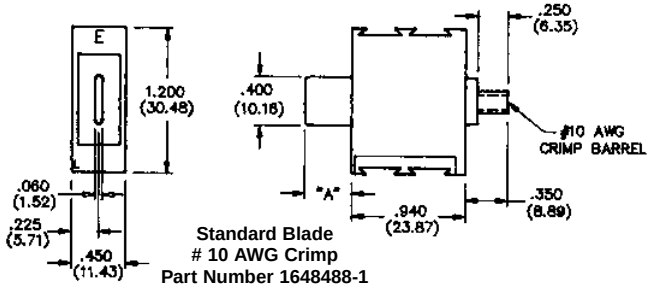
DOMINO Modules

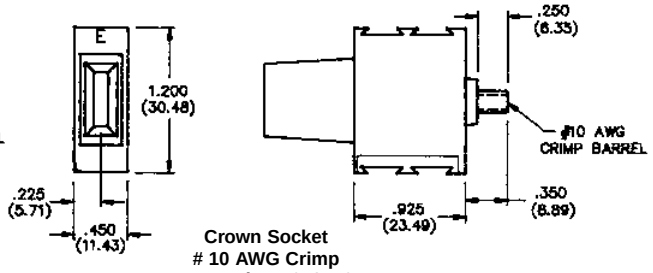
L Modules – Hot Plug Flat Blade Contact, Crown Socket

Note: Pin and socket modules may be assembled within either pin or socket side connector for reverse polarization. Standard blade length, dim A = .400"; premate blade length, dim A = .525" Use Crimp Tool PN 1766453-1

Specifications: Agency approved for 50 Cycles of current interruption; contact rating 30 Amps UL/CSA/TUV, 250V and 55 Amps UL/TUV, 30 Amps CSA, 72 V dc; Fully loaded module nominal forces: insertion 4.2 lbs, extraction 3.7 lbs



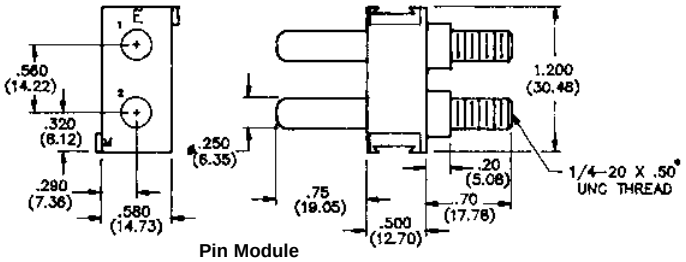
Standard Blade
 # 10 AWG Crimp
Part Number 1648488-1
Premate Blade
 # 10 AWG Crimp
Part Number 1648489-1



Crown Socket
 # 10 AWG Crimp
Part Number 1648446-1

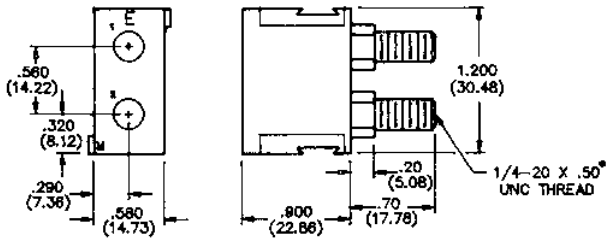
M Modules – Pre-installed Dual In-Line Crown Pin & Socket

Specifications: Contact rating 125 Amps UL/CSA/TUV, 250V; Fully loaded module nominal forces: insertion 14.9 lbs, extraction 9.8 lbs



Pin Module
Ext. Threaded
Part Number 1648499-1

Recommended torque value 40 lb.in (4.52 N.m)

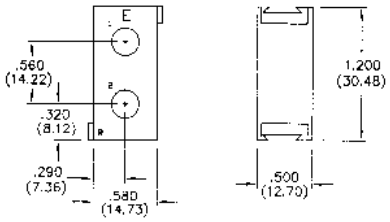


Socket Module
Ext. Theaded
Part Number 1648454-1

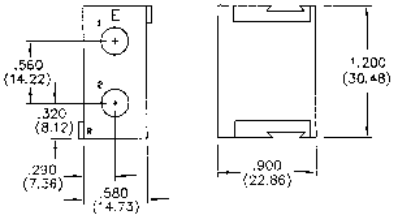
R Modules – 2 x 1/4" Power Contacts

Note: Supplied without contacts; available contacts: Crimp insertable/removable, Ext. Threaded insertable/non-removable, consult Tyco Electronics for contact part numbers and available Double Crown option

Specifications: Contact rating 150 Amps UL, 110 Amps CSA, 250V; Fully loaded module nominal forces: insertion 9.4 lbs, extraction 6.0 lbs



Pin Module
(without contacts)
Part Number 1648515-1



Socket Module
(without contacts)
Part Number 1648457-1

Spacer Module – Non-electrical

Note: any module may be ordered without contacts for use as spacers; consult factory for options and part numbers.

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Revised 8-05

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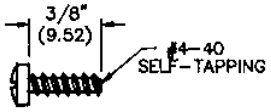
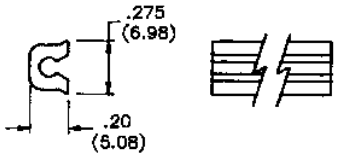
DOMINO Assembly

Mounting Accessories



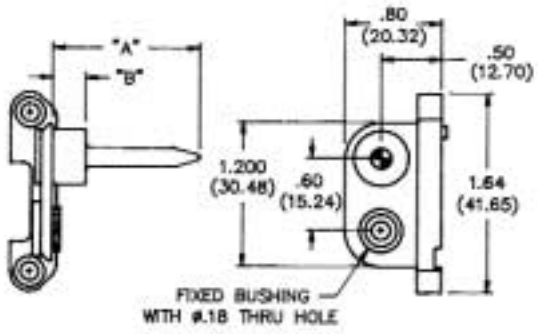
Screw Part Number 1651285-1, Steel



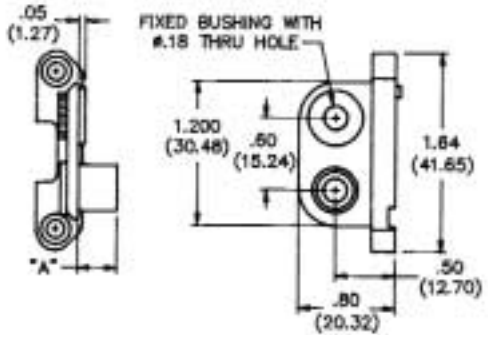
**Locking Rail Part Number 1648990-1,
Aluminum alloy, gold anodized finish, 36" length.
Requires cutting to size**

End Caps – Zinc die cast, CRS hardware, yellow chromate finish

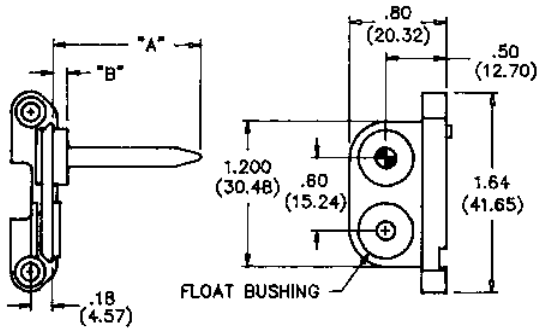
End caps secure the modules when screwed into the locking rails providing rigid assembly and a means of mounting assembly to frames, bulkheads, etc. Float mount styles correct for misalignment during mating. Any end cap may be used to mount either pin or socket sides.



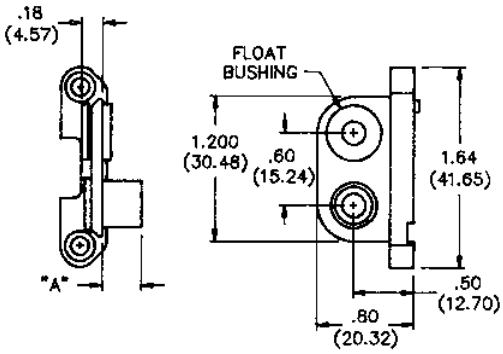
**Fixed Mount, Guide Pin
Part Number 1648259-1
A = 1.22 (30.98), B = .275 (6.98)**



**Fixed Mount, Guide Socket
Part Number 1648263-1
A = .175 (4.44)**



**Float Mount, Guide Pin
Part Number 1648251-1
Standard
A = 1.22 (30.98), B = .275 (6.98)
Part Number 1648253-1
L-Module
A = 1.62 (41.14), B = .125 (3.17)**



**Float Mount, Guide Socket
Part Number 1648252-1
Standard
A = .175 (4.44)
Part Number 1648254-1
L-Module
A = .325 (8.25)**

Catalog 1773096
Revised 8-05

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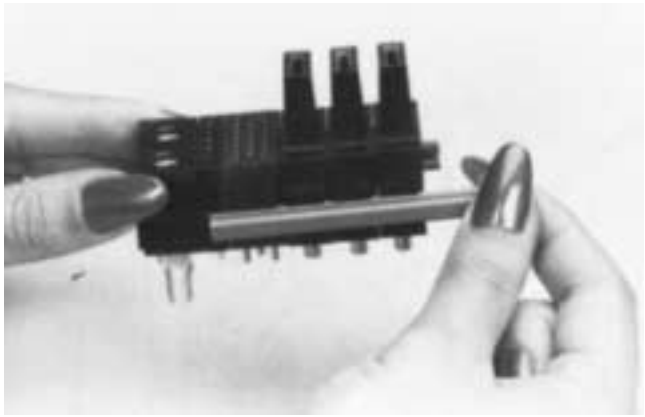
South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-1908-574289

DOMINO Module Assembly Process

1. Align modules in desired order.

2. Measure length of assembly, and add .100" (2.54mm) to determine overall rail length. Cut rails to length.



3. Slide locking rails into position on both sides of module assembly via the molded rail tracks.

4. Position end caps over locking rail ends and secure using Phillips head screws.

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HTS Power Connectors

Product Facts

- Heavy-duty, rectangular, multiple-position, pin and socket connectors
- Current rating: 10-500 A
- Voltage rating: 1-1.4 kV
- Number of contact positions: 1 through 216
- Connectors are designated by four components: base and hood, and male and female inserts
- Contact inserts provide for three types of wire termination: screw (no crimp tool required), crimp (higher pin count), and cage clamp (fastest)
- HE Series inserts (screw terminated) are the most popular
- Bases provide environmental (IP 55, 65 and 68) and electrical protection (NEMA 4 and 4X)
- Bases share an industry standard panel cutout and mounting hole pattern
- Hoods offer top, side, or angled cable entry. Hoods are tapped to accommodate metric or PG fittings
- Automated tooling matched to contact
- DIN/VDE, UL, CSA and SEV approved

HTS Power Connectors are heavy-duty, rectangular, multiple-position, pin and socket connectors. They are commonly referred to as “Rectangular” or “European Metal Shell” connectors.

HTS Connectors are designated by four components: base and hood, and male and female inserts. The designation is driven by electrical specifications; pin count and current rating define the inserts needed. From 1 to 216 contact positions are available. Current ratings range from 10-500 A.

The appropriate housing size (1-12) to accommodate selected inserts is then defined. Housing selection criteria include: base mounting style, latch type, hood cable entry location, and hood gland size. The most popular housing sizes are: Shell Size 1 (3 or 4 positions), Shell Size 3 (6 positions), Shell Size 6 (16 positions), Shell Size 8 (24 positions), and Shell Size 5 (25 positions).

HTS Connectors have many applications: Industrial Machinery (automotive, plastics, semiconductors, material handling, packaging and printing), Railroad and Mass Transit (A/C and brake subsystems, power transformers, door systems, switches and signals, and drive motor enclosures).

For more information, request Catalog 1308980.

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UK: 44-141-810-8967

RAPID LOCK Quick Connect/Disconnect Bus Bar Connectors

Product Facts

- Replaces power lugs
- Locking feature
- Up to 120 Amps
- CROWN BAND Connector Technology

Typical Applications

- Power Distribution Systems

The RAPID LOCK connector is a size #4 single-pole, quick connect/disconnect replacement for lug connections, used in bus bar and backplane power distribution applications. RAPID LOCK connectors allow a reliable and safe connection, as well as better serviceability, than bolt-fitted lugs. The cable mounted sockets have a right angle configuration, and feature an insulator cap that provides the retention mechanism on the pin. The pin contacts can be attached to a bus bar by screw or swage, and to a backplane by press fit and backup screw.

Secure Power Distribution

By replacing power lugs fitted using nuts and bolts, the RAPID LOCK connector offers an extremely secure interconnect mechanism that totally frees the power distribution system from the risk of loose connections, which can cause arcing.

Safety Locking Feature

A locking feature is provided on the pins for protection against accidental unlatching of the cable. Although connection of the cable is easily performed by hand, disconnection requires a simple tool to provide the leverage needed to overcome the locking feature.

Improved Ease of Service

Service in the field becomes very easy with RAPID LOCK connectors because there are no nuts and washers to loose in the equipment. The RAPID LOCK connector is available with red or black color insulators.

CROWN BAND Technology

The RAPID LOCK connector enjoys all the benefits of the ELCON CROWN BAND technology, providing a stable connection with excellent mechanical and electrical performance rated up to 120 Amps on a #4 AWG cable.

Note: All RAPID LOCK Products in this section are RoHS compliant.

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UK: 44-1908-574289

RAPID LOCK Connectors Ordering Information

Size	Crimp Size	Part Number			
		Socket		Pin	
		Black	Red	Swage	Screw
#4	AWG #4	6648236-1	6648236-2	6648222-1	6648224-1
	AWG #6	6648239-1	6648239-2		
	AWG #8	6648235-1	6648235-2		

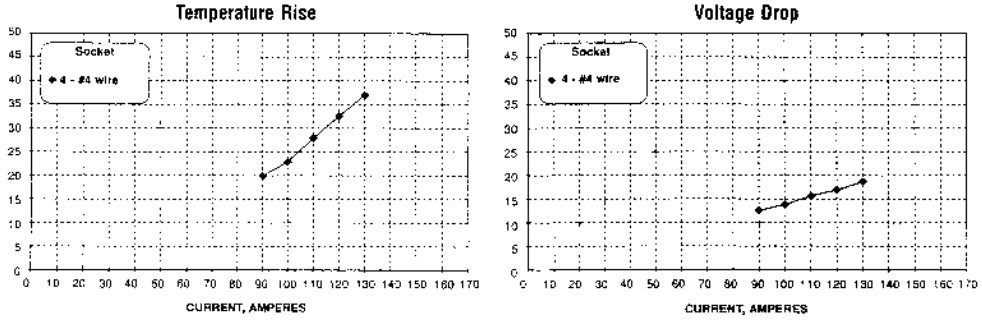
Product Specifications

Materials	
Insulator	Thermoplastic, UL 94V-0 flammability rated
Socket Contact Body	Copper alloy, plated Silver over nickel
Crown Band	Beryllium Copper, plated Gold (30 uin minimum) over nickel
Pin Contact	Copper alloy, plated Silver over nickel
Electrical	
Current Rating	120 Amp, with #4 AWG wire, 30°C temperature rise
Voltage Drop	Less than 20 mV, with #4 AWG wire
Mechanical	
Disconnect Tool	Part Number 1650398-1

Test Data

Show below is current versus temperature rise of the five different available socket sizes.

Shown below is current versus voltage drop performance of the five different available socket sizes.



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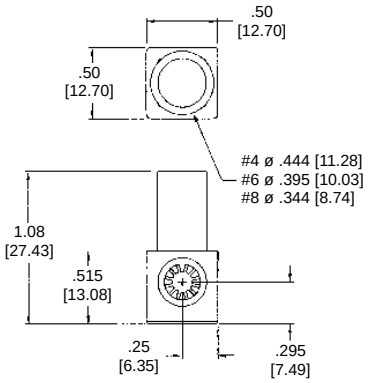
RAPID LOCK Sockets and Pins

Cable Mounted Sockets

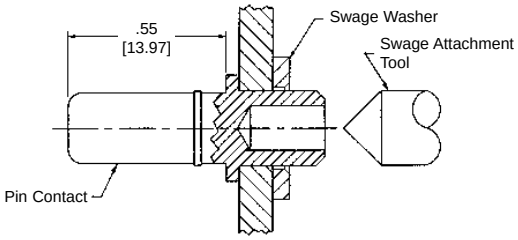
RAPID LOCK sockets are crimped to AWG #4, #6 or #8 size cable depending on the application requirements. Envelope dimensions are common except for the crimp barrel diameter.

Pin Contacts

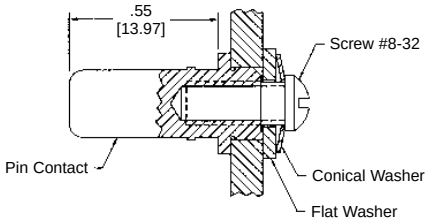
RAPID LOCK pin contacts are offered in either swage or screw & washer mounting options for .125" (3.18 mm) or 3mm (.118") thick PCB or bus bars. Consult Tyco Electronics Customer Service for other bus bar and backplane thicknesses and designs.



Cable Mounted Socket



Part Number 1648222-1



Part Number 1648224-1

Pin Contacts

Press Fit Pin Contacts

Attach Type	Pin Size	Mounts to
Screw and washer	#4	Bus bar/Backplane
		Bus bar
Swage	#4	Bus bar

Note: All part numbers include attachment hardware (screw, washer, etc.)

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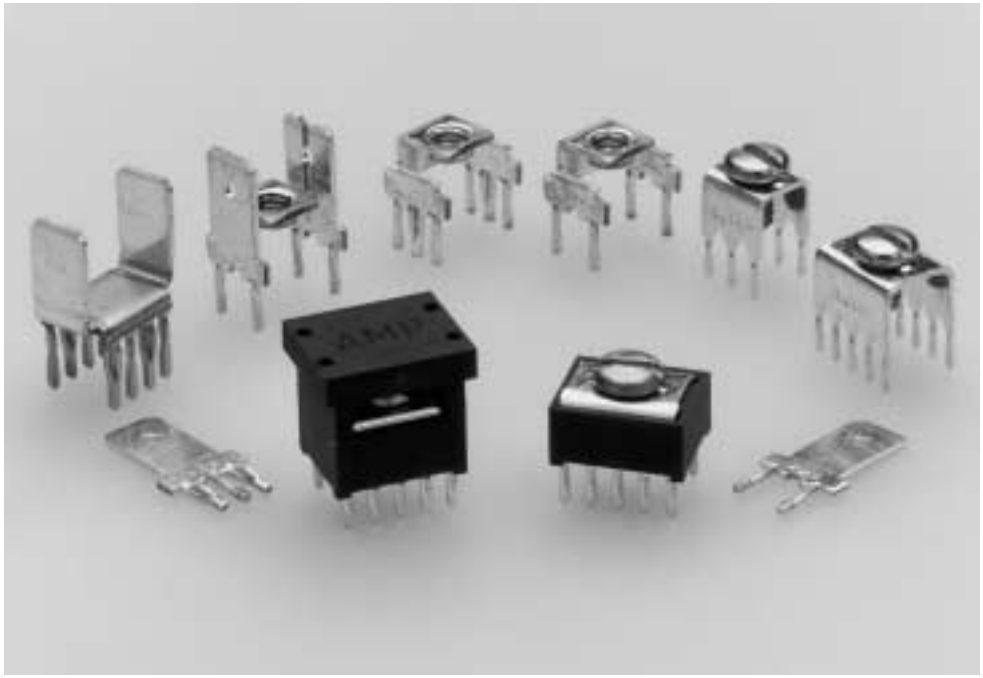
AMP Power Taps

Product Facts

- **ACTION PIN contacts eliminate soldering**
- **Provides high current, separable connection to pc board traces**
- **Wire-to-board connection using common terminals**
- **All metal-to-metal assembly for long-term integrity**
- **Standard DIP outlines (7.62 x 2.54 [.300 x .100]), 10 positions, and 6.35 x 3.18 [.250 x .125], 6 and 10 positions, plus high current versions on 10.16 x 5.08 [.400 x .200] footprint in 4 and 6 positions, 7.62 x 2.54 [.300 x .100] in 8 positions, and both 2 and 3 position in-line 2.54 [.100] tab taps**
- **Low resistance interface**
- **Internally threaded tap to secure screw to terminal**
- **Anti-rotational embossments hold wire and terminal in place**
- **Standard Power Taps rated at 2.5 amps per pin — 6 position 15 amps, 10 position 25 amps current carrying capability**
- **High Current Power Taps rated at up to 5 amps per pin — 2 position 10 amps, 3 position 15 amps, 4 and 6 position 20 amps and 8 position 40 amps**
- **30 amp inverse sex Power Tap**



AMP Power Taps are designed for the growing need for power to printed circuit board applications required in today's electronic industry. The taps provide a high current, separable connection to a pc board. Pin configuration is of the standard DIP outline with 7.62 x 2.54 [.300 x .100] or 6.35 x 3.18 [.250 x .125] for the Standard versions, plus 10.16 x 5.08 [.400 x .200], 7.62 x 2.54 [.300 x .100] and in-line spacing for the High Current versions.

ACTION PIN contacts provide a low resistance interface with tin-plated through holes in the pc board, thereby eliminating the need for soldering.

The variety of available power taps allow for various installation schemes. The Uninsulated Tap and Low Profile Tap can be used in bus bar pattern. The High Profile and Low Profile Taps offer insulation protection from other components. The High Current versions provide a greater power density option with current ratings from 10 amps on the 2 position in-line 6.35 [.250] tab tap up to 40 amps on the 8 position dual 6.35 [.250] tab tap.

All AMP Power Tap configurations are easily inserted into the pc board with a simple Tyco Electronics or customer supplied tool.

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UK: 44-141-810-8967

AMP Power Taps

Material and Finish

Connector Body and Lid — Nylon, 105°C 94V-0 rated

Contact — Copper alloy, bright tin-lead plated

Screw — Plated steel

Electrical and Mechanical Characteristics

Resistance — 2 milliohms, max. (stud hole to ACTION PIN contact)

Insertion Force — 40 lbs. [177.9N], max. per pin

Retention Force — 7 lbs. [31.1N], min. per pin

Technical Documents:

Product Specification —

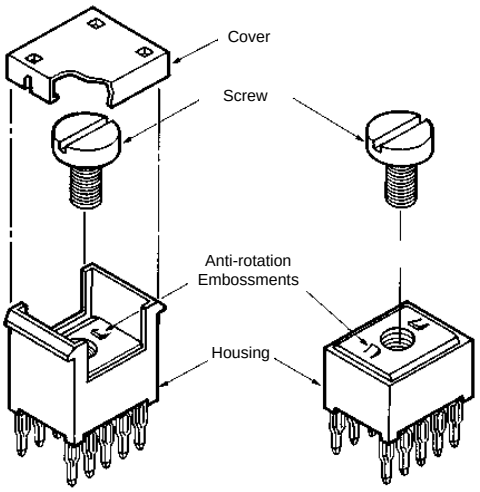
108-11030 Tap, Power Distribution

Application Specification —

114-11000 Tap, Power Distribution

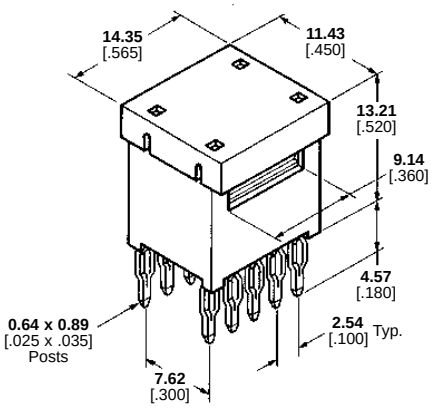
Handbook —

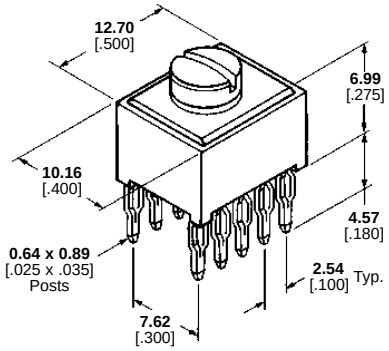
5697 Guide to Application of ACTION PIN Connectors



7.62 x 2.54 [.300 x .100] High Profile Tap 10 Position

7.62 x 2.54 [.300 x .100] Low Profile Tap 10 Position





Tap Version	Pcb Thickness	Description	Screw Hole Size	Part Number
High Profile	**1.57-3.18** .062-.125	Housing and contact assembled with screw[1,2]	6-32	55557-4
Low Profile	**1.57-3.18** .062-.125	Housing and contact assembled with screw[2]	6-32	55556-4
Low Profile	**1.57-3.18** .062-.125	Housing and contact assembled with screw[2,3]	6-32	55673-2
Low Profile	**1.57-3.18** .062-.125	Housing and contact assembled without screw	M4	55556-9

[1]Cover not assembled [2]Screw not assembled [3]No anti-rotational embossments

Recommended PCB Layout

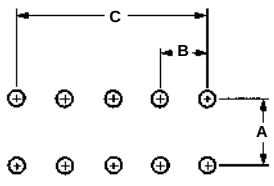
For Standard Threaded Taps Only

Recommened PC Board Layout

Drilled Hole Diameter—
1.15±0.03 [.0453±.001]

After Plating
0.94-1.09 [.037-.043]

After Reflow—
0.91-1.09 [.036-.043]



Size	Dimensions A	Dimensions B	Dimensions C
7.62 x 2.54 .300 x .100 10 Position	**7.62** .300	**2.54** .100	**10.16** .400
6.35 x 3.18 .250 x .125 6 Position	**6.35** .250	**3.18** .125	**6.35** .250
6.35 x 3.18 250 x .125 10 Position	**6.35** .250	**3.18** .125	**12.7** .500

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AMP Power Taps

Material and Finish

Contact—Copper alloy, post plated bright tin-lead

Screw—Stainless steel, passivated

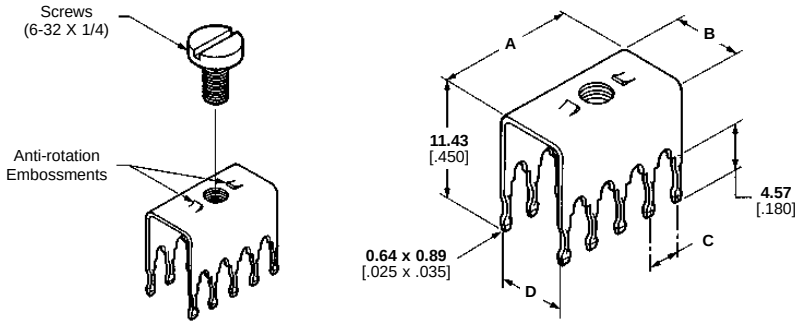
Electrical and Mechanical Characteristics

Resistance — 2 milliohms, max. (stud hole to ACTION PIN contact)

Insertion Force — 40 lbs. [177.9N] max. per pin

Retention Force — 7 lbs. [31.1N] min. per pin

For Recommended PC Board Layout, see page 121.



Size	Pcb Thickness	Dimensions A	B	C	D	Description	Screw Size	Part Number
7.62 x 2.54 .300 x .100 10 Position	**1.57-3.18** .062-.125	**11.18** .440	**8.26** .325	**2.54** .100	**7.62** .300	Without Screw	6-32	55558-3
						With Screw	6-32	55558-4
6.35 x 3.18 .250 x .125 6 Position	**1.57-3.18** .062-.125	**8.13** .320	**6.99** .275	**3.18** .125	**6.35** .250	Without Screw	6-32	55323-5
						With Screw	6-32	55323-9
6.35 x 3.18 .250 x .125 10 Position	**1.57-3.18** .062-.125	**14.48** .570	**6.99** .275	**3.18** .125	**6.35** .250	Without Screw	6-32	55323-6
						With Screw	6-32	1-55323-0

High Current* Power Taps

*Up to 20 amps

Material and Finish

Contact — Phosphor bronze, tin-lead plated

Screw — Stainless steel, passivated

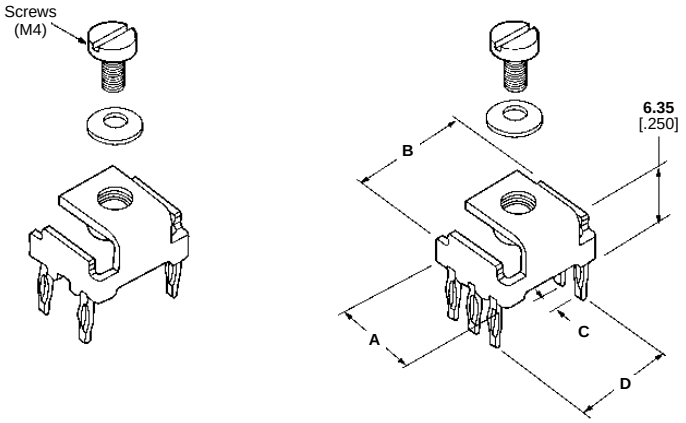
Washer — Stainless steel

Electrical and Mechanical Characteristics

Current Rating — 20 amperes max.

Insertion Force — 40 lbs. [180N] max. per pin

Retention Force — 7 lbs. [30N] min. per pin



Size	Pcb Thickness	Dimensions A	B	C	D	Description	Part Number
4 Position	**1.57-3.18** .062-.125	**9.09** .358	**10.95** .431	**5.08** .200	**10.16** .400	With Screw, Washer	213815-1
						Without Screw	216906-1[1,2]
6 Position	**1.57-3.18** .062-.125	**9.09** .358	**10.95** .431	**2.54** .100	**10.16** .400	With Screw, Washer	213816-1
						Without Screw	216907-1[1,2]

[1]No Anti-rotation Embossments featured on High Current Taps. Therefore, if application requires product supplied without washer and screw, use of lockwashers with a high surface contact area are strongly recommended.
[2]RoHS compliant.

For High Current and FASTON Taps

Use with Hand Press **677430-1**

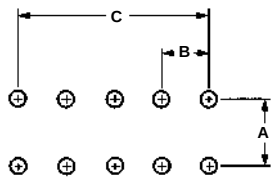
Recommended PC Board Layout

Drilled Hole Diameter—
1.60±0.03 [.063±.001]

Cu Thickness—
0.03-0.08 [.001-.003]

SnPb Thickness—
0.004 min. [.0002 min.]

Recommended PCB Layout



Finished Hole—
1.36-1.54 [.054-.061]

After Reflow—
1.36-1.54 [.054-.061]

Type	A	B	C
4 Position	**10.16** .400	**5.08** .200	**5.08** .200
6 Position	**10.16** .400	**2.54** .100	**5.08** .200
I	—	**5.08** .200	**5.08** .200
II	—	**2.54** .100	**5.08** .200
III	**10.16** .400	**5.08** .200	**5.08** .200
IV	**7.62** .300	**2.54** .100	**7.62** .300

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AMP Power Taps

*Up to 5 amps per pin

Mating Connectors
FASTON Receptacles —

Material and Finish

Contact — Phosphor bronze, post plated tin-lead

Screw — Stainless steel, passivated

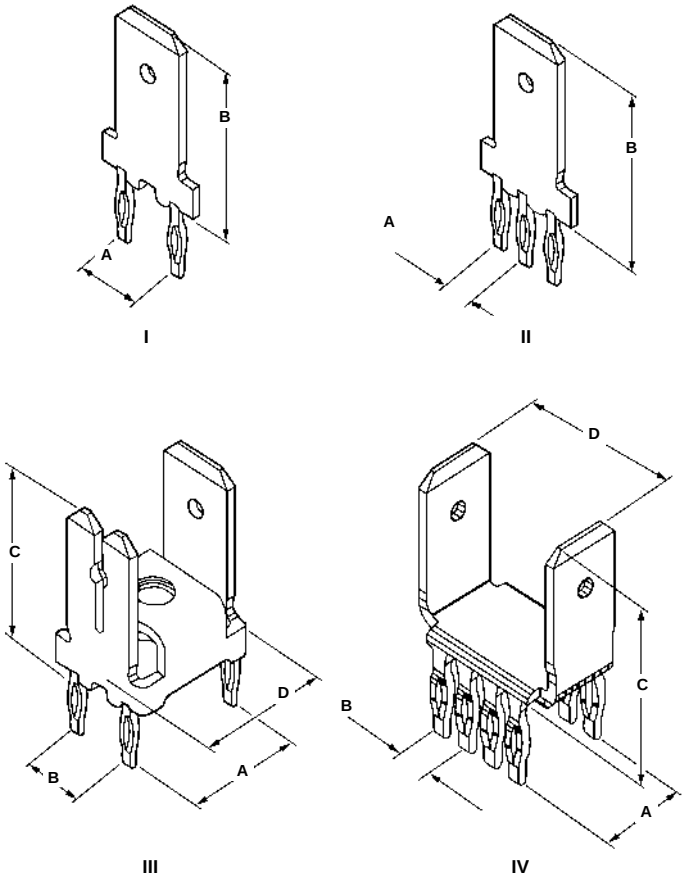
Washer — Stainless steel

Electrical and Mechanical Characteristics

Current Rating — 5 amps max. per pin

Insertion Force — 40 lbs. [180N] max. per pin

For Recommended PC Board Layout, see page 122.



Style	Pcb Thickness	Dimensions A	B	C	D		Description	Part Number	Receptacle Mating
I	**1.57 x 3.18** .062 x .125	**5.08** .200	**13.49** .531	—	—	**6.35 x 0.81** .250 x .032 Tab	With Hole	216926-1[2]	Positive Lock
II	**1.57 x 3.18** .062 x .125	**2.54** .100	**13.49** .531	—	—	**6.35 x 0.81** .250 x .032 Tab	With Hole	216843-1[2]	Positive Lock
III	**1.57 x 3.18** .062 x .125	**10.16** .400	**5.08** .200	**13.49** .531	**10.95** .431	**1-6.35 x 0.81** .250 x .032 Tab **2-2.79 x 0.81** .110 x .032 Tab	With Hole Without Washer Without Screw	216905-1[1,2]	Positive Lock
IV	**3.18** .125	**7.62** .300	**2.54** .100	**12.32** .485	**12.7** .500	**2-6.35 x 0.81** .250 x .032 Tab	With Dimple	167892-3	FASTON Receptacle
							With Hole	167892-6[2]	Positive Lock

[1]No Anti-rotation Embossments featured on High Current Taps. Therefore, if application requires product supplied without washer and screw, use of lock-washers with a high surface contact area are strongly recommended.
[2]RoHS compliant.

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Japan: 81-44-844-8013
UK: 44-141-810-8967

AMP Power Taps

Product Facts

- Excellent for power distribution
- For board-to-board and board-to-bus applications
- Louvertac high current contact used in receptacle
- ACTION PIN compliant pcb tails for high surface area contact with plated through hole
- Receptacle fits onto standard DIP 7.62 x 2.54 [.300 x .100] footprint
- Press-fit receptacle needs simple "flat-rock" tooling to install
- Accommodates board thickness from 1.37 to 3.18 [.054 to .125]
- Insulated body rated 105°C 94 V-0
- Blindmate capability (tolerance: ± 3.18 [± .125] in X and Y axes)
- Perpendicular board stacking
- Silver or Gold plated
- UL recognition at 35 Amps

Material and Finish

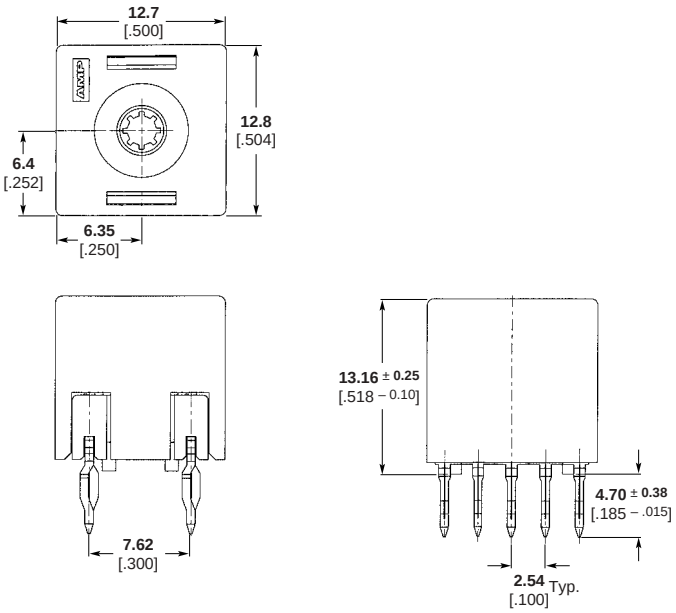
Housing — Thermoplastic black
Body — Zinc Alloy
Contact — Bronze Alloy
Pin — Brass Alloy

Technical Documents

Product Specification —
108-1624 and 108-1624-1
Application Specification —
114-11000 Tap, Power Distribution

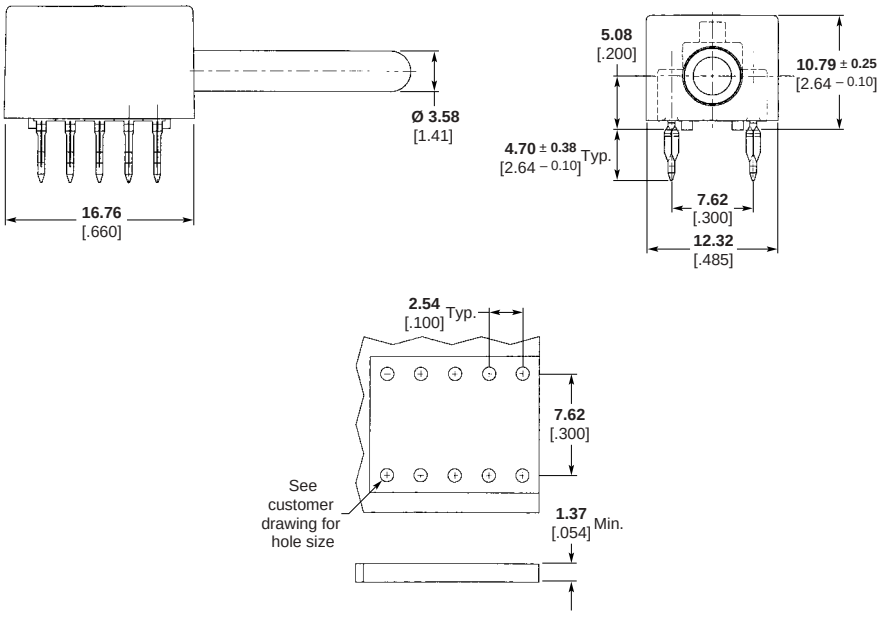
Compatible with Z-PACK 2mm HM product family.

Vertical Receptacle



Recommended PC Board Layout

Right Angle Pin



Recommended PC Board Layout

Description	Plating	Part Number
Right Angle Pin	Gold	796137-2
Vertical Receptacle	Gold	796138-2

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Application Tooling/PCB Layout

For Standard Threaded Taps Only

Recommened Pc Board Layout

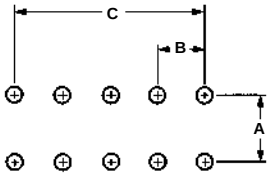
Drilled Hole Diameter—
.0453$^{\pm.001}$ [1.15$^{\pm0.03}$]

After Plating
.037-.043 [0.94-1.09]

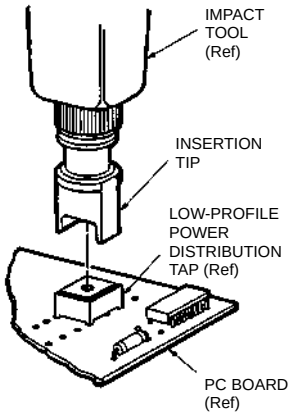
After Reflow—
.036-.043 [0.91-1.09]

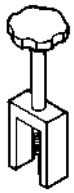
Installation and Extraction Tooling

Impact Insertion Tool Number 313102-1
(Insertion Tip No. 58133-1 required)



Size	Dimensions		
	A	B	C
.300 x .100 7.62 x 2.54 10 Position	**.300** 7.62	**.100** 2.54	**.400** 10.16
.250 x .125 6.35 x 3.18 6 Position	**.250** 6.35	**.125** 3.18	**.250** 6.35
250 x .125 6.35 x 3.18 10 Position	**.250** 6.35	**.125** 3.18	**.500** 12.7





Extraction Tool Number 68380-1

For High Current and FASTON Taps

Use with Hand Press **677430-1**

Recommened Pc Board Layout

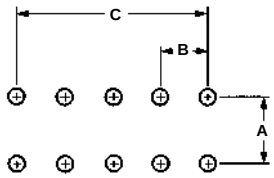
Drilled Hole Diameter—
.063$^{\pm.001}$ [1.60$^{\pm0.03}$]

Cu Thickness—
.001-.003 [0.03-0.08]

SnPb Thickness—
.0002 min.[0.004 min.]

Finished Hole—
.055-.061 [1.39-1.54]

After Reflow—
.054-.061 [1.36-1.54]



Type	A	B	C
4 Position	**.400** 10.16	**.200** 5.08	**.200** 5.08
6 Position	**.400** 10.16	**.100** 2.54	**.200** 5.08
I	—	**.200** 5.08	**.200** 5.08
II	—	**.100** 2.54	**.200** 5.08
III	**.400** 10.16	**.200** 5.08	**.200** 5.08
IV	**.300** 7.62	**.100** 2.54	**.300** 7.62

Installation Tooling

Type	Part Number	Upper Tool	Lower Tool
High Current 4 & 6 Positions	216906-1 216907-1	432848-1	433600-2 or 432130-2
High Current Style I, II	216926-1 216843-1	432845-1	433600-2 or 432130-2
High Current Style III	216905-1	432847-1	433600-2 or 432130-2
High Current Style IV	167892-3 167892-6	432849-1	433600-2 or 432130-2

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Engineering Notes

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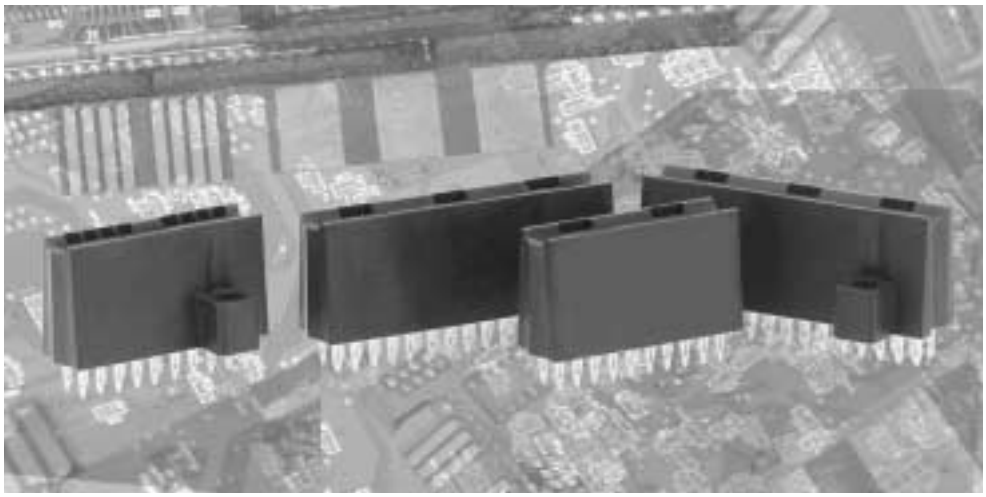
CROWN EDGE Card Edge-style High Current Connectors



Product Facts

- **Low cost power solution**
- **Power, signal and mixed modules**
- **30A per power contact**
- **Mates with .062 (1.6 mm) with thick card edge or bus bar tab**
- **Press-fit or solder tail terminations**
- **True hot plug power modules**
- **Meets regulatory safety requirements**
- **All CROWN EDGE Products in this section are RoHS compliant.**

Typical Applications

- **Board-to-board power connections**
- **DC-DC converters**
- **UPS**
- **Power supplies**

CROWN EDGE Connectors are a board-to-board power interconnect solution that uses ELCON high performance CROWN BAND contact technology configured to mate directly with a printed circuit board edge or – for higher currents – with a solid bus bar. Power, signal and mixed contact modules can be combined and mounted end-to-end to meet the requirements of the applications.

Product Highlights

High-current Card Edge Interface

CROWN EDGE Connectors uses Tyco Electronics proven ELCON CROWN BAND contacts that provide multiple points of contact for high current, and low voltage drop and minimal heat generation. The desired current rating for most applications can be achieved by bussing multiple contacts or even modules. For even higher currents, CROWN EDGE Connectors can be mounted onto a bus bar, and mate directly with a bus bar tab. Optimum interface to the mounting PC board is achieved through five termination tails.

Flexible Modular Design

To make easy work of power distribution design, CROWN EDGE Connectors are available in modules of 2 and 3 contact segments with power or signal contacts or a combination of both in a single module. Modules can be placed end-to-end for assemblies up to 8" (203.20 mm) long. Custom molded configurations are possible on high-volume projects. Consult Tyco Electronics or your local Tyco Electronics sales representative for details.

Versatile Power Arrangements

Opposing contacts are isolated, so power connections at different voltage levels can be on one side of the board, with ground or power return on the other side.

True Hot Plug Support

CROWN EDGE power modules that support current interruption under load as defined by safety regulatory agencies are also available for mating to a metal blade or bus bar tab. These true hot plug modules allow current interruption under load by incorporating a contact design that restricts the effects of arcing to areas that do not compromise the integrity of the connection.

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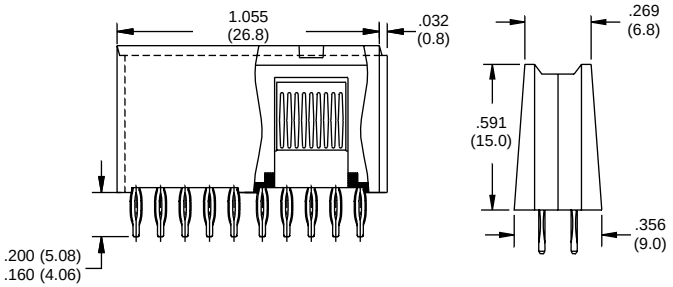
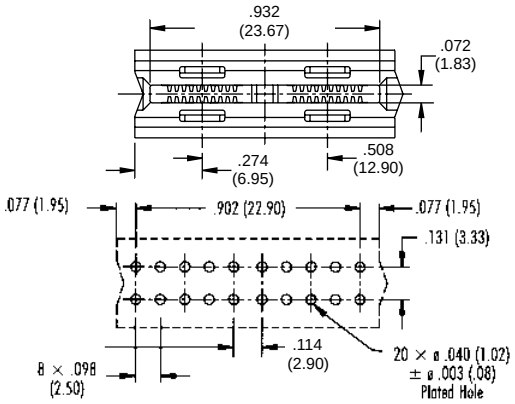
Dimensions and Part Numbers

Power Contacts x 4 Part Numbers

6651170-1	Long solder tail, non-hot plug*
6651170-2	Press-fit tail, non-hot plug*
6651170-3	Short solder tail, non-hot plug*
6651331-1	Press-fit tail, hot plug
6651380-1	Short solder tail, hot plug
6651380-2	Long solder tail, hot plug

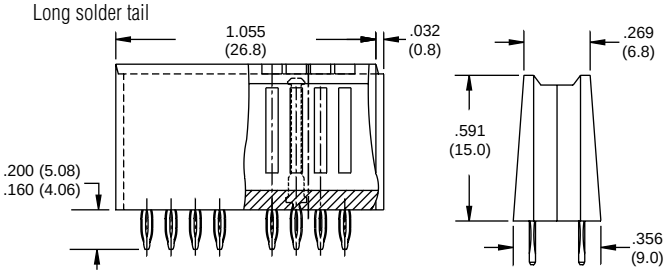
* Also available for .093" (2.4 mm) thick mating board. Contact Tyco Electronics Customer Service for details.

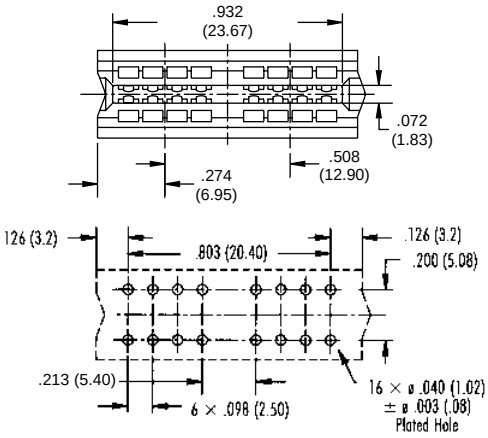




Signal Contacts x 16 Part Numbers

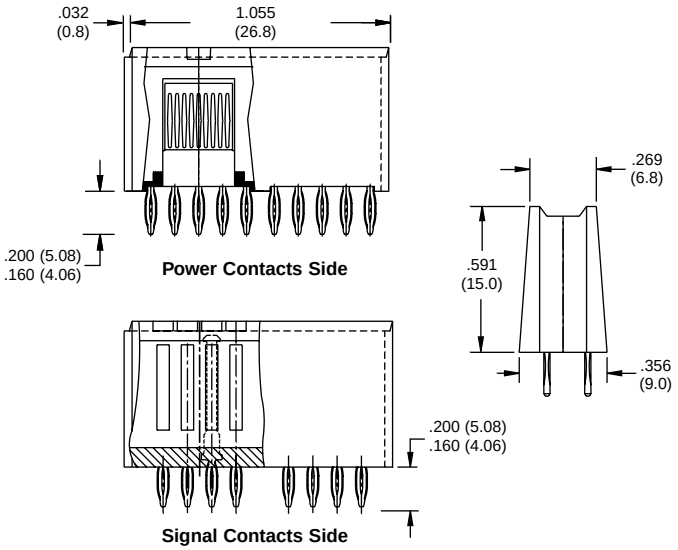
6650534-1	Press-fit tail
6650534-2	Short solder tail
6650534-3	Long solder tail

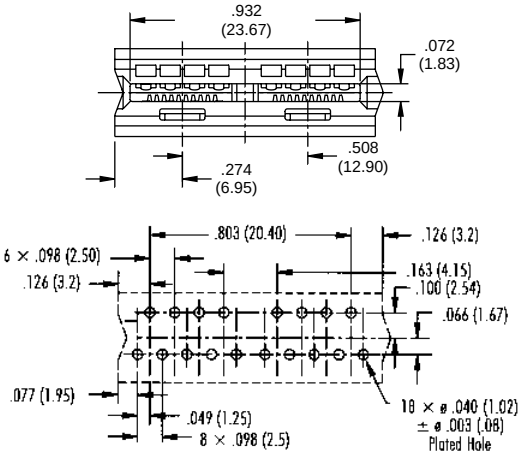




2 Power + 8 Signal Contacts Part Numbers

6643460-1	Short solder tail
6643460-2	Long solder tail
6643460-3	Press-fit tail





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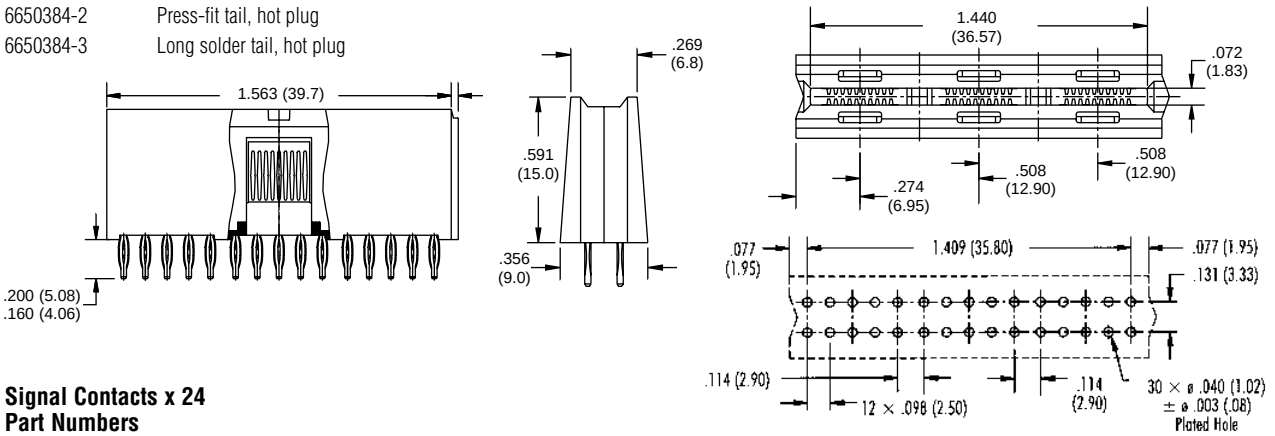
Dimensions and Part Numbers

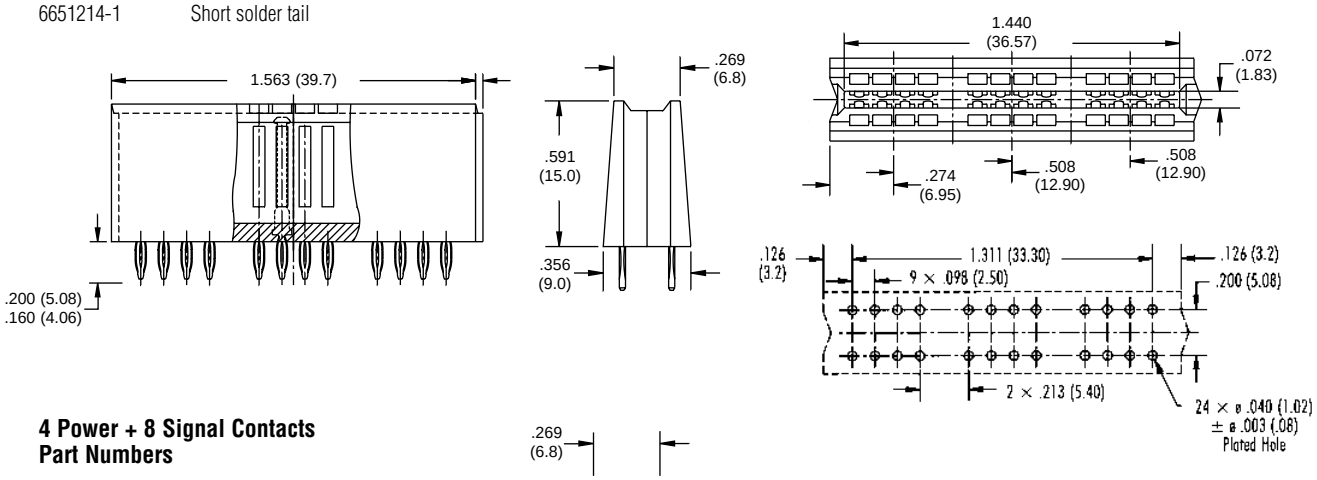
Power Contacts x 6 Part Numbers

6650383-1	Press-fit tail, non-hot plug
6650383-2	Long solder tail, non-hot plug
6650383-3	Short solder tail, non-hot plug
6650384-1	Short solder tail, hot plug
6650384-2	Press-fit tail, hot plug
6650384-3	Long solder tail, hot plug



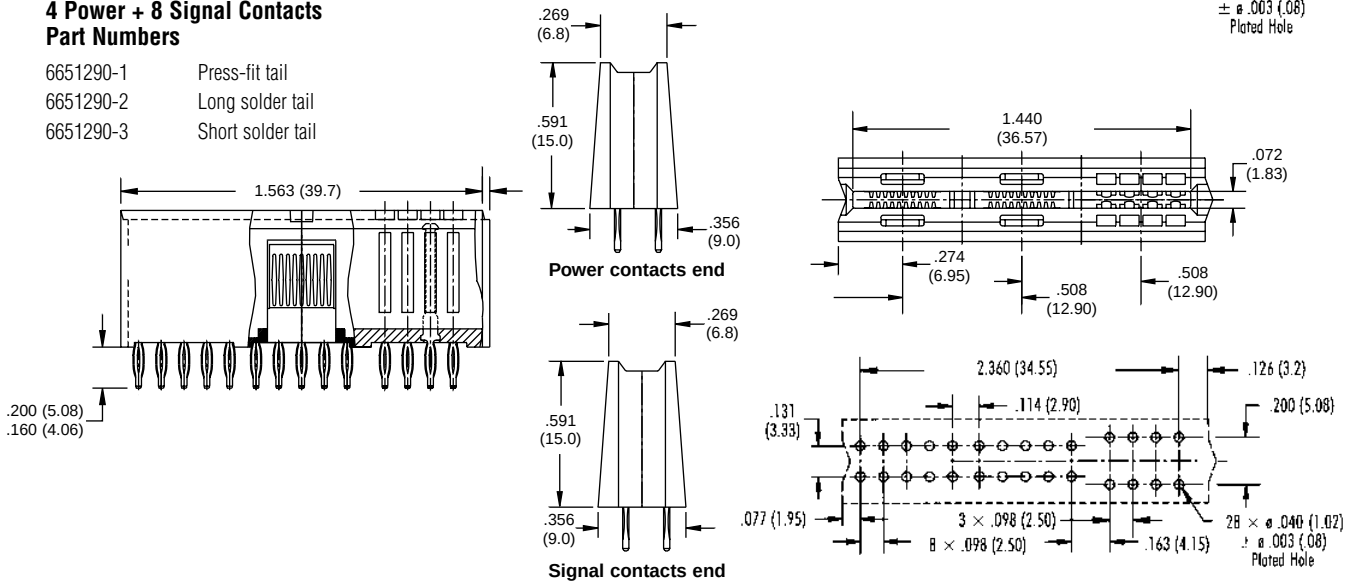
Signal Contacts x 24 Part Numbers

6650494-1	Press-fit tail
6651193-1	Long solder tail
6651214-1	Short solder tail



4 Power + 8 Signal Contacts Part Numbers

6651290-1	Press-fit tail
6651290-2	Long solder tail
6651290-3	Short solder tail



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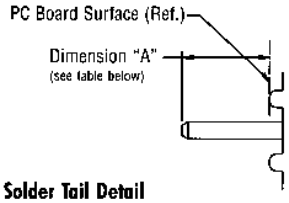
Connector Mounting

Solder Tails

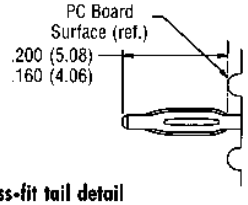
Solder termination is available in two lengths. See table below for board thicknesses and recommended tail lengths.



Solder Tail Detail

Press-fit Tails

CROWN EDGE Connectors use truly compliant eye of the needle press-fit tails designed for boards 0.093" thick and above.



Press-fit tail detail

Tail length vs. board thickness

Board Thickness	Dimension "A"
.062" (1.6mm)	.100" - .140" (2.55 - 3.57mm) [.115" (2.92mm) nominal]
.092"/.125" (2.3/3.0mm)	.160" - .200" (4.06 - 5.08mm) [1.77" (4.5mm) nominal]

Tooling for compliant press-fit assemblies

Pressing fixtures are recommended for compliant press-fit assemblies. Contact Tyco Electronics for a detailed tool drawing.

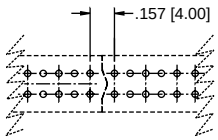
Suggested printed circuit hole for power contact

Finished Hole: ø .040±.003 (ø 1.02±.08)
Drilled Hole: ø .0453±.005 (ø 1.151±.013)
Copper Plate: .0010 (.025) min. (per surface)
Tin Plate: .0003 (.008) min. (per surface)

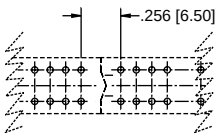
Spacing between modules in end-to-end mounting

This spacing between plated thru-holes for end-to-end mounting varies depending on the chosen module combination. Spacing for the three possible combinations is shown below.

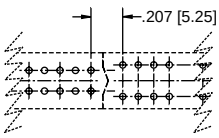
Power-to-power



Signal-to-signal



Power-to-signal



Custom Solutions

Non-standard Modules

In case the standard CROWN EDGE modules do not meet your design requirements, Tyco Electronics has the capability to mold any combination of power and signal contact layouts in 2 and 3 segment modules.

Application-specific Custom Designs

Tyco Electronics has a long history of designing and building application specific custom connectors, and CROWN EDGE Connectors are no exception. A one-piece CROWN EDGE insulator, instead of a combination of several modules, provides a more robust interconnection design, as well as cost savings in high volume projects. Consult Tyco Electronics Customer Service for details.

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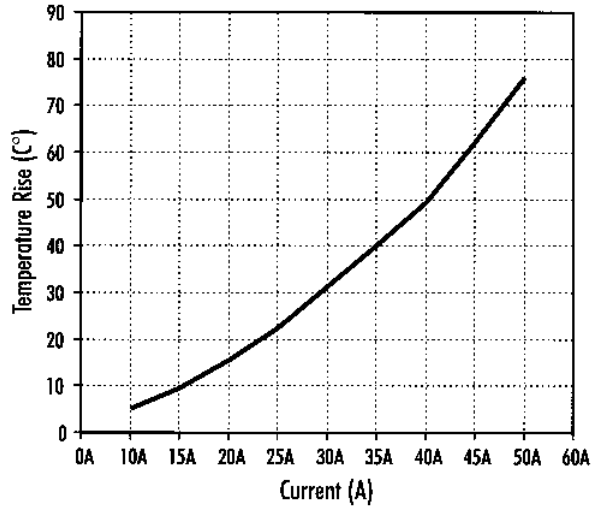
Product Specifications

Materials & Finishes			
Insulators			PPA, UL 94-V-0 flammability rated, color black
Contacts	Non-hot plug power contact		Copper alloy, selectively plated with gold (30 uin minimum) and tin on terminations, all over nickel
	Hot plug power contact	Contact holder	Phosphor bronze alloy, selectively plated with tin on terminations, over nickel
		Crown Band element	Beryllium copper alloy, selectively plated with gold (30 uin minimum), over nickel
	Signal contacts		Phosphor bronze alloy, selectively plated with gold (30 uin minimum) and tin on terminations, all over nickel
Electrical			
Current ratings	Power contact		30A (see graph below)
	Signal contact		3A max.
Insulation resistance			5,000MΩ minimum at 500 VDC for 2 minutes, power MIL-STD 1344, Method 3003
Dielectric strength			1,500VDC for 1 minute, per MIL-STD 1344, Method 3001
Mechanical			
Mating PCB thickness			.062" 91.6mm±.006" (0.15mm)
Insertion Forces	2 segment power module		5.0 lbf typical using .062" (1.6mm) thick mating board with 5 oz. of copper
	3 segment power module		6.0 lbf typical using .062" (1.6mm) thick mating board with 5 oz. of copper
Extraction Forces	2 segment power module		3.0 lbf typical using .062" (1.6mm) thick mating board with 5 oz. of copper
	3 segment power module		5.0 lbf typical using .062" (1.6mm) thick mating board with 5 oz. of copper
Tooling			Press fixture is recommended for compliant press-fit assemblies Consult Tyco Electronics customer service for details

Current Ratings

The chart below demonstrates the performance of the CROWN EDGE power contact by showing the temperature rise at different current levels applied to two power contacts connected in series.

Current rating for any given application will depend, among other things, on the module combination, PCB copper trace volume, and internal equipment temperature/air flow. Mounting and mating to a bus bar will increase current ratings.



Safety Regulatory Compliance

CROWN EDGE Connectors have been evaluated by Underwriters Laboratories and has been found to comply with the requirements of U.S. standard UL1997 and Canadian standard C22.2 No. 182.3-M1987.
CROWN EDGE Connectors also has TÜV certification.

c UL us
File No. E102484

TÜV PRODUCT SERVICE
Certificate No. B 99 12 18949 026

Compliance with Current Interruption Requirements

Hot plug CROWN EDGE modules are available for applications that require current interruption as defined by safety regulatory agencies. These power-only modules have been evaluated and recognized by Underwriters Laboratories for current interruption up to 50 cycles as per the UL1977 standard. See Hot Plug requirements on page 132.

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Design Notes

Mating PCB requirements

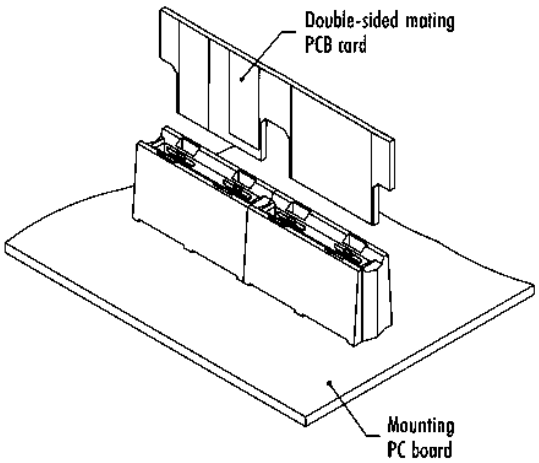
Mating PCB edge fingers should be gold plated, have .050" (1.3 mm) side margins, and be of suitable copper weight for power applications. Mating board thickness is .062 [1.60].

Sequenced mating

Sequenced mating can be achieved by designing one or more setback traces on the mating card edge, or by notching the edge of the card.

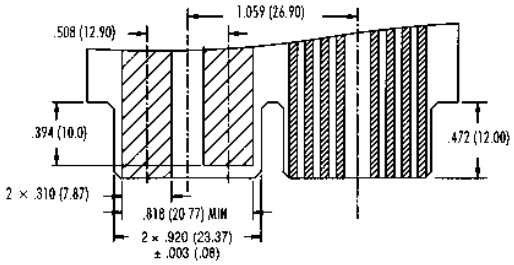
End-to-end mounting

CROWN EDGE modules can be placed end-to-end for connector assemblies up to 8" (203.20 mm) long.

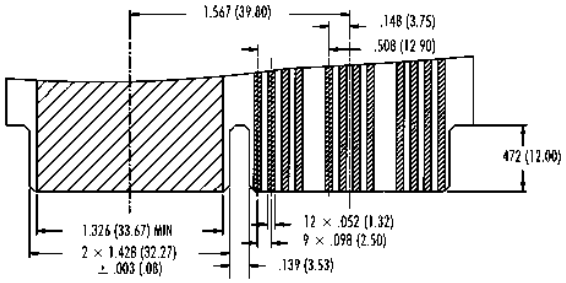


Mating PC Card Edge Samples

The drawings below show two PC card edge samples with signal and power lines designed to mate with 2 and 3-segment CROWN EDGE modules.



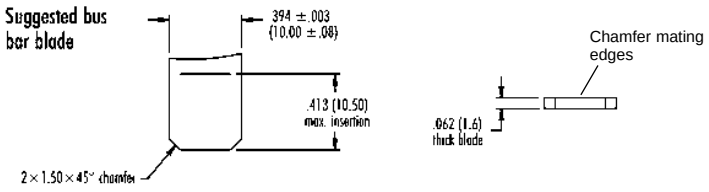
2 × 2 segment modules provide two sequenced power traces and 8 signal traces

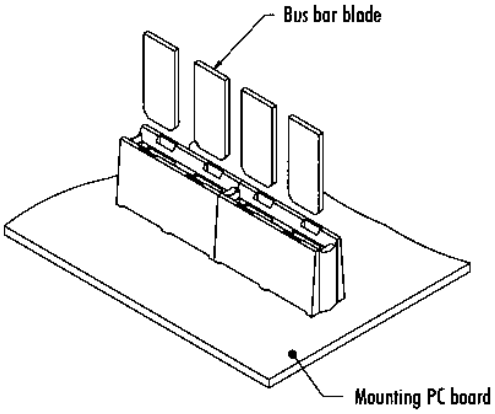


2 × 3 segment modules provide ground plane and 12 signal lines

Hot Plug Requirements

Hot plug application of this product requires the use of the CROWN EDGE true hot plug modules (see part numbers on inside pages under Dimensions and Part Numbers) mated with a customer-supplied metal blade or bus bar. Dimensions of a sample mating blade for use with CROWN EDGE hot plug modules is shown below.





Catalog 1773096
Revised 8-05

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-1908-574289

High Current Card Edge Connectors

Product Facts

- **Contacts on .100 [2.54] Centerlines**
- **Selective gold plating of contacts for high performance at low cost**
- **Flow solder applications**
- **Glass-filled polyester housing is 94V-0 rated**
- **Available in Vertical, Right Angle or Straddle PCB Mount**
- **Soldertails for wave solder applications**
- **Compliant press-fit pcb tails for solder-less applications**
- **50% to 100% greater current carrying capacity than traditional card edge connectors**
- **Accepts double sided PC boards, .054-.070 [1.27-1.78] thick**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR 7189**

Performance Specifications

Contact Rating*: 3 amperes continuous (UL and CSA)

Contact Resistance: 10 milliohms max.

Operating Temperature: –55°C to +85°C

Voltage Rating (Sea Level):
.100 [2.54] centerline—1000 VAC (test)
.125 [3.18] centerline—1500 VAC (test)
.150 [3.81] centerline—1500 VAC (test)

Insulation Resistance: 5000 megohms min., after exposure to humidity

Vibration Tolerance: 10 to 500 hertz

Contact Engagement Force: 12 oz [3.3 N] average per pair with .062 [1.57] PC board

Contact Separation Force: 2 oz [0.6 N] average per pair with .062 [1.57] PC board

Humidity Tolerance: 90%-95% for 96 hours

Introduction:

The High Current Edge family of connectors provides high reliability and economy in packages compatible with industry standards. While many new card edge connectors for signal applications have moved toward higher density configurations (0.050" and 1mm centerlines), Tyco Electronics has redesigned the 0.100" Standard Edge product family to carry more current, for low power distribution.

This product family includes the following:

- Standard Edge Connector – 2nd generation (SEC-II)
- Voltage Regulator Module (VRM) Connectors
- SEC-II Power
- Hybrid Power/Twin Leaf Connectors

The connectors serve low durability cycle applications which do not have the available room for a traditional 2-piece power distribution connector. In other applications, a low-profile connector is needed to allow for better airflow / less airflow restriction. This grouping of Power Card Edge Connectors is focused on providing high current density with the favored multi-point contact design which reduces contact interface resistance.

The connectors were used originally in the ISA Standard for computer expansion cards. Today these connectors are being used in applications such as; DC-to-DC Converters, low-wattage power supplies, industrial grade card extenders and general low cost I/O applications requiring durable/rugged card edge contacts. The improvements made still allows use in the original applications and they provide a lower resistance connection due to the high conductivity contacts plated with a minimum 30 micro-inch gold.

The options include vertical or right angle pcb mounting as well as straddle-mount configurations for co-planar pcb applications.

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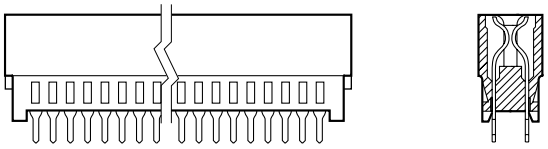
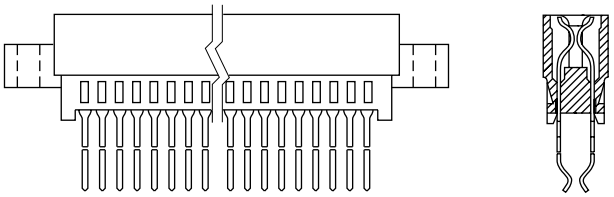
High Current Card Edge Connectors Styles

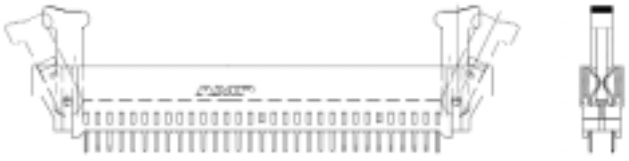
.100 [2.54] Centerline Solder Posts without Mounting Ears
Page 136



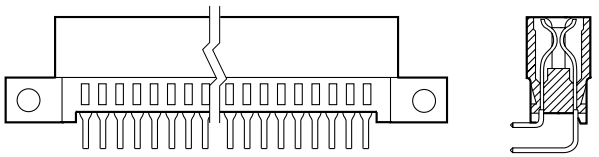
.100 [2.54] Centerline Straddle Mount Sec II Power Products
Page 137

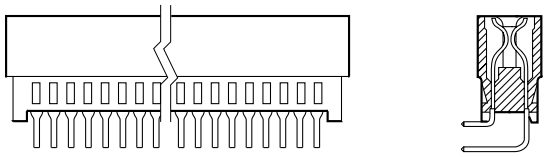


.100 [2.54] Centerline VRM Connectors
Pages 139-141



.100 [2.54] Centerline Right-Angle Posts with Low and No Mounting Ears
Page 138





.100 [2.54] Centerline Wire to Board for "Thin Power Supplies" per SSI Standard
Page 145

Catalog 1773096
Revised 8-05

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Japan: 81-44-844-8013
UK: 44-141-810-8967

Standard Edge II (SEC II) Card Edge Connectors

Product Facts

- **Maximum number of dual positions .100 [2.54] Centerlines-70, .125 [3.18] Centerlines-50, .150 [3.81] Centerlines-31**
- **Selective gold plating of contacts for high performance at low cost**
- **.025 [0.64] square solid posts meet standard wrap-type specifications**
- **For flow solder applications**
- **Glass-filled polyester housing is 94V-0 rated**
- **Accepts double sided PC boards, .054-.070 [1.27-1.78] thick**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR 7189**

Performance Specifications

Contact Rating*: 3 amperes continuous (UL and CSA)

Contact Resistance: 10 milliohms max.

Operating Temperature: –55°C to +85°C

Voltage Rating (Sea Level):
.100 [2.54] centerline—1000 VAC (test)
.125 [3.18] centerline—1500 VAC (test)
.150 [3.81] centerline—1500 VAC (test)

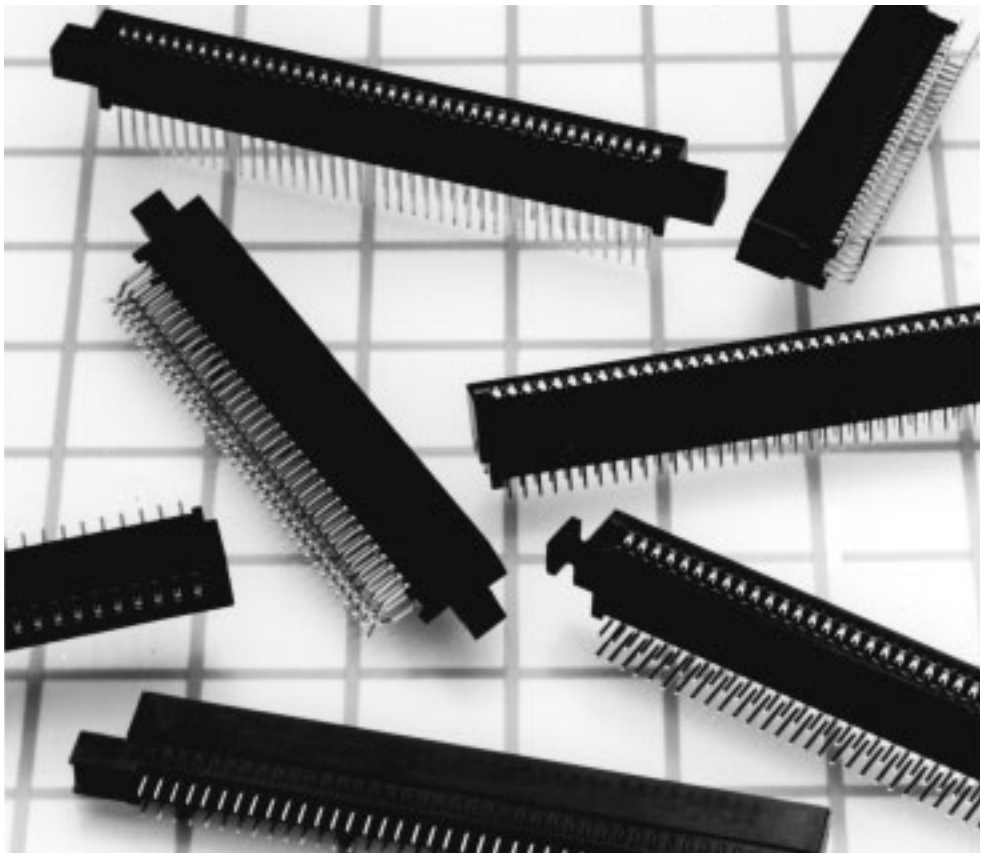
Insulation Resistance: 5000 megohms min., after exposure to humidity

Vibration Tolerance: 10 to 500 hertz

Contact Engagement Force: 12 oz [3.3 N] average per pair with .062 [1.57] PC board

Contact Separation Force: 2 oz [0.6 N] average per pair with .062 [1.57] PC board

Humidity Tolerance: 90%-95% for 96 hours



Tyco Electronics Standard Edge II Connectors provide high reliability and economy in packages compatible with industry standards for double sided printed circuit boards.

Tyco Electronics offers Standard Edge II Connectors with or without mounting ears, for rack mounting and soldering. Contacts are arranged on .100 [2.54] centers, .125 [3.18] centers, .150 [3.81] centers, .200 [5.08] row-to-row; and .250 [6.35] row-to-row.

Right-angle connectors are also available with contacts arranged on .100 [2.54] centers, .150 [3.81] row-to-row or .200 [5.08] row-to-row.

Card extenders with contacts on .100 [2.54] and .125 [3.18] centers also are available.

Precision formed phosphor bronze contacts are selectively gold plated. Phosphor bronze has excellent strength characteristics which help the connector absorb load deflection movement of a PC board while maintaining sufficient contact force for good electrical connection. Bifurcated cantilever beam contacts provide redundant contact.

***Consult Tyco Electronics engineering when paralleling contacts for power applications.**

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-1908-574289

Standard Edge II (SEC II) Card Edge Connectors

.100 [2.54] Centerline, Vertical Solder Posts, Without Mounting Ears

Material and Finish:

Housing—Black glass-filled polyester, 94V-0 rated

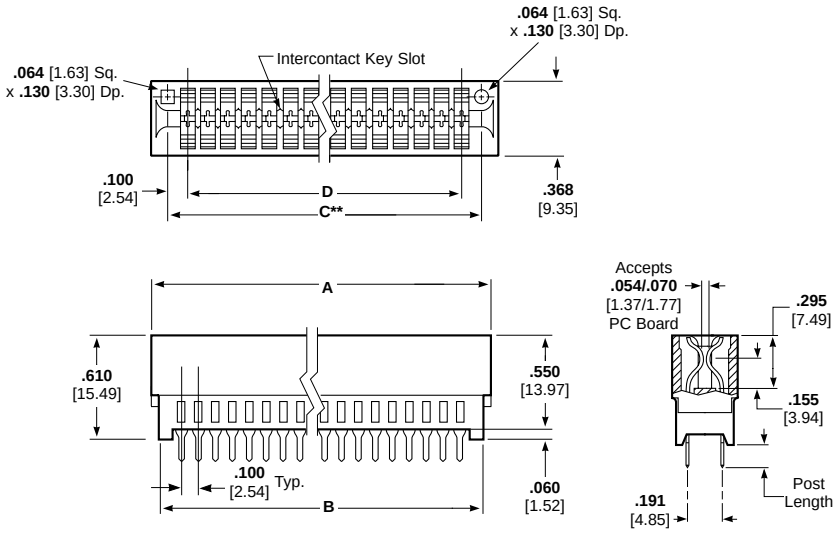
Contacts—Phosphor bronze, duplex plated as follows:

Plating—.000030 [0.00076] gold in contact area, tin on posts, with entire contact nickel underplated

Technical Documents:

Product Specification
108-9039

Qualification Test Report
501-227



No. of Dual Positions	Dimensions				Post Length*	Part Numbers	
	A	B	C**	D		Solder Tail	Press-Fit
6	**.860** 21.84	**.750** 19.05	**.700** 17.78	**.500** 12.70	**.125**	7-530843-5	—
10	**1.260** 32.00	**1.150** 29.21	**1.100** 27.94	**.900** 22.86	**.125**	5-530843-0	145269-5
12	**1.460** 37.08	**1.350** 34.29	**1.300** 33.02	**1.100** 27.94	**.125**	8-530843-3	—
15	**1.760** 44.70	**1.650** 41.91	**1.600** 40.64	**1.400** 35.56	**.125**	530843-2	—
17	**1.960** 49.78	**1.850** 46.99	**1.800** 45.72	**1.600** 40.64	**.125**	5-530843-3	—
18	**2.060** 52.32	**1.950** 49.53	**1.900** 48.26	**1.700** 43.18	**.125**	530843-3	—
20	**2.260** 57.40	**2.150** 54.61	**2.100** 53.34	**1.900** 48.26	**.125**	5-530843-4	—
22	**2.460** 62.48	**2.350** 59.69	**2.300** 58.42	**2.100** 53.34	**.125**	530843-4	—
25	**2.760** 70.10	**2.650** 67.31	**2.600** 66.04	**2.400** 60.96	**.125**	530843-5	145269-3
28	**3.060** 77.72	**2.950** 74.93	**2.900** 73.66	**2.700** 68.58	**.125**	530843-6	—
30	**3.260** 82.80	**3.150** 80.01	**3.100** 78.74	**2.900** 73.66	**.125** **.187**	530843-7	145269-6
31	**3.360** 85.34	**3.250** 82.55	**3.200** 81.28	**3.000** 76.20	**.125**	6-530843-5	—
35	**3.760** 95.50	**3.650** 92.71	**3.600** 91.44	**3.400** 86.36	**.125**	2-530843-4	1489782-1[3]
36	**3.860** 98.04	**3.750** 95.25	**3.700** 93.98	**3.500** 88.90	**.125**	530843-8	—
40	**4.260** 108.20	**4.150** 105.41	**4.100** 104.14	**3.900** 99.06	**.187**	2-530843-0	—
50	**5.260** 133.60	**5.150** 130.81	**5.100** 129.54	**4.900** 124.46	**.187**	2-530843-2	—

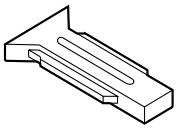
*Metric equivalent for post lengths are **.125** = 3.18; **.187** = 1.75.
Contact Tyco Electronics for alternate post length.
****C** dimension is card slot length.

Notes: 1. Other connector sizes can be made available, consult Tyco Electronics.
2. High temperature IR reflow compatible connectors can be made available, consult Tyco Electronics.
3. Contains high conductivity contacts.

Intercontact Keying Plug

Material:

Natural color polyester



Part Number 650025-2
(**.100** [2.54] Centerline)

Catalog 1773096
Revised 8-05

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Standard Edge II (SEC II) Card Edge Connectors (Continued)

.100 [2.54] Centerline, Special 18/31 Dual Combination Connector, Vertical Solder Posts, Without Mounting Ears

Material and Finish:

Housing—Black glass-filled polyester, 94V-0 rated, except where noted

Contacts—Phosphor bronze, plated with .000030 [0.00076] gold in contact area (except where noted), tin on posts, with entire contact nickel underplated

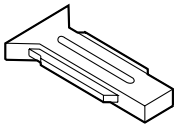
Technical Documents:

Product Specification
108-9039

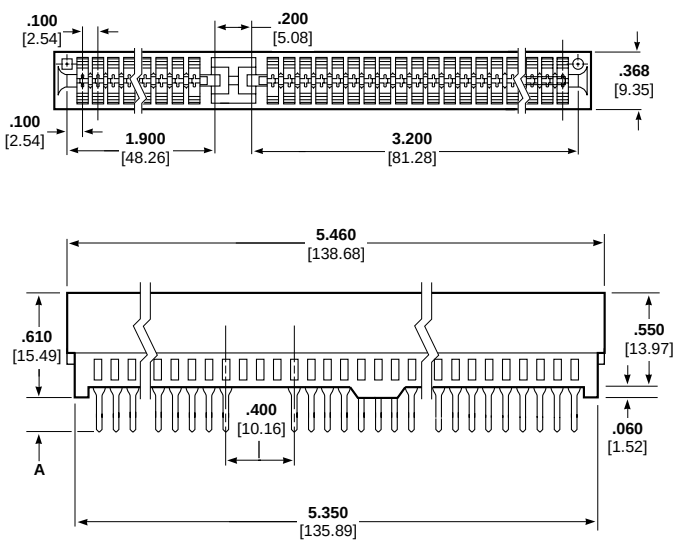
Intercontact Keying Plug

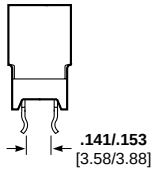
Material:

Natural color polyester

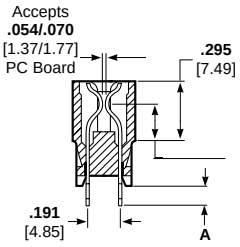


Part Number 650025-2
(**.100** [2.54] Centerline)





Retention Feature



Solder Posts

No. of Dual Positions	Post Type	Dimension A	Retention Feature	Part Numbers
52	Solder Posts	**.125** 3.18	3-6, 41, 42, 51, 52, 93-96	645169-2 536128-1[1]
52	Solder Posts	**.125** 3.18	None	645169-3
52	Solder Posts	**.187** 4.75	None	650616-1

[1] Housing material is high temperature glass-filled polyester, gray.

Notes: 1. Card slot length is **5.300** [134.62].
2. Other connector sizes can be made available, consult Tyco Electronics.
3. High temperature IR reflow compatible connectors can be made available, consult Tyco Electronics.

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UK: 44-141-810-8967

Standard Edge II (SEC II) Card Edge Connectors (Continued)

.100 [2.54] Right-Angle Solder Posts, with Low and No Mounting Ears

Material and Finish:

Housing—Black glass-filled polyester, 94V-0 rated

Contacts—Phosphor bronze, duplex plated as follows:

Plating A—.000030 [0.00076] gold in contact area, tin on posts, with entire contact nickel underplated

Plating B—.000015 [0.00038] gold in contact area, tin on posts, with entire contact nickel underplated

Related Product Data:

Performance Specifications—
page 135

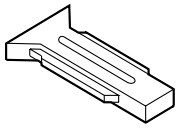
Technical Documents:

Product Specification
108-9039

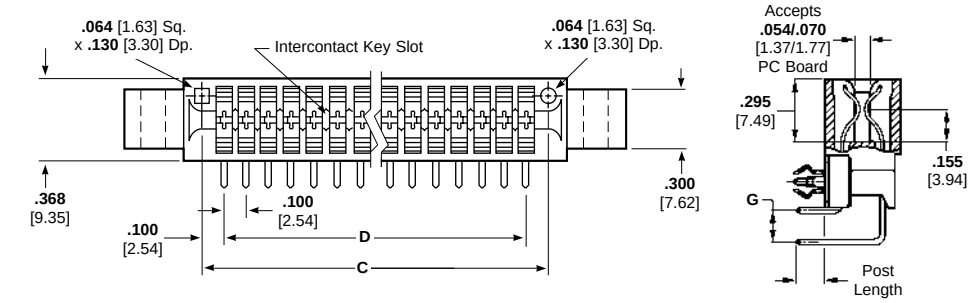
Intercontact Keying Plug

Material:

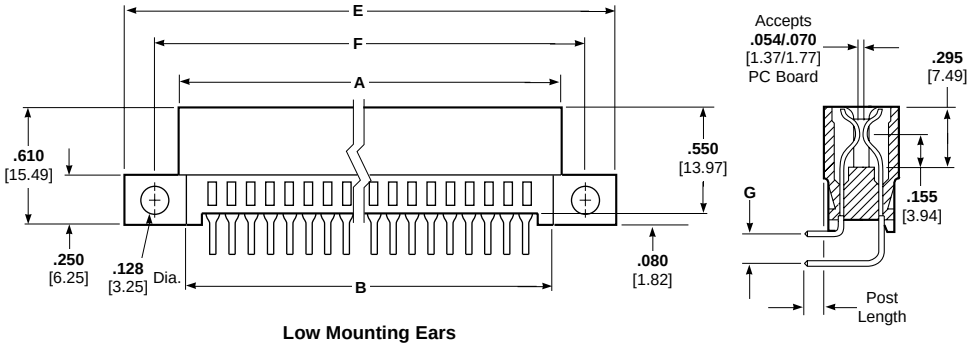
Natural color polyester



Part Number 650025-2
(**.100** [2.54] Centerline)



With Board Locks



Low Mounting Ears

Low Mounting Ears

No. of Dual Positions	Dimensions							Post Length[2]	Part Numbers (Plating A)
	A	B	C*	D	E	F	G[1]		
12	**1.460** 37.08	**1.350** 34.29	**1.300** 33.02	**1.100** 27.94	**2.045** 51.94	**1.775** 45.08	**.100x** **.150**	**.090**	145089-1[3]
18	**2.060** 52.32	**1.950** 49.53	**1.900** 48.26	**1.700** 43.18	**2.645** 67.18	**2.375** 60.32	**.100x** **.150**	**.090**	645384-1
20	**2.260** 57.40	**2.150** 54.61	**2.100** 53.34	**1.900** 48.26	**2.845** 72.30	**2.575** 65.40	**.100x** **.150**	**.090**	645384-3

*__C__ dimension is card slot length.

[1] Metric equivalent for **.100 x .150** and **.100 x .200** are [2.54 x 3.81] and [2.54 x 5.08].
[2] Metric equivalent for post length is **.090** = [2.27].
[3] Connector with Board Locks.

Note: Other connector sizes can be made available, consult Tyco Electronics.

No Mounting Ears

No. of Dual Positions	Dimensions					Post Length[2]	Part Numbers	
	A	B	C*	D	G[1]		Plating A	Plating B
10	**1.260** 32.00	**1.150** 29.21	**1.100** 27.94	**0.900** 22.96	**.100x** **.150**	**.090**	650118-2	—
15	**1.760** 44.70	**1.650** 41.91	**1.600** 40.64	**1.400** 35.56	**.100x** **.150**	**.090**	650118-1	—
25	**2.760** 70.10	**2.350** 67.61	**2.600** 66.04	**2.400** 60.96	**.100x** **.150**	**.090**	—	532600-2
31	**3.360** 85.34	**3.250** 82.55	**3.200** 81.28	**3.000** 76.20	**.100x** **.150**	**.090**	—	532600-4
32	**3.460** 87.88	**3.350** 85.09	**3.300** 83.82	**3.100** 78.74	**.100x** **.150**	**.090**	—	532600-5
19	**2.160** 54.86	**2.750** 69.85	**2.700** 68.58	**1.800** 45.72	**.100x** **.150**	**.090**	—	532600-6

*__C__ dimension is card slot length.

[1] Metric equivalent for **.100 x .150** and **.100 x .200** are [2.54 x 3.81] and [2.54 x 5.08].
[2] Metric equivalent for post length is **.090** = [2.27].

Notes: 1. Other connector sizes can be made available, consult Tyco Electronics.
2. High temperature IR reflow compatible connectors can be made available, consult Tyco Electronics.

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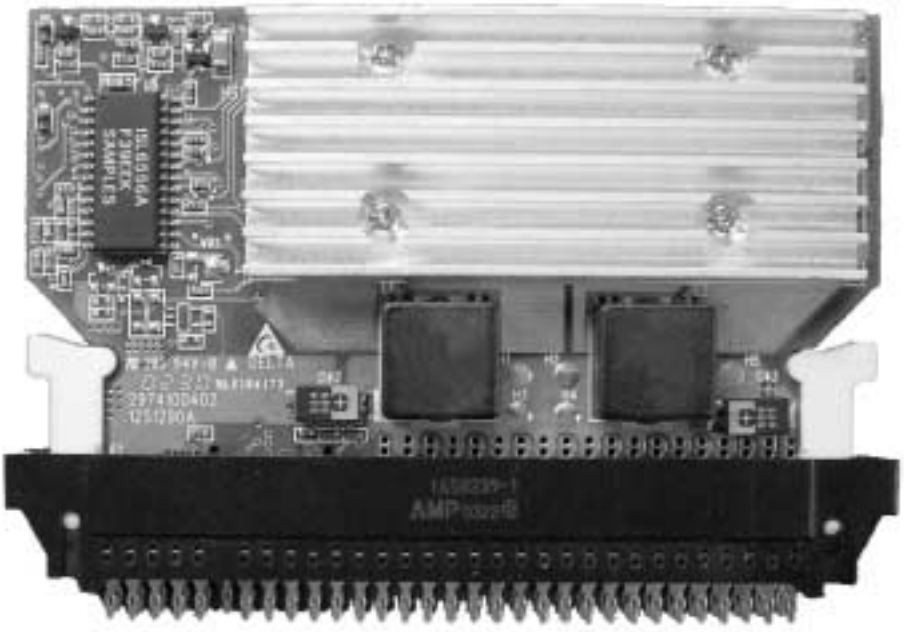
Voltage Regulation Module (VRM) Connector

Product Facts

- **Available in latch versions for VRMs up to 3 oz.**
- **Available with metal clip for VRMs over 3 oz.**
- **VRM connectors to support a wide variety of Power Supply Standards**
- **Solder tail, press fit and right angle versions to support specific customer needs**
- **Up to 5.5 Amps per contact in typical VRM applications**
- **New materials are 94 V-0 rated with max. operating temperature of 125°C – VRM 10.x Series**
- **Keying prevents plugging the wrong VRM into the connector**



Materials

Housing—PBT Thermoplastic
Contact—High conductivity copper alloy

Technical Documents

Product Specification
108-9039-1 & -2

Qualification Test Report
501-227-1 & -2

The new Voltage Regulation Module (VRM) family of connectors is designed to meet the needs of many Power Supply Standards being developed. They are dual row card edge style connectors that are well known in the computer market. Currently the connectors are designed to carry up to 105 amps of current. The connector is pcb mounted and there are versions available in press fit or right angle. The connectors have card retention either in the form of a latch or a metal retention clip which is added after the VRM is in place.

Industry Applications

The VRM connector is controlled by various Power Supply Standards. Current ones are EPS-1U, AD2D-VID, AD2D, VRM 8.5, VRM 9.0, VRM 9.1, VRM 10.0 and VRM 10.1. Many applications with a need to transmit high power from board to board can benefit from this connector and additional customer specific applications are developing.

Catalog 1773096
Revised 8-05

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Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Voltage Regulation Module (VRM) Connector (Continued)

Product Facts

- .100 [2.54] Centerlines
- Selective gold plating of contacts for high performance at low cost
- Latches (or spring clip) provide for power module retention
- Keyed to insure proper module compatibility
- Glass-filled polyester housing is 94V-0 rated
- Accepts double sided .054-.070 [1.27-1.78] PC boards
- Recognized under Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189

Solder Tail Length	Key Location	No. of Dual Positions	Part Number
.125-.020 [3.18-0.15]	19,20	25	145459-6
	23,24	35	145459-5
	None*	35	145459-2

*Removable key plug 650025-2 required

Part Number 1364125-x (Connector)
Part Number 1364124-x (Spring Clip)
Designed for Intel VRM 9.0 Specifications

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Voltage Regulation Module (VRM) Connector (Continued)

Part Number Matrix

Application	Power Supply Standard				
	AD2D-VID	AD2D-5 volt	AD2D 12 volt	VRM 8.5, 12 volt	EPS-1U
Max Current[1] Output - Spec	30 amps	20 amps	8.3 amps	44 amps	22 amps
Max Current[4] per Contact	3.15 amps	3.15 amps	3.15 amps	3.15 amps	3.58 amps
Connector Size	35 pair	35 pair	35 pair	25 pair	31 pair
Key Located between slots	23,24	3,4	5,6	17,18	11,12
Omit Pin for Keying	4	5	67	44	6
Solder Tail Connectors					
Standard Conn. without Latch	145539-4	145539-3	145539-5	na	1364999-1
Conn. With Clip[1] #1364124-1	na	na	na	na	1364125-1
Conn. With New Latch[2] & Supports	1364700-6	1364700-5	1364700-7	1364666-2	1364666-1
Press-Fit Connectors					
Conn. With Clip[1] #1364124-1	na	na	na	na	1364664-1[3]
Conn. With Latch[2] & Supports	1489648-2	1489648-1	1489648-3	1489649-1	1489650-1[3]

Application	Power Supply Standard							
	VRM 9.0, 12 volt	VRM 9.0, 48 volt	VRM 9.05, 12 volt	VRM 9.1, 12 volt	VRM 9.1	VRM 10.0	VRM 10.1	VRM 10.2
Max Current[1] Output - Spec	68 amps	68 amps	80 amps	80 amps	80 amps	105 amps	105 amps	See Mini Crown Edge Product Pages 27-31
Max Current[4] per Contact	3.58 amps	3.58 amps	4.21 amps	4.21 amps	4.21 amps	5.53 amps	5.53 amps	
Connector Size	31 pair	31 pair	31 pair	31 pair	31 pair	31 pair	31 pair	
Key Located between slots	11,12	4,5	11,12	12,13	4,5	10, 11	5, 6 & 10, 11	
Omit Pin for Keying	6	6	6	6	6	57	57	
Solder Tail Connectors								
Standard Conn. without Latch	1364999-1	na	na	na	na	na	na	
Conn. With Clip[1] #1364124-1	1364125-1	1364125-2	1364125-6	1489162-1	1489162-2	—	—	
Conn. With New Latch[2] & Supports	1364666-1	na	1489165-3	1489165-1	1489165-2	1489930-2	1489930-1	
Press-Fit Connectors								
Conn. With Clip[1] #1364124-1	—	na	1489652-3[3]	1489652-1[3]	1489652-2[3]	—	—	
Conn. With Latch[2] & Supports	1489650-1[3]	na	1489651-3[3]	1489651-1[3]	1489651-2[3]	1658239-2[3]	1658239-1[1]	

Notes:
1. Metal clip, part number 1364124-1, is recommended for use with modules weighing up to 6 oz. and is sold separately.
2. Plastic Latch is recommended for use with modules weighing up to 3 oz.
3. Contact Tyco Engineering for information on connector insertion tooling.
4. Maximum currents achieved currents minimum cooling air flow of 400 LFM.
Consult Tyco Electronics product specification for specific performance information.

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"New" SEC II Power Products

Product Facts

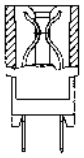
- **Combines industry standard 0.100" pitch card edge format in a high power density design**
- **Industry-proven multi-beam power contact design**
- **High conductivity contact materials**
- **High temperature housing materials**
- **UL 94V-0**
- **Selective gold plating for high performance with low cost**
- **.000030 [0.00076] gold in contact area. Tin/lead on posts with entire contact nickel underplated**
- **Power Contact Current Ratings:**
  - **25 amps – Single Contact**
  - **17 amps – on each of 6 adjacent pairs**

Product Specification 108-2202

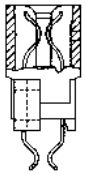
The trends in electronic power supplies require high current density and lower cost. In addition, smaller sized connectors are needed to provide less airflow restriction for cooling the power supplies. The SEC-II Power connectors offer an ideal combination of low-current and high-current connections in a single, durable design.

SEC-II Power connectors are built on an expandable tooling platform which allows for a variety of combinations of power and signal contacts, all combined in a single molded housing. The vertical press-fit versions are ideal for high density stacking of cards into a backplane or for low air restriction of blade-style power supply designs. The straddle mount style offers a true co-planar interconnection with a total height of less than 4mm from the top surface of the pcb.

SEC-II Power Connectors are currently in use in high-end computer and data storage equipment. Extensive testing in exposure to high vibration and shock has proven these connectors equally suited for industrial applications as well, where low contact resistance and high current density is required.



Vertical



Co-Planar

Catalog 1773096
Revised 8-05

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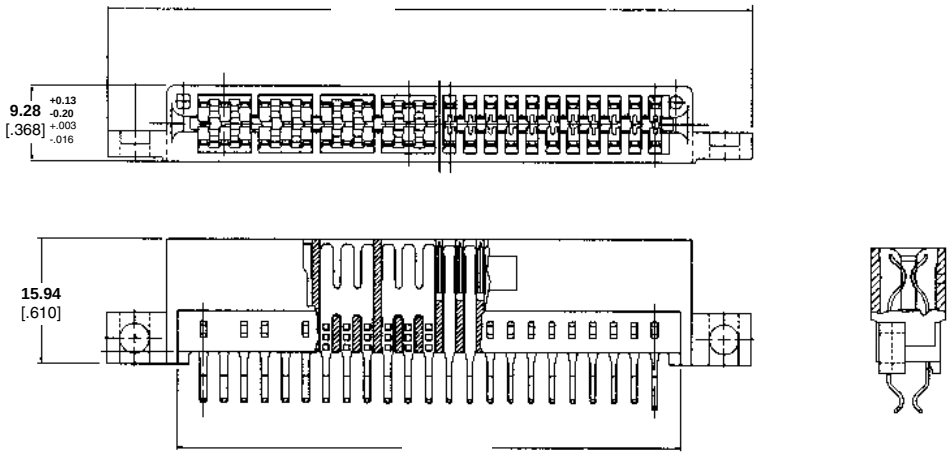
"New" SEC II Power Products

Co-Planar Application

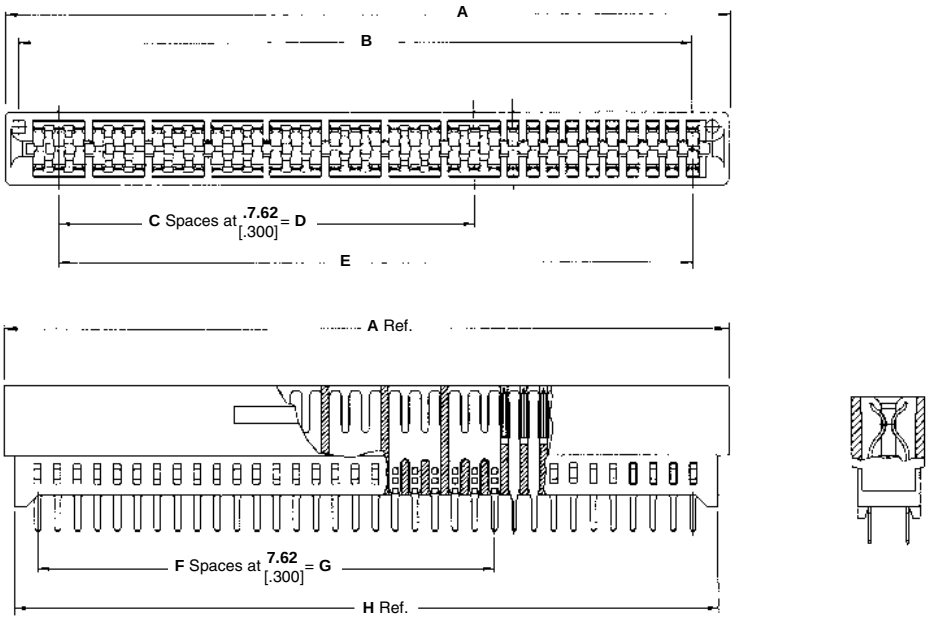
Straddle Mount to 0.062 [1.6] pcb



Vertical PCB Mount

Seating tool required

*See customer drawing for details



Dimensions								No. of Multiple Positions	No. of Single Positions	Omitted PIN	Molded Key Location	Part Number
A	B	C	D	E	F	G	H					
Solder Tail												
92.68 [3.650]	**86.09** [3.389]	7	**53.34** [2.100]	**81.02** [3.190]	23	**58.42** [2.300]	**89.88** [3.540]	8	10	None	None	1761426-1
69.82 [2.750]	**63.27** [2.493]	4	**31.28** [1.200]	**58.20** [2.292]	14	**35.56** [1.400]	**67.02** [2.641]	5	10	None	None	1761426-2
54.70 [2.155]	**48.15** [1.897]	2	**15.24** [0.600]	**43.08** [1.697]	8	**20.32** [0.800]	**51.7** [2.037]	3	10	None	None	1761426-3
Press-Fit												
54.61 [2.150]	**46.99** [1.850]	3	**22.86** [0.900]	**40.64** [1.600]	17	**43.16** [1.700]	**49.28** [1.940]	4	6	None	None	1761786-1

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"New" Hybrid Power Twin Leaf Connectors

Product Facts

- **Specified for use in Thin Power Supplies (TPS) per the Server Systems Infrastructure (SSI) standard**
- **High conductivity contacts – deliver 33% more current than traditional card edge connectors**
- **Max. Operating temperature 105°C**
- **29 Dual Positions**
- **Housing Accepts**
  4 – 18-20 AWG contacts – input power
  24 – 20 AWG Contacts – output power
  24 – 24-28 AWG contacts – signals

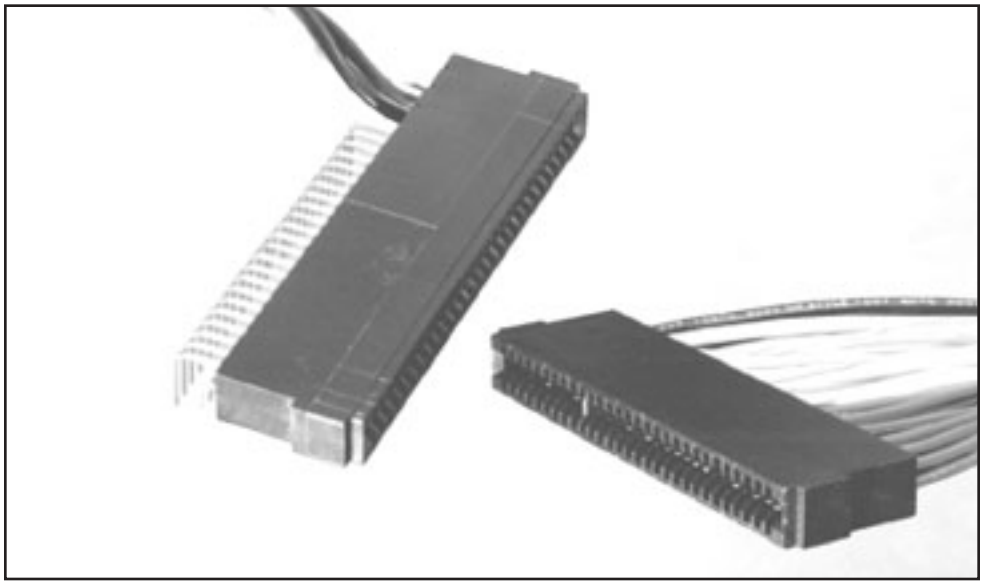
Input Power Contacts
Part No. 147431-2
18-20 AWG

Output Power Contacts
Part No. 147439-2
20 AWG

Signal Contacts
Part No. 583616-2
24-28 AWG

Product Specification
108-2081
UL File NO. E28476
CSA File No. LR7189

***Consult Tyco Electronics engineering when paralleling contacts for power applications.**



The Hybrid Power Twin Leaf product combines the industry proven AMP Twin Leaf Card-Edge connector with high temperature plastics, high conductivity metals and a housing designed for both pcb or wire connection. Due to its thin overall profile and high current density performance, the Hybrid Power Twin Leaf connector was selected for the I/O connector of the "Thin Power Supply" section of the Server Systems Infrastructure (SSI) standard. This standard has been adopted throughout the high-end computer industry to allow interoperability of subsystems in a computer server.

The Wire-to-Board version has been designed to accommodate up to 300V AC Input on 18 AWG wire and offers 24 DC Output wires (each on 20 AWG) and 24 Signal wires (each on 24-28 AWG). The cable-to-board solution allows flexibility in routing inputs and outputs directly to input filtering devices and to the point of load for the outputs.

The Hybrid version combines the wire inputs with traditional printed circuit board (pcb) solder tail outputs all in one connector. This can be appealing in some applications where the input power may not be suitably located near, or desired to be integrated with the output power. The hybrid version combines a right angle pcb mount section for the DC Signals and Output Power, along with a traditional crimp-snap contact for the Input Power.

A key concern with any power connector is the temperature rise when the connector is under load. These connectors have been qualified to meet UL and CSA requirements and are rated at the industry standard 30°C T-Rise criteria. In addition, the connectors pass the finger probe test so the connectors can be energized while unmated. This is a requirement in N + 1 redundant power supply applications where power supplies may be removed, while the system is still powered.

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"New" Hybrid Power Twin Leaf Connectors (Continued)

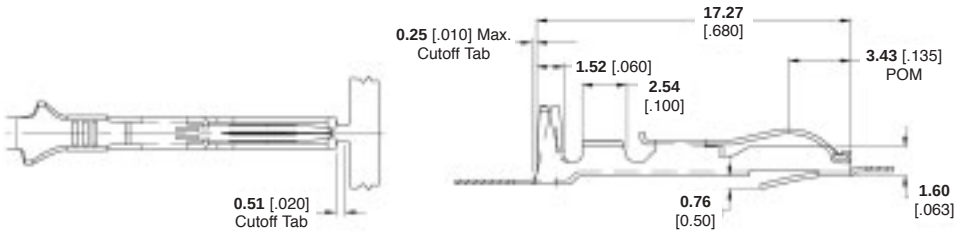
Contacts

Materials and Finish

Power—High Conductivity Copper Alloy

Signal—Phosphor Bronze

Plating—.000030 [0.00076] gold over nickel in contact area, tin plated in crimp area.



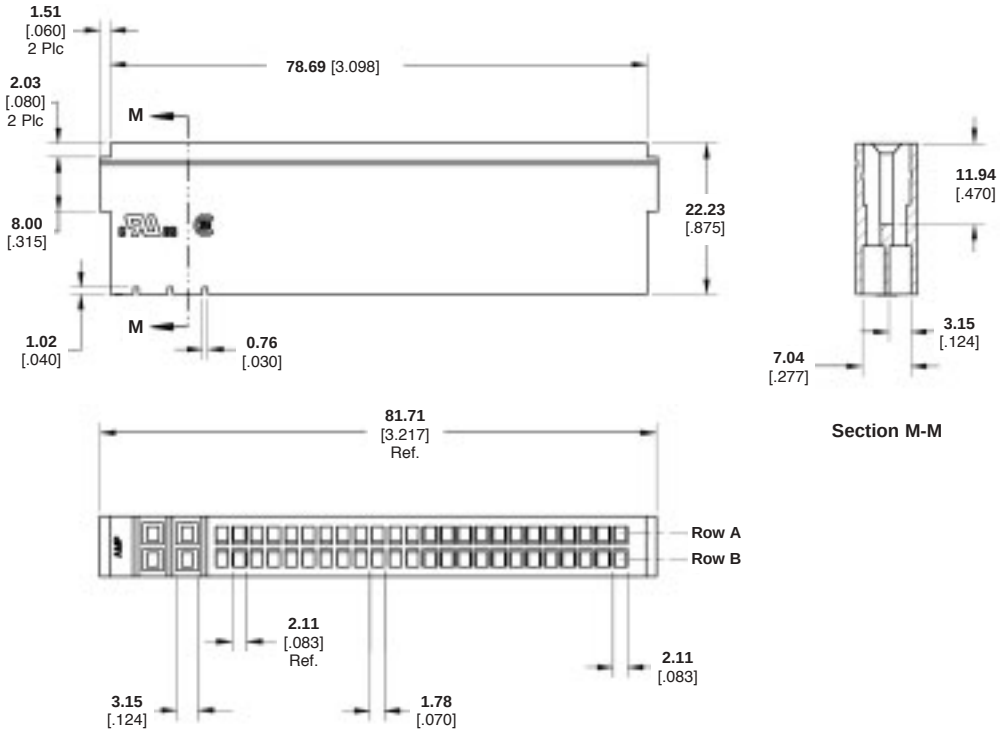
Contact Type	Wire Range AWG/mm²	Contact Part Numbers	Applicator
P	16-20 0.6-1.4	147431-2	1385306-3
		147439-2	—
S	24-28 0.08-0.2	583616-2	466577-4

Wire-to-Board

Materials and Finish

Housing—High temperature glass filled polyester

Max. Operating temperature 105°C



Number of Positions	Key Location	Part Number
4-Input Power		
24-Signal	14,15	147354-8
24-Ouput Power		

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"New" Hybrid Power Twin Leaf Connectors (Continued)

Hybrids Wire/PCB-to-Board

Materials and Finish

Housing—High temperature glass filled polyester

Max. Operating temperature 105°C

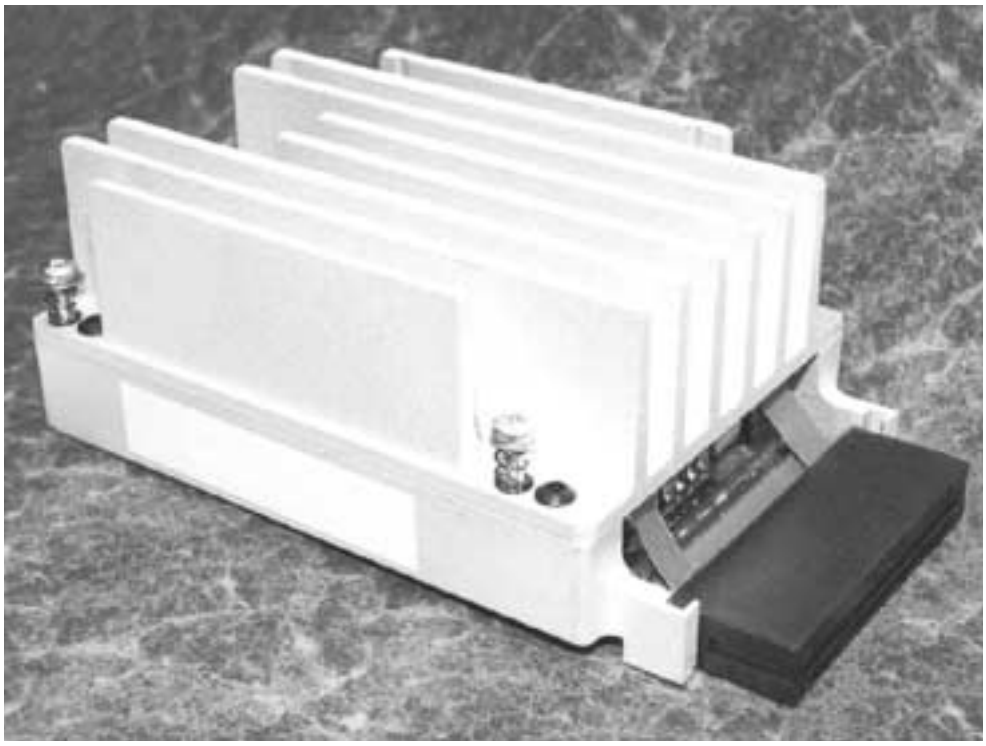
High Conductivity copper alloy PCB contacts

Number of Positions	Key Location	Part Number
4-Input Power		
24-Signal	9,10	147351-1
24-Ouput Power		

"New" Power POD Connectors for Intel's Itanium II Processors

Product Facts

- **Industry favored design for Itanium II Power POD Applications**
- **Rated to carry 130 Amps DC Output Power**
- **97 high conductivity power contacts per card-edge side result in low contact resistance and low temperature rise**
- **12 signal contacts**
- **Max. continuous operating temperature 105°C**



Technical Documents

Product Specification—
108-2102

Qualification Test Reports—
Contech Research Report #200416
Tyco Electronics Report
CTLB019033-011

The most demanding microprocessors running at very high speeds require high speed power delivery. The power delivery is accomplished with power supplies located as close as possible to the load and with the current flowing as seamless as possible through the power supply connector. In the case of the Intel Itanium II generation of processors the low resistance and low inductance requirements were met only by way of an entirely new interconnect method. Tyco Electronics' Power POD connectors, designed to the Intel interface requirements, deliver the power from the Power POD to the processor through an ultra low resistance / low inductance connector. The 97 contacts combined deliver up to 130 amps, resulting in a current load of just 1.34 amps per contact, which keeps the connectors operating below the 30°C temperature rise limit.

Since the Itanium series of processors were introduced Tyco Electronics Power POD connectors were placed in use by the industry leading power supply manufacturers.

While the typical Itanium II power supply max. current output is 100 Amps, the connectors have been qualified to 130 amps, with additional testing successfully passing the 150 amp barrier. The flex circuit connection is designed to allow the use of heavy , 6 ounce copper, circuits and still provide for "float" due to the soft copper flex circuits, to aid in the power supply insertion into the Power POD Connector. Each Power POD Connector is 100% electrically tested prior to being delivered to the power supply manufacturer.

Itanium is a registered trademark of Intel Corporation.

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"New" Power POD Connectors for Intel's Itanium II Processors (Continued)

The rigid construction of the Power POD Housing ensures the contact normal force is maintained across the entire connector width. The recessed power and signal contacts ensure the contacts are not overstressed during an angled entry of the mating pcb card.

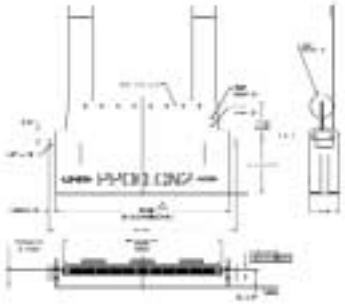
The Power POD Connector / Flex Circuit is supplied pre-assembled in order to maintain precise control on the manufacturing process.

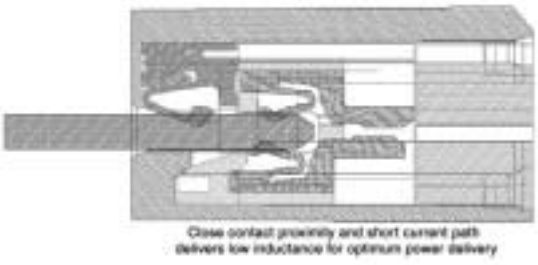
The final assembly is delivered as shown, ready for soldering to the VR circuit board.

While the Tyco Electronics Power POD Connector is identical for all applications, each flex circuit is customized for each specific customer. The photo shows just one configuration of flex circuit design.

This allows maximum flexibility in how the power and signals are transferred to the POD circuit boards.

NOTE: Part Numbers are created to satisfy customer flex circuit requirements. Please contact Tyco Electronics for a list of available part numbers.





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CROWN CLIP Series Sockets

Product Facts

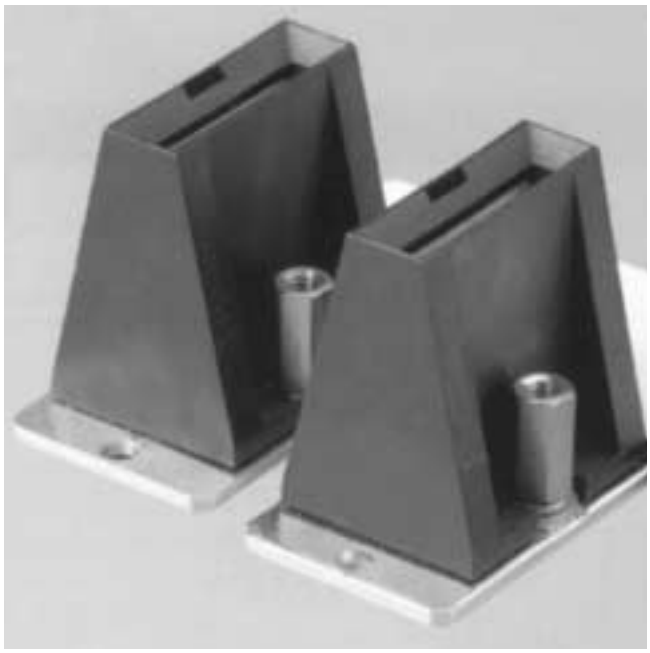
- Compact design
- High performance CROWN BAND contacts
- Currents to 350 Amps[1]
- Mates with solid or laminated blades
- Supports true Hot Plug (Current Interruption)[2]
- Float Mount option reduces mating forces
- Meets UL (USR & CNR), CSA and TUV[3] safety requirements
- All CROWN CLIP Products in this section are RoHS compliant.

Typical Applications

- Bus Bar based power distribution
- Power racks
- Rack mounted switching power supplies

Notes:

[1]Dual CROWN CLIP Socket using nickel plated mating tab, equivalent rating for other CROWN CLIP Socket designs is 300A
[2]Current interruption requires a gold plated, solid mating tab, and is not currently supported using a laminated mating tab
[3]TUV certification pending for CROWN CLIP Socket



CROWN CLIP sockets are compact, high-current socket connectors for high current bus bar power distribution. Using ELCON high performance CROWN BAND technology, CROWN CLIP Sockets are available in single pole format to mate with a solid blade, handling up to 350 Amps, or in dual pole format to mate with laminated bus bar tabs for feed and return currents.

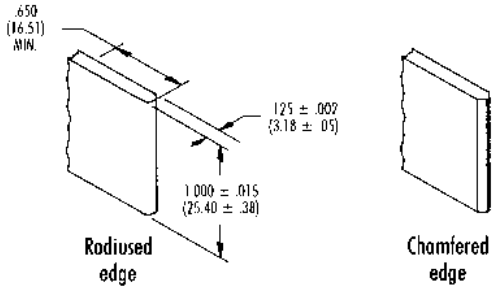
Product Highlights

Hot plug design

CROWN CLIP sockets also comply with safety regulatory requirements for current interruption under load. Compliance is achieved by a contact design that restricts the effects of arcing to areas that do not compromise the integrity of the connection. Hot plugging requires a gold plated mating blade.

Safety Agency Compliance

CROWN CLIP sockets comply with the UL1977 standard and CSA standard C22.2 No. 182.3-M1987. Tyco Electronics will work with customers to obtain application specific regulatory certifications if needed.



Mating Blades

Recommendations for customer supplied mating blades are:

Insertion Length: .650" (16.5 mm) minimum, 1.00" (25.4 mm) maximum

Thickness: .125" (3.18 mm) or 3 mm (.118")

Material: Copper, gold or nickel plated, with chamfered or rounded mating edge

Sample Application

CROWN CLIP Sockets allow hot plugging of rack-mounted switching power supplies.

Photo reproduced by courtesy of Unipower Corporation.

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Original CROWN CLIP Sockets

Part Number 1643906-1

Product Specifications

Materials

Insulator: Polyester, UL 94V-0

Crown Band: Beryllium copper alloy, selectively plated with gold (30 µin minimum), over nickel

Crown Holder: Copper alloy

Electrical

Current Rating, Steady State: Nickel plated solid tab: 300 Amp maximum; 200 Amp at 30°C maximum temperature rise

Current Rating, Hot Plug: Gold plated solid tab: 200 Amp maximum, 42V; 100 Amp maximum, 48V

Mechanical

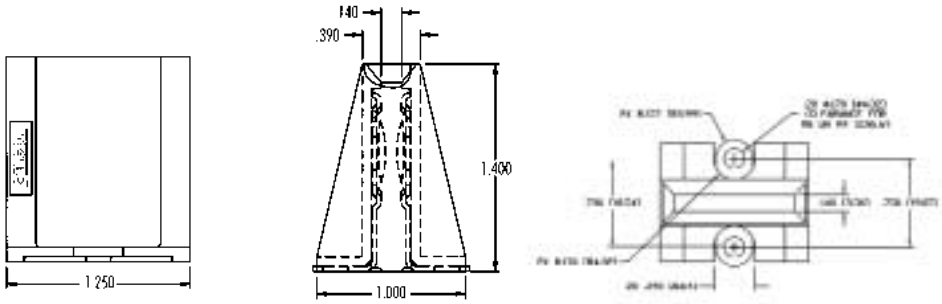
Insertion Force: 10.0 lbs (4.54 Kg) maximum

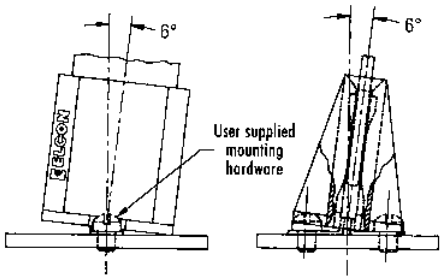
Extraction Force: 5.0 lbs (2.72 Kg) minimum

Single Pole, Float Mount Socket design delivers 300 Amp current capability plus current interruption

Float mount design provides alignment for blind mating of rack-mounted power supply units. Parallel cantilever design contacts include ELCON CROWN BAND contact elements to ensure low voltage drop and heat generation, plus consistent insertion and extraction forces. Current interruption ratings are 100A at 48V and 200A at 42V, both using a gold plated, solid tab.

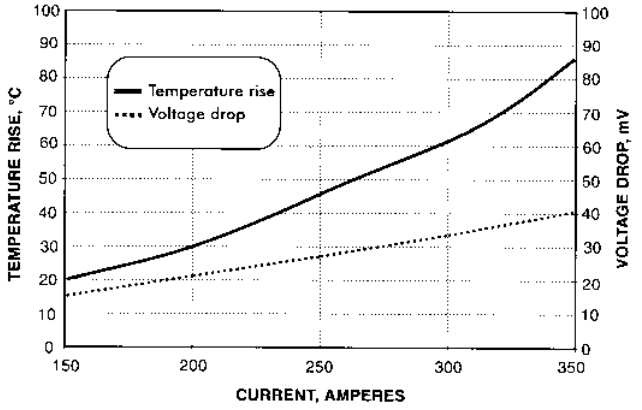
Customer Drawing available upon request.





CROWN CLIP Sockets Electrical Performance

The graph at right shows the electrical performance of CROWN CLIP Sockets in terms of temperature rise and volt-age drop at currents from 150 Amps to 350 Amps. The set up used for the test had six CROWN CLIP Socket samples mounted on a .25" x 1.75" x 6.0" bus bar, mating with 1.0" long by .125" thick nickel plated blades connected in series using 1/0 AWG wire.



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C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-1908-574289

"New" CROWN CLIP II Sockets

Part Number 1643903-1

Dual Pole, Float Mount Socket design delivers 300 Amp current capability plus current interruption

Float mount design provides alignment for blind mating of rack-mounted power supply units. The Dual Pole contact design allows mating to a two pole laminated bus bar or double sided PCB tab, adding design flexibility by providing feed and return using a single socket. Current interruption ratings are 100A at 48V and 200A at 42V, both using a gold plated, solid tab.

Product Specifications

Materials

Insulator: Polyester, UL 94V-0

Contact: Copper alloy, selectively plated with gold (30 µin minimum), over nickel

Electrical

Current Rating, Steady State: Nickel plated solid tab: 300 Amp maximum; 230 Amp at 30°C maximum temperature rise

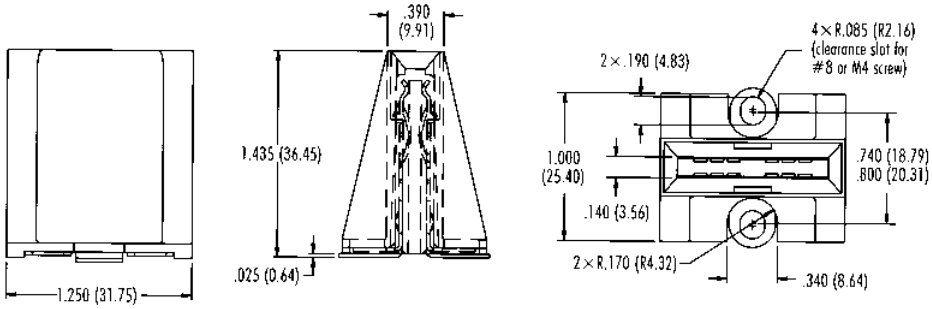
Current Rating, Hot Plug: Gold plated solid tab: 200 Amp maximum, 42V; 100 Amp maximum, 48V

Mechanical

Insertion Force: 20.0 lbs (9.08 Kg) typical

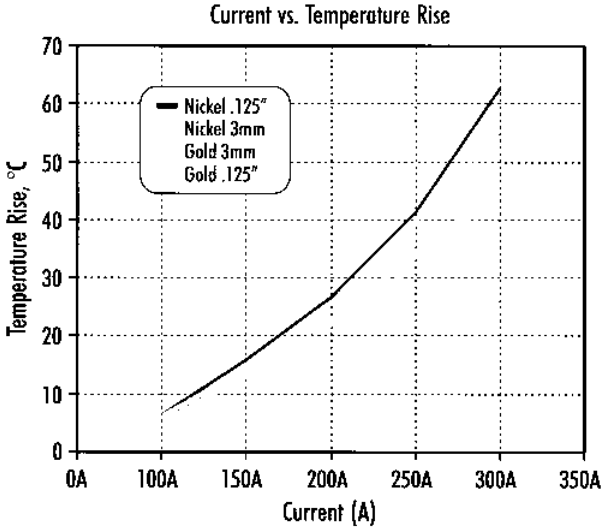
Extraction Force: 10.0 lbs (4.54 Kg) typical

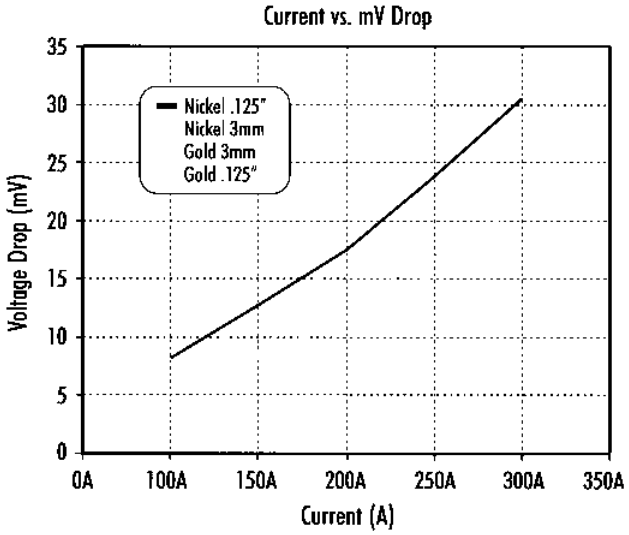
Customer Drawing available upon request.



CROWN CLIP Sockets II Connector Electrical Performance

The graphs below show the electrical performance of CROWN CLIP II sockets in terms of temperature rise and voltage drop at currents from 150 Amps to 350 Amps. The set up used for the test had samples of six CROWN CLIP Sockets mounted on a .25" x 1.75" x 6.0" bus bar, mating with 1.0" long by .125" thick nickel plated blades connected in series using 1/0 AWG wire.





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Japan: 81-44-844-8013
UK: 44-1908-574289

DUAL CROWN CLIP Sockets

Part Number 1643902-1

Product Specifications

Materials

Insulator: Polyester, UL 94V-0

Crown Band: Beryllium copper alloy, selectively plated with gold (30 µin minimum), over nickel

Crown Holder: Copper alloy

Electrical

Current Rating, Steady State: Nickel plated solid tab: 350 Amp maximum; 225 Amp at 30°C maximum temperature rise

Current Rating, Steady State: Laminated bus bar tab: 130 Amp per side (260 A total) maximum; 75 Amp per side (150 A total) at 30°C maximum temperature rise

Current Rating, Hot Plug: Gold plated solid tab: 200 Amp maximum, 5V; 100 Amp maximum, 60V

Mechanical

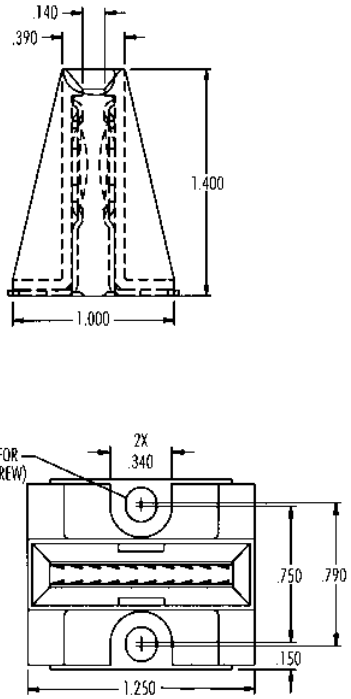
Insertion Force: 20.0 lbs (9.08 Kg) typical

Extraction Force: 13.0 lbs (5.9 Kg) typical

Dual Pole, Feed-through Socket design delivers 350 Amp current capability plus current interruption. The Dual Pole contact design allows mating to a two pole laminated bus bar or double sided PCB tab, adding design flexibility by providing feed and return using a single socket. The Feed-through design aspect allows insertion of mating blade from both top and bottom of socket. The contacts include ELCON CROWN BAND contact elements to ensure low voltage drop and heat generation, plus consistent insertion and extraction forces. Current interruption ratings are 100A at 60V and 200A at 5V, both using a gold plated, solid tab.

Feed-Thru View

Customer Drawing available upon request.



Sample Application

ELCON Dual CROWN CLIP connectors mounted on a laminated power distribution bus bar in a large server.

Photos reproduced courtesy of Eldre Corporation

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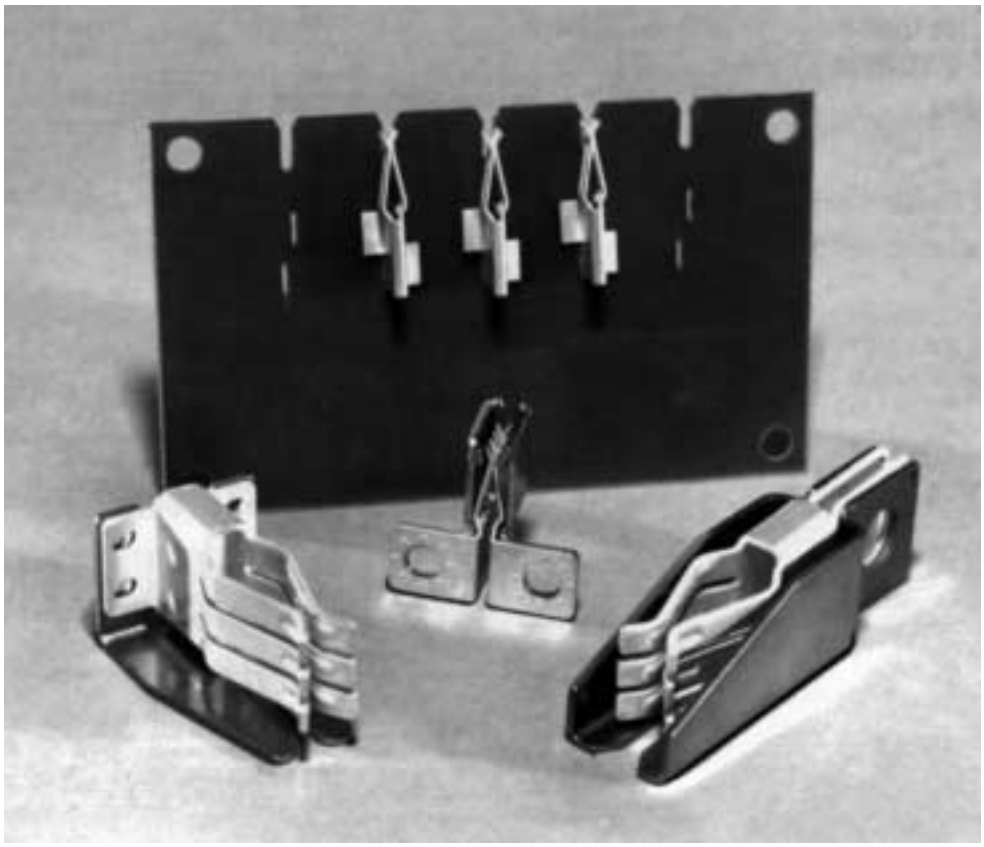
Pluggable Bus Bar Connector

Product Facts

- **Separable bus bar connector**
- **062 series for .062" [1.57] thick, 1/2" [12.7] minimum width bus bar**
- **125 series for .125" [3.18] thick, 1" [25.4] minimum width bus bar**
- **Mounts direct to bus bar or terminated wire**
- **Low resistance, low millivolt drop**
- **High current rating: up to 500 amps for 125 series and 250 amps for 062 series**
- **Blind mateable (misalignment up to± .060" [1.52] for both series)**
- **Anti-overstress feature**
- **Component Recognition Underwriter's Laboratories File No. E113407**



Technical Documents

Applications Specifications

- Provide instructions for assembling or applying product
- 062 Series – #114-2130
- 125 Series – #114-2111

Product Specifications

- 062 Series – #108-1380
- 125 Series – #108-1101

The AMP Pluggable Bus Bar Connectors are ideal for computer, industrial control and modular power supply Applications that demand low millivolt drop and reliable separation. This unique connector design replaces the nuts and bolts previously used to transfer power from the source to the bus bar and simplifies power distribution.

The Pluggable Bus Bar Connectors mate with .125" [3.18] or .062" [1.57] thick plated bus bars providing a separable connection that eases assembly, inspection and trouble shooting. The silver-plated, high conductivity copper alloy contacts offer a low resistance contact resulting in low millivolt drop providing efficient power distribution.

These "Blind Mateable" connectors feature a generous lead-in on the integral stainless steel guide plate. This permits mating if the bus bar is slightly misaligned and provides anti-overstress protection for the contact.

Pluggable Bus Bar Connectors can be mounted directly to a bus bar or fed by a power supply cable as outlined in the Application Specifications.

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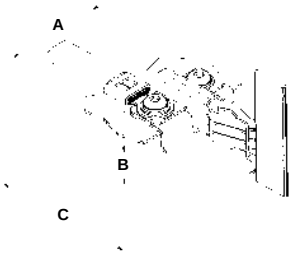
Pluggable Bus Bar Connector (Continued)

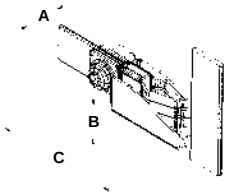
Ordering Information

Dimensions in inches, [metric]

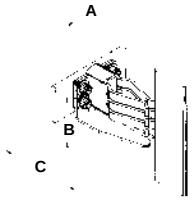
125 Series



Style F



Style F2



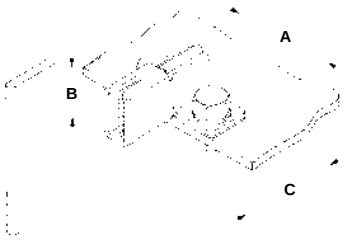
Style F3

Selection Data

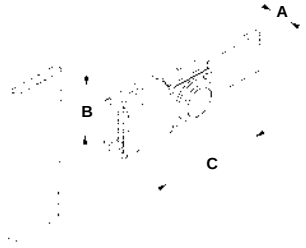
Series	Style	Dimensions			Part Number
		"A" (Width)	"B" (Height)	"C" (Length)	
125 Series Fits Bus Bar .125" [3.18] Thick	F *	2.290 [58.17]	1.141 [28.99]	3.200 [81.28]	104502-1
	F2	.850 [21.59]	1.122 [28.5]	3.294 [83.67]	104501-1
	F3	1.250 [31.75]	1.141 [28.99]	1.993 [50.61]	213647-1

* Bus Bar or Cable Power Feed

062 Series



Style F



Style F2

Selection Data

Series	Style	Dimensions			Part Number
		"A" (Width)	"B" (Height)	"C" (Length)	
062 Series Fits Bus Bar .062" [1.57] Thick	F	1.360 [34.54]	.705 [17.91]	1.342 [34.09]	104729-1
	F2	.356 [9.04]	.705 [17.91]	1.342 [34.09]	104742-1

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UK: 44-141-810-8967

Pluggable Bus Bar Connector (Continued)

Materials

Contact

- Copper alloy

Plating

- Silver over nickel

Guide Plate

- Stainless steel

Specifications

Rated Current

- Up to 500 amps for 125 Series at 30°C maximum t-rise *
- Up to 250 amps for 062 Series at 30°C maximum t-rise *

*actual current rating is dependent on bus bar/wire and ambient conditions (see charts).

Contact Resistance

- .10 milliohms maximum (125 series)
- .50 milliohms maximum (062 series)

Mating Force

- 30 lb. [133.4 N] maximum (125 series)
- 6 lb. [26.7 N] maximum (062 series)

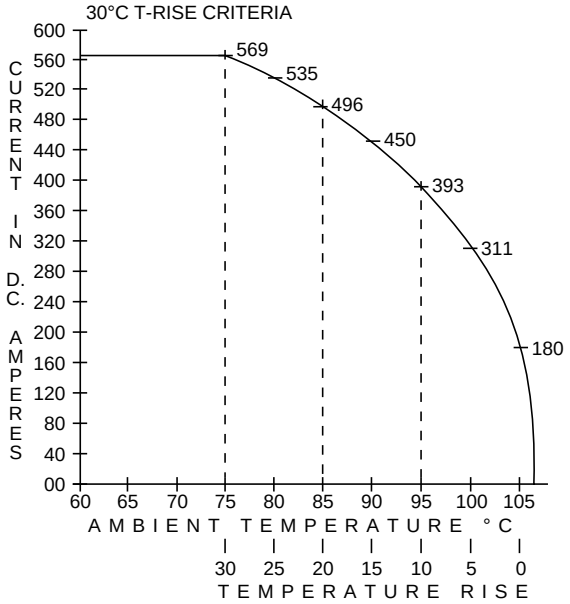
Unmating Force

- 1 lb. [4.4 N] minimum (125 and 062 series)

Durability

- 100 cycle minimum (125 series)
- 50 cycle minimum (062 series)

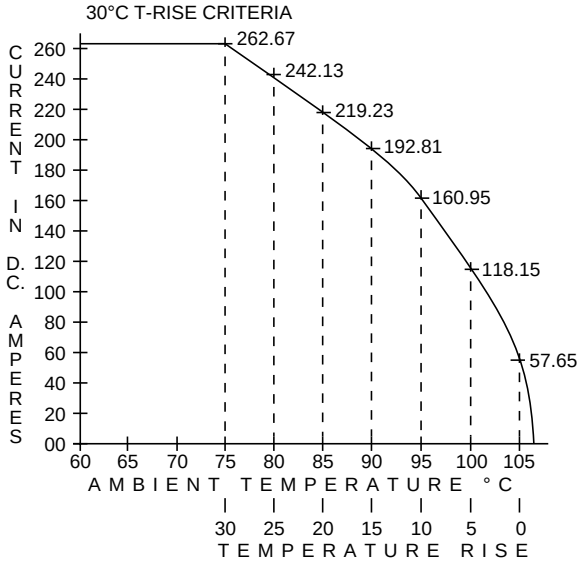
125 Series



Current Carrying Capability

Test Configuration	Multiplication Factor
Contact on 4x12 [101.6 x 304.8] bar mated with 4x12 [101.6 x 304.8] bar	1.00
Contact on 1x12 [25.4 x 304.8] bar mated with 1x23 [25.4 x 584.2] bar	0.40
Contact on AWG #00 mated with 1x12 [25.4 x 304.8] bar	0.38
Contact on AWG #2 mated with 1x12 [25.4 x 304.8] bar	0.32

062 Series



Current Carrying Capability

Test Configuration	Multiplication Factor
Contact on 1.5x6 [38.1 x 304.8] Bar mated with 1.5x12 [38.1 x 304.8] Bar	1.00
Contact on 1.0x6 [25.4 x 304.8] Bar mated with 1.0x12 [25.4 x 304.8] Bar	0.81
Contact on 0.5x6 [12.7 x 304.8] Bar mated with 0.5x12 [12.7 x 304.8] Bar	0.58

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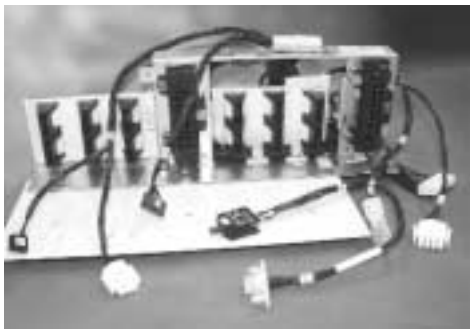
Value Added Bus Bar Assemblies (Power Distribution Solutions - PDS)



What is PDS?

Power Distribution Solutions are critical in today's high-speed electronic systems. Tyco Electronics is introducing our value-added cable assembly capabilities for specialty power systems and value added power distribution (bus bar) applications. We already offer a wide array of Tyco Electronics power connectors and cable assemblies, combined with the flexibility of regional and global sourcing. We are currently producing a variety of quality value added bus bar assemblies for many familiar OEM's and their subcontractors.

Why PDS?

Tyco Electronics is offering integrated supply chain management to our customers. This allows for one point of contact and one part number for your total power distribution needs.

The Tyco Electronics Advantage

For today's power applications, an OEM must rely on a variety of suppliers for each component of their power distribution solutions (bus bar, connectors, cable assemblies, metal fabrications, etc.). We are uniquely positioned with a variety of in-house power components, accessories, and an array of global sources to cover our customer's entire power distribution needs from filtered IEC connectors, to power cords, to bus bars, to power distribution circuit boards, etc.

The 'Tyco Electronics Advantage' includes the following:

- Consolidation of supply base for the customer.
- Widest variety of power connectors in the industry.
- Global cable assembly manufacturing capacity.
- Custom high-end power harnesses.
- Industry standard power cords.
- In-house, bulk cable extrusion capability.
- Diverse, low-cost, global supply base.

Typical Applications

- Power distribution
- Switches
- Mass Storage Devices

Do I need a Tyco Electronics PDS?

- Are you buying any laminated bus bars?
- If buying bus bars, do the bus bars have connectors or cable assemblies attached?
- Are you purchasing the bus bar and connectors/assemblies from different sources?
- Are you buying filtered power connectors?
- Do you have hot-swap requirements?
- Would you be interested in buying the total solution from one supplier?

If you answered yes to any of the above questions, a PDS from Tyco Electronics may be right for you. Contact your local sales rep to see what Tyco Electronics can do for you.

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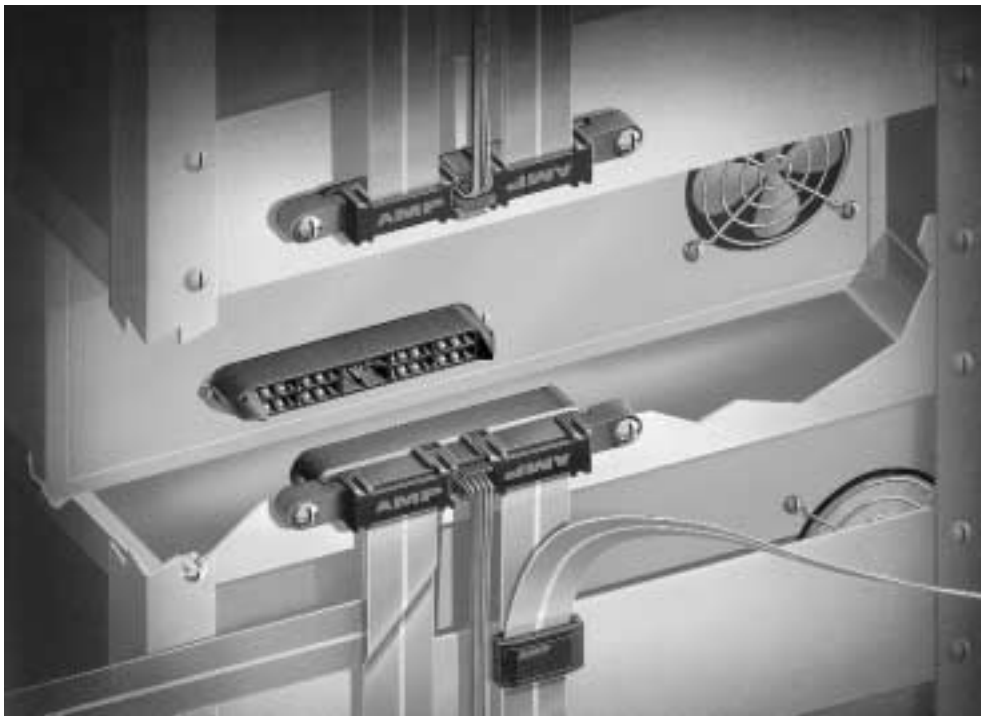
AMPOWER Wave Crimp System

Product Facts

- **Termination of flat cable requires no stripping, does not reduce cable cross section and provides a reliable, low resistance, gas tight interface**
- **Separable interfaces have positive locking, polarization and contact shrouding**
- **Right-angle and vertical headers on 2.54 [.100] centers, accommodate standard 1.02 [.040] PCB hole diameters**
- **Four cable self-aligning connector can pickup 2.03 [.080] misalignment off a common axis and measures 80 amps per cable (at 30°C temperature rise) depending upon the application**
- **Unique tap permits branching of trunk lines to serve multiple distribution points**
- **Assemblies are measured at 80–110 amps (with 30°C temperature rise) depending upon mounting interface**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476, No. E13288, and No. E53799**
- **Certified by Canadian Standards Association, File No. LR7189A-149**



Today's intelligent systems require more sophisticated power distribution solutions than ever before. Even the conductor geometry can make a significant impact on systems performance. Flat conductors offer desirable packaging advantages:

- Improved heat dissipation resulting in higher current capacity or reduced operating temperature.
- Low inductance, high capacitance power distribution.
- Reduced noise.
- Packaging flexibility.

The AMPOWER Wave Crimp System is the first power distribution system to offer a cost effective, totally mechanical termination method for insulated flat copper cable.

Assemblies provide:

A fully shrouded and polarized separable interface with right angle and vertical board mount headers.

The first flat cable tap that allows branching from primary trunk lines, side tapping and discrete wire tapping.

Blindmate drawer connectors feature sequential mating and signal contacts.

AMPOWER flat cable assemblies provide a unique and effective means of distributing power from source to load in today's high speed, high density systems.

Performance Data

Voltage Rating — 250 V AC RMS/DC. Single conductor cable assemblies are available with a 600 V AC RMS/DC rating.

Dielectric Withstanding Voltage — Power Contact: 1500 VAC

Signal Contact: 1200 VAC

Insulation Resistance — 5000 megohms initial
1000 megohms final

Temperature Range — −55°C to +105°C

Current Rating — Refer to Product and/or Application Specifications.

Typical Applications

- Mass Storage
- Switches
- Various Power Distribution Applications

Technical Documents

Product Specifications

108-1308	Separable Interface
108-1313	Terminal Block & Stud Interface
108-1315	Cable Tap Interface
108-1319	Drawer Connector
108-1387	FASTON Wire Tap
108-1391	Side Tap
108-1323	Cable Specification
108-1410	ACTION PIN Header
108-1436	Cable-to-Cable Drawer Connector
108-1479	ACTION PIN Self-Aligning Connector
108-1403	Self-Aligning Header and Receptacle
108-1408	Wave Crimp System (Cable-to-Cable)

Application Specification

114-49005

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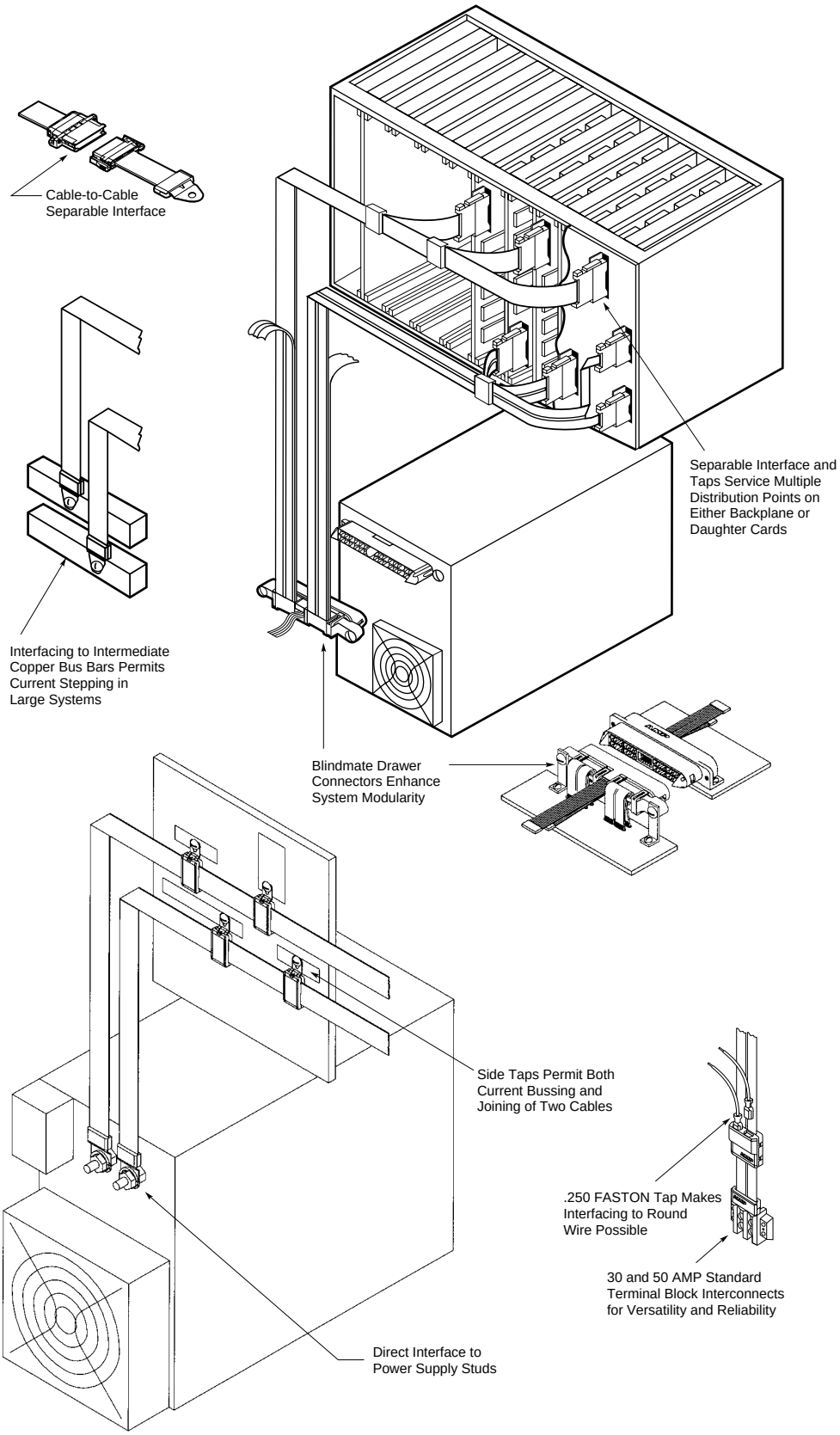
Applications

The variety of AMPOWER Wave Crimp System interfaces available from Tyco Electronics make flat copper cable a versatile and innovative systems solution to power distribution.



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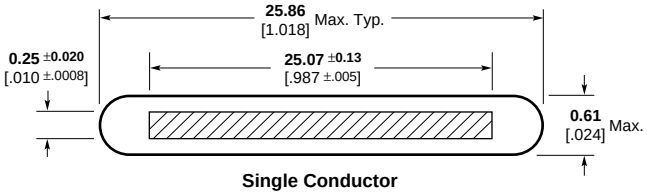
Copper Cable Options

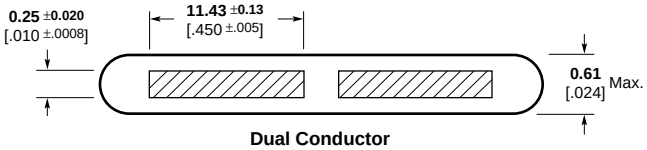
Copper cable used in AMPOWER Wave Crimp System assemblies is available in dual or single conductor in 0.25 [.010] or 0.51 [.020] thick copper.

Conductor Thickness	Resistance	
	Single	Dual
0.25 .010	.912	2.030
0.51 .020	.456	.996

Note: The D.C. resistance of a 304.80 [12.00] length of conductor, when measured at 25°C and 10 amps, shall be < this figure (in milliohms).



Single Conductor



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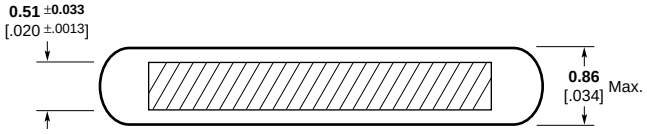
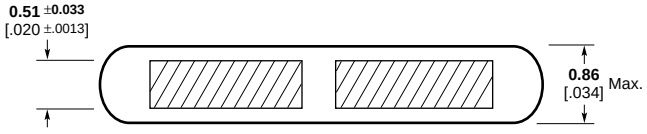


Single Conductor

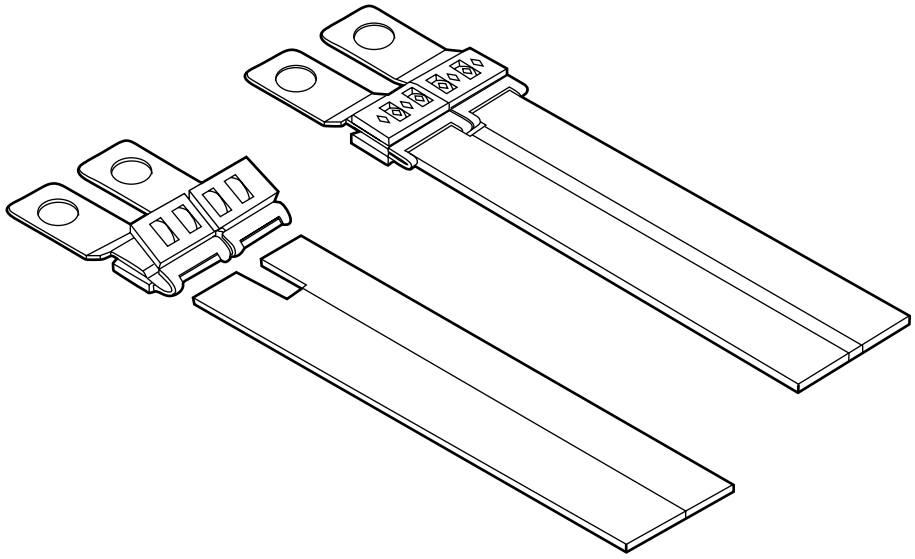


Dual Conductor

Circular MILS	Approx AWG Per Conductor	Amps
12,566	9	80
5,729	13	40/40
25,133	6	110
11,459	10	55/55

Wave Crimp

One of the most unique features of the AMPOWER system is the wave crimp itself. Comprised of a hard copper transition sandwiched between soft copper profile plates, it is forced closed on the prepared cable end. The resultant sheared edges of the cable make a termination interface larger in area than the cable cross section itself. For greater reliability, diamond shaped indents spread each wave, creating a stored energy crimp that is a mechanically sound, low resistance gas tight interface without cable stripping.



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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Terminal Block and Stud Interface

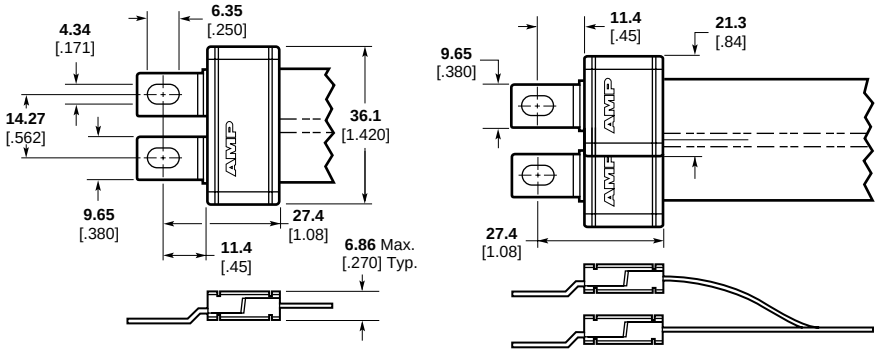
Material and Finish

Housing — UL 94V-0 rated thermoplastic, black

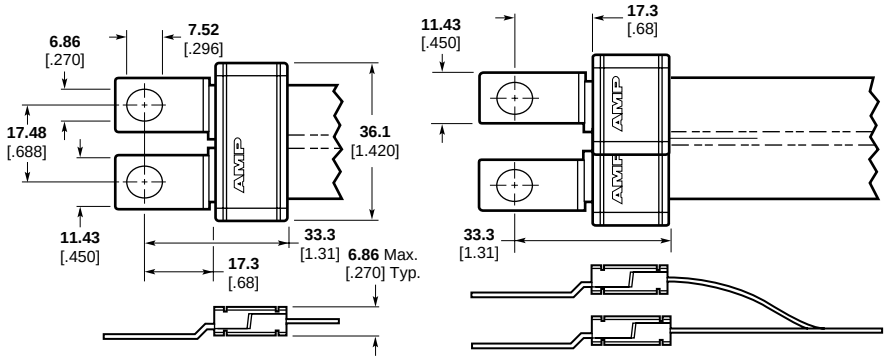
Contacts — Copper alloy silver on termination and mating interface.

All over nickel base plate.

Terminal Block Interface (14.27 [.562] Centerline)

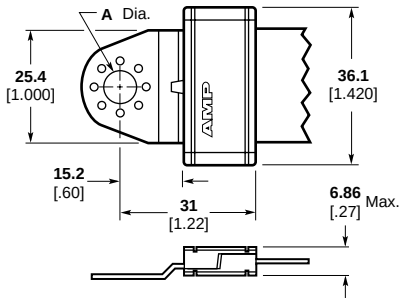


Terminal Block Interface (17.48 [.688] Centerline)



Centerline Spacing	Part Numbers	
	Termination Assembly	Cover
14.24 .562	—	765228-1 Full Width
—	—	765229-1 Half Width
17.48 .688	765225-1	765228-1 Full Width
—	765225-1	765229-1 Half Width

Stud Interface



Stud Size	Hole Size "A"	Part Numbers
		Cover (x2)
1/4"	**6.76** .266	765228-1
5/16"	**8.33** .328	765228-1

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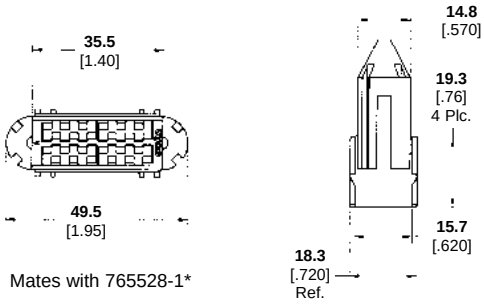
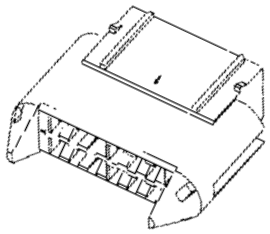
Cable-to-Cable Blindmate Receptacle Housing

Part Number 766569-1



Mates with 765528-1*



*Panel mount (765530-1) or squeeze-to-release (765529-1) strain relief can be used on either 766569-1 or 765528-1 housing. At least one housing must have the squeeze-to-release strain relief; the panel mount strain relief is optional on the mating housing.

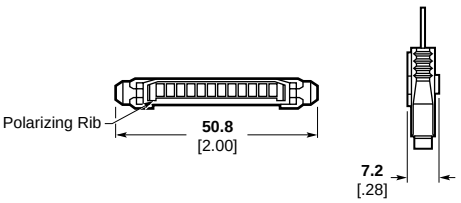
Separable Interface

Material and Finish

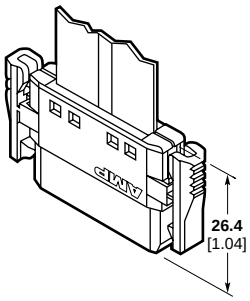
Housing — UL94V-0 rated thermoplastic, black

Contact — Copper alloy silver on termination and mating interface.
Tin-lead on header solder and ACTION PIN contact Tails.
All over nickel base plate.

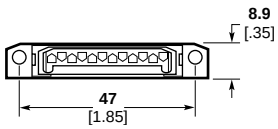
Plug 765191-1



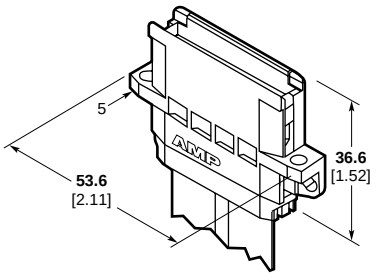
Mates with Part Number 765478, 765204, 765206



Cable-to-Cable Receptacle 765478-1



Available with or without mounting flanges
Mates with Part Number 765191



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UK: 44-141-810-8967

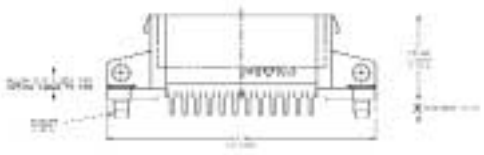
Separable Interface – Headers

Material and Finish

Housing — UL94V-0 rated thermoplastic, black

Contact — Copper alloy silver on termination and mating interface.
Tin-lead on header solder and ACTION PIN contact Tails.
All over nickel base plate.

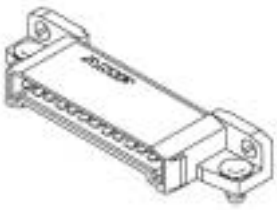
Vertical Header



"X"	Tail Type	Housing	Part Numbers	
			Horizontal	Vertical
3.15 .124	Solder Tail	Standard Temp, Black	765206-1	765206-9
4.19 .165	Solder Tail	Standard Temp, Black	765206-2	1-765206-0
5.72 .225	Solder Tail	Standard Temp, Black	765206-4	1-765206-2
3.15 .124	Solder Tail	High Temp, Natural	765206-5	1-765206-3
4.19 .165	Solder Tail	High Temp, Natural	765206-6	1-765206-4
5.72 .225	Solder Tail	High Temp, Natural	765206-8	1-765206-6
3.66 .144	ACTION PIN Tail	Standard Temp, Black	765271-1[1]	—

*Uses insertion tool 765312-1

Horizontal Header



Mates with 766569-1

"X"	Tail Type	Housing	Part Numbers	
			Horizontal	Vertical
3.15 .124	Solder Tail	Standard Temp, Black	765204-1	765204-9
4.19 .165	Solder Tail	Standard Temp, Black	765204-2	1-765204-0
5.72 .225	Solder Tail	Standard Temp, Black	765204-4	1-765204-2
3.15 .124	Solder Tail	High Temp, Natural	765204-5	1-765204-3
4.19 .165	Solder Tail	High Temp, Natural	765204-6	1-765204-4
5.72 .225	Solder Tail	Standard Temp, Black	765204-8	1-765204-6

*Uses insertion tool 765312-1[1]Uses ACTION PIN insertion tool 765312-1, see page xx.
Recommended mounting hardware, 2 #4-40 screws and nuts, or 2 eyelets Tyco Electronics part number **748572-2**.

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Half Width Plug Header

Material and Finish

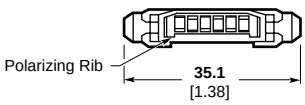
Housing — UL94V-0 rated thermoplastic, black

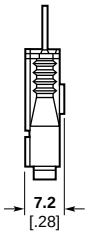
Contact — Copper alloy silver on termination and mating interface.

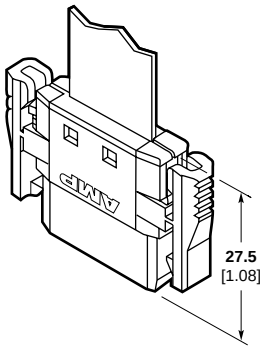
Tin-lead on header solder and ACTION PIN contact Tails.

All over nickel base plate.

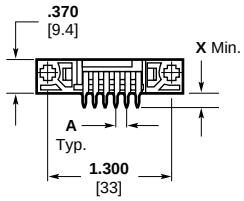
Plug
Part Number 765622-1

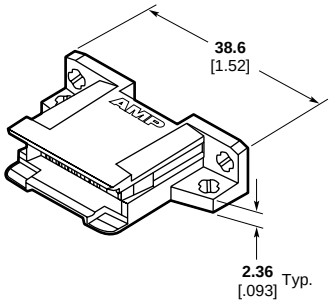




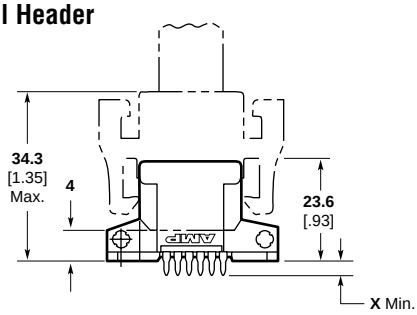


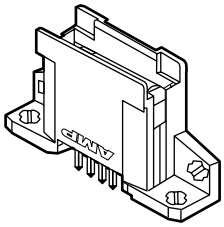
Horizontal Header





Vertical Header





Header Pin Pitch "A"	"X"	Header Assembly Part Numbers		
		Tail Type	Horizontal	Vertical
2.54 .100	**3.15** .124	Solder Tail	765450-1	765449-1
	4.19 .165	Solder Tail	765450-2	765449-2
	5.72 .225	Solder Tail	765450-4	765449-4
	3.66 .144	ACTION PIN Tail	—	765451-1
	3.15 .124	Solder Tail	765450-5[2]	765449-5[2]
	4.19 .165	Solder Tail	765450-6[2]	765449-6[2]
	5.72 .225	Solder Tail	765450-8[2]	765449-8[2]

[1]Recommended mounting hardware, 2 #4-40, screws and nuts or, 2 eyelets Tyco Electronics part number **748572-2**, customer supplied.
[2]High temperature material.
[3]Allow 5.65 [.262] for mating cable to PCB.

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Mid-Cable Terminations

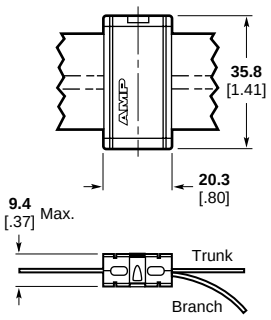
Material and Finish

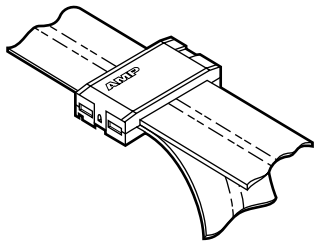
Housing — UL94V-0 rated thermoplastic, black

Contact — Silver plated copper alloy

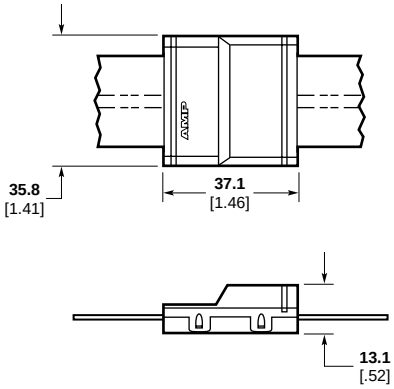
All over nickel base plate.

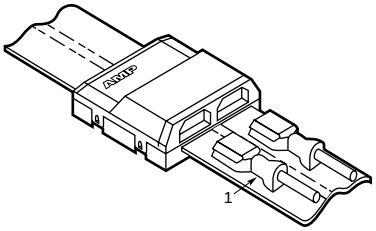
Tap





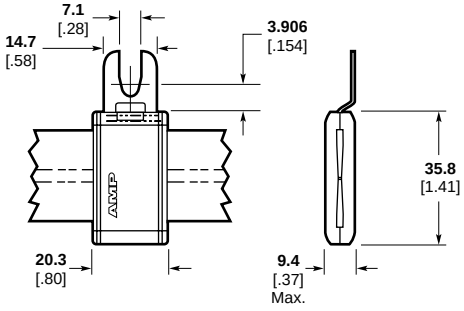
.250 FASTON Tab Tap

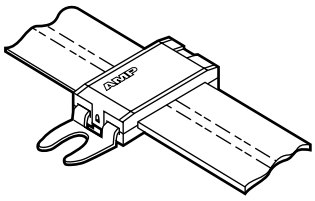




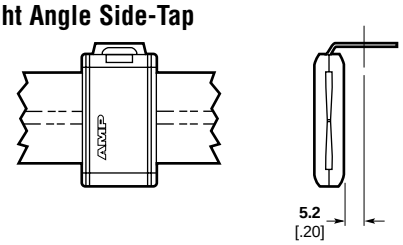
1. FASTON Receptacles not included. Use Ultra-Pod fully insulated FASTON receptacles with 18AWG to 12AWG wire. FASTON is a trademark.

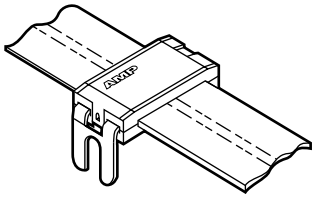
Side-Tap





Right Angle Side-Tap





Termination Type	Part Numbers		
	Termination Assembly	Housing Cover	Housing Base
Flat Cable	765277-1	765278-1	—
.250 FASTON Tab	765276-1	765295-1	765296-1
¼" Stud	—	765278-1	—
¼" Stud	765311-1	765278-1	—

Note: Connectors on this page are capable of terminating up to two 0.51 [.020] thick cables.

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Self-Aligning Headers

Material and Finish

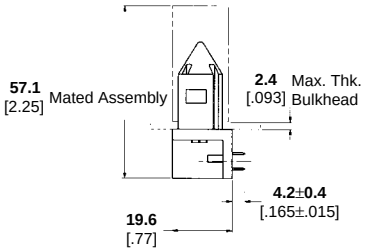
Housing — UL94V-0 rated thermoplastic, black

Contact — Copper alloy silver on mating interface

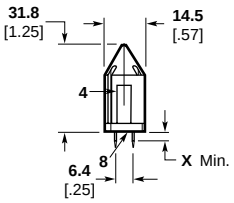
Tin-lead on solder tails.

ALL over nickel base plate.

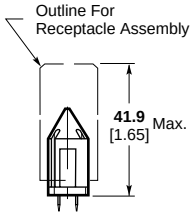
Signal contact gold plate.



Typical For All Right-Angle Headers

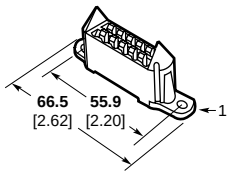


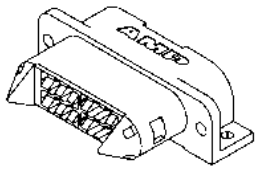
Typical For All Vertical Headers



Typical For All Vertical Headers

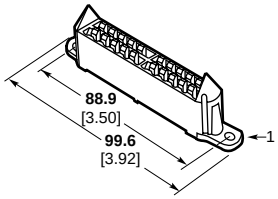
2 Cable Header

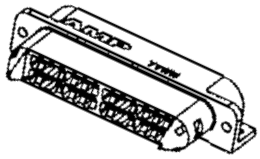




Part Number 765608-1

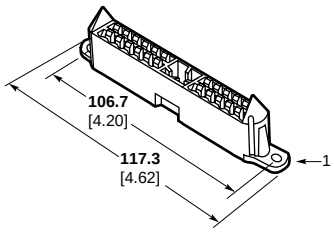
4 Cable Header



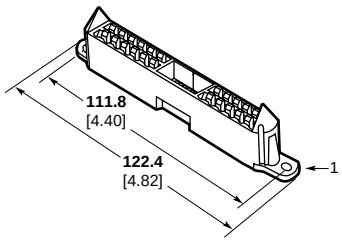


Part Number 766510-1

4 Cable Header w/8 Signal Lines[5, 6]



4 Cable Header w/21 Signal Lines[5, 6]



"X"	Tail Type	Part Numbers			
		2 Cable Header	4 Cable Header	4 Cable Header 8 Signal Lines[5]	4 Cable Header 21 Signal Lines[5]
3.10 .122	Solder Tail	765527-1	765208-1	765249-1	765265-1
3.96 .156	Solder Tail	765527-2	765208-2	765249-2	765265-2
5.74 .226	Solder Tail	765527-3	765208-3	765249-3	765265-3
3.66 .144	ACTION PIN Tail	765527-5	765208-5	765249-5	765265-5
3.10 .122	Solder Tail	765527-6[3]	765208-6[3]	765249-7[3]	765265-6[3]
3.96 .156	Solder Tail	765527-7[3]	765208-7[3]	765249-8[3]	765265-7[3]
5.74 .226	Solder Tail	765527-8[3]	765208-8[3]	765249-9[3]	765265-8[3]

[1]Mounting holes offset from centerline of part .76 [.030].
[2]Recommended mounting hardware, 2 #4-40, screws and nuts or, 2 eyelets AMP part number **748572-2**, customer supplied.
[3]High temperature material.
[4]Polarizing slot, 2 places.
[5]Mates with MINI-TANDEM contact, AMP part number **530553-x**. Reference Catalog 82055.
[6]Signal pins not shown for clarity.
Note: Tail length "x" is 4.20 (.165) for all right angle headers.

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Self-Aligning Receptacles (Float Mount)

Material and Finish

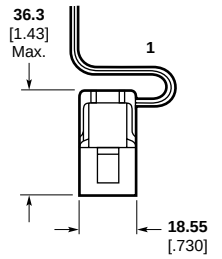
Housing — UL94V-0 rated thermoplastic, black

Contact — Copper alloy silver on termination and mating interface.

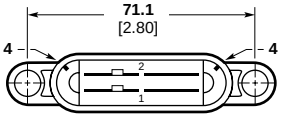
All over nickel base plate.

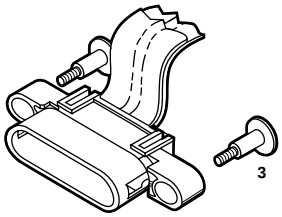
Signal contact see page 165.

2 Cable Receptacle

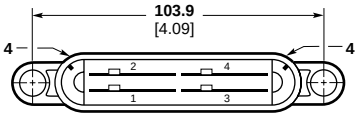


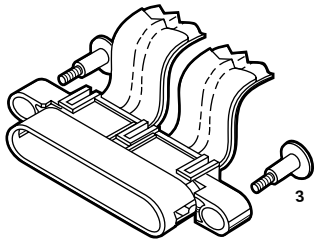
Typical For All Self-Aligning Receptacles



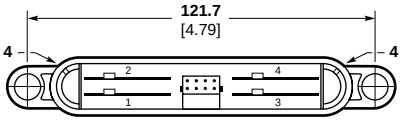


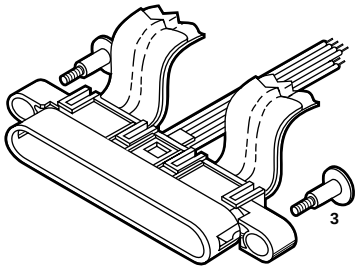
4 Cable Receptacle



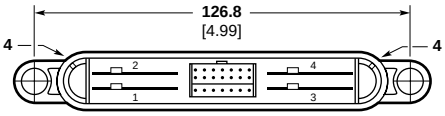


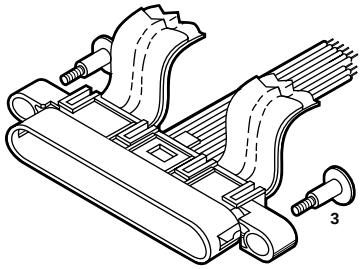
4 Cable Receptacle w/8 Signal Lines[5]





4 Cable Receptacle w/21 Signal Lines[5]





	Part Numbers			
	2 Cable w/o Signal Lines	4 Cable w/o Signal Lines	4 Cable w/8 Signal Lines	4 Cable w/21 Signal Lines
Housing	765528-1	765247-1	765224-1	765261-1
Strain Relief	765530-1	765250-1	765238-1	765238-1
Ground Contacts[2]	765209-1	765209-1	765209-1	765209-1
Power Contacts	765209-2	765209-2	765209-2	765209-2

[1]Service loop suggested, allows for connector float.
[2]Ground contacts are longer and mate before power contacts.
[3]Recommended mounting hardware, Tyco Electronics part number **208211-4**, 2 required per kit and 2 #6-32 nuts (customer supplied).
[4]Polarizing ribs, 2 places.
[5]Custom signal module assemblies available with power assemblies.

Catalog 1773096
Revised 8-05

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USA: 1-800-522-6752
Canada: 1-905-470-4425
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South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Self-Aligning Receptacles (Latching)

Material and Finish

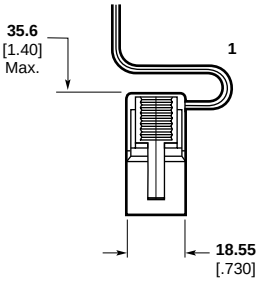
Housing — UL94V-0 rated thermoplastic, black

Contact — Copper alloy silver on termination and mating interface.

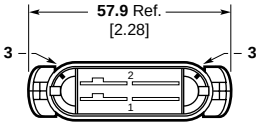
All over nickel base plate.

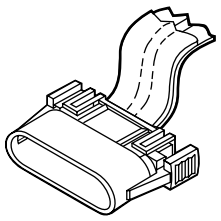
Signal contact see page 165.

2 Cable Receptacle

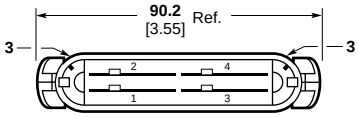


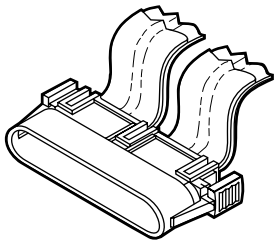
Typical For All Self-Aligning Receptacles



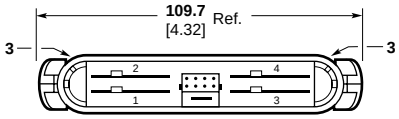


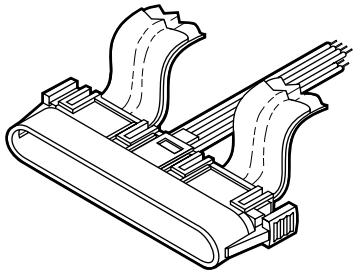
4 Cable Receptacle



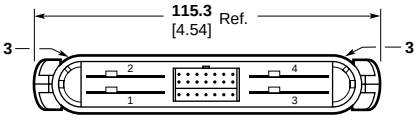


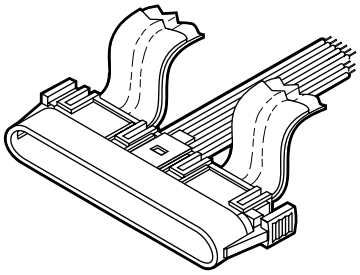
4 Cable Receptacle w/8 Signal Lines[4]





4 Cable Receptacle w/21 Signal Lines[4]





	Part Numbers			
	2 Cable	4 Cable	4 Cable w/8 Signal Lines	4 Cable w/21 Signal Lines
Housing	765528-1	765247-1	765224-1	765261-1
Strain Relief	765529-1	765248-1	765251-1	765251-1
Ground Contacts[2]	765209-1	765209-1	765209-1	765209-1
Power Contacts	765209-2	765209-2	765209-2	765209-2

[1]Service loop suggested, allows for connector disconnection.
[2]Ground contacts are longer and mate before power contacts.
[3]Polarizing ribs, 2 places.
[4]Custom signal module assemblies available with power assemblies.

Catalog 1773096
Revised 8-05

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Japan: 81-44-844-8013
UK: 44-141-810-8967

Cable-to-Cable Plug Connector w/8 Signal Lines

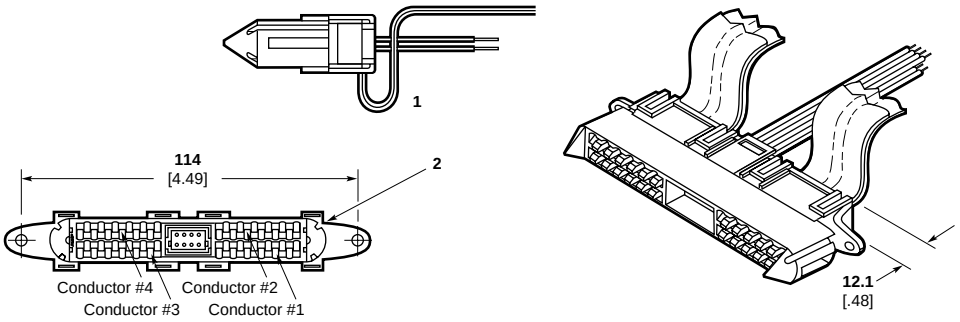
Material and Finish

Housing — UL94V-0 rated thermoplastic, black

Contact — Copper alloy silver plated

All over nickel base plate.

Mates with:
Self-Aligning receptacle, with 8 signal lines.



	Part Numbers 4 Cable w/8 Signal Lines
Housing	765241-1
Strain Relief	765242-1

[1]Service loop suggested, when float mount strain relief used (not shown).
[2]Polarizing slots, 2 places.
[3]Custom signal module assemblies available with power assemblies.

Self-Aligning Right Angle Connector w/48 Signal Lines

Material and Finish

Housing — UL94V-0 rated thermoplastic, black

Contact — Copper alloy silver on mating interface

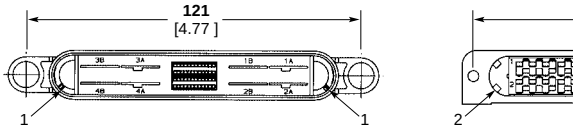
Tin-lead on header solder tails.

All over nickel base plate.

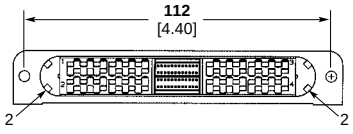
Signal contact gold plate.

Product Facts

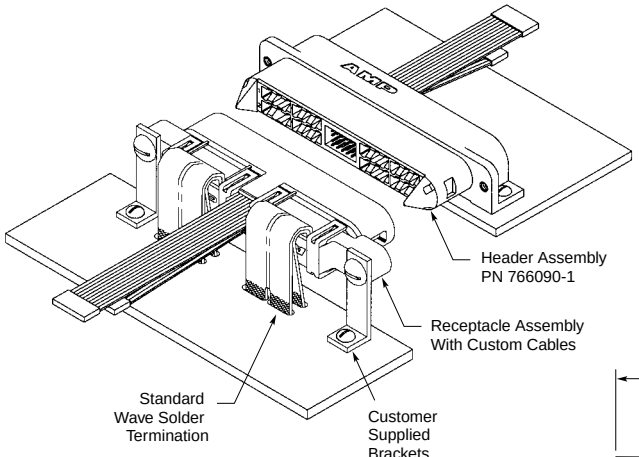
- Right angle header for .06" – .12" PWB thickness
- 8 DC contacts
- 48 signal contacts
- 3 possible levels of sequencing
- Blind mate with .19" total mismate alignment
- Polarization
- Mechanical PWB fasteners
- Drop-in-place custom assemblies



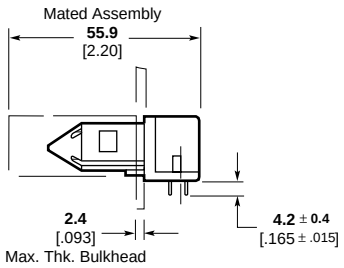
Floating Receptacle



Plug Header



Side View



[1]Polarizing rib, 2 places.
[2]Polarizing slot, 2 places.

Catalog 1773096
Revised 8-05

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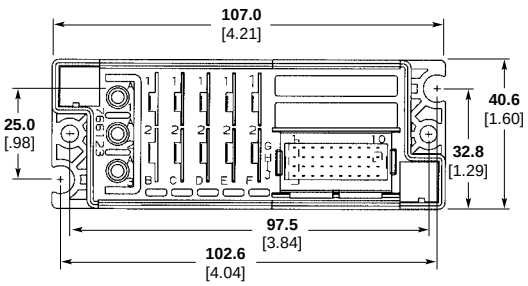
UK: 44-141-810-8967

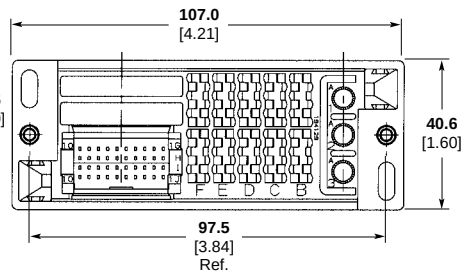
Hybrid Connector

Product Facts

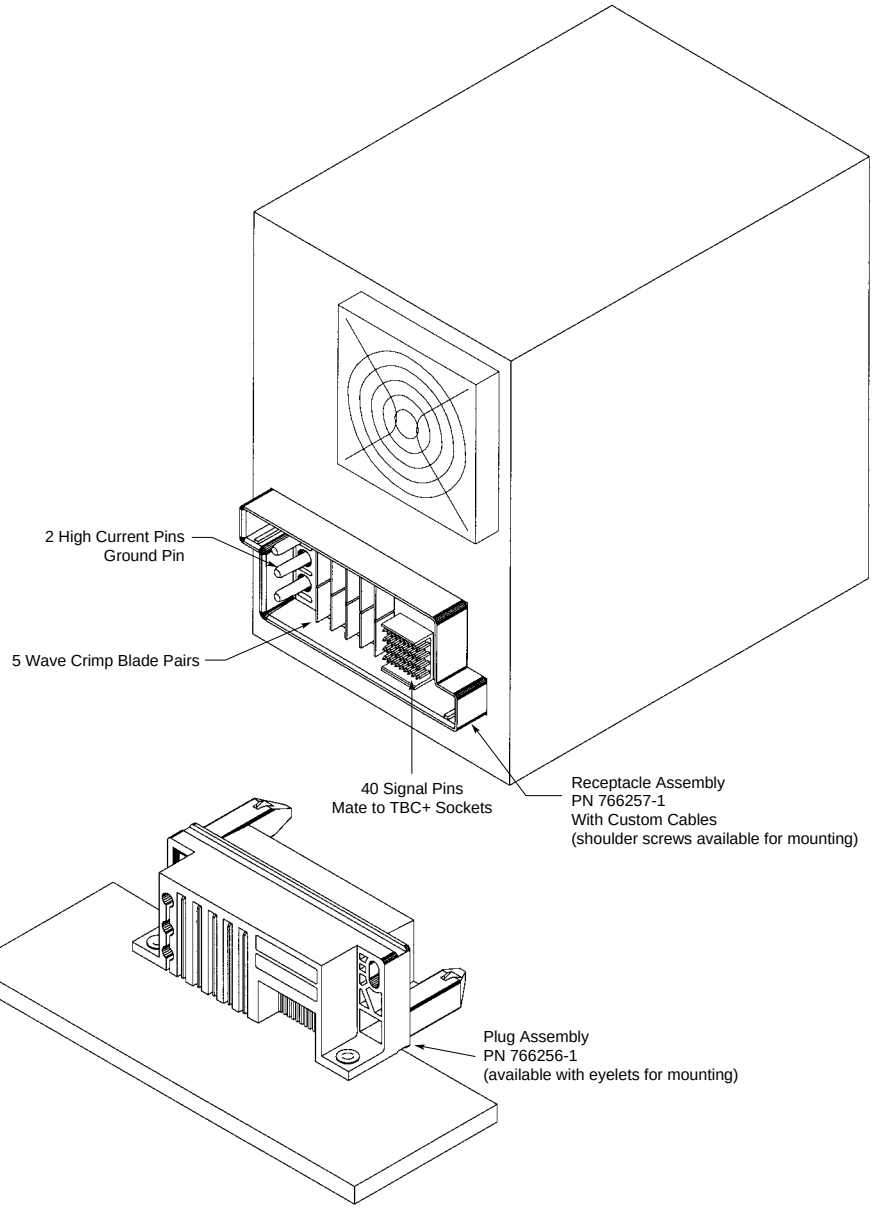
- Right angle header for .06" – .12" PWB thickness
- 3 AC contacts
- 10 DC contacts
- 40 signal conductors
- 6 possible levels of sequencing
- Blind mate with .154" total mismate alignment
- Polarization
- Mechanical PWB fasteners
- Drop-in-place custom assemblies
- 32 amps max / Wave Crimp contact when fully loaded
- Designed for 30-500 volts dielectric withstand test, and is dependant on circuit layout



Floating Receptacle
(mating face)



Plug Header
(mating face)



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Engineering Notes

Catalog 1773096
Revised 8-05

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UK: 44-141-810-8967

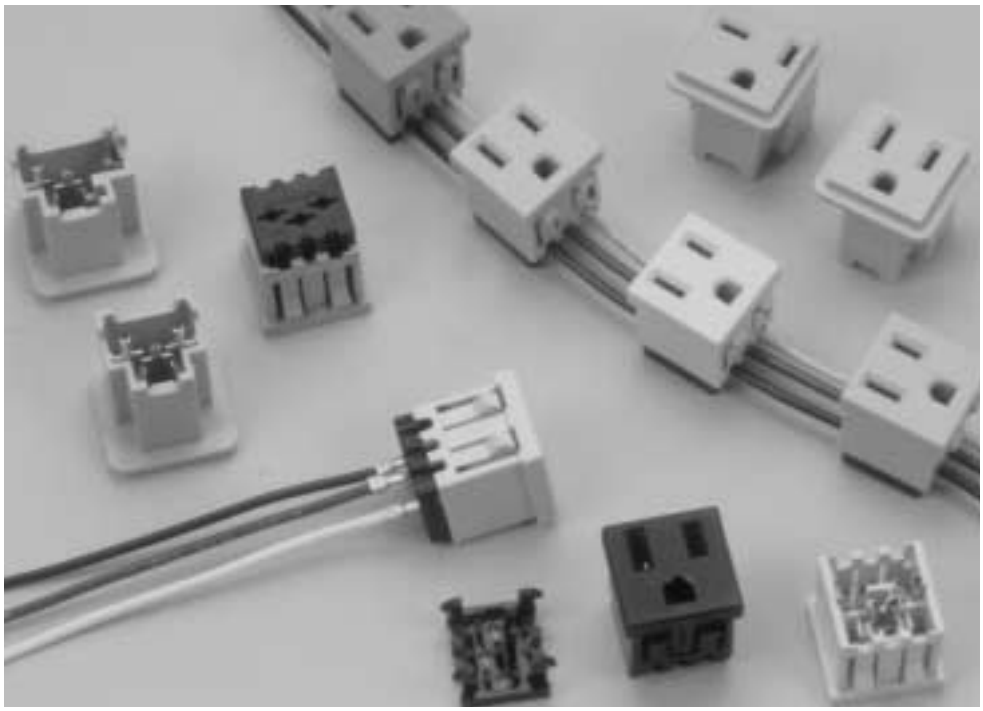
Convenience Outlets

Product Facts

- **Panel mount connector snaps in without the use of tools and holds securely without retention hardware**
- **Terminates solid copper wire using stripless insulation displacement terminals**
- **Terminates wire end or allows wire to feed thru**
- **Alternate connection uses FASTON 205 Series tabs (see Catalog 82004)**
- **Panel mount connectors available in two sizes: 14-12 AWG [2-3 mm²] 18-16 AWG [0.8-1.4 mm²]**
- **Rated under the Component Recognition Program of Underwriters Laboratories Inc., File No. E146448, except for 213727-1**
- **Designed to UL Performance Std. 498**
- **Certified by Canadian Standards Association, File No. LR-7189A 15 A, 12-14 AWG [3-2 mm²] 13 A, 16 AWG [1.4 mm²] 10 A, 18 AWG [0.8 mm²]**

  File No. LR-7189A (213727-1 only)

  NRTL/C



89105

The Convenience Outlets offer a fast and easy way to add an AC Power Outlet to a variety of electrical and/or electronic equipment. The connectors are available to snap-in to panels or to be mounted on a printed circuit board. The end applications vary from use in applications such as Multiple Outlet Strips and Uninterruptible Power Supplies to industrial applications where a convenient AC power outlet is needed to be installed to the equipment in order to power external devices.

The panel mount connectors use insulation displacement technology to terminate the contacts to solid wires (from 18 AWG to 12 AWG). The printed circuit mounted connectors include both Outlet Jacks which are touch-safe and Input Jacks, which accept custom molded power cord receptacles.

Technical Documents

Instruction Sheets

408-6669 — 14-12 AWG [2-3 mm²] IDC version

408-6698 — 18-16 AWG [0.8-1.4 mm²] IDC version

For more information, request Catalog 82067.

Catalog 1773096
Revised 8-05

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UK: 44-141-810-8967

Convenience Outlets - Panel Mount

Current Rating:
14-12 AWG – 15A
16 AWG – 13 A
18 AWG – 10A

Material
Housing- thermoplastic
Contact – Copper alloy

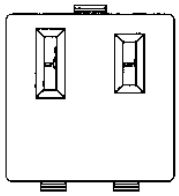
205 Series FASTON Tab
Part Number 62531-1*

Specifications
Wire Range – 18-14 AWG [0.8-2mm²]
Insulation Diameter - .120-.150 [3.05-3.81]

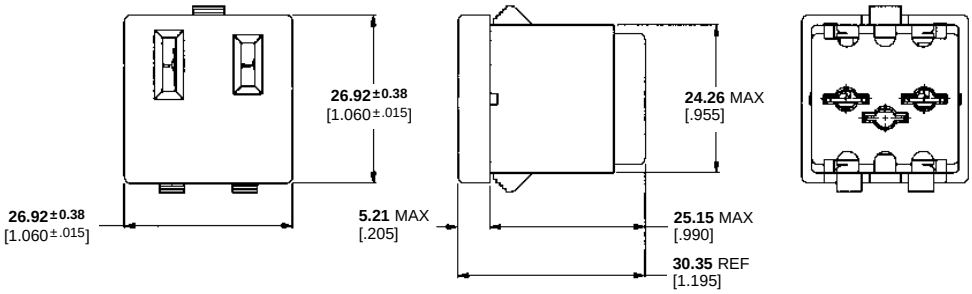
Material and Finish
Brass, tin plated

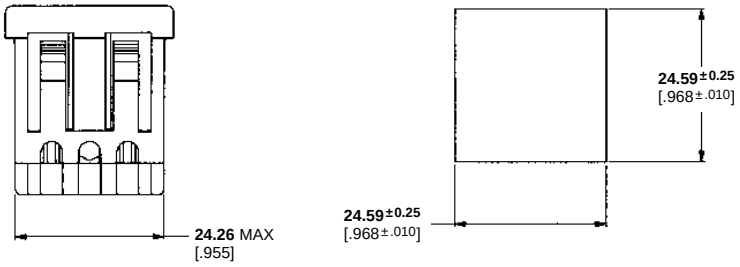
*Reverse reeled for use in Model "K" Terminating Machine **Part Number** 585435-5 using Heavy Duty Miniature (HDM) Applicator **Part Number** 567069-2 or in Leadmakers using HDM Applicator **Part Number** 567069-1

No. of Contacts	Part Numbers			Housing Color
	14-12 AWG [2-3 mm²]	18-16 AWG 0.8-1.4mm²]	Panel Plug	
2 Plus Ground	208979-2	208697-2	—	Black
	208979-4	208697-4	—	Almond
	1-208979-0	—	—	Platinum
	1-208979-1	—	—	Gray
	1-208979-2	—	—	Orange
	1-208979-4	—	—	Putty White
2 (No Ground)	213878-1	—	—	Black
0 (Blank)	—	—	796285-1	Black



Part No. 213878-1





Recommended Panel Cutout
Panel thickness - 0.76-1.78 [.030-.070]

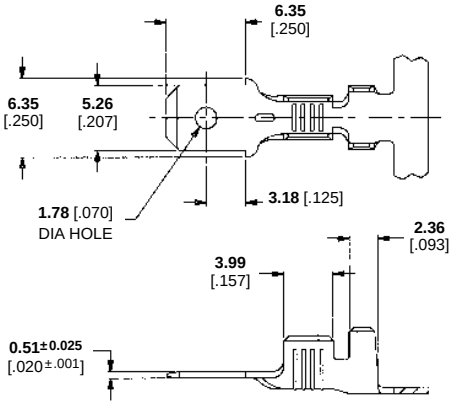
205 Series FASTON Tab
Part Number 62531-1*

Specifications

Wire Range — 18-14 AWG [0.8-2 mm²]

Insulation Diameter — .120-.150 [3.05-3.81]

Material and Finish — Brass, tin plated



*Reeled for use in Model "G" and Model "K" Terminating Machine using Heavy Duty Miniature Applicator Part Number 567069-1

AC Inputs

Catalog 1773096
Revised 8-05

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Convenience Outlets - PC Board Mount

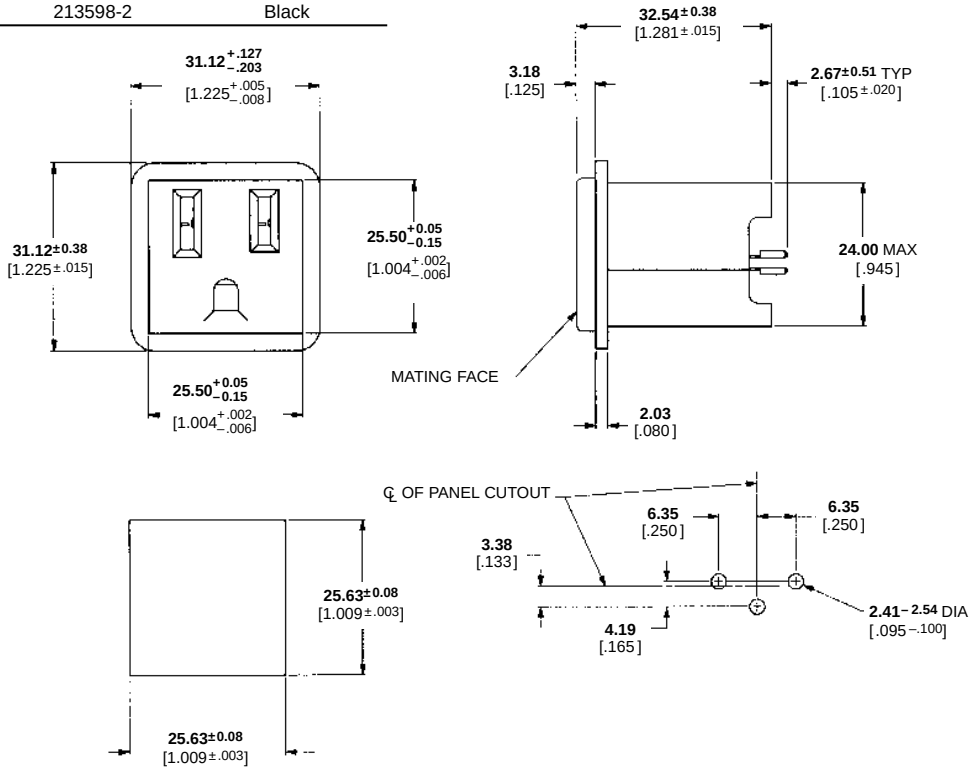
15 Amperes

Part Numbers	Housing Color
213598-1	Gray
213598-2	Black

Material and Finish

Housing — Nylon

Contacts — Brass plated .000100 [0.00254] min. tin-lead for a minimum length of .195 [4.95] on end opposite mating face, over .000050 [0.00127] min. nickel on entire contact



Recommended Panel Cutout **Recommended Hole Pattern**

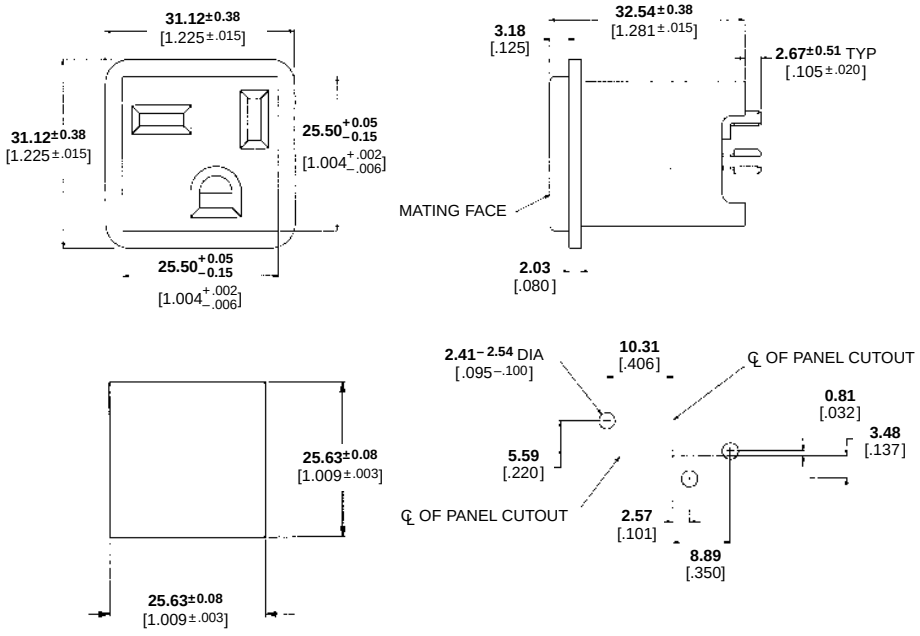
20 Amperes

Part Number 213727-1

Material and Finish

Housing — Nylon, Gray

Contacts — Brass plated .000100 [0.00254] min. tin-lead for a minimum length of .195 [4.95] on end opposite mating face, over .000050 [0.00127] min. nickel on entire contact



Recommended Panel Cutout **Recommended Hole Pattern**

AC Inputs

Catalog 1773096
Revised 8-05

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Japan: 81-44-844-8013
UK: 44-141-810-8967

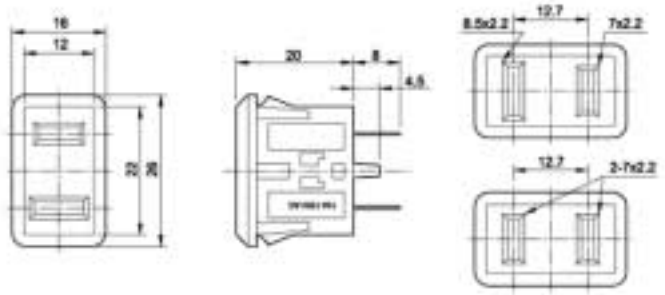
Convenience Outlets

Product Facts

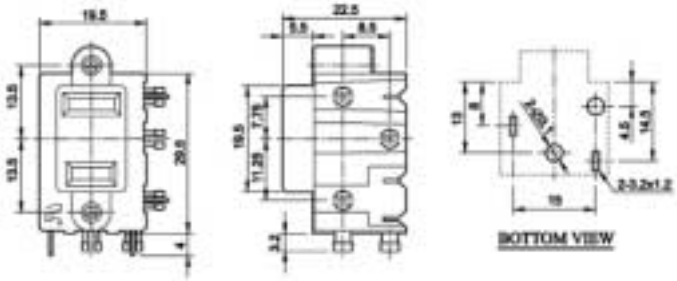
- PCB Mountable
- 15A Output (outlet) Jacks
- 7A Input Jacks
- Connectors feature pcb retention features
- Horizontal or Vertical Mount
- Combination Jacks ideal for compact inverters – saves space vs. separate input/output connectors

For specific part numbers, contact Tyco Electronics

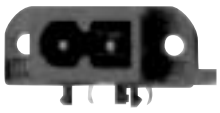
AC Output Jack
Panel Mount with Solder Tabs

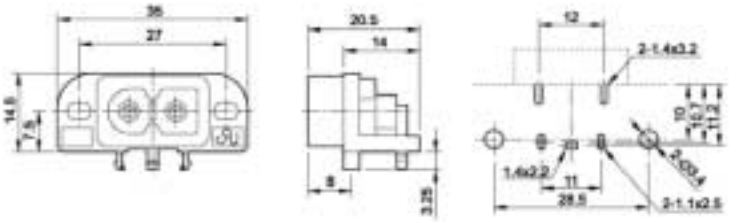


AC Output Jack
PCB Mount

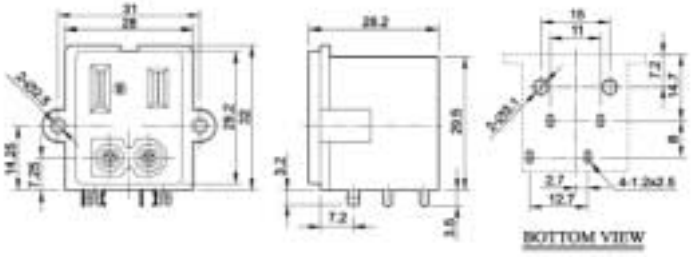


AC Input Jack
PCB Mount





Combination Input/Output Jack
PCB Mount



AC Inputs

Catalog 1773096
Revised 8-05

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Japan: 81-44-844-8013
UK: 44-141-810-8967

IEC Power Connectors (CORCOM)

A complete line of power entry modules solves a variety of power entry needs by combining functions to reduce cost, space and labor.

Power entry modules are an efficient means of combining power entry functions into one module to save ordering, manufacturing, and inventory costs. Tyco Electronics offers hundreds of options to solve power entry problems.

With filtered and unfiltered modules, Tyco Electronics provides more ways of bringing power into a system than any other manufacturer.

For more information, request Catalog 1654001.

Catalog 1773096
Revised 8-05

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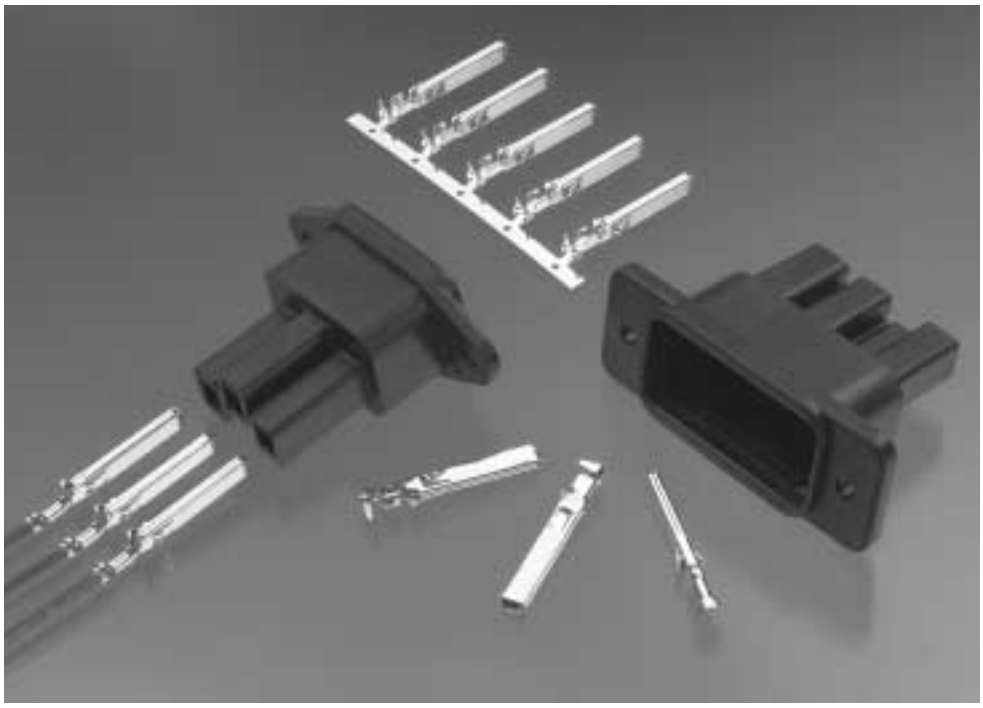
Power Cord Receptacles



Product Facts

- Designed to international standard CEE-22
- Recognized under the Component Recognition Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LK7189
- VDE approved, License No. 70442 and 70443
- Mate with standard international plugs
- Machine applied, crimp, snap-in contacts
- Same contact design for ground and power — one inventory item
- Rear of housing is egg-crated for maximum protection — no post termination sleeving required

Technical Document

Instruction Sheets

408-7686 – Power Cord Receptacle Housing PN 206637-1

408-7711 – Extraction Tool PN 91106-1

Application Specification

114-10044 – Power Cord Receptacle Housing PN 206637-1

AMP Power Cord Receptacles are designed to electrical specification CEE-22, the international standard used by most European nations.

AMP Power Cord receptacles are available in a 3-position and a 5-position male configuration with a polarized, thermoplastic housing suitable for rack or panel mounting. The crimp, snap-in contacts are tin plated and have a rectangular cross section. The ground contact extends .118 [3] farther forward than the power contacts when installed in the housing, to provide for proper grounding prior to power engagement.

They are recognized by Underwriters Laboratories Inc., under the Component Recognition Program, at 250 volts, 15 amperes when wired with appropriate 16 AWG [1.25-1.4mm^2] wire per table 400-5 of the National Electrical Code. CSA certifies the receptacles for 250 volts, 15 amps. Because of configuration controls, CEE rates them for 250 volts, 10 amperes. VDE certifies them for 250 volts, 10 amps.

Contacts are available in strip form for high-speed, automatic machine application at lowest cost, and loose-piece contacts are available for hand tool application for repair or maintenance.

In addition to economies of application by automatic machine, the egg crate design at the rear of the housing cavities eliminates the need for costly post-termination insulation sleeving.

For more information, request Catalog 82047.

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Battery Interconnects

Product Facts

- Multi-directional mating – all angles between 0° and 90°
- Standard 5-position system
- Total interface solution
- Current capacity – 7 Amps/ single contact at 30°C T-Rise
- Choice of right-angle or vertical mount headers with left, right or keyless polarization
- Headers available for 7.2, 10.8, and 12.0 volt rechargeable batteries
- Receptacle connectors with solder tails or weld tabs
- Consumer friendly mating/unmating of battery
- Reduces design cycle time
- Reduces overall costs
- Produced under a Quality Management System certified to ISO 9001
- Two-Piece Connector
- Blade Contacts – for high durability
- Used Industry-wide for rechargeable battery I/O – in laptop computers
- Offered in a variety of key arrangement – for different voltage batteries
- 2.5mm, 3.0mm and 5.0mm contact pitch
- Up to 7 Amps per contact
- Up to 2500 cycle durability
- Two pc tails per blade – for better current distribution

Since the introduction of the Duracell, standard-sized nickel-metal hydride rechargeable battery to the computer and communications original equipment manufacturers (OEMs), Tyco Electronics has played a major role in the development and manufacture of a reliable, high performance multi-directional interconnect system.

As the Duracell line of rechargeable batteries expanded to newer and more diversified uses, so have Tyco Electronics Battery Interconnect Systems. Today, systems are available for:

- DR17 (7.2 Volts)
- DR30 (7.2 Volts)
- DR15 (10.8 Volts)
- DR35 (10.8 Volts)
- DR36 (12.0 Volts)

These 5-position headers and the Tyco Electronics 5-position receptacle connectors provide reliable, easy mate/unmate interconnects.

Single contacts are rated at 7 amperes with a 30°C T-Rise, and have an operating temperature rating of -30°C to +70°C. Headers feature sturdy brass contacts with duplex plated tin-lead solder tails and nickel on the mating area to ensure the life of the system and to provide high cycle mating/unmating.

Housings are made of high temperature, U.L. 94V-0 rated thermoplastic and are available with left or right hand keying, or with keyless mounting configurations. Keyless headers are designed to minimize board space requirements, and require the battery manufacturer to provide voltage key in the battery rack compartment. Keyless headers accept all 3 voltage battery packs.

Tyco Electronics "Drop-In" receptacle connectors fit securely within the battery pack compartment. They are offered in a choice of weld tab or solder tail versions for PC board mounting. Housings are made from high impact U.L. 94V-0 rated thermoplastic with high temperature housings available for solder tail versions.

The Tyco Electronics Battery Interconnection systems provide variable direction mating and voltage/form factor polarization for safe, friendly operation.

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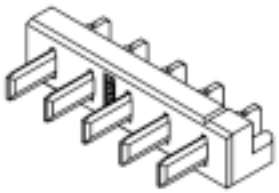
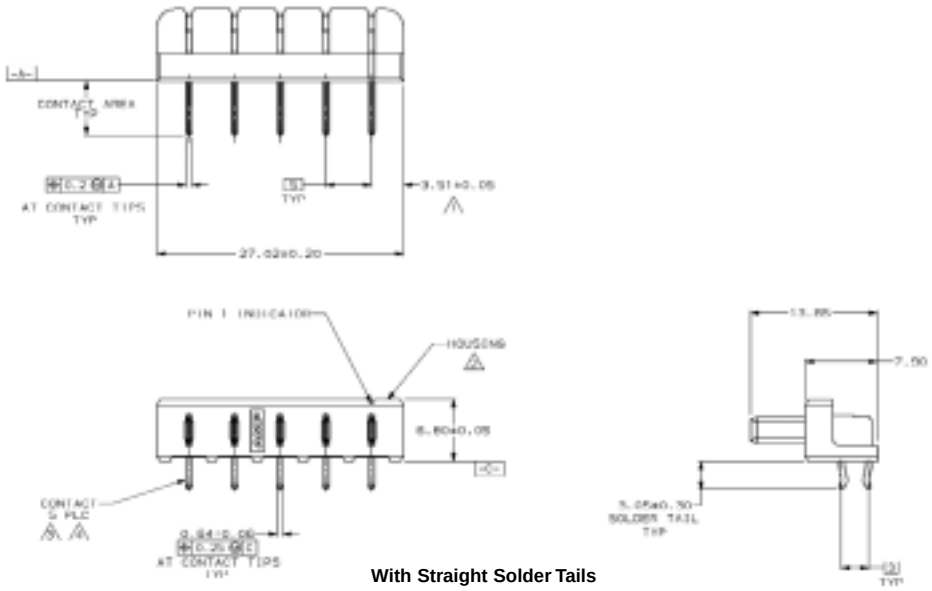
Battery Interconnects (Continued)

Right-Angle Headers, 5.0 Centers, Left-Hand Key

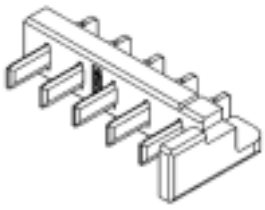


Material and Finish:
Housing – Polyphthalamide 94 V-0 rated, black
Contacts – Brass, plated 0.00254 min. tin-lead on the solder tail over 0.00190 min. nickel overall

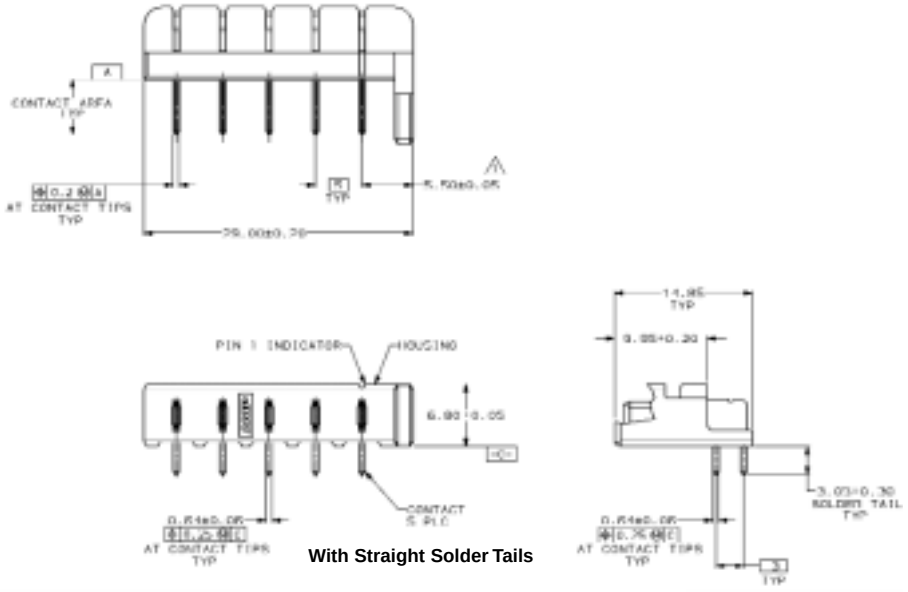


With Straight Solder Tails

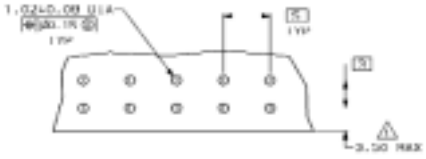
Right-Angle Headers, 5.0 Centers, Right-Hand Key



Material and Finish:
Housing – Polyphthalamide 94 V-0 rated, black
Contacts – Brass, plated 0.00254 min. tin-lead on the solder tail over 0.00190 min. nickel overall



With Straight Solder Tails



Recommended PC Board Layout

Technical Documents:

Product Specification – 108-1501
Application Specification – 114-24005

Notes:
1. Connector side of pc board lay-out shown.
2. PC board layout and connector dimensions illustrated above serve as a guide only; they are not to be used for actual design or construction of equipment,. Consult Tyco Electronics customer drawings for detailed pc board layout and connector dimension requirements.
3. Voltage keying reg. IEC connector study group (IEC 488).

Voltage	Voltage Key	Part Numbers		Dia. A	With Mounting Holes
		Straight Solder Tails	Retentive Solder Tails		
7.2	Right Hand	787142-1	—	5.5	No
10.8	Left Hand	787259-1	—	10.0	No
12.0	Left Hand	787428-1	—	7.5	Yes*
	Right Hand	787366-1	—		
NA	Keyless	787441-1	787443-1	3.51	No

*See Tyco Electronics Customer Drawings for specific hole layout.

Catalog 1773096
Revised 8-05

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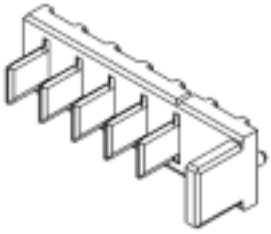
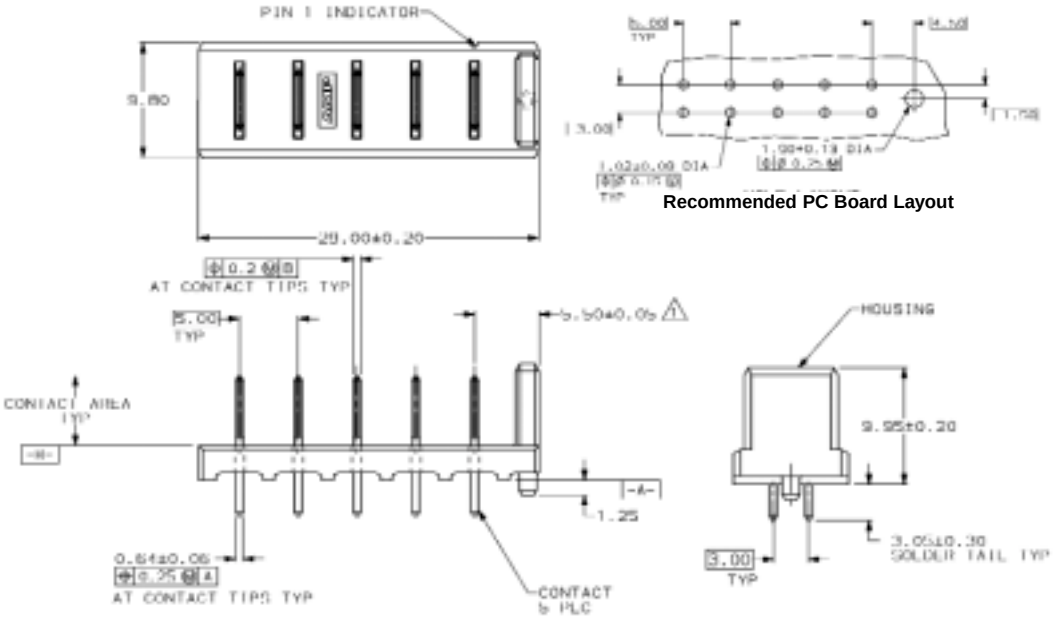
Battery Interconnects (Continued)

Vertical Headers, 5.0 Centers



Material and Finish:
Housing – Polyphthalamide 94 V-0 rated, black
Contacts – Brass, plated 0.00254 min. tin-lead on the solder tail over 0.00190 min. nickel overall

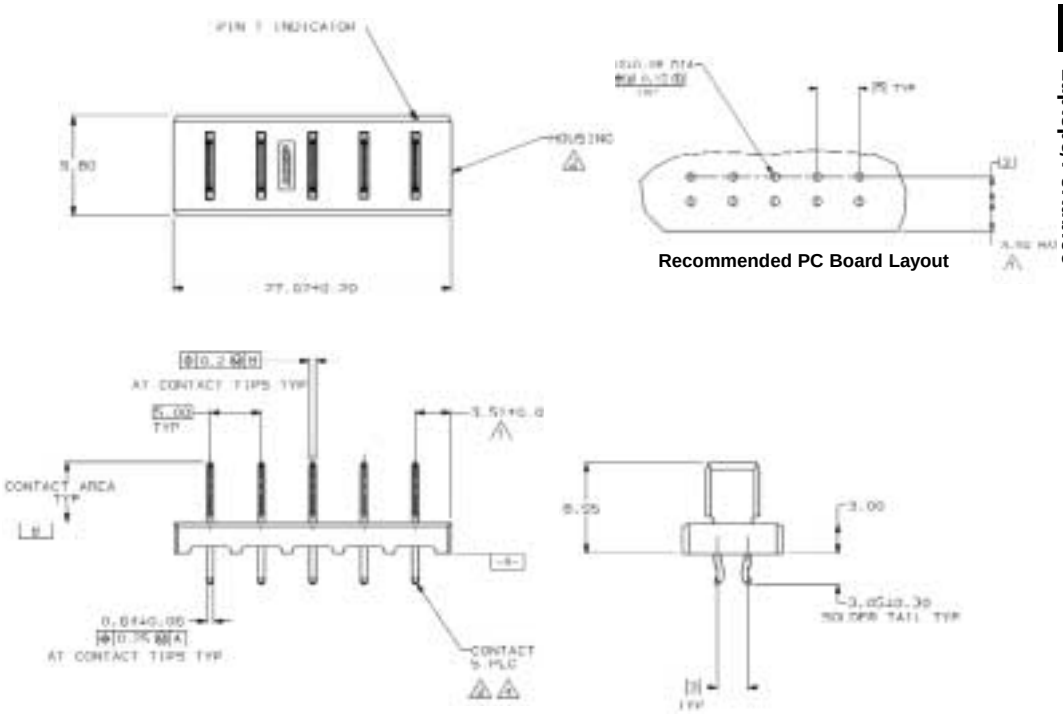
Technical Documents:
Product Specification – 108-1501
Application Specification – 114-24005



Vertical Headers, 5.0 Centers, Keyless*

*Keyless headers are designed for any voltage battery pack, and to minimize pc board space requirements. The use of a keyless header requires the equipment manufacturer to provide voltage key in the battery pack compartment.

Material and Finish:
Housing – Polyphthalamide 94 V-0 rated, black
Contacts – Brass, plated 0.00254 Min. tin-lead on the solder tail over 0.0190 min. nickel overall



Voltage	Part Numbers		Dia. A	With Mounting Holes
	Straight Solder Tails	Retentive Solder Tails		
7.2	787334-1	—	5.5	Yes
10.8	787419-1	787421-1	10.0	Yes
12.0	787430-1	—	7.5	Yes
Keyless	787444-1	787446-1	3.51	No

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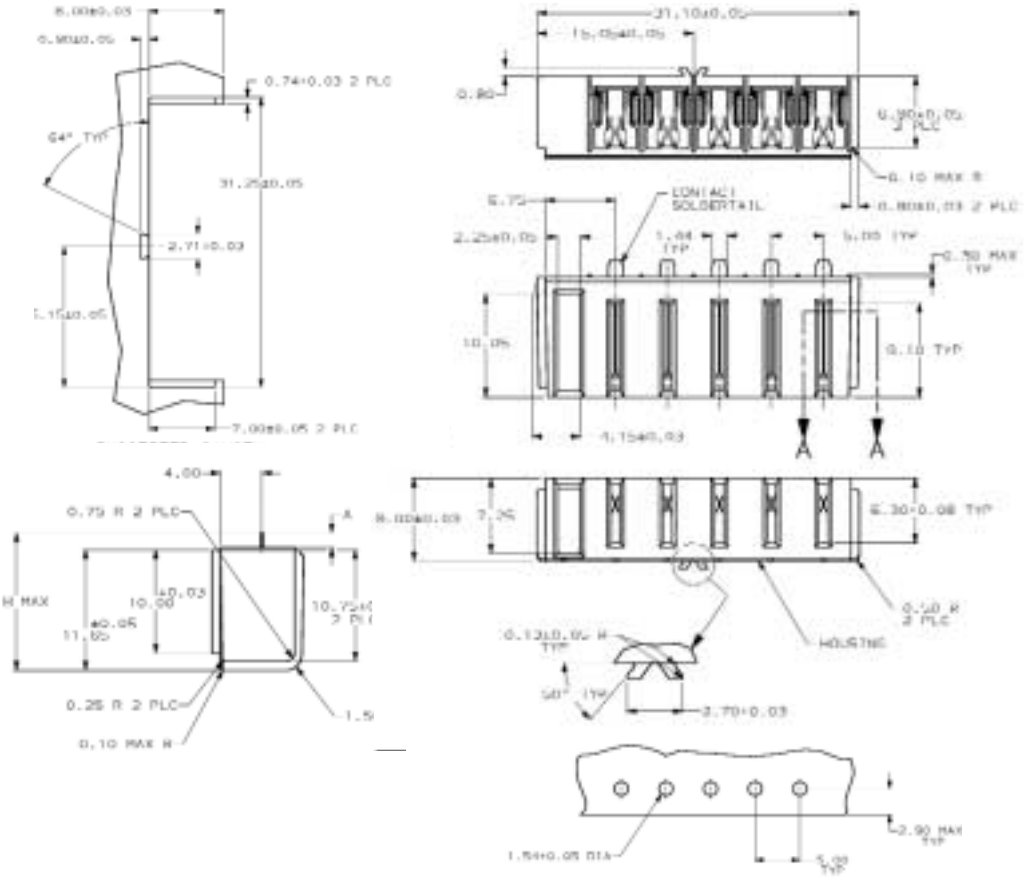
Battery Interconnects (Continued)

Receptacle Connectors, 7.2 Voltage, with Solder Tail for PC Board Mounting

Part No. 787590-1

Material and Finish:
Housing – Polyphthalamide 94 V-0 rated, black
Contacts – Copper alloy, duplex plated 0.00254 min. tin-lead on solder tails over 0.00190 min. nickel overall



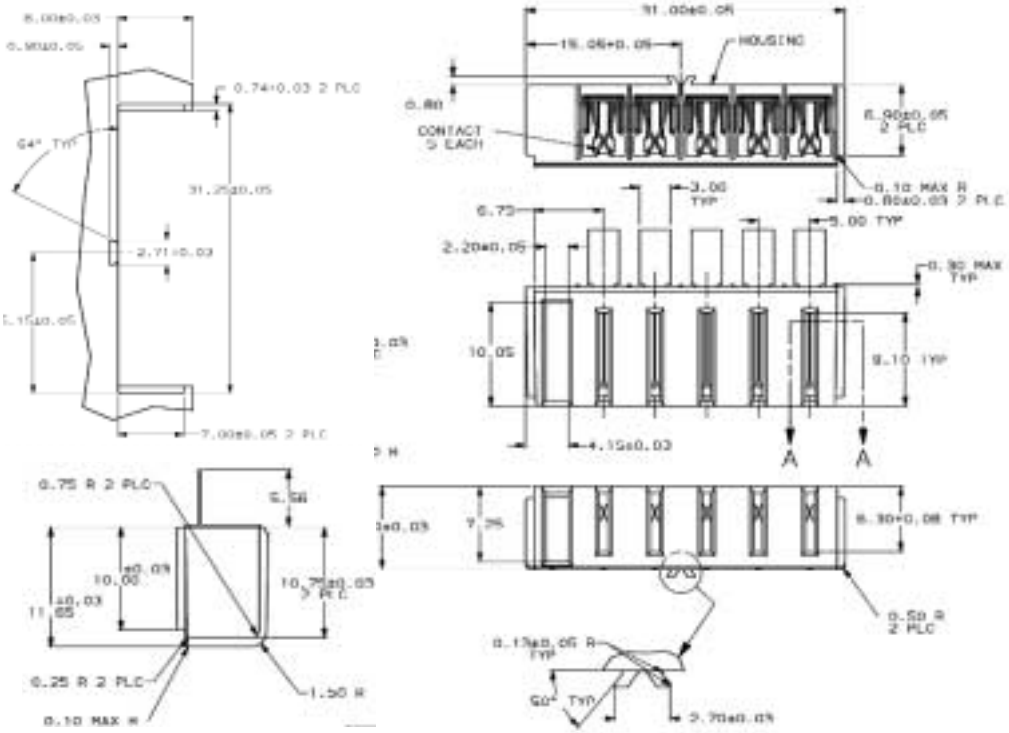
Recommended PC Board Layout

Receptacle Connector, 7.2 Voltage with Weld Tabs

Part No. 787613-1

Material and Finish:
Housing – Polycarbonate 94 V-0 rated, black
Contacts – Copper alloy, plated 0.00190 min. nickel

Technical Documents:
Product Specification – 108-1501
Application Specification – 114-24005



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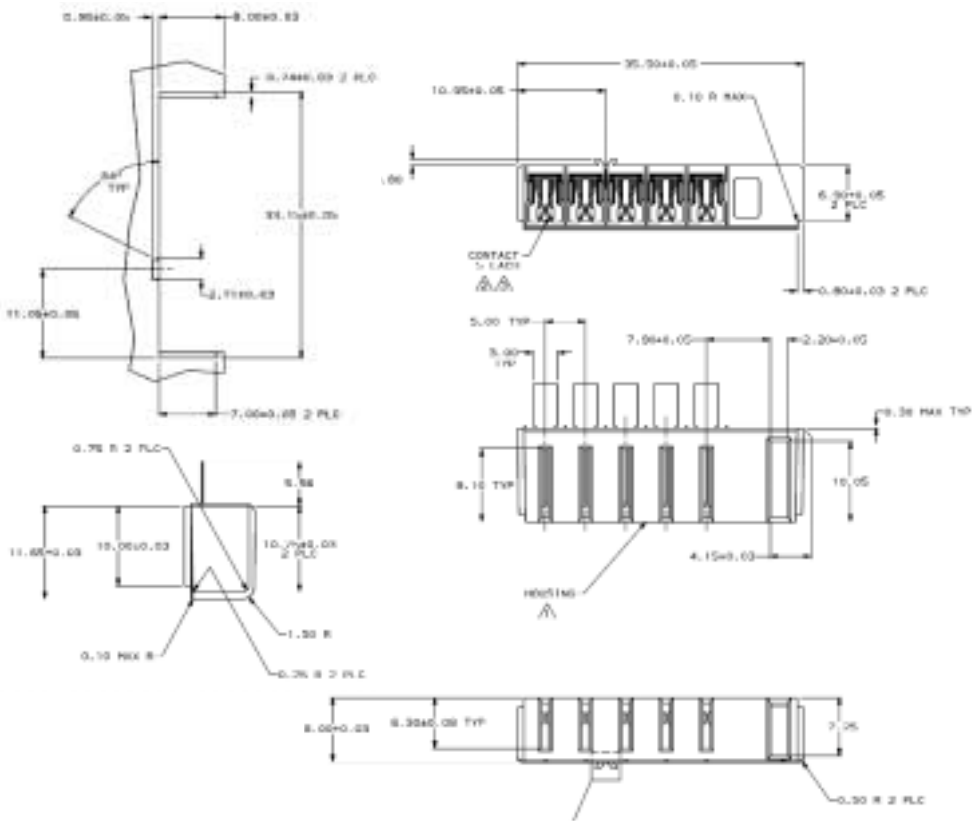
Battery Interconnects (Continued)

Receptacle Connectors, 10.8 Voltage, with Weld Tabs

Part No. 787614-1

Material and Finish:
Housing – Polycarbonate 94 V-0 rated, black
Contacts – Copper alloy, plated 0.00190 min. nickel

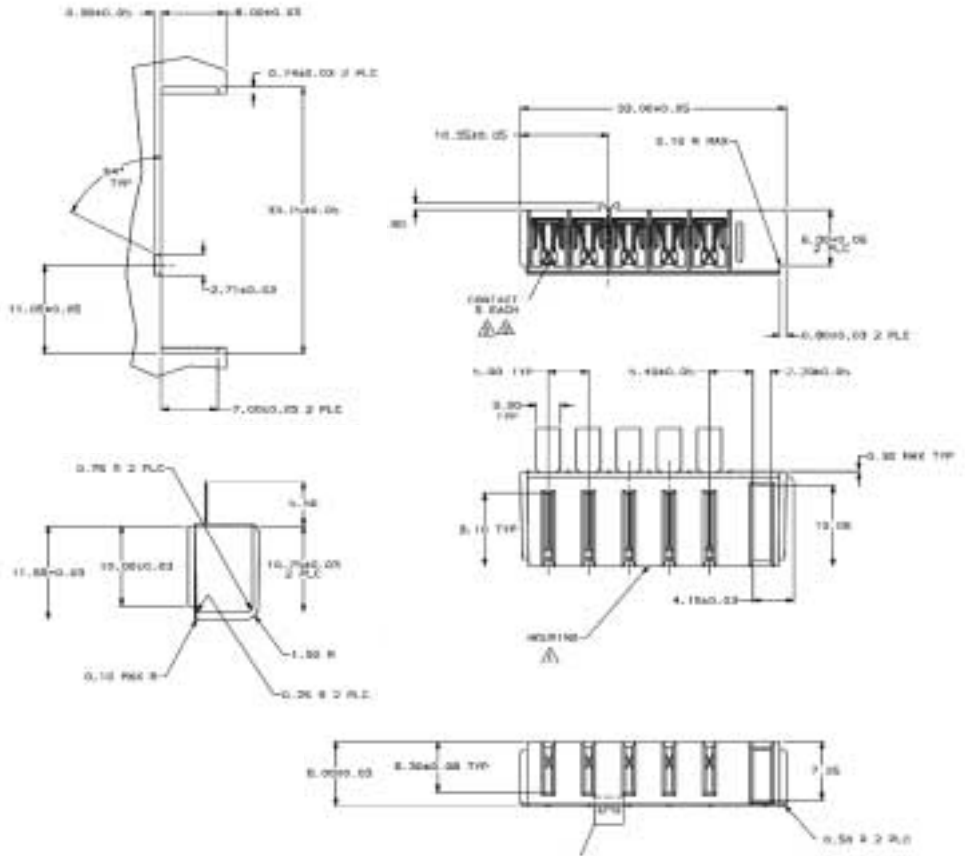


Receptacle Connector, 12.0 Voltage with Weld Tabs

Part No. 787615-1

Material and Finish:
Housing – Polycarbonate 94 V-0 rated, black
Contacts – Copper alloy, plated 0.00190 min. nickel

Technical Documents:
Product Specification – 108-1501
Application Specification – 114-24005



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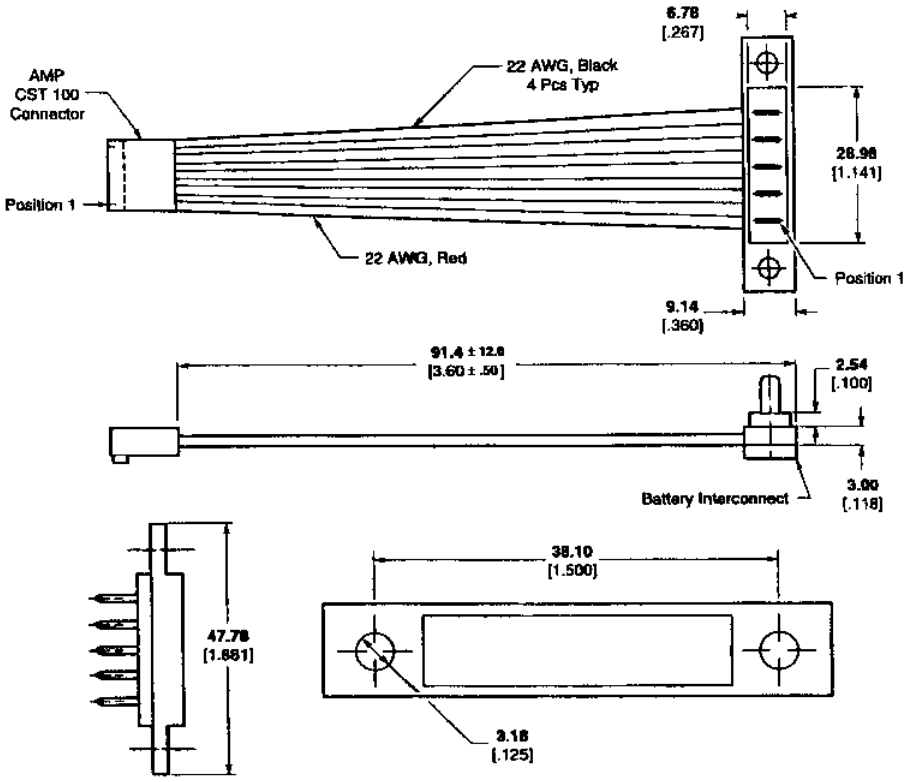
Tyco Electronics Battery Interconnection System, Cable-to-Board Connector Assembly

Product Facts

- Offers OEM manufacturers complete design flexibility
- Tyco Electronics cable assembly design engineers assist on your specific assembly requirements
- Standard or customized mounting options
- Double or single ended assemblies
- Wide choice of other end Tyco Electronics connectors to complete your assembly
- Manufacturing labor and overhead cost savings
- Inventory cost savings with Tyco Electronics Just-In-Time Delivery
- Eliminates Down-Time, all assemblies individually inspected prior to shipping



Tyco Electronics Battery Interconnect System, Cable-to-Board Connector Assembly is designed to maximize your manufacturing capabilities, and offers greater flexibility in your design cycle.

This assembly is presently available with a keyless battery connector on the mating end and a Tyco Electronics CST-100 connector on the internal connection end.

Tyco Electronics will consult with you, in the design or post-design stage, to introduce our complete cable-to-board connector assembly design and manufacturing capabilities to meet your specific battery interconnect system connector assembly requirements.

Call the Tyco Electronics Product Information Center, for immediate information on this new, exciting service for the OEM systems designer.

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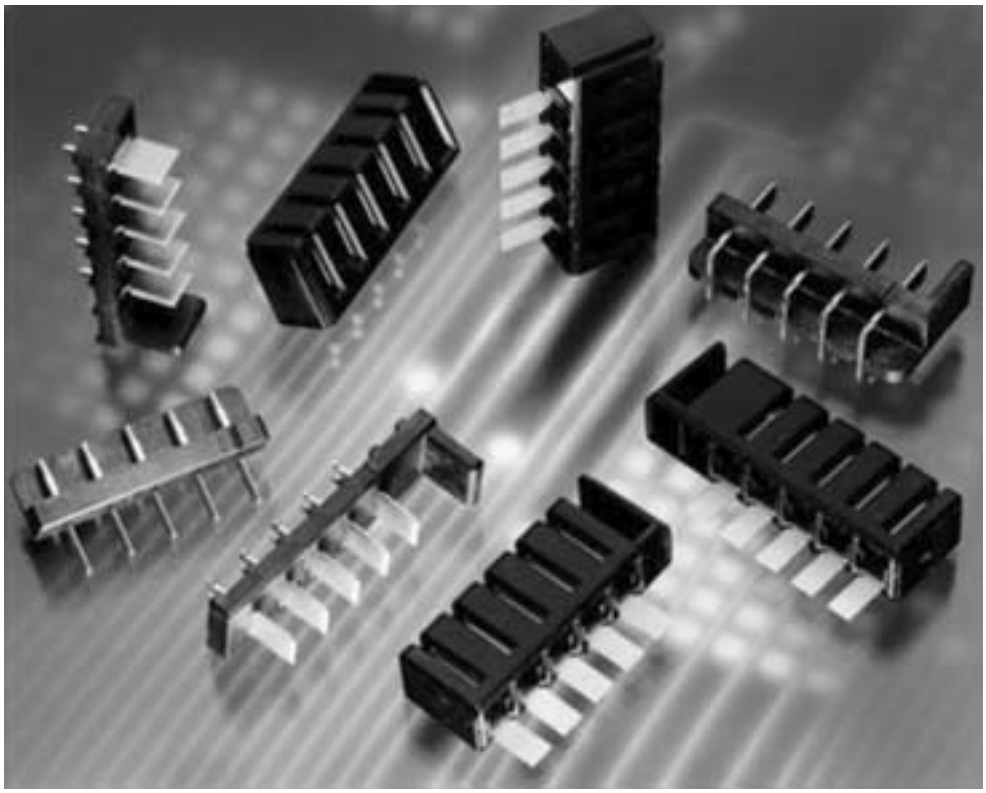
Special Battery Connectors

Product Facts

- **4, 5, 6 and 7 positions at 2.5mm centerline; 8 and 10-position at 3.0mm centerline**
- **Housings have an excellent heat resistant property and are durable with the through-hole reflow techniques**
- **Contacts are made of gold plated, high conductivity, copper alloy**
- **2.5mm centerline plugs are available with DIP types and SMT offset types for thinner equipment. Receptacles are available only with SMT types.**



As the sizes of mobile equipment, such as notebook PCs, portable telephones, etc. are becoming smaller and thinner, the spaces for battery packs also require the best space efficiency.

Tyco Electronics Battery Connectors are available to meet the requirements of extremely high space efficiency of small size mobile equipment with the line contact concept and are available at 2.5mm and 3.0mm centerlines.

These connectors offer significant space savings with enough contact area to secure the connection. They connect the battery spaces apt to be affected by cumulative total of tolerances and the equipment of high reliability.

Performance Data

Voltage rating: 30V AC

Current rating: less than 6A

Mating/Unmating cycles:
6000 cycles (plug)
2000 cycles (rec)

Operating Temperature: -20°C to +80°C

Part Number	Connector Type	Number Position	Pitch
1318430-2	rec	5	2.5mm
1318792-1	plug	5	2.5mm
1318977-3	plug	6	2.5mm
1123688-3	rec	6	2.5mm
1318573-4	plug	7	2.5mm
1318574-4	rec	7	2.5mm
316160-1	plug	8	3.0mm
316163-1	rec	8	3.0mm
316433-1	plug	10	3.0mm
316435-1	rec	10	3.0mm
1123738-7	plug	10	2.5mm
1123822-7	plug	10	2.5mm
1123684-7	plug	10	2.5mm

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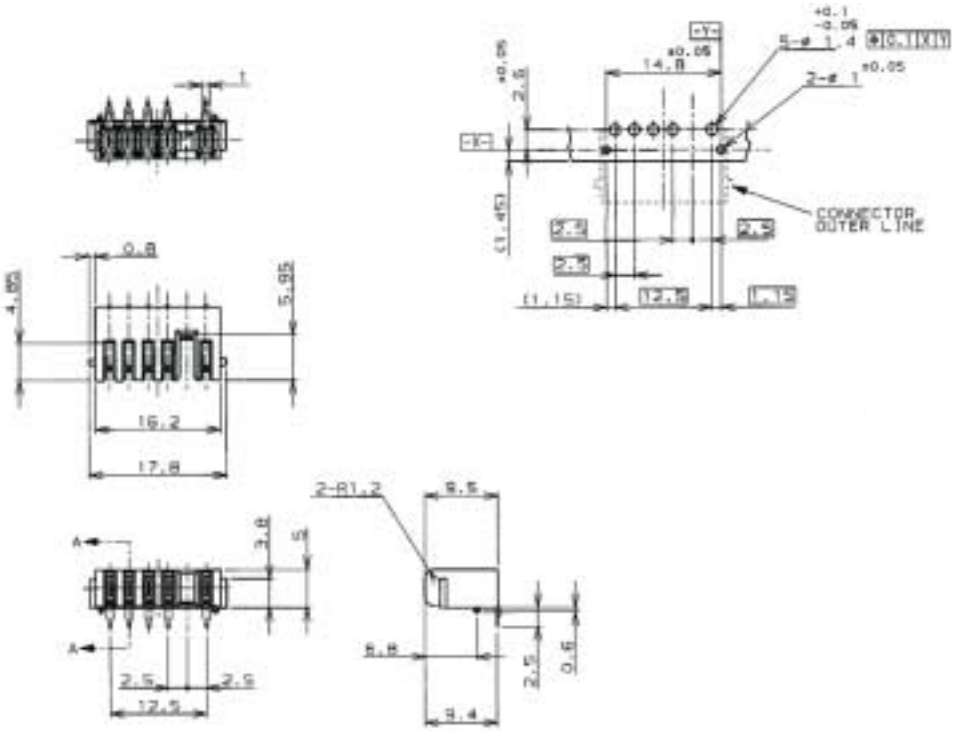
Special Battery Connectors (Continued)

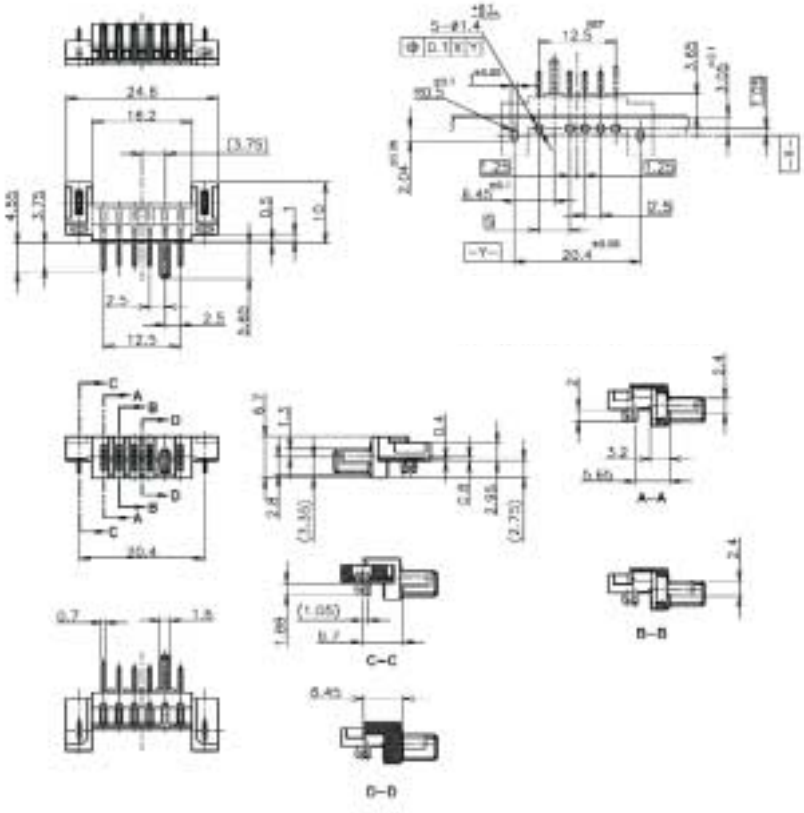
**2.5mm Pitch,
Receptacle Assembly,
5 Position**

Part Number 1318430-2



**2.5mm Pitch,
Plug Assembly, 5 Position**

Part Number 1318792-1



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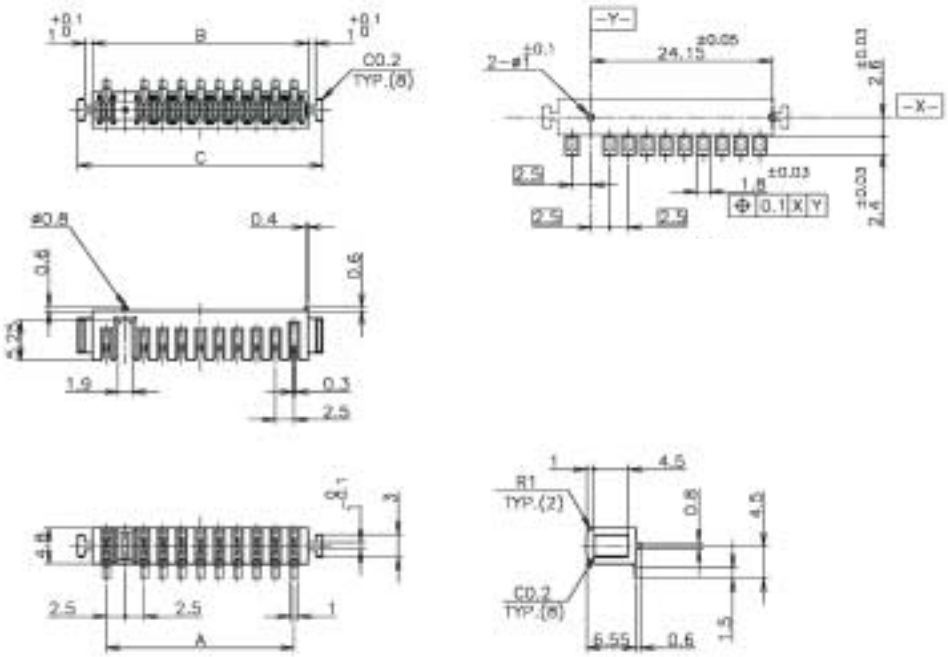
Special Battery Connectors (Continued)

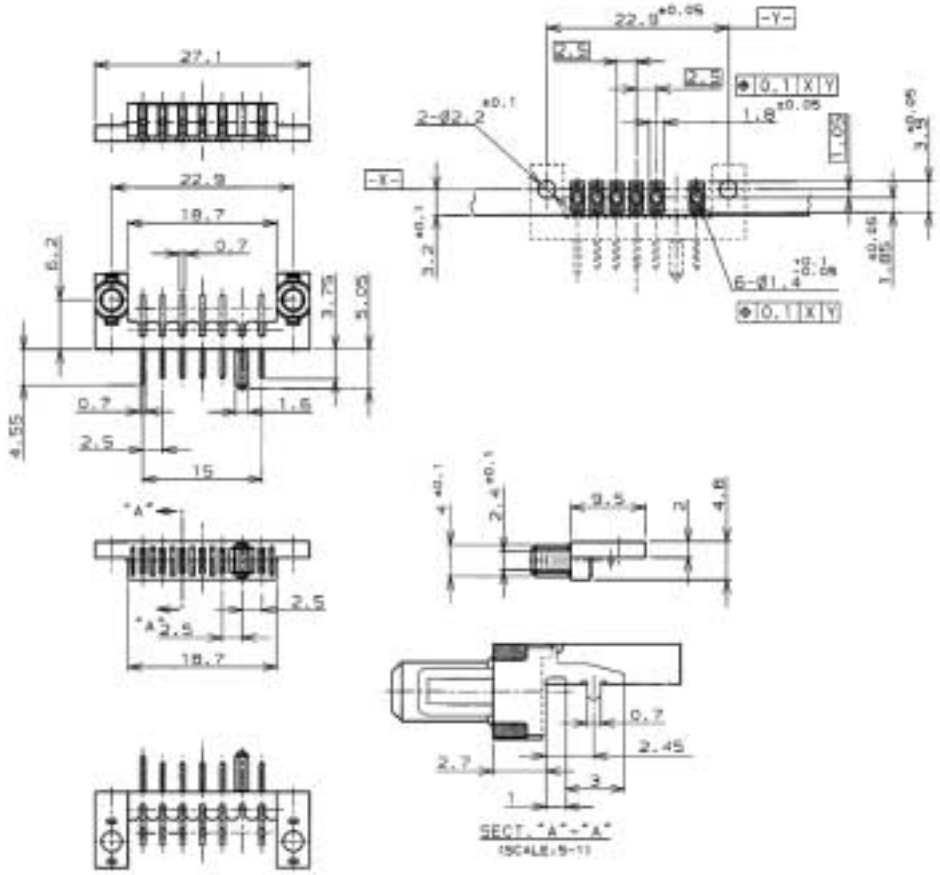
2.5mm Pitch, Receptacle Assembly, 6 Position

Part Numbers 1123688-3, 1123688-7



2.5mm Pitch, Plug Assembly, 6 Position

Part Number 1318977-3



Laptops/Portables

Catalog 1773096
Revised 8-05

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Dimensions are shown for reference purposes only. Specifications subject to change.

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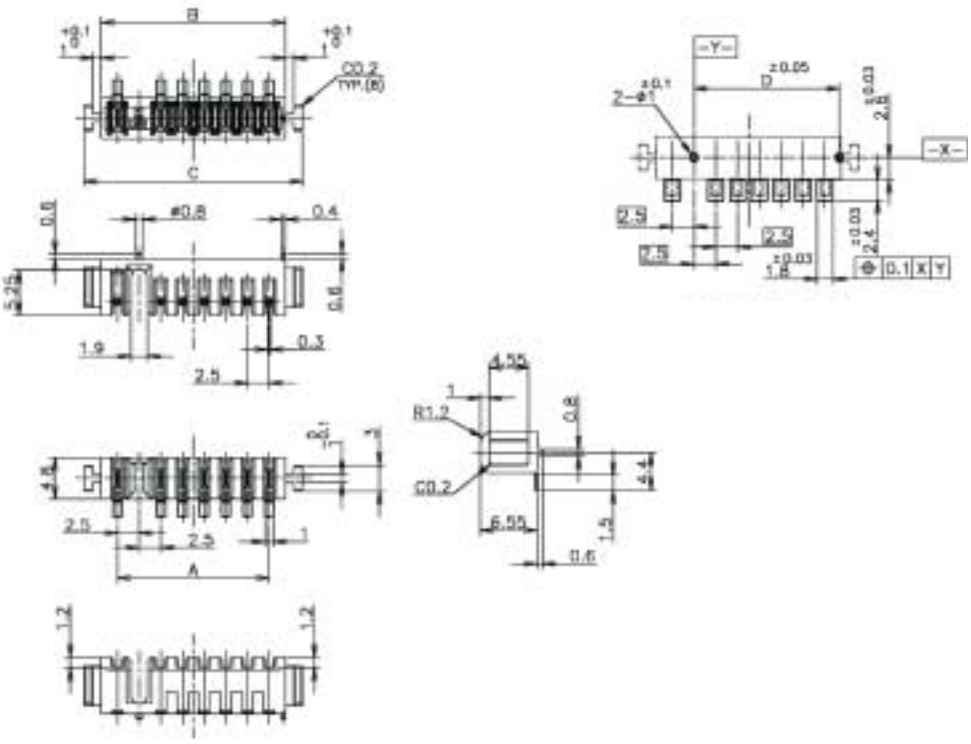
Japan: 81-44-844-8013
UK: 44-141-810-8967

Special Battery Connectors (Continued)

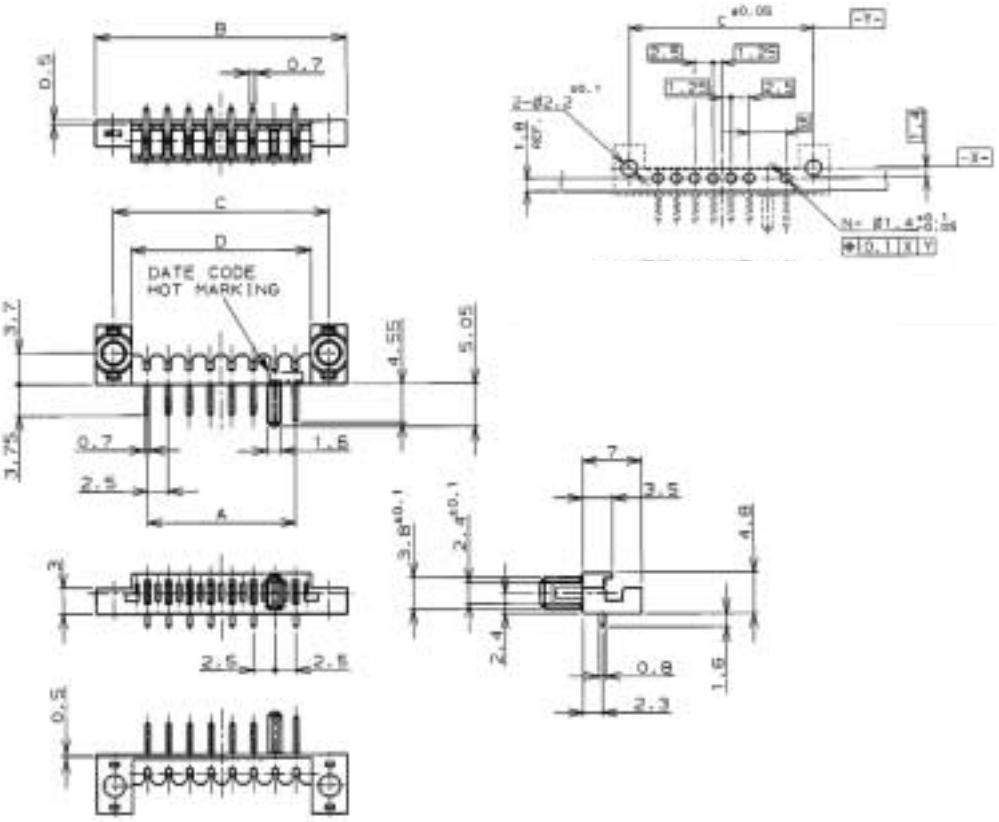
2.5mm Pitch Receptacle Assembly 7 Position

Part Number 1318574-4



2.5mm Pitch Plug Assembly 7 Position

Part Number 1318573-4



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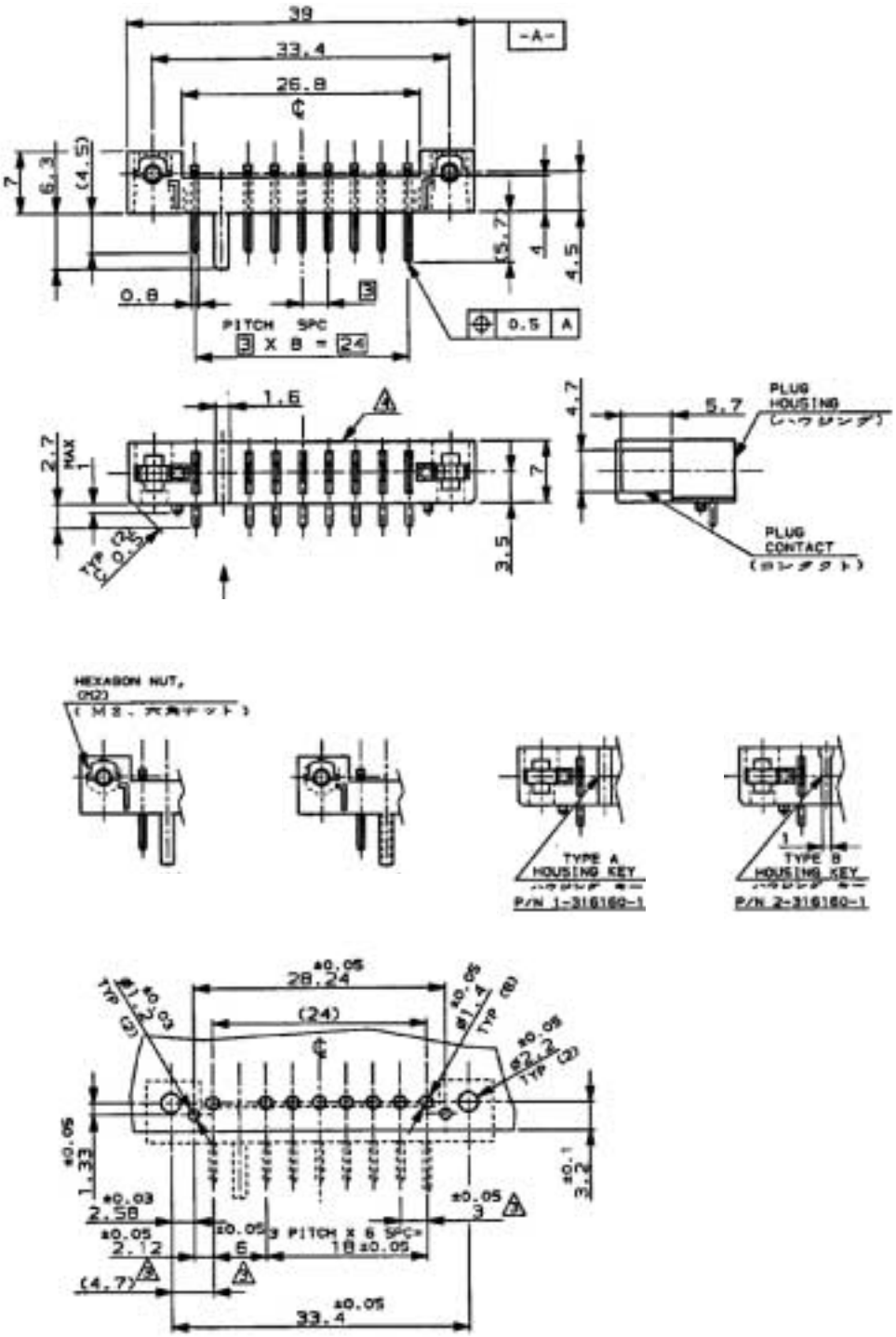
Special Battery Connectors (Continued)

3.0mm Pitch Plug Assembly 8 Position

Part Number 316160-1



Hexagon Nuts	Housing Key	
	A	B
With	1-316160-1	2-316160-1
Without	3-316160-1	4-316160-1

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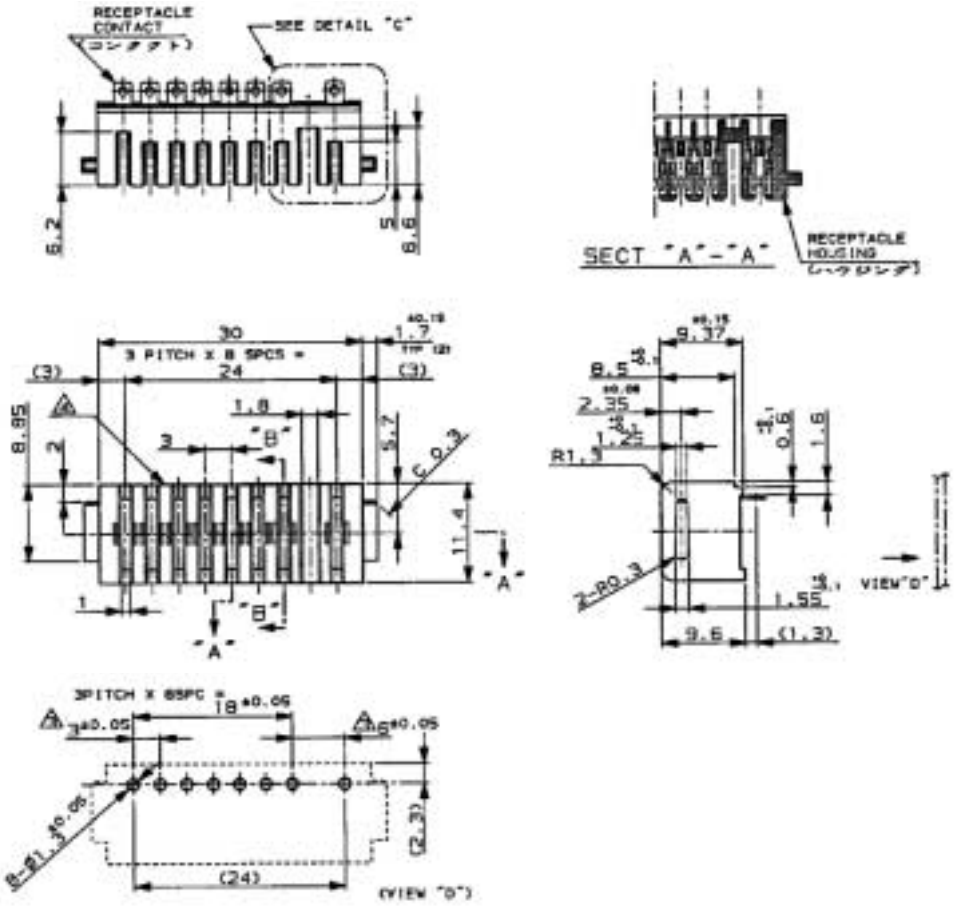
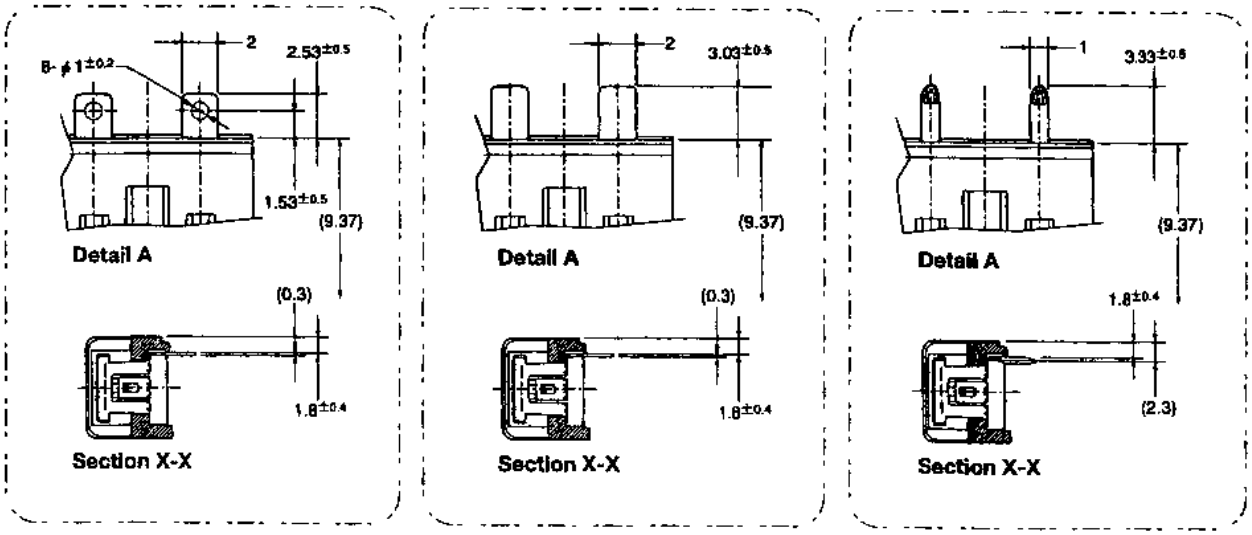
Special Battery Connectors (Continued)

3.0mm Pitch Receptacle Assembly 8 Position



Mount Type	Part Numbers	
	Key A	Key B
Wire	1-316163-1	2-316163-1
SMT	3-316163-1	4-316163-1
DIP	5-316163-1	6-316163-1



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Special Battery Connectors (Continued)

2.5mm Pitch Receptacle Assembly

Part Number 1123688-3, 6 Position

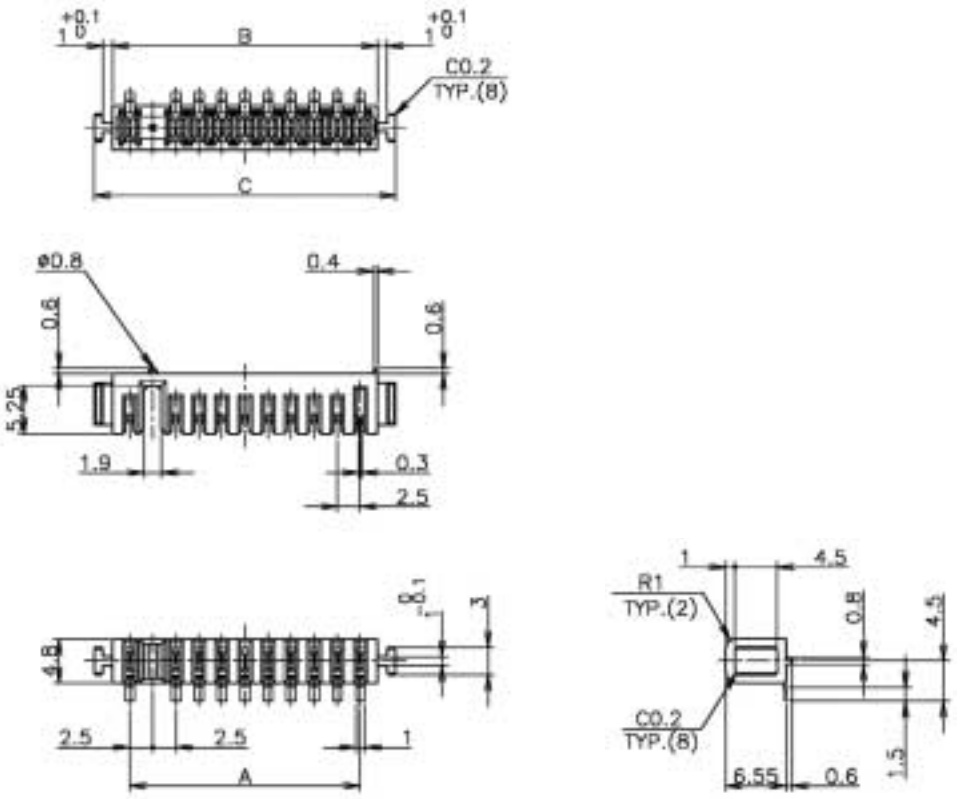
Part Number 1123688-7, 10 Position

Part Number 1-1123688-3, 10 Position

Material and Finish

Housing – Thermoplastic Molding Compound, UL94V-0 rated, black

Contact – Copper Alloy, nickel-under-plated all over, palladium nickel plated and gold-flash plated at contact area, tin-lead plated on soldering area.



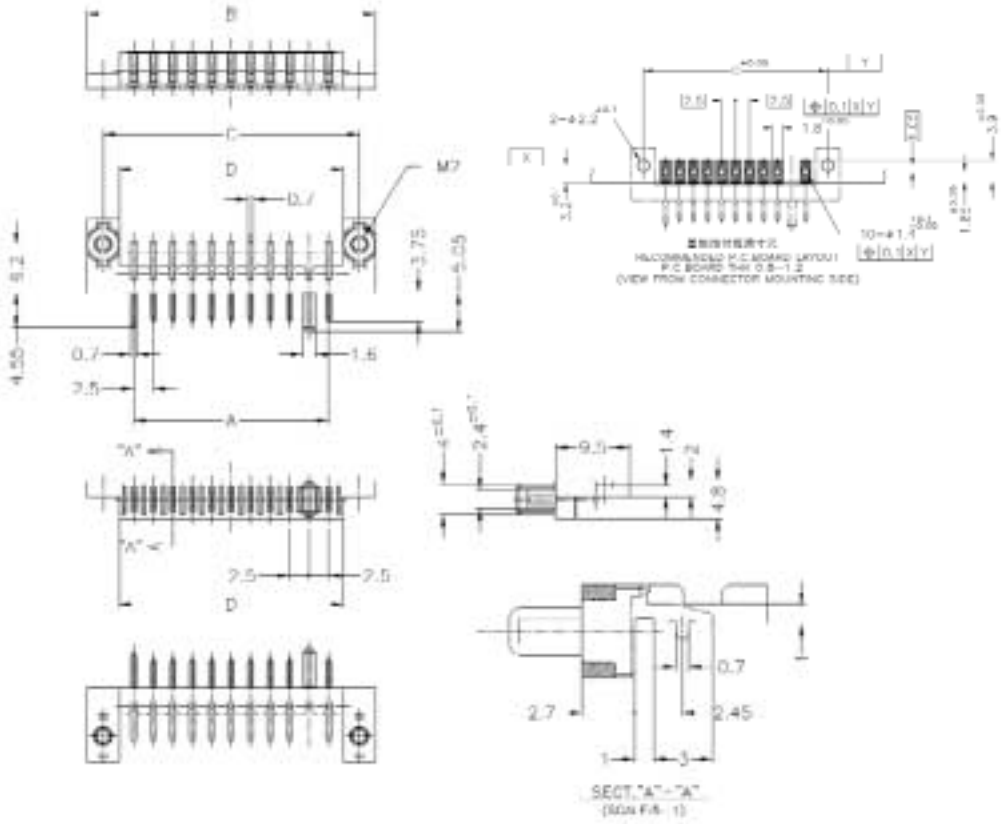
2.5mm Pitch, Plug Assembly 10 Position, Off Set Type

Part Number 1123738-7

Material and Finish

Housing – Thermoplastic Molding Compound, UL94V-0 rated, black

Contact – Copper Alloy, nickel-under-plated all over, palladium nickel plated and gold-flash plated at contact area, tin-lead plated on soldering area.



Catalog 1773096
Revised 8-05

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Special Battery Connectors (Continued)

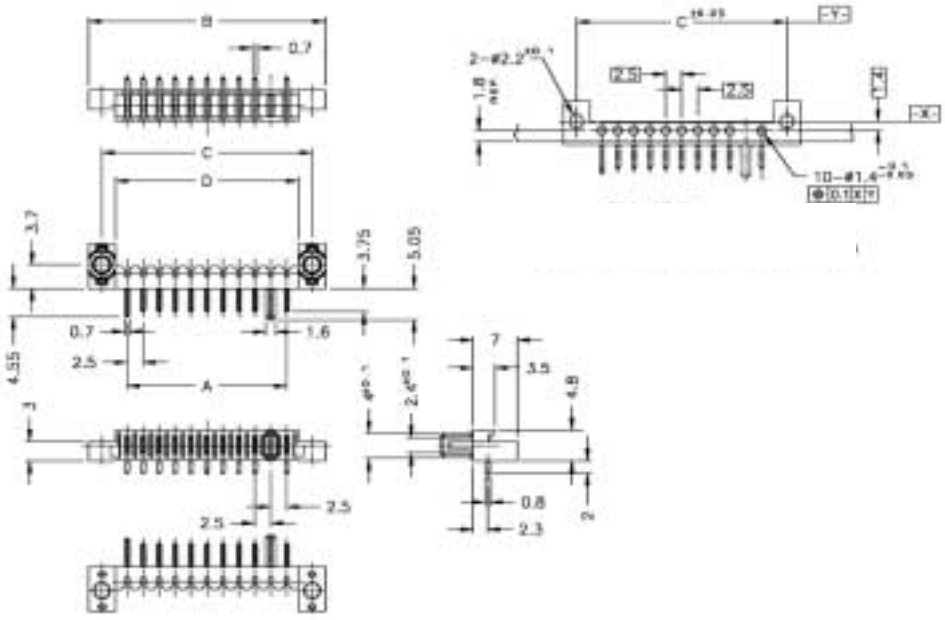
2.5mm Pitch, Plug Assembly 10 Position, Without Nut Plate

Part Number 1123822-7

Material and Finish

Housing – Thermoplastic Molding Compound, UL94V-0 rated, black

Contact – Copper Alloy, nickel-under-plated all over, palladium nickel plated and gold-flash plated at contact area, tin-lead plated on soldering area.



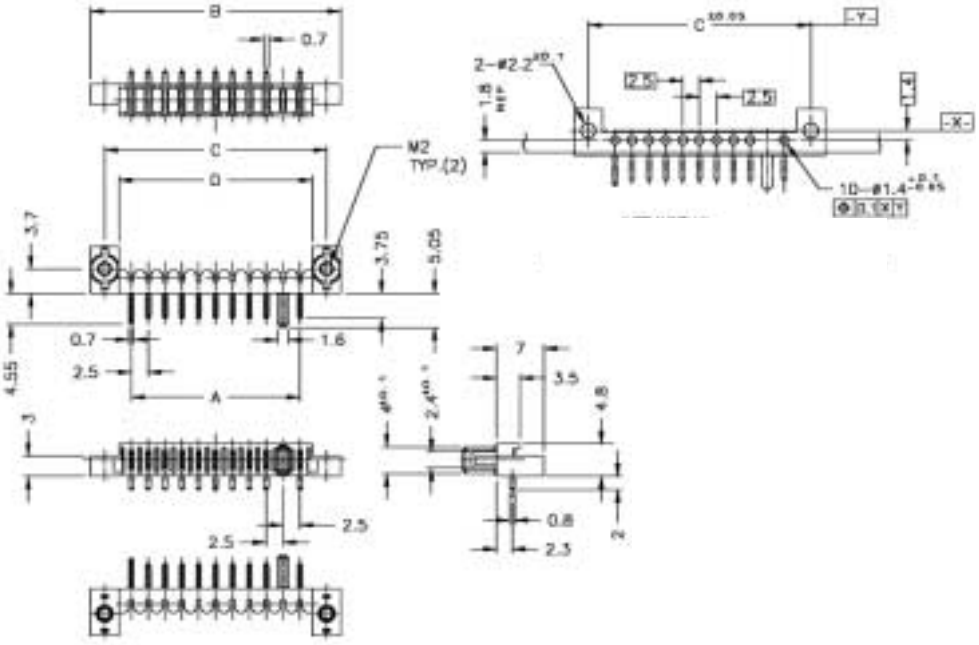
2.5mm Pitch, Plug Assembly 10 Position

Part Number 1123684-7

Material and Finish

Housing – Thermoplastic Molding Compound, UL94V-0 rated, black

Contact – Copper Alloy, nickel-under-plated all over, palladium nickel plated and gold-flash plated at contact area, tin-lead plated on soldering area.



Catalog 1773096
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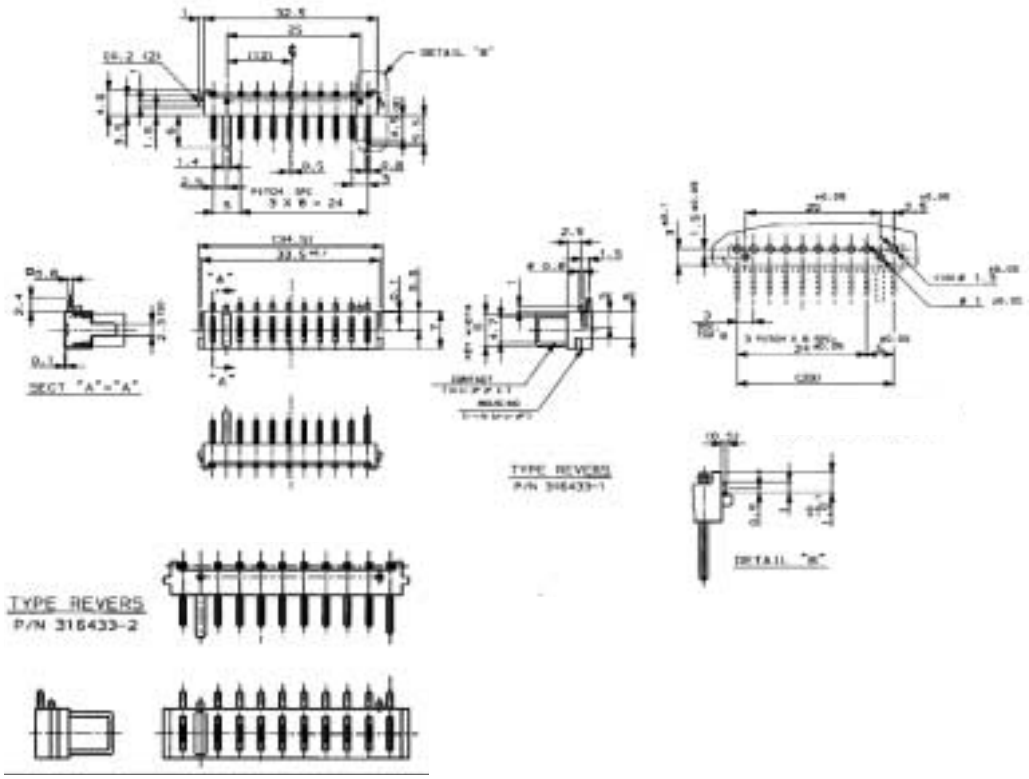
Special Battery Connectors (Continued)

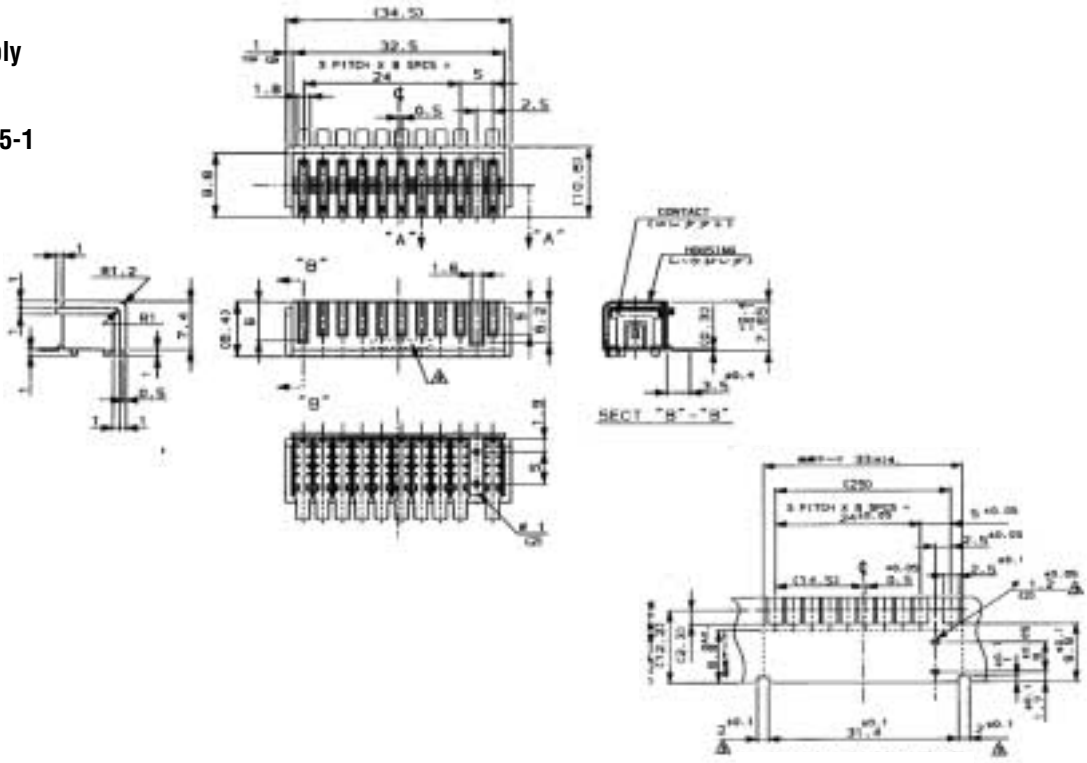
3.0mm Pitch
Plug Assembly
10 Position

Part Number 316433-1



3.0mm Pitch
Receptacle Assembly
10 Position

Part Number 316435-1



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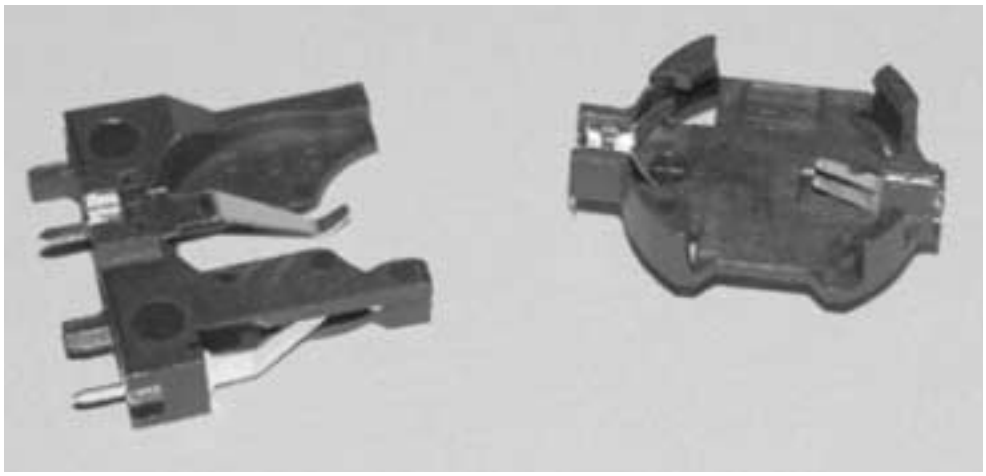
Coin-Cell Battery Holders



Product Facts

- Accepts BR2032 and CR2032 Lithium Ion Battery Cells
  - Vertical orientation available with solder tails
  - Low profile horizontal orientation with solder tail or SMT terminations
- Designed for reliable (twin-beam) connection for the back-up battery on motherboards for desktop and notebook PC's.
- Designed for plated through hole (PTH) soldering and surface mount soldering
- Self-ejecting design allows battery to be removed without tools
- Accepts ML 616 and ML 614 batteries

Typical Application

- Internet routers
- Handhelds
- Vending machines

Product Specification

108-1691

Tyco Electronics Top Load Battery is a high reliable receptacle for coin-cell (BR 2032 and CR2032) batteries. These batteries are used as battery back-ups in computers to store the RTC (real time clock) and other CMOS RAM data when the computer is not turned on. It can also be used in a variety of other electronic equipment needing a compact low wattage (typically less than 2Watts) battery source.

The polarized pcb lay-out and tin plated twin-beam contact design of the horizontal battery holders ensure easy printed circuit board (pcb) assembly and long term connection reliability, along with easy battery removal. The vertical mount battery holders reduce both the required pcb space and the overall height required for an optimum high-density pcb design.

Surface Mount and re-flow compatible options are also ready to meet the newer pcb assembly requirements. Top Load battery connectors can be supplied in tube, tray or reel packaging methods or tray.

Catalog 1773096
Revised 8-05

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Coin-Cell Battery Holders (Continued)

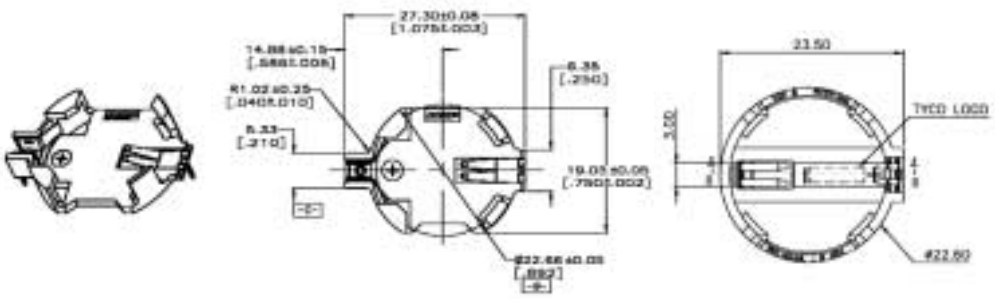
Horizontal Mount Through-Hole Solder Tails

Part Number 120591-1
Tray Packaging (shown)

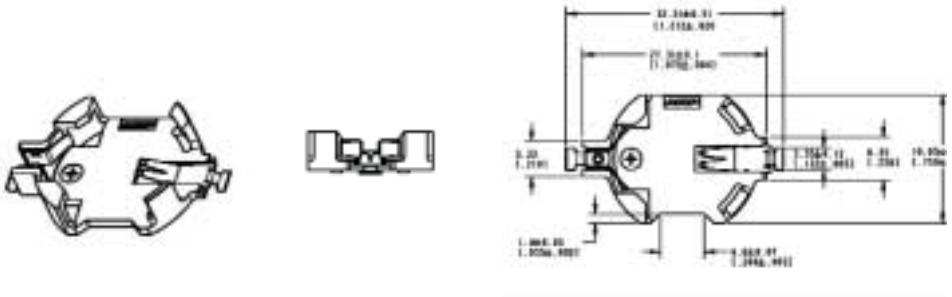
Part Number 120591-2
Tube Packaging

Part Number 1734178-1
Tray Packaging (shown)

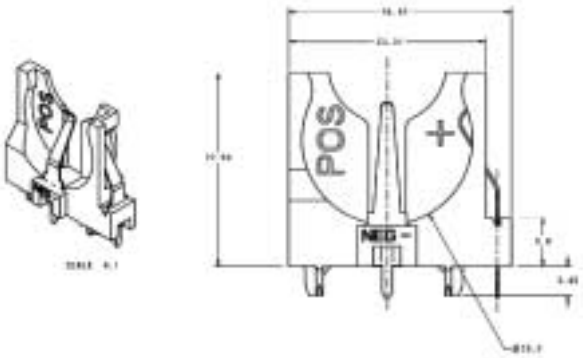
* Housing flexes for easy removal.



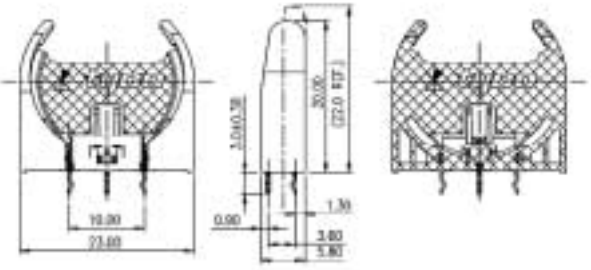
Surface Mountable
Part Number 796136-1



Vertical Mount
Standard Product
Part Number 1339488-1
Color – black



Low Profile
Part Number 1775118-2
Color – Blue



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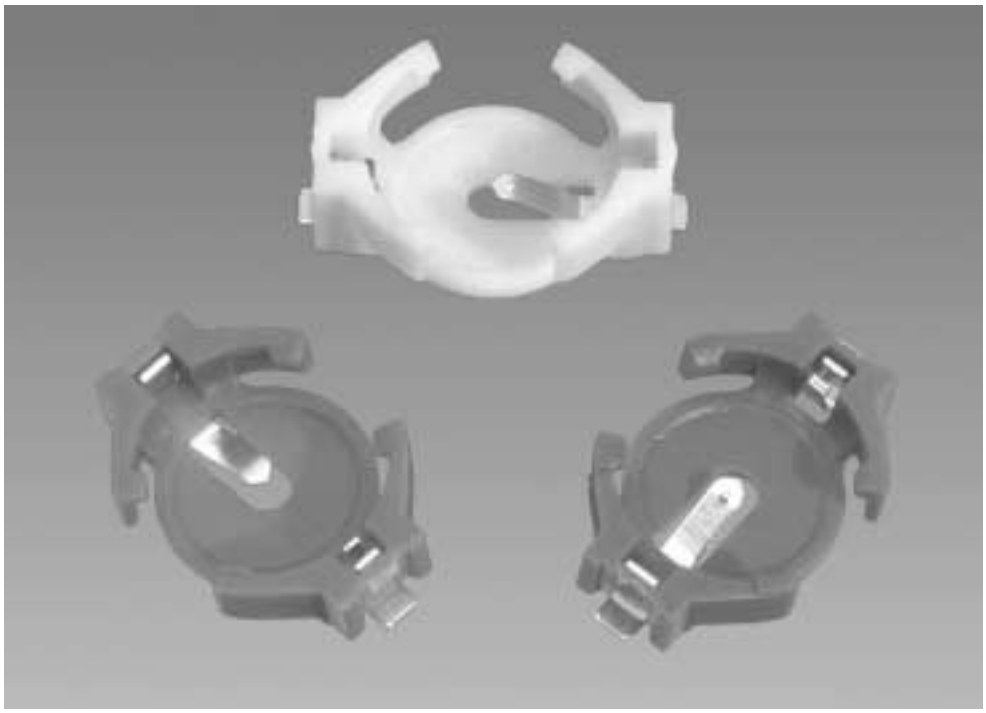
Button Battery Holder



Product Facts

- **Button Battery Holder enables the button battery assembly process automatic and makes a significant production efficiency improvement.**
- **The SMT Type is compact and low-profile and is 2.5mm high, 6.7mm wide and 10.6mm deep.**
- **The battery can be easily pushed into the holder from the top.**
- **Small size 6.7 [.264] x 10.6 [.417]**
- **Light weight: 0.8 grams**

Performance Specifications

Matings & Unmating Cycle:
5 Cycles

Insertion Force:
29.4 N max. ML 612 L/P : 40N max.

Material and Finish
Housing – Thermoplastic (6T Nylon)
Contact – Stainless steel
Contact Surface – Nickel/Palladium Nickel/Gold

Reflow conditions:
60 sec. at 200°C peak 240°C

Contact Pressure:
At positive pole: 300°f min.
At negative pole: 150°f min.

Technical Documents:

Product Specifications
108-5631 (ML614)
108-5578 (ML616)
108-5697 (ML621)

Application Specifications

114-5248

Test Reports

501-5274 (ML614)
501-5244 (ML616)
501-5326 (ML621)

As the production of portable telephones and PHS grow, the process of installation of button batteries onto this equipment cannot be overlooked. With the manual operation and soldering, the production efficiency cannot be improved. Button Battery Holder can make a drastic improvement of production efficiency.

ML 616 (diameter: 6.8mm, height: 1.6mm) and ML 614 (diameter: 6.8mm, height: 1.4mm) are available for automatic mounting machines. When disposing the battery can be removed from the holder so easily that environmental contamination can be prevented.

Button Battery Selection Guide

	Tested for use with				
	Panasonic ML621 batteries	Sanyo/Panasonic ML614 batteries	Seiko Epson MS614 batteries	Panasonic ML616 batteries	Sanyo ML621 batteries
614 Button Battery Holder		√	√		
616 Button Battery Holder				√	
621 Button Battery Holder	√				√

Part Number 353832-1 is for ML 616 (Made by Matsushita Battery Industry Co., Ltd. The compatibility of our holder to ML 616 is already tested.) Part Number 1318164-1 is for ML 614 (Made by Sanyo Electric Co., Ltd The compatibility of our holder to ML 614 is already tested.)

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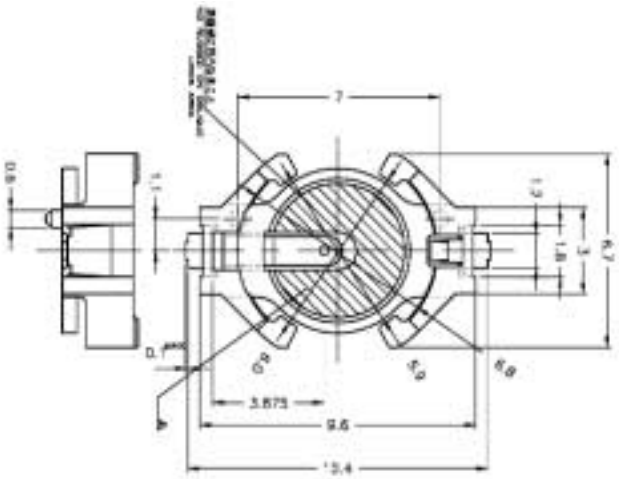
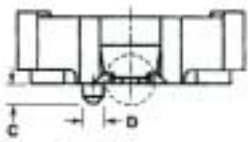
Button Battery Holder

Material and Finish

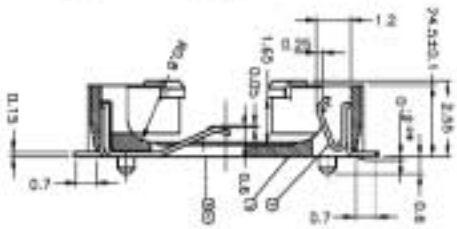
Housing – Thermoplastic, 614 black, 616 natural (white)

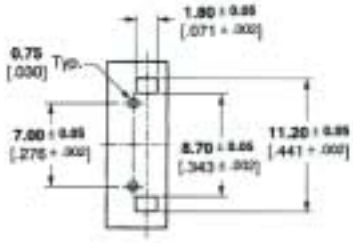
Contact – Stainless steel with palladium nickel and gold plating over nickel underneath





End View





Recommended PC Board Layout

Type	Dimensions			Part Number	Emboss Tape Mounted (EA/Reel)
	A	B	C		
ML 616	2.55	2.4	1.65	353832-1	1,500
ML 614	2.3	2.2	1.45	1318164-1	1,500
ML 612	2.55	2.4	1.25	1318679-1	1,500

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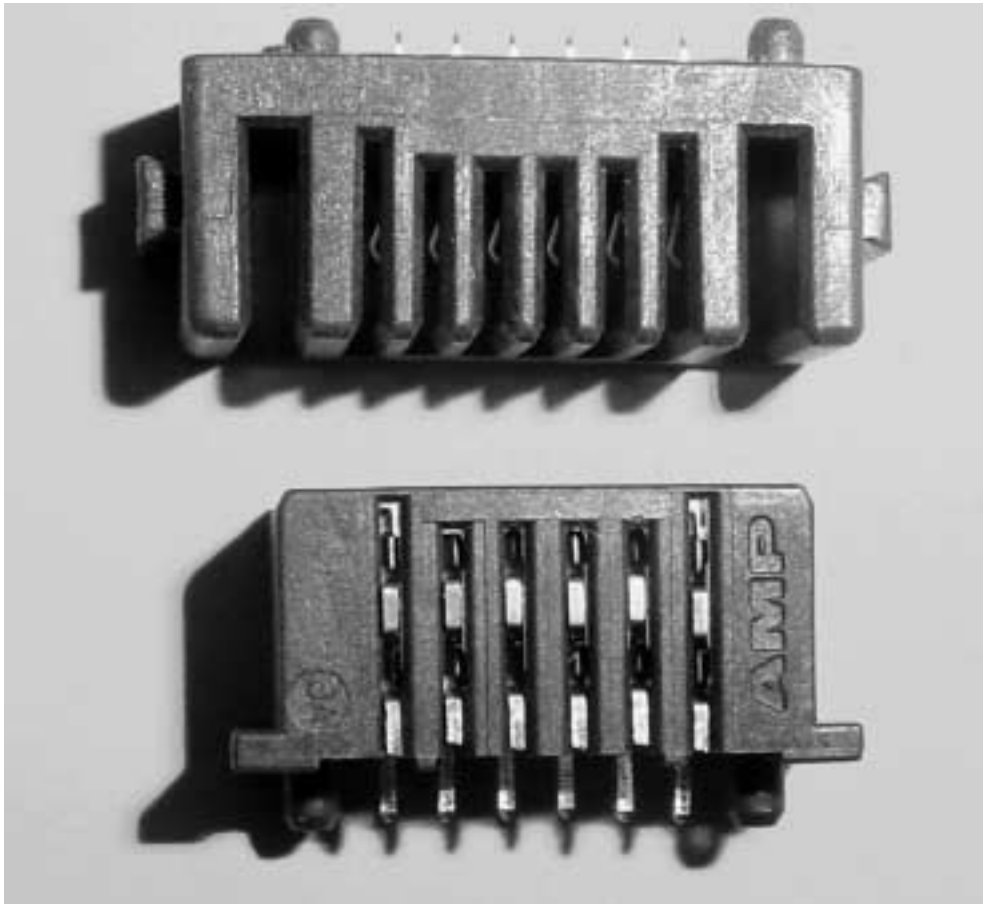
Multi-Directional Interconnection (MDI) System



Product Facts

- 6-position, 2mm interface shrouded on both sides
- Offers blind mating from 0 to 90 mating angle
- Solder tail and SMT pcb termination
- 6–position receptacle and header interconnection on 2.0mm
- Ideal for high density application
- Connectors can be mated at any angle between 0° and 90°
- Durable–2500 cycles, contacts with 0.00076 min. AMP-DURAGOLD plating over 0.00127 min. nickel underplating
- High reliability for docking applications – portable hand held devices, measurement equipment, documentation control and interconnections for rechargeable batteries for lap-top and notebook computers
- 0.00380 min. tin-lead on solder tails
- Versatile solder operation for board-to-board applications
- Produced under a Quality Management System certified to ISO 9001
  A copy of the certificate is available upon request.
- Recognized under the Component Program of Underwriters Laboratories, Inc. File No. E28476
- Certified Pending by Canadian Standards Association, File No. LR 16455

Prod. Specifications

108-1503
108-1503-1

The rapid growth of the portable equipment market has fostered a need for a high density and versatile interconnection system. Tyco Electronics Multi-Direction Interconnection System answers this need. The system consists of 6-position receptacles and headers featuring contacts on 2.0mm centerlines. This multi-directional interconnection system is designed to permit mating/unmating at any angle between 0° and 90°. This durable system features AMP-DURAGOLD plated contacts for positive mating/unmating up to 2500 cycles.

Housings are made of UL 94V-0 rated, high temperature thermoplastic, compatible with IR and reflow solder techniques.

The multi-directional aspect and durability of this system make it ideal for docking connector applications in a variety of portable hand held devices, measurement equipment, documentation control, and interconnections for rechargeable batteries used in laptop and notebook type computers.

Tyco Electronics Multi-Directional Interconnection System is your total interface problem solver. It reduces your design cycle time, time-to-market, and provides an overall reduced cost of manufacturing

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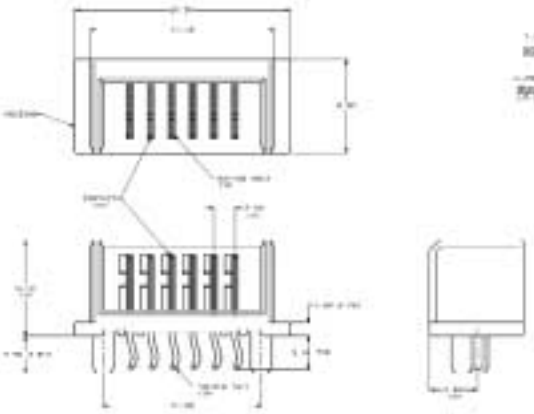
Multi-Directional Headers

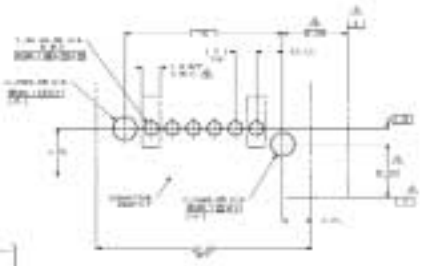
6-Position Header, with Below the Board Retention Tails

Part Number 787252-1

Material and Finish
Housing – LCP, 94V-0 rated, black
Contacts – Brass, plated 0.00076 min. AMP-DURAGOLD on mating area, 0.00380 min. tin-lead on solder tail, all over 0.00127 min. nickel

Notes
1. Datum and dimensions established by customer.
2. Recommended minimum trace width for end positions when carrying 3 amps – 0.00180 wide x 0.00055 thick, both sides.





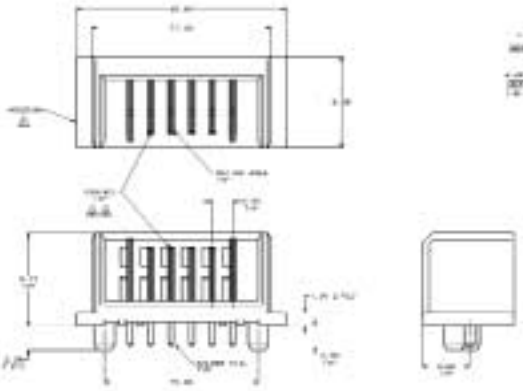
PC Board Mounting Dimensions

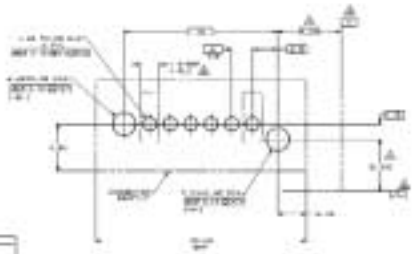
6 Position Header Assembly with Straight Solder Tails

Part Number 787531-1

Material and Finish
Housing – LCP, 94V-0 rated, black
Contacts – Brass, plated 0.00076 min. AMP-DURAGOLD on mating area, 0.00380 min. tin-lead on solder tail, all over 0.00127 min. nickel

Notes
1. Datum and dimensions established by customer.
2. Recommended minimum trace width for end positions when carrying 3 amps – 0.00180 wide x 0.00055 thick, both sides.





PC Board Mounting Dimensions

Catalog 1773096
Revised 8-05

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

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USA: 1-800-522-6752
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C. America: 52-55-5-729-0425

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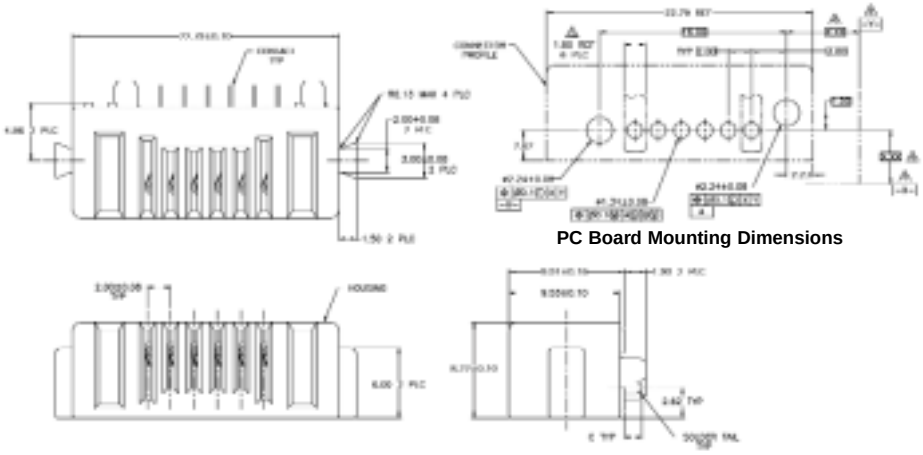
Japan: 81-44-844-8013
UK: 44-141-810-8967

Multi-Directional Receptacles

6-Position Receptacle Assembly with Straight Solder Tails

Part Number 787253-1



PC Board Mounting Dimensions

Material and Finish

Housing – LCP, 94V-0 rated, black

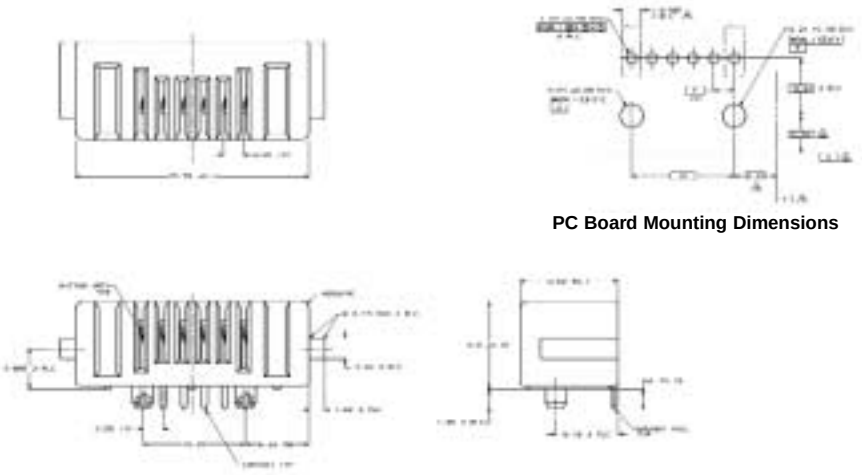
Contacts – Phosphor bronze, plated 0.00076 min. AMP-DURAGOLD on mating area, 0.00380 min. tin-lead on solder tail, all over 0.00127 min. nickel

Notes

1. Datum and dimensions established by customer.
2. Recommended minimum trace width for end positions when carrying 3 amps – 0.00180 wide x 0.00055 thick, both sides.

6-Position Receptacle Assembly with Surface Mount Tails

Part Number 787526-1



PC Board Mounting Dimensions

Housing – LCP, 94V-0 rated, black

Contacts – Phosphor bronze, plated 0.00076 min. AMP-DURAGOLD on mating area, 0.00380 min. tin-lead on solder tail, all over 0.00127 min. nickel

Notes

1. Datum and dimensions established by customer.
2. Recommended minimum trace width for end positions when carrying 3 amps – 0.00180 wide x 0.00055 thick, both sides.
3. Recommended PC Board thickness of 1.57.

Catalog 1773096
Revised 8-05

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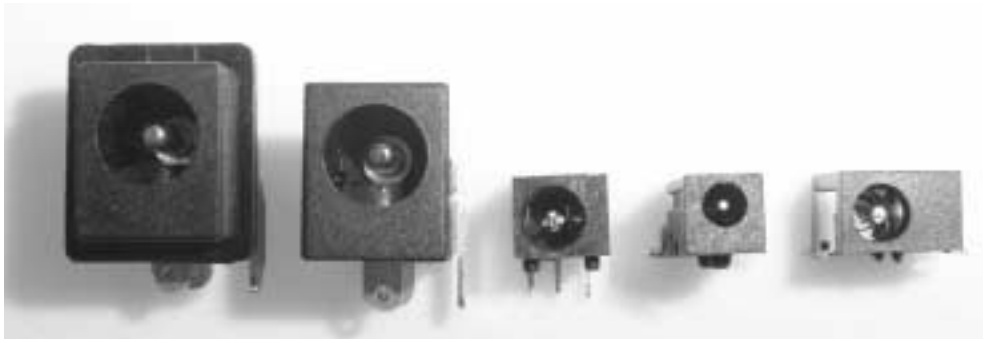
DC Power Jacks

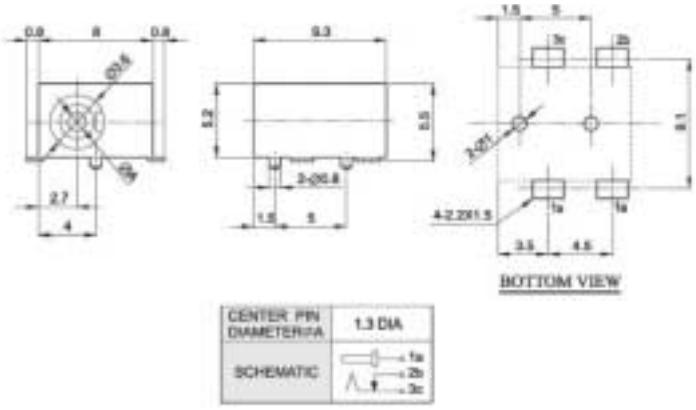


Product Facts

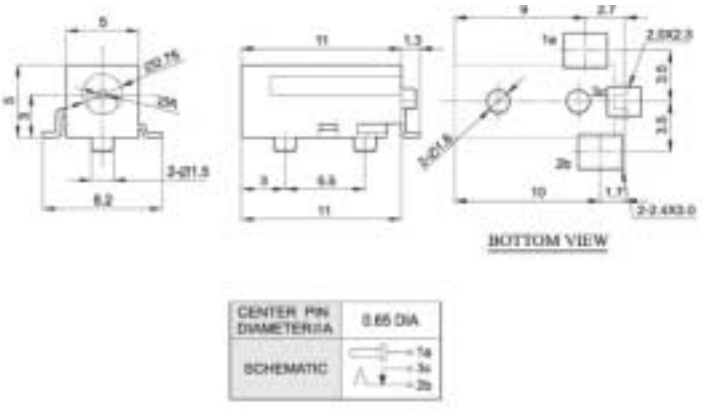
- **Low Profile Design**
- **Accepts industry standard DC power plugs**
- **Available with:**
  - **Solder tabs**
  - **Through-hole solder tails**
  - **SMT leads**
- **Available to accept these plug sizes:**
  0.65mm
  1.0mm
  1.3mm
  1.47mm
  1.87mm
  2.0mm
  2.35mm
  2.5mm
- **Ideal for portable electric devices**

Surface Mount Power Jacks

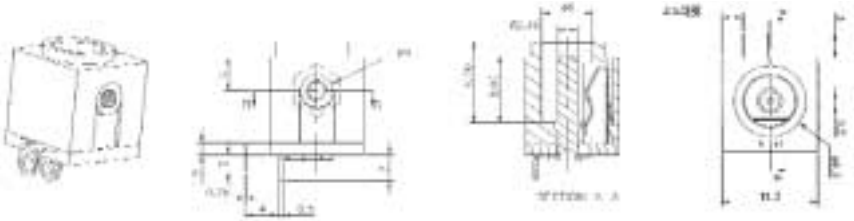
Pin Diameters: 0.65mm and 1.3mm



For specific part numbers, contact Tyco Electronics



Vertical DC Jack
Part Number 1470390-1



Catalog 1773096
Revised 8-05

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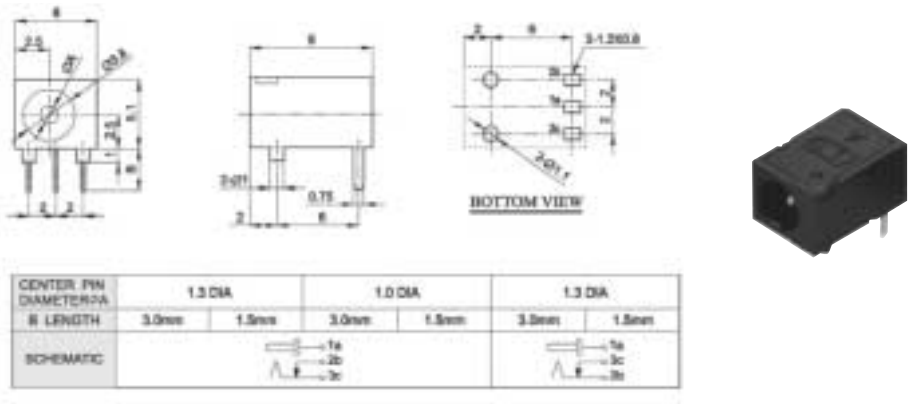
DC Power Jacks (Continued)

Right-Angle DC Jacks Miniature Jacks

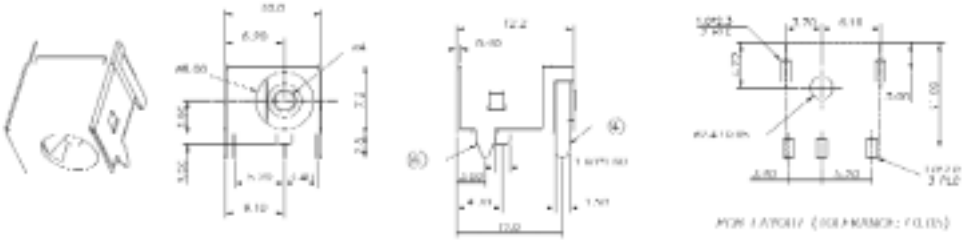
For specific part numbers, contact Tyco Electronics



CENTER PIN DIAMETER/A	1.3 DIA		1.0 DIA		1.3 DIA	
B LENGTH	3.0mm	1.5mm	3.0mm	1.5mm	3.0mm	1.5mm
SCHEMATIC						

Shielded Jack

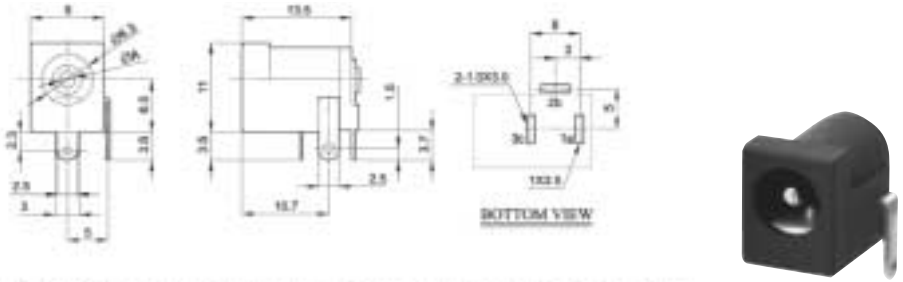
For specific part numbers, contact Tyco Electronics



N.W. (g)	Dia. A	Part Number
2.0	2.5	1470811-2
1.8	2.0	1470811-1

Standard Jacks

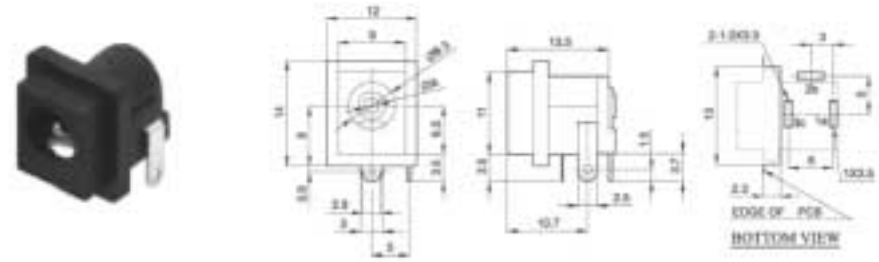
For specific part numbers, contact Tyco Electronics



CENTER PIN DIAMETER/A	1.35 DIA	1.47 DIA	1.7 DIA	1.87 DIA	2.0 DIA	2.2 DIA	2.35 DIA	2.5 DIA
SCHEMATIC								

Standard Jack – Recessed Flange

For specific part numbers, contact Tyco Electronics



CENTER PIN DIAMETER/A	1.47 DIA	1.87 DIA	2.0 DIA	2.35 DIA	2.45 DIA
SCHEMATIC					

Laptops/Portables

Catalog 1773096
Revised 8-05

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Power Cords

Power Cords—USA

Tyco Electronics continues to be a world-class supplier of standard and custom power cords to the computer, communications and consumer electronics industries. They have received the approvals of the major standards organizations from countries in the Americas, Europe, and Asia.

Tyco Electronics currently supplies two (2) and three (3) pin plugs, at various voltage and amperage ratings, meeting NEMA 1, NEMA 5 & NEMA 6 standards, for the U.S. market.

USA

USA

Power Cords—Europe

Tyco Electronics offers products that meet the various country standards, including CEE, SHUCO, BS, CEI, SEV and SRAF.

Europe

Europe

Europe

Power Cords—Japan

Other

Japan Class I and Class II power cords are available that meet a variety of the JIS specifications, and Tyco Electronics provides KSC plugs to service the Korean market.

Japan

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Power Cords

Power Cords—Other

Tyco Electronics provides power cords that cover the standards and approvals of many other countries including:

China	various GS standards
Australia	AS standard
Argentina	IRAM, IEC standards
Israel	SI standard
South Africa	SABS standard

China

South Africa

Additionally, Tyco Electronics offers power cord connector mating ends with all the appropriate standards approvals, such as UL 817, IEC 320, and NEMA 5.

IEC

IEC

Tyco Electronics is also proud to offer custom power cord configurations for your most unique applications. They are able to provide various voltage and amperage options, create professionally overmolded solutions, and of course, obtain the requisite standards approvals.

Custom

Please visit Tyco Electronics power cord website for part numbers and detail at http://tycoelectronics.com/powercord

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Custom Cable Assemblies





Tyco Electronics CC&CE Cable Systems Group specializes in Custom Power Cable Assemblies for most applications. They provide solutions using a wide array of connector styles and cable types, regardless of manufacturer.

Tyco Electronics currently supplies the major Original Equipment Manufacturers (OEM's), within the market, with simple double-ended MATE-N-LOK assemblies, complex power harnesses, and even rugged mechanical line cords, to name a few.

If power distribution through cabling is what you need, Tyco Electronics engineering capabilities, combined with global manufacturing and logistics are just the right combination to help you succeed. It is time you 'hooked up' with the leader in the power area, Tyco Electronics.

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Engineering Notes

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Revised 8-05

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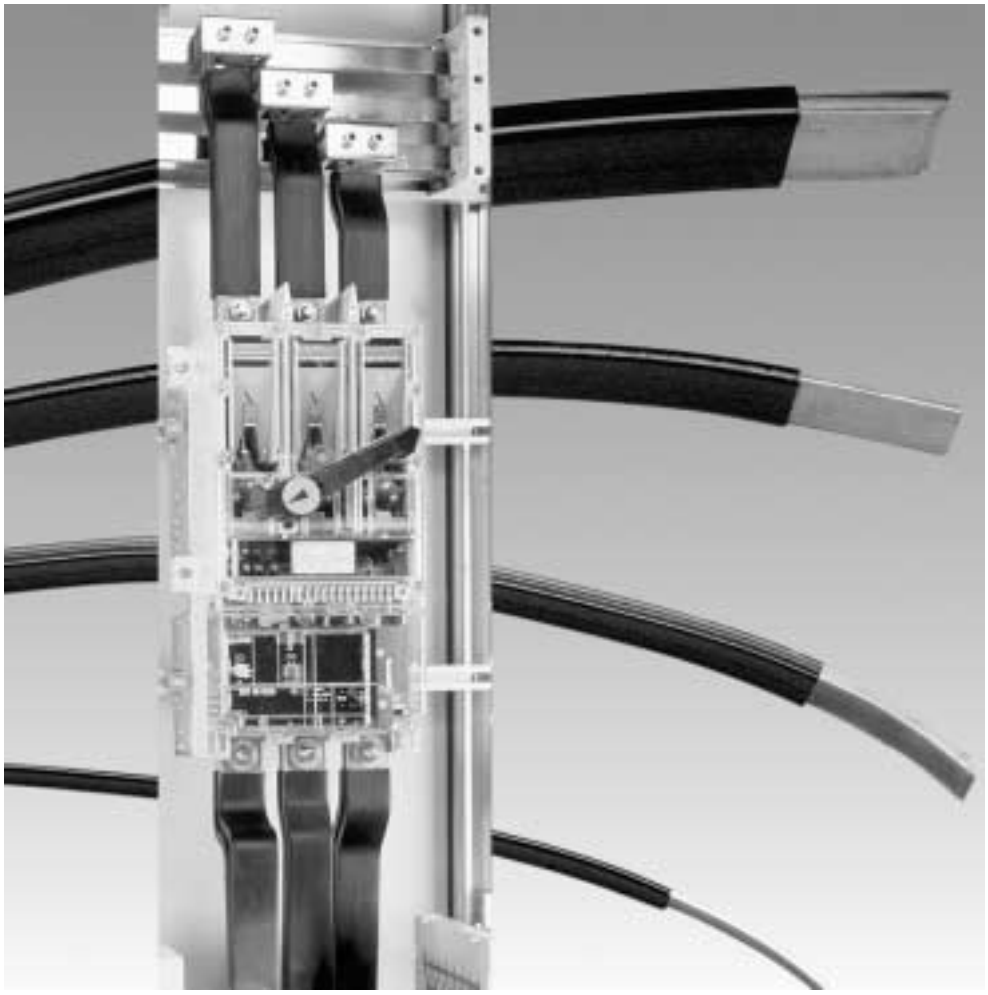
SIMEL ISOLAMES Flexible Bus Bar

Products Facts

- **Wide range of cross section 21 to 1,200mm².**
- **Various laminated copper layer widths enable connection on all main apparatus and copper busbars.**
- **High dielectric strength.**
- **Flame retardant insulating material.**
- **Limited temperature rises compared to cables or non-insulated copper bars.**
- **High flexibility enables bending by hand.**
- **Space saving: ISOLAMES bus bar bend radius is smaller than equivalent copper cable one.**
- **Standard delivery length : 2.00 m.**
- **Also available on request :**
  -Tin plated copper strips.
  -Halogen-free insulation material.
  -Longer bars (up to 4.00m).
- **Approvals :**
  LLOYD N° 93/30023
  CSA N° 099903
  UL105°C N° E113407

Applications

- **Low voltage power distribution: connections of switchboards, panel boards, transformers, busbars.**



ISOLAMES bus bar flexible insulated bars are made of high flexibility laminated copper layers, coated with black colored, self-extinguishable insulating PVC compound.

For more information, request Catalog 1242405

Catalog 1773096
Revised 8-05

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Engineering Notes

Catalog 1773096
Revised 8-05

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South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Non-RoHS to RoHS Compliant Part Number Cross Reference

Non-RoHS Part Number	RoHS Compliant Part Number
55323-5	5055323-5
55323-6	5055323-6
55323-9	5055323-9
1-55323-0	1-5055323-0
55556-4	9-55556-0
55556-9	5055556-9
55557-4	5055557-4
55558-3	9-55558-0
55558-4	9-55558-1
55673-2	5055673-2
RoHS Compliant	60151-6
RoHS Compliant	66084-1
66084-2	5-66084-2
RoHS Compliant	66084-3
RoHS Compliant	106528-2
RoHS Compliant	1-106528-2
RoHS Compliant	106529-2
RoHS Compliant	1-106529-2
RoHS Compliant	120591-1
RoHS Compliant	120591-2
120913-1	5120913-1
120913-3	5120913-3
120913-5	5120913-5
120913-6	5120913-6
145089-1	5145089-1
145269-3	5145269-3
145269-5	5145269-5
145269-6	5145269-6
145459-5	5145459-5
145459-6	5145459-6
145539-3	5145539-3
145539-4	5145539-4
145539-5	5145539-5
RoHS Compliant	147354-8
147431-2	5147431-2
147439-2	5147439-2
167892-3	5167892-3
RoHS Compliant	167892-6
RoHS Compliant	170221-4
RoHS Compliant	170222-3
RoHS Compliant	170286-4
RoHS Compliant	170289-3
RoHS Compliant	170311-1
RoHS Compliant	170312-1
RoHS Compliant	170313-1
RoHS Compliant	170314-1
RoHS Compliant	170484-1
RoHS Compliant	170485-1
RoHS Compliant	172032-3
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RoHS Compliant	172061-1
RoHS Compliant	172061-3
RoHS Compliant	172063-1
RoHS Compliant	172063-3
RoHS Compliant	172624-1
RoHS Compliant	172624-3
RoHS Compliant	172653-1
RoHS Compliant	172653-2
RoHS Compliant	172653-3

Non-RoHS Part Number	RoHS Compliant Part Number
RoHS Compliant	173977-2
RoHS Compliant	173977-3
RoHS Compliant	173977-4
RoHS Compliant	173977-5
RoHS Compliant	173977-6
RoHS Compliant	173977-7
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RoHS Compliant	208979-2
RoHS Compliant	208979-4
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RoHS Compliant	1-208979-2
RoHS Compliant	1-208979-4
RoHS Compliant	213647-1

Non-RoHS Part Number	RoHS Compliant Part Number
213815-1	5213815-1
213816-1	5213816-1
RoHS Compliant	216843-1
RoHS Compliant	216905-1
RoHS Compliant	216906-1
RoHS Compliant	216907-1
RoHS Compliant	216926-1
223092-1	5223092-1
223093-1	5223093-1
223955-2	5223955-2
RoHS Compliant	223956-1
223957-1	5223957-1
223961-1	5223961-1
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5-223961-2	5-5223961-2
223963-1	5223963-1
RoHS Compliant	223969-1
RoHS Compliant	223969-4
RoHS Compliant	223969-7
223979-1	5223979-1
RoHS Compliant	223982-1
223985-1	5223985-1
223986-1	5223986-1
223986-3	5223986-3
223986-5	5223986-5
223986-6	5223986-6
223995-1	5223995-1
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223995-3	5223995-3
223995-4	5223995-4
223995-5	5223995-5
RoHS Compliant	292180-1
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RoHS Compliant	1-292183-2
RoHS Compliant	292184-1
RoHS Compliant	292185-8
RoHS Compliant	2-292185-0
RoHS Compliant	2-292185-8
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RoHS Compliant	1-292187-2
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RoHS Compliant	6-316163-1
RoHS Compliant	316433-1
RoHS Compliant	316435-1
RoHS Compliant	343347-1

Non-RoHS Part Number	RoHS Compliant Part Number
RoHS Compliant	343348-1
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RoHS Compliant	480110-2
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536603-1	5536603-1
536607-1	5536607-1
536613-1	5536613-1
536614-1	5536614-1
536642-1	5536642-1
536642-7	5536642-7
536649-1	5536649-1
RoHS Compliant	582140-5
RoHS Compliant	582147-5
RoHS Compliant	582264-2
RoHS Compliant	582500-2
RoHS Compliant	582963-2
RoHS Compliant	583167-3
RoHS Compliant	583204-2
RoHS Compliant	583280-1
583361-2	5-583361-2
RoHS Compliant	583361-3
RoHS Compliant	583361-4
RoHS Compliant	583555-4
RoHS Compliant	583555-6

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Non-RoHS to RoHS Compliant Part Number Cross Reference (Continued)

Non-RoHS Part Number	RoHS Compliant Part Number
583616-2	5-583616-2
RoHS Compliant	583617-1
RoHS Compliant	583680-1
RoHS Compliant	583685-1
RoHS Compliant	583722-1
RoHS Compliant	583723-1
RoHS Compliant	583724-1
RoHS Compliant	583725-1
RoHS Compliant	583726-1
RoHS Compliant	583989-3
RoHS Compliant	583989-4
RoHS Compliant	583990-3
RoHS Compliant	583991-3
645169-2	5645169-2
645169-3	5645169-3
645384-1	5645384-1
645384-3	5645384-3
646954-1	5646954-1
646954-2	5646954-2
646955-1	5646955-1
646955-2	5646955-2
646956-1	5646956-1
646956-2	5646956-2
646957-1	5646957-1
646958-1	5646958-1
646958-2	5646958-2
650118-1	5650118-1
650118-2	5650118-2
650616-1	5650616-1
748572-2	Contact Tyco Electronics
765204-1	Contact Tyco Electronics
765204-2	Contact Tyco Electronics
765204-4	Contact Tyco Electronics
765204-5	Contact Tyco Electronics
765204-6	Contact Tyco Electronics
765204-8	Contact Tyco Electronics
765204-9	Contact Tyco Electronics
1-765204-0	Contact Tyco Electronics
1-765204-2	Contact Tyco Electronics
1-765204-3	Contact Tyco Electronics
1-765204-4	Contact Tyco Electronics
1-765204-6	Contact Tyco Electronics
765206-1	Contact Tyco Electronics
765206-2	Contact Tyco Electronics
765206-4	Contact Tyco Electronics
765206-5	Contact Tyco Electronics
765206-6	Contact Tyco Electronics
765206-8	Contact Tyco Electronics
765206-9	Contact Tyco Electronics
1-765206-0	Contact Tyco Electronics
1-765206-2	Contact Tyco Electronics
1-765206-3	Contact Tyco Electronics
1-765206-4	Contact Tyco Electronics
1-765206-6	Contact Tyco Electronics
RoHS Compliant	765209-1
RoHS Compliant	765209-2
RoHS Compliant	765224-1
RoHS Compliant	765225-1
RoHS Compliant	765228-1
RoHS Compliant	765229-1
RoHS Compliant	765238-1
RoHS Compliant	765242-1
RoHS Compliant	765247-1
RoHS Compliant	765248-1
765249-1	Contact Tyco Electronics
765249-2	Contact Tyco Electronics
765249-3	Contact Tyco Electronics
765249-5	Contact Tyco Electronics
765249-7	Contact Tyco Electronics
765249-8	Contact Tyco Electronics
765249-9	Contact Tyco Electronics
RoHS Compliant	765250-1
RoHS Compliant	765251-1
RoHS Compliant	765261-1
765265-1	Contact Tyco Electronics
765265-2	Contact Tyco Electronics
765265-3	Contact Tyco Electronics
765265-5	Contact Tyco Electronics
765265-6	Contact Tyco Electronics
765265-7	Contact Tyco Electronics
765265-8	Contact Tyco Electronics
765271-1	Contact Tyco Electronics
RoHS Compliant	765277-1
765449-1	Contact Tyco Electronics
765449-2	Contact Tyco Electronics
765449-4	Contact Tyco Electronics
765449-5	Contact Tyco Electronics
765449-6	Contact Tyco Electronics
765449-8	Contact Tyco Electronics
765450-1	Contact Tyco Electronics
765450-2	Contact Tyco Electronics
765450-4	Contact Tyco Electronics
765450-5	Contact Tyco Electronics
765450-6	Contact Tyco Electronics
765450-8	Contact Tyco Electronics
765451-1	Contact Tyco Electronics
RoHS Compliant	765528-1
RoHS Compliant	765529-1
787142-1	5787142-1
787252-1	5787252-1
787253-1	5787253-1
787259-1	5787259-1
787334-1	5787334-1
787366-1	5787366-1
787419-1	5787419-1
787421-1	5787421-1
787428-1	5787428-1
787430-1	5787430-1
787441-1	5787441-1
787443-1	5787443-1
787444-1	5787444-1
787446-1	5787446-1
787526-1	5787526-1
787531-1	5787531-1
787590-1	5787590-1
787613-1	5787613-1
787614-1	5787614-1
787615-1	5787615-1
794138-3	1-794138-3
794139-3	1-794139-3
794140-3	1-794140-3
794141-3	1-794141-3
794142-3	1-794142-3
RoHS Compliant	794144-1
RoHS Compliant	794145-3
RoHS Compliant	794152-1
RoHS Compliant	794153-1
RoHS Compliant	794156-1
794172-2	5794172-2
794172-3	5794172-3
794173-2	5794173-2
794173-3	5794173-3
794176-2	5794176-2
794176-3	5794176-3
RoHS Compliant	794418-1
RoHS Compliant	796136-1
RoHS Compliant	796137-2
RoHS Compliant	796138-2
RoHS Compliant	796285-1
RoHS Compliant	1123684-7
RoHS Compliant	1123688-3
RoHS Compliant	1123688-7
RoHS Compliant	1-1123688-3
RoHS Compliant	1-1123688-7
RoHS Compliant	1123738-7
RoHS Compliant	1123822-7
RoHS Compliant	1123981-1
RoHS Compliant	1123987-1
RoHS Compliant	1318164-1
RoHS Compliant	1318430-2
RoHS Compliant	1318573-4
RoHS Compliant	1318574-4
RoHS Compliant	1318679-1
RoHS Compliant	1318792-1
RoHS Compliant	1318977-3
1339488-1	6339488-1
RoHS Compliant	1364124-1
1364125-1	6364125-1
1364125-2	6364125-2
1364125-4	6364125-4
1364125-5	3634125-5
1364125-6	6364125-6
1364664-1	6364664-1
1364666-1	6364666-1
1364666-2	6364666-2
1364700-5	6364700-5
1364700-6	6364700-6
1364700-7	6364700-7
1364999-1	6364999-1
RoHS Compliant	1367369-1
1410270-1	1410270-2
1410271-1	1-1410271-1
1410271-2	1-1410271-2
1410271-3	1-1410271-3
1410271-4	1-1410271-4
1410271-5	1-1410271-5
1410271-6	1-1410271-6
1410271-7	1-1410271-7
1410271-8	1-1410271-8
1-1410271-0	2-1410271-0
1410278-1	1410278-2
1410279-1	1410279-7
1410279-2	1410279-8
1410279-3	1410279-9
1410279-4	1-1410279-0
1410279-5	1-1410279-1
1410279-6	1-1410279-2
1410297-1	1-1410297-1
1410297-3	1-1410297-3
1410297-5	1-1410297-5
1410297-6	1-1410297-6
1410546-1	1-1410546-1
1410546-3	1-1410546-3
1410546-5	1-1410546-5
1410546-6	1-1410546-6
1410548-2	1410548-3
1410710-1	1-1410710-1
1410710-3	1-1410710-3
1410714-2	1410714-3
1410773-2	1-1410773-2
1410773-3	1-1410773-3
1410773-4	1-1410773-4
1450100-5	6450100-5

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Non-RoHS to RoHS Compliant Part Number Cross Reference (Continued)

Non-RoHS Part Number	RoHS Compliant Part Number
1450100-6	6450100-6
1450108-4	6450108-4
1450109-1	6450109-1
1450120-1	6450120-1
1450120-2	6450120-2
1450120-6	6450120-6
2-1450120-7	2-6450120-7
3-1450120-4	3-6450120-4
1450121-3	6450121-3
1450123-1	6450123-1
1450123-2	6450123-2
1450123-3	6450123-3
1450123-5	6450123-5
1450123-6	6450123-6
1450128-1	6450128-1
1450128-2	6450128-2
1450128-4	6450128-4
1450129-1	6450129-1
1450129-2	6450129-2
1450129-3	6450129-3
1450130-3	6450130-3
1450130-4	6450130-4
1450130-6	6450130-6
1-1450130-4	1-6450130-4
4-1450130-5	4-6450130-5
4-1450130-6	4-6450130-6
1450131-7	6450131-7
1450132-3	6450132-3
1450132-4	6450132-4
1450140-4	6450140-4
1450140-5	6450140-5
1-1450140-0	1-6450140-0
1450142-3	6450142-3
1450150-3	6450150-3
1450150-6	6450150-6
1450151-3	6450151-3
1450152-1	6450152-1
1450160-1	6450160-1
1450160-3	6450160-3
1450160-5	6450160-5
1450160-6	6450160-6
1-1450160-0	1-6450160-0
1450161-1	6450161-1
1450161-2	6450161-2
1450161-6	6450161-6
1450163-2	6450163-2
1450170-2	6450170-2
1450170-8	6450170-8
1450172-1	6450172-1
1450172-2	6450172-2
1450173-1	6450173-1
1450230-1	6450230-1
1450231-1	6450231-1
1450330-1	6450330-1
1-1450330-4	1-6450330-4
1450500-1	6450500-1
1450500-3	6450500-3
1450500-4	6450500-4
1450500-8	6450500-8
1450500-9	6450500-9

Non-RoHS Part Number	RoHS Compliant Part Number
1-1450500-4	1-6450500-4
2-1450500-1	2-6450500-1
1450501-2	6450501-2
1450503-1	6450503-1
1450503-3	6450503-3
1-1450508-1	1-6450508-1
1-1450508-3	1-6450508-3
1-1450508-4	1-6450508-4
1450509-1	6450509-1
1450509-2	6450509-2
1450509-3	6450509-3
1450523-2	6450523-2
1450540-1	6450540-1
1450540-2	6450540-2
1450541-5	6450541-5
1450543-1	6450543-1
1450543-3	6450543-3
1450543-5	6450543-5
1450550-1	6450550-1
3-1450550-2	3-6450550-2
1450551-1	6450551-1
1450553-1	6450553-1
1450553-2	6450553-2
1450560-2	6450560-2
1450560-4	6450560-4
1450570-2	6450570-2
RoHS Compliant	1469269-2
RoHS Compliant	1469269-4
RoHS Compliant	1469269-6
RoHS Compliant	1489127-1
RoHS Compliant	1489127-2
RoHS Compliant	1489127-3
RoHS Compliant	1489127-4
RoHS Compliant	1489127-5
RoHS Compliant	1489127-6
RoHS Compliant	1489127-7
RoHS Compliant	1489127-8
RoHS Compliant	1489128-7
RoHS Compliant	1489128-8
RoHS Compliant	1489128-9
RoHS Compliant	1-1489128-0
RoHS Compliant	1-1489128-3
RoHS Compliant	1-1489128-4
RoHS Compliant	1-1489128-5
RoHS Compliant	1-1489128-6
1489162-1	6489162-1
1489162-2	6489162-2
1489165-1	6489165-1
1489165-2	6489165-2
1489165-3	6489165-3
1489648-1	6489648-1
1489648-2	6489648-2
1489648-3	6489648-3
1489649-1	6489649-1
1489650-1	6489650-1
1489650-1	6489650-1
1489651-1	6489651-1
1489651-2	6489651-2
1489651-3	6489651-3
1489652-1	6489652-1

Non-RoHS Part Number	RoHS Compliant Part Number
1489652-2	6489652-2
1489652-3	6489652-3
RoHS Compliant	1489715-1
RoHS Compliant	1489715-2
RoHS Compliant	1489715-3
RoHS Compliant	1489715-4
RoHS Compliant	1489715-5
RoHS Compliant	1489715-6
RoHS Compliant	1489715-7
RoHS Compliant	1489715-8
RoHS Compliant	1-1489715-1
RoHS Compliant	1-1489715-2
RoHS Compliant	1-1489715-3
RoHS Compliant	1-1489715-4
RoHS Compliant	1-1489715-5
RoHS Compliant	1-1489715-6
RoHS Compliant	1-1489715-7
RoHS Compliant	1-1489715-8
1489782-1	6489782-1
1489930-1	6489930-1
1489930-2	6489930-2
RoHS Compliant	1600606-1
RoHS Compliant	1600606-2
RoHS Compliant	1-1600606-6
RoHS Compliant	1600636-1
RoHS Compliant	1600636-2
RoHS Compliant	1600636-8
RoHS Compliant	1600636-9
RoHS Compliant	1-1600636-0
RoHS Compliant	1-1600636-3
RoHS Compliant	1-1600636-4
RoHS Compliant	1-1600636-5
RoHS Compliant	1600788-1
RoHS Compliant	1600788-8
RoHS Compliant	1-1600788-0
RoHS Compliant	1-1600788-2
RoHS Compliant	1-1600788-3
RoHS Compliant	1-1600788-4
RoHS Compliant	1600798-1
RoHS Compliant	1600798-2
RoHS Compliant	1600798-3
RoHS Compliant	1600798-4
RoHS Compliant	1600798-5
1643220-1	6643220-1
1643222-1	6643222-1
1643223-1	6643223-1
1643227-1	6643227-1
1643228-1	6643228-1
1643229-1	6643229-1
1643232-1	6643232-1
1643247-1	6643247-1
1643250-1	1766815-1
1643251-1	1766157-1
1643252-1	6643252-1
1643253-1	6643253-1
1643256-1	1766160-1
1643257-1	1766161-1
1643262-1	1766163-1
1643263-1	1766816-1
1643264-1	6643264-1

Non-RoHS Part Number	RoHS Compliant Part Number
1643266-1	6643266-1
1643269-1	6643269-1
1643271-1	6643271-1
1643272-1	6643272-1
1643273-1	6643273-1
1643274-1	6643274-1
1643275-1	6643275-1
1643276-1	6643276-1
1643281-1	6643281-1
1643283-1	6643283-1
1643431-1	6643431-1
1643432-1	6643432-1
1643433-1	6643433-1
1643434-1	6643434-1
1643435-1	6643435-1
1643436-1	6643436-1
1643437-1	6643437-1
1643438-1	6643438-1
1643439-1	6643439-1
1643440-1	6643440-1
1643441-1	6643441-1
1643442-1	6643442-1
1643443-1	6643443-1
1643444-1	6643444-1
1643445-1	6643445-1
1643446-1	6643446-1
1643447-1	6643447-1
1643449-1	6643449-1
1643450-1	6643450-1
1643451-1	6643451-1
1643459-1	6643460-3
1643460-1	6643460-1
1643460-2	6643460-2
RoHS compliant	1643902-1
RoHS compliant	1643903-1
RoHS compliant	1643906-1
RoHS compliant	1648110-1
RoHS compliant	1648111-1
RoHS compliant	1648112-1
RoHS compliant	1648115-1
RoHS compliant	1648116-1
RoHS compliant	1648117-1
RoHS compliant	1648127-1
RoHS compliant	1648128-1
RoHS compliant	1648132-1
RoHS compliant	1648133-1
RoHS compliant	1648134-1
RoHS compliant	1648135-1
RoHS compliant	1648151-1
RoHS compliant	1648152-1
RoHS compliant	1648156-1
RoHS compliant	1648157-1
RoHS compliant	1648162-1
RoHS compliant	1648163-1
RoHS compliant	1648167-1
RoHS compliant	1648168-1
RoHS compliant	1648183-1
RoHS compliant	1648186-1
RoHS compliant	1648203-1
RoHS compliant	1648204-1

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Non-RoHS to RoHS Compliant Part Number Cross Reference (Continued)

Non-RoHS Part Number	RoHS Compliant Part Number
RoHS compliant	1648205-1
RoHS compliant	1648206-1
RoHS compliant	1648207-1
RoHS compliant	1648208-1
RoHS compliant	1648211-1
RoHS compliant	1648212-1
1648222-1	6648222-1
1648224-1	6648224-1
1648235-1	6648235-1
1648235-2	6648235-2
1648236-1	6648236-1
1648236-2	6648236-2
1648239-1	6648239-1
1648239-2	6648239-2
1648251-1	6648251-1
1648252-1	6648252-1
1648253-1	6648253-1
1648254-1	6648254-1
1648259-1	6648259-1
1648263-1	6648263-1
1648317-1	6648317-1
1648318-1	6648318-1
1648319-1	6648319-1
RoHS compliant	1648325-1
1648335-1	6648335-1
1648374-1	6648374-1
RoHS compliant	1648382-1
1648383-1	6648383-1
RoHS compliant	1648384-1
RoHS compliant	1648387-1
1648400-1	6648400-1
1648405-1	6648405-1
1648416-1	6648416-1
1648417-1	6648417-1
1648418-1	6648418-1
1648419-1	6648419-1
1648420-1	6648420-1
1648428-1	6648428-1
1648429-1	6648429-1
1648430-1	6648430-1
1648431-1	6648431-1
1648434-1	6648434-1
1648435-1	6648435-1
RoHS compliant	1648446-1
1648454-1	6648454-1
RoHS compliant	1648461-1
RoHS compliant	1648462-1
RoHS compliant	1648463-1
RoHS compliant	1648464-1
RoHS compliant	1648465-1
RoHS compliant	1648466-1
RoHS compliant	1648467-1
RoHS compliant	1648468-1
RoHS compliant	1648469-1
RoHS compliant	1648470-1
RoHS compliant	1648473-1
1648476-1	6648476-1
1648482-1	6648482-1
1648485-1	6648485-1
RoHS compliant	1648488-1

Non-RoHS Part Number	RoHS Compliant Part Number
RoHS compliant	1648489-1
1648499-1	6648499-1
RoHS compliant	1648505-1
1648508-1	6648508-1
RoHS compliant	1648548-1
RoHS compliant	1648549-1
RoHS compliant	1648552-1
RoHS compliant	1648568-1
RoHS compliant	1648574-1
RoHS compliant	1648575-1
RoHS compliant	1648578-1
RoHS compliant	1648596-1
1648970-1	6651170-3
RoHS compliant	1648990-1
1648992-3	1766199-1
1650060-1	1766245-1
1650063-1	1766222-1
RoHS compliant	1650065-1
1650067-1	1766223-1
1650070-1	1766818-1
1650073-2	1766249-1
1650074-2	1766250-1
1650152-3	1766192-1
1650153-1	1766193-1
1650154-1	1766194-1
RoHS compliant	1650155-1
1650156-1	1766195-1
1650158-1	1766196-1
1650160-1	1766198-1
RoHS compliant	1650161-1
RoHS compliant	1650162-2
1650165-1	1766197-1
1650171-3	1766811-1
RoHS compliant	1650226-1
1650241-1	1766268-1
1650254-3	1766819-1
1650266-1	1766269-1
1650275-2	1766230-1
1650278-1	1766270-1
1650280-2	1766274-1
1650281-2	1766275-1
1650282-2	1766812-1
RoHS compliant	1650283-1
1650290-2	1766231-1
1650302-2	1766276-1
1650367-3	1766232-1
1650380-1	6650380-1
1650380-2	6650380-2
1650383-1	6650383-1
1650383-2	6650383-2
1650383-3	6650383-3
1650384-1	6650384-1
1650384-2	6650384-2
1650384-3	6650384-3
RoHS compliant	1650398-1
1650420-2	1766283-1
1650465-2	1766262-1
1650466-2	1766263-1
1650494-1	6650494-1
1650534-1	6650534-1

Non-RoHS Part Number	RoHS Compliant Part Number
1650534-2	6650534-2
1650534-3	6650534-3
1650679-1	6650679-1
1650680-1	6650680-1
1650697-2	1766817-1
1650785-1	6650785-1
1651170-1	6651170-1
1651170-2	6651170-2
1651193-1	6651193-1
RoHS compliant	1651202-1
RoHS compliant	1651203-1
RoHS compliant	1651204-1
RoHS compliant	1651205-1
1651214-1	6651214-1
1651285-1	1766829-1
1651290-1	6651290-1
1651290-2	6651290-2
1651290-3	6651290-3
1651331-1	6651331-1
RoHS compliant	1651457-1
RoHS compliant	1651458-1
RoHS compliant	1651493-1
RoHS compliant	1651494-1
RoHS compliant	1651826-1
RoHS compliant	1651864-1
RoHS compliant	1651929-1
1658239-1	6658239-1
1658239-2	6658239-2
RoHS Compliant	1734178-1
RoHS Compliant	1761419-1
RoHS Compliant	1761419-2
RoHS Compliant	1761419-3
RoHS Compliant	1761419-4
RoHS Compliant	1761819-2
RoHS Compliant	1761819-4
RoHS compliant	1766308-1
RoHS compliant	1766336-1
RoHS compliant	1766436-1
1766439-1	6766439-1
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RoHS compliant	1766442-1
RoHS compliant	1766443-1
RoHS compliant	1766444-1
RoHS compliant	1766444-2
RoHS compliant	1766444-3
RoHS compliant	1766447-1
RoHS compliant	1766448-1
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RoHS compliant	1766450-1
RoHS compliant	1766451-1
RoHS compliant	1766452-1
RoHS Compliant	1766500-1
RoHS Compliant	1766501-1
RoHS Compliant	1775118-2
RoHS Compliant	6450503-4
RoHS Compliant	6450503-5
RoHS compliant	6643914-1
RoHS compliant	6643915-1
RoHS compliant	6643916-1

Non-RoHS Part Number	RoHS Compliant Part Number
RoHS compliant	6643917-1
RoHS compliant	6643921-1
RoHS compliant	6643922-1
RoHS compliant	6648457-1
RoHS compliant	6648515-1
RoHS compliant	6766453-1

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Tyco Electronics to ELCON Part Number Cross Reference

Tyco Electronics Part Number	ELCON Part Number
1643220-1	259-0114-00500
1643222-1	259-0153-00500
1643223-1	259-0174-00500
1643227-1	259-0192-00500
1643228-1	259-0194-00500
1643229-1	259-0195-00500
1643232-1	259-02-00500
1643247-1	259-04-00500
1643250-1	259-16-00100
1643251-1	259-17-00100
1643252-1	259-20-00100
1643253-1	259-22-00100
1643256-1	259-30-00100
1643257-1	259-32-00100
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1643263-1	259-45-00100
1643264-1	259-46-00500
1643266-1	259-50-00500
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1643903-1	538-0068-00100
1643906-1	538-17-00100
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1648463-1	765-12-0080C
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1648467-1	765-16-0080B
1648468-1	765-17-0080C
1648469-1	765-18-0080D
1648470-1	765-19-0080E
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1648476-1	766-33-0080K
1648482-1	767-03-0080J
1648485-1	767-13-0080J
1648488-1	770-16-0080L
1648489-1	770-96-0080L
1648499-1	772-17-0080M
1648505-1	772-40-0080G
1648508-1	772-43-0080K
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1648596-1	296-0093-01100
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1650073-2	707-46-02107
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1650152-3	701-11-02107
1650153-1	701-12-02107
1650154-1	701-13-02107
1650155-1	701-14-02109
1650156-1	701-15-02107
1650158-1	701-16-02107
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1650281-2	711-24-02107
1650282-2	711-55-02107
1650283-1	707-06-02109
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1650302-2	711-26-02107
1650367-3	711-52-02107
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1650380-2	287-0032-02301
1650383-1	284-0102-01300
1650383-2	284-0102-02300
1650383-3	284-0102-02100
1650384-1	286-0052-02101
1650384-2	286-0052-01301
1650384-3	286-0052-02301
1650398-1	84H-E001
1650420-2	711-83-02107
1650465-2	709-75-02107
1650466-2	709-76-02107
1650494-1	286-0022-01300
1650534-1	287-0022-01300
1650534-2	287-0022-02100
1650534-3	287-0022-02300
1650679-1	750-22-0320J
1650680-1	750-23-0320J
1650697-2	259-81-02107
1650785-1	269-54-00500
1651170-1	285-0102-02300
1651170-2	285-0102-01300
1651193-1	286-0022-02300
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1651203-1	426-0001-01100
1651204-1	427-0001-01100
1651205-1	428-0001-01100
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1651285-1	901-35-02300
1651290-1	284-0112-01300
1651290-2	284-0112-02100
1651290-3	284-0112-02300
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1651457-1	431-0001-01100
1651458-1	432-0001-01100
1651493-1	429-0001-01100
1651494-1	430-0001-01100
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1651864-1	284-0223-02303
1651929-1	283-0172-02303
1766308-1	284-0313-01303
1766336-1	283-0172-03003
1766436-1	283-0172-04003
1766439-1	269-71-00500
1766440-1	269-72-00500
1766441-1	269-73-00500
1766442-1	284-0223-01303
1766443-1	284-0223-04003
1766444-1	285-0103-11300
1766444-2	285-0103-12100
1766444-3	285-0103-12300
1766447-1	435-0001-01100
1766448-1	436-0001-01100
1766449-1	439-0001-01100
1766450-1	440-0001-01100
1766451-1	441-0001-01100
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6643914-1	703-11-00100
6643915-1	703-12-00100
6643916-1	703-13-00100
6643917-1	703-14-00100
6643921-1	703-99-00100
6643922-1	713-19-00100
6648457-1	761-33-0080R
6648515-1	772-70-0080R
6766453-1	804-01-00100

Catalog 1773096
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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

ELCON to Tyco Electronics Part Number Cross Reference

ELCON Part Number	Tyco Electronics Part Number
84H-E001	1650398-1
221-0010-01100	1648110-1
221-0011-01100	1648111-1
221-0012-01100	1648112-1
222-0010-01100	1648115-1
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222-0012-01100	1648117-1
235-0152-01100	1648127-1
235-0153-01100	1648128-1
235-0162-01100	1648132-1
235-0163-01100	1648133-1
235-0164-01100	1648134-1
235-0165-01100	1648135-1
241-27-01100	1648151-1
241-28-01100	1648152-1
242-27-01100	1648156-1
242-28-01100	1648157-1
259-0114-00500	1643220-1
259-0153-00500	1643222-1
259-0174-00500	1643223-1
259-0192-00500	1643227-1
259-0194-00500	1643228-1
259-0195-00500	1643229-1
259-02-00500	1643232-1
259-04-00500	1643247-1
259-16-00100	1643250-1
259-17-00100	1643251-1
259-20-00100	1643252-1
259-22-00100	1643253-1
259-30-00100	1643256-1
259-32-00100	1643257-1
259-44-00100	1643262-1
259-45-00100	1643263-1
259-46-00500	1643264-1
259-50-00500	1643266-1
259-52-00500	1643269-1
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259-54-00500	1643272-1
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259-65-00500	1643274-1
259-66-00500	1643275-1
259-67-00500	1643276-1
259-81-02107	1650697-2
259-97-00500	1643281-1
259-99-00500	1643283-1
261-0006-01100	1648162-1
261-0007-01100	1648163-1
262-0006-01100	1648167-1
262-0007-01100	1648168-1
269-50-00500	1643431-1
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269-67-00500	1643447-1
269-68-00500	1643449-1
269-69-00500	1643450-1
269-70-00500	1643451-1
269-71-00500	1766439-1
269-72-00500	1766440-1
269-73-00500	1766441-1
283-0172-01303	1651826-1
283-0172-02303	1651929-1
283-0172-03003	1766336-1
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284-0102-01300	1650383-1
284-0102-02100	1650383-3
284-0102-02300	1650383-2
284-0112-01300	1651290-1
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284-0112-02300	1651290-3
284-0223-01303	1766442-1
284-0223-02303	1651864-1
284-0223-04003	1766443-1
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285-0103-11300	1766444-1
285-0103-12100	1766444-2
285-0103-12300	1766444-3
285-0112-01300	1643459-1
285-0112-02100	1643460-1
285-0112-02300	1643460-2
286-0022-01300	1650494-1
286-0022-02100	1651214-1
286-0022-02300	1651193-1
286-0052-01301	1650384-2
286-0052-02101	1650384-1
286-0052-02301	1650384-3
287-0022-01300	1650534-1
287-0022-02100	1650534-2
287-0022-02300	1650534-3
287-0032-01301	1651331-1
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712-04-01107	1648417-1
712-09-01107	1648418-1
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712-12-01107	1648420-1
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712-81-01107	1648434-1
712-85-01107	1648435-1
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750-23-0320J	1650680-1
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760-79-0080M	1648454-1
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772-70-0080R	6648515-1
804-01-00100	6766453-1
901-35-02300	1651285-1

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Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
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Tyco Electronics Power Connectors Catalog Part Number List

Catalog 1773096
Revised 8-05

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