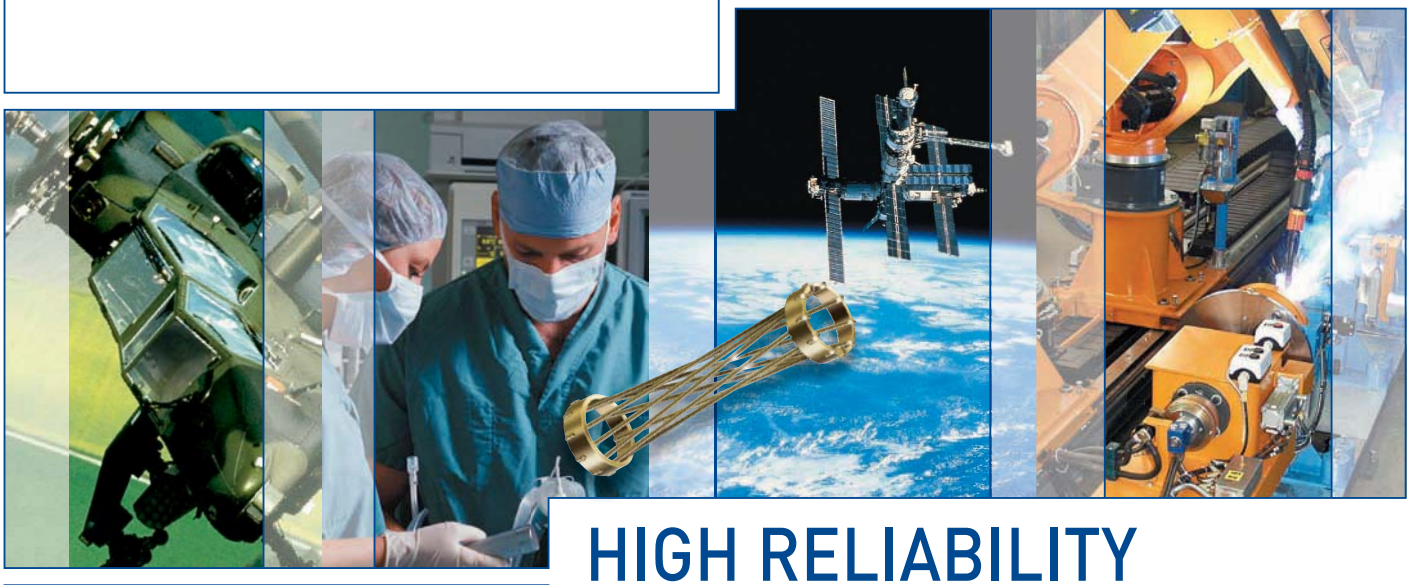
HYPERTAC
HYPERTRONICS



HIGH RELIABILITY CONNECTOR SOLUTIONS CATALOG

smiths
bringing technology to life

Table of Contents

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The following icons will be shown throughout this catalog to demonstrate the most common markets for each product line.

Marine | Mil/Aero | Communications | Mass Transit | Industrial | Test & Measurement | Space | Medical | Automotive

Solving Interconnect Challenges through Unrivalled Performance

Hypertronics at a Glance

Hypertronics is a leading supplier of high reliability, high performance interconnect solutions and electrical/electronic connectors for the most demanding applications. The company has particular expertise in the rapid development of innovative interconnect solutions for high reliability applications in the medical, military, aerospace, industrial, and test and measurement electronics markets.

Hypertronics is headquartered in Hudson, Massachusetts and has manufacturing sites in the United States, China and Mexico, as well as a global network of agents and distributors.

The Difference Is In the Contact Technology

Hypertronics offers a variety of contact system technologies all of which provide the most reliable interconnect solution for any application. With custom design capability, each contact technology can be engineered to meet the demands of mission critical applications in every industry.

Hypertac® Contact Technology is a superior performing, hyperboloid contact technology, ideal for harsh and demanding environments where high reliability and safety are absolutely crucial. The inherent electrical and mechanical characteristics of the Hypertac hyperboloid contact ensure unrivalled performance in terms of reliability, number of mating cycles, low contact forces and low contact resistance. You can find the Hypertac contact system in many of our specialty technologies such as ClearImage™ non-magnetic interconnects, ImplanTac™ bio-compatible, implantable interconnects, HyperSpring® spring loaded interconnects, and HotPlug high current interconnects.

HyperBand Contact Technology provides enhanced electrical performance by teaming power contacts with a compliant contact band to create a bridge that allows for high current carrying capacity. This is an ideal solution when the application requires a lightweight, high current connection with low insertion force and low contact resistance.

HyperGrid® Contact Technology is a lightweight scalable interconnect based on a patented Z axis compliant floating contact system. This technology provides engineers with a high performance replacement for pogo pin, eleastomer-based and fuzz button connectors when signal integrity, reliability and performance are critical.

Complete Custom Design Solutions

Hypertronics expertise is in the precision design and manufacturing of electronic interconnect systems. Hypertronics provides complete, custom design solutions, including cabling, mechanical, instrumentation housing, and electrical modeling and testing. Hypertronics custom solutions can save valuable engineering and manufacturing time, and ensure the overall reliability of the final product. The company's complete solutions are as dependable as its connectors, service and support.

Commitment in Product Innovation

Hypertronics achieves innovative design through the synergies of strong research and development programs, expertise in materials science, product design and process engineering, and a network of sales representatives and customer service personnel dedicated to meeting customers' present and future needs.

Part Number Note

The ordering information found within this catalog can be used to configure standard Hypertronics products. Standard products are defined as having met the “Hypertronics Standard Operating Practices” listed below. For additional requirements please contact the factory.

Hypertronics Standard Operating Practices

- Customer Specifications: customer specification not applicable for standard Hypertronics products
- Packaging: bulk packaging of hardware and loose crimp contacts
- Marking: Hypertronics part number, data code, cage number
- Quality Inspection: AQL level 1.0, C=0
- Certificate of Conformance
- Mercury Free Certification

High Quality and Respect for the Environment

First class material, state-of-the-art development methods, advanced know-how and exact processing are the essential ingredients of Hypertronics quality. Commitment to continuous improvement in interaction with the environment, including the prevention of pollution, ranks first and foremost in all respects. Hypertronics is taking steps in improving the environment by participation in recycling programs, reducing paper usage and conservation of energy.

RoHS / WEEE Compliance

Hypertronics complies with the Restriction of Hazardous Substances Directive (2002/95/EC RoHS) which addresses the design phase of products and aims to restrict the use of substances that pose risks to the environment and human health such as lead, cadmium, polybrominated biphenyls, polybrominated biphenyl ethers, hexavalent chromium and mercury.

Hypertronics also complies with the Waste of Electronic and Electrical Equipment Directive (2002/96/EC WEEE) which addresses the end-of-life phase of products and contributes to the reduction of wasteful consumption of natural resources.

Hypertronics standard catalog products meet the ROHS/WEEE directives with the exception of parts that utilize 63/37 tin lead solder components. Products that deviate from the standard catalog offering will be evaluated for compliance on a case by case basis.

If you have any questions regarding the use of Hypertronics products in your ROHS complaint application please contact technical support.

Disclaimer

All hardware and its associated technical data and services are categorized as either defense or civil, regardless of actual application. Export controls apply to all commodities, technologies, software, data, services and support. In some cases export licenses will be required. In other cases, exemptions or exceptions from licensing may apply. In all cases, detailed documentation is required for each export. Request assistance from your Hypertronics Contact prior to exporting, re-exporting or re-transferring any hardware or technical data, or providing a related service.

Certifications

Hypertronics is certified to:

- ISO9001-2000
- AS9100B
- ISO14001:2004
- ISO13485:2003

Capabilities Overview

Complete Solutions Provider

Hypertronics expertise is in precision design and manufacturing of highly reliable electronic interconnect systems. With standard and custom design solutions that include cabling, mechanical, instrumentation housing and electrical modeling and testing, Hypertronics offers complete interconnect solutions that save valuable engineering and manufacturing time as well as ensure the overall reliability of the final product. Hypertronics employs the finest draftsmen and engineers to work directly with customers to address specific needs and meet industry requirements. The combination of engineering talent and in-house manufacturing capabilities – such as 3D solid modeling, rapid prototyping, and high precision assembly – provide customers with high quality products with a quick turnaround.

Design Capabilities and Specialties

3D Design

Hypertronics uses SolidWorks® 3D solid modeling software to design interconnect solutions. More product designers and engineers worldwide depend on SolidWorks CAD software to help improve product quality and shorten the design and development process. Hypertronics also offers a 3D part configurator on its website that is compatible with many of the industry's standard mechanical CAD programs. The 3D-Config enables designers to view, configure and download Hypertronics products into their own designs.

Custom Design

Hypertronics provides custom design and assembly services for both standard and custom interconnect solutions. For OEMs that specify standard connectors, this service can eliminate the need to source and certify materials and components from multiple vendors, resulting in a more cost competitive solution. And for OEMs who require a complete custom interconnect design, Hypertronics engineers can provide a complete solution optimized for each specific application. In each instance, Hypertronics custom design and assembly services result in higher performing products and more cost effective connection designs.

Rapid Prototyping

Hypertronics uses CNC milling centers to configure and machine engineered plastics and metals into complicated connector designs. These machines give Hypertronics an edge because we are able to supply customized connector solutions to full customer specifications within a matter of days – from initial design concepts to complete applications. Quantities can range from one of a kind piece to complete systems.

Manufacturing Capabilities and Specialties

High Precision Contact Manufacturing and Connector Assembly

Hypertronics core technology, the legendary Hypertac® contact technology, ranges in amperage from one to 500 Amps, and are available various sizes and configurations. Hypertronics designs complete connector systems through a wide range of automated capabilities and specialty operations to complete the assembly that meet the exact needs and requirements of each customer. Hypertronics performs many hand assemblies for build-to-order requests, solder dipping and back sealing. Electrical and mechanical testing is also available on Hypertronics connectors.

Cable Assembly

Customers can rely on Hypertronics for their complete, integrated interconnect cable assemblies, all from one supplier, saving time and money. Hypertronics designs and manufactures cable assemblies available with RF, signal, and high-power contacts, either as one-piece assemblies or as modular pieces to provide design flexibility that reduced costs. Cable options include standard and non-magnetic components and materials, overmolded strain reliefs, splitters, custom coil side connectors and pigtail terminations, and allows for a electronic package to be integrated into the cable assembly. The combination of the ultra-reliable Hypertac® contact technology and Hypertronics expertise, cable assembly and custom connector design results in secure, cost-effective connections for the most critical applications.

Overmolding

Hypertronics offers the convenience of overmolding bend reliefs on its cable connectors as part of a complete cable assembly. Flexible overmolded bend reliefs provide cable protection as well as seal the connector from liquid ingress. Overmolding colors can match the cable, the connector or can provide color coding for the entire interconnect system. Overmolded grommets for the opposite end of the system can complete the cable assembly. Overmolding can be used with standard Hypertronics connectors, such as the D Series and HyperGrip Series, or with custom Hypertronics cable connectors and assemblies. Design engineers work one-on-one with customers to design the overmolded components on cable assembly that fit the needs.

Shielding

Hypertronics offers custom EMI and RFI shielding for applications using standard and custom Hypertronics connectors and cable assemblies. Shielding can be designed into a connector, between cables, or from a cable to a shielded medical device housing. Non-magnetic shielding is also available.

Configure, View and Download 3D Models of Hypertronics Products Directly Into Your Designs

Hypertronics 3D-Config is an interactive online catalog that lets customers search, custom-configure, view and download 3D models and 2D drawings of Hypertronics products. The 3D-Config catalog makes it easy for customers to "design-in" Hypertronics products regardless of which CAD system is being used and which product specifications are required.

Search

Search for the right Hypertronics product for your application using part numbers, product names, descriptions, product parameters, and other application-specific criteria. Or simply browse through an intuitive catalog interface to find the product that fits your needs.

Configure

Configure product models based on specific application requirements such as dimensions, features, colors and accessories.

View

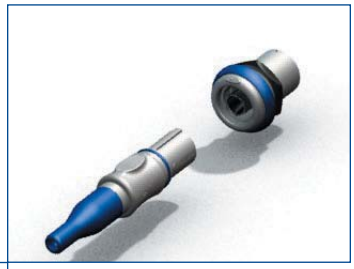
View 3D models and 2D drawings of your specified Hypertronics components. Zoom, pan, and rotate 3D product models to view realistic colors, shadows, and transparencies and easily visualize how a Hypertronics product will work in your design.

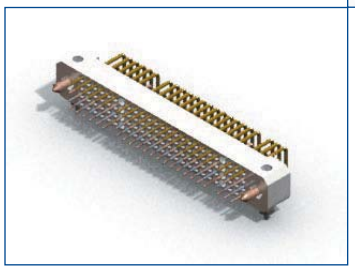
Download

Download models and drawings of Hypertronics products in seconds. 3D-Config speeds and enhances designs and the design process by eliminating costly data manipulation and design review delays. 3D-Config supports all industry standard mechanical CAD systems including AutoCAD®, Mechanical Desktop®, Pro/ENGINEER®, and SolidWorks® 3D CAD software.

Request a Quote

Submit an RFQ (Request for Quotation) via the Web.



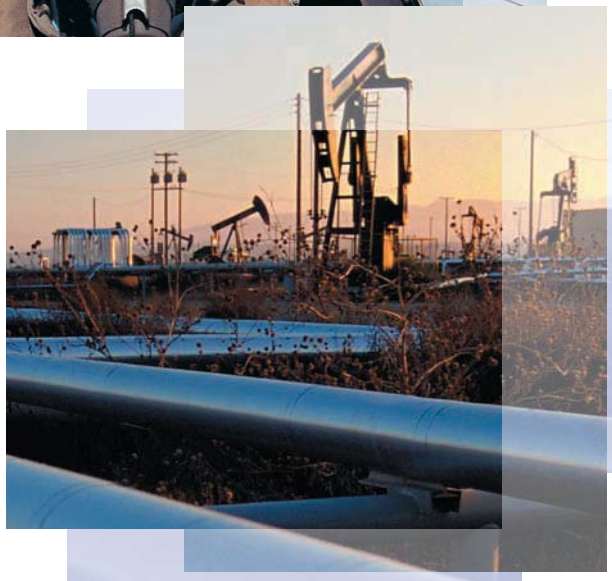


3D CONFIG

Hypertronics is a world leading supplier of high performance interconnect solutions for the most demanding applications. Hypertronics focuses on a set of core markets and applications that require the ultimate in high reliability interconnects and specialty products. In most cases, high mating cycles, specialty materials and designs, and immunity to shock and vibration are essential requirements. Hypertronics design engineers work directly with customers to create the interconnect solution that meet each application-specific requirement.

Military and Aerospace

Hypertronics is a major supplier of standard and custom interconnect solutions to the world's leading civil and military aerospace manufacturers for various naval, land and air systems and applications. From civil airlines to new generation strike fighter aircrafts, Hypertronics interconnect solutions are used extensively on all systems where reliability is a must. Focus market segments include communication, navigation, and weapons systems, missile defense, ground support and maintenance as well as all other mission critical systems that require the high reliability and performance of the Hypertac® contact system.



Oil and Gas

Intelligent Pipeline Inspection Gauges (PIGs) operate in extremely harsh conditions that encounter shock and vibration, debris, temperature extremes and other environmental challenges, all of which can potentially compromise data and system integrity. The superior performance of Hypertronics connectors along with the capability to customize solutions has made Hypertronics the preferred supplier of interconnects for extreme environments.

Medical

Compromise is unacceptable in medical applications where lives are involved. Hypertronics interconnects are used extensively in areas where integrity and reliability is essential to the well being of a patient. Hypertronics supplies the medical market with standard and custom interconnect solutions for those critical applications where thousands of mating cycles are needed and specialty materials are required. Focus applications include imaging systems, implantable devices, therapeutic devices, patient monitors, probes and catheters, and lab equipment.

Industrial and Test and Measurement

Customers in the industrial market segment dread the effect of an electrical connection failure. This could lead to significant production downtime, loss of critical data, expensive maintenance repairs, and damage to product reputation. Hypertronics ultra reliable solutions satisfy the demand for top quality interconnect systems that offer the reassurance of a strong connection. Applications within the industrial market that require Hypertronics interconnect solutions include portable data collection, telecommunications, rail traction, heavy machinery, robotics, industrial equipment and pipeline inspection. In these applications, there is a demand for high performing interconnects that can be provided at the lowest possible cost. Hypertronics products offer a low cost of ownership associated with high quality and reliable performance even in the harshest environments.

Test equipment applications rely on the integrity of the components used within them. Hypertronics interconnect solutions ensure superior longevity and extremely low mating forces even when using a high number of contacts.

Space

Space shuttles, satellites, and navigational systems not only require the highest performing components, they require ultra-high reliability since operating conditions are extreme. With billions of dollars spent on research and exploration, every connection within a space application is absolutely critical. The ability to replace or repair components during a mission is rarely possible. Hypertronics offers a range of space approved connectors which deliver the essential quality, reliability, and longevity of operation that are required for such demanding applications.

Applications	Technologies									
	Signal Contacts	Power Contacts	ClearImage™ Series	COAXTAC®	HTT Series	ImplanTac™	Hot Plug Contacts	HyperBand Contacts	HyperGrid® Contacts	HyperSpring Contacts
Medical Imaging										
Magnetic Resonance	■	■	■	■						
CT/PET/Xray	■	■	■	■				■	■	■
Digital X-Ray Sensors	■			■					■	
Dental Digital X-Ray Sensors	■			■					■	
Ultrasound	■	■	■					■	■	■
SPECT	■	■	■	■					■	
Optical	■	■	■					■	■	
Infrared	■	■	■					■	■	
Thermal	■	■	■					■	■	
Medical Therapeutic Devices										
Defibrillation	■									■
Respiratory	■			■						■
Implantable	■					■			■	
Medical Monitors	■			■						■
Medical Probes/Catheters	■			■					■	■
Medical Hybrid										
Fluid										
Air										
Signal	■									
Medical Lab Equipment	■			■			■		■	■
Military										
Aircraft	■	■		■	■			■	■	■
Ground Vehicles	■	■		■				■	■	■
Maritime Systems	■	■		■				■	■	■
C4I Systems	■	■		■				■	■	■
Missiles & Munitions	■								■	■
Aerospace										
Civil Aviation	■	■		■	■			■	■	■
Space Systems	■		■	■	■				■	■
Industrial										
Automated Test Equipment	■	■							■	■
Automotive	■	■					■			
Communications	■			■						
Industrial Control	■	■			■		■	■		■
Oil & Gas Exploration	■	■			■			■		
Mining & Heavy Equipment	■	■			■			■		
Power Management	■	■			■		■	■		
Rail	■	■						■		
Robotics	■			■					■	■
Semiconductor Fabrication	■	■							■	■

Circular						Rectangular												Modular	
ARINC 628	D Series	HBB Series	HyperGrip® Series	HyperRel Series	SnapTac Circular	cPCI Series (2mm)	HDL Series	HDLP Series	HMD Series	KA Series	KFT Series	KGA Series	KMR Series	KS Series	LSH Series	PC/104+ Series	SnapTac Rectangular	VME64X	L Series	N Series
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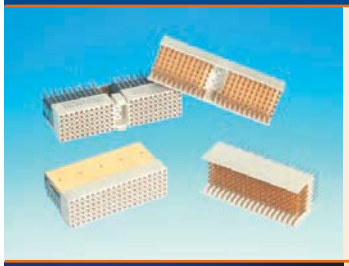
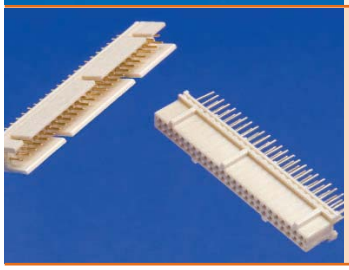
Circular Connectors

	Description	Contact Positions	Nominal Current
	**ARINC 628 circular connectors**	2 power 2 signal (optional 5 signal)	Power: 8 Amps Signal: 2.50 Amps
	**Circular plastic connectors**	3, 4, 7, 9, 12 and 25	1 to 8 Amps
	**Single pole power connectors**	1	300 and 500 Amps
	**Push/pull quick disconnect plastic connectors**	12, 19, 33 and 80	1 Amp
	**Ruggedized 38999 connectors**	3 to 128 (various contact sizes)	Size 12: 23 Amps Size 16: 13 Amps Size 20: 7.5 Amps Size 22D: 5 Amps
	**Miniature circular connectors**	7, 13 and 19	3 Amps

Circular Connectors

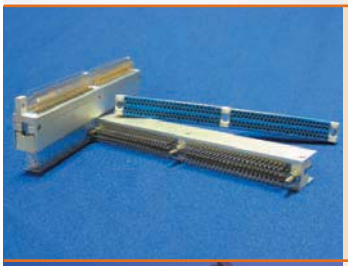
Rectangular Connectors

	Description	Pitch mm	Contact Positions	Nominal Current
	**2mm connector interchangeable with cPCI COTS Systems**	2.00	Signal: 95 or 110 Ground: 19 or 22	1 Amp
	**Test equipment connectors**	2.54	60, 96 or 156	4 Amps
	**High density low profile connectors**	1.30, 1.50 off set grid	30, 58, 90 and 118	2 Amps
	**Micro-D style signal connectors**	1.91	5, 9, 15, 21, 25, 31, and 51	5 Amps
	**2, 3, 4 and 5 row PCB connectors**	2 and 3 row: 2.54 1.27 off set grid 4 and 5 row: 2.54	2 and 3 row: 17 to 160 4 and 5 row: 48 to 490	4 Amps
	**High density low profile mezzanine connectors**	1.27	50, 100 and 140	1 Amp

Rectangular Connectors

Nominal PIN DIA mm	Approvals/ Conformity	Main Markets	Connector Series	Page
0.40	MIL-DTL-55302 EEE-INST-002 GEVS-SE Rev. A NASA GSFC S-311-P-822 IEC 61076-101	Communications, Medical, Space, Industrial, Mass Transit, Mil/Aero	**cPCI (2mm)**	**3 / 1**
0.60	ASTM-488-B (plating)	Medical, Test and Measurement, Industrial, Mass Transit	**HDL**	**3 / 15**
0.40	ASTM-488-B (plating)	Mil/Aero, Industrial, Test and Measurement, Marine, Communications	**HDLP**	**3 / 21**
0.60	MIL-G-45204 (plating)	Mil/Aero, Mass Transit, Industrial, Space	**HMD**	**3 / 27**
0.60	MIL-DTL-55302 (2 and 3 rows)	Mil/Aero, Space, Marine, Test and Measurement, Industrial, Medical	**KA**	**3 / 49**
0.38	N/A	Medical, Mil/Aero, Space	**KFT**	**3 / 81**

Rectangular Connectors (continued)

	Description	Pitch mm	Contact Positions	Nominal Current
	**Single row PCB connectors**	2.54	4 to 90 (even numbers only)	2.5 Amps
	**High density signal connectors**	Mating side: 1.91 Termination side: 0.95 to 2.54	200	3 Amps
	**Single row docking station connectors**	2.10	10	2.5 Amps
	**Dual row portable device connectors**	2.10	10	2.5 Amps
	**200 Amp rack and panel connectors**	23.50	1 to 6	200 Amps
	**Ruggedized PC/104+ stackable connector**	2.00	120	1 Amp

Rectangular Connectors

Nominal PIN DIA mm	Approvals/ Conformity	Main Markets	Connector Series	Page
0.45	N/A	Mil/Aero, Mass Transit, Industrial, Space	**KGA**	**3 / 85**
0.50	N/A	Mil/Aero, Space	**KMR**	**3 / 91**
0.45	N/A	Medical, Light Industry	**KS**	**3 / 99**
0.45	N/A	Medical, Light Industry	**KS**	**3 / 101**
6.12	N/A	Aerospace, Automotive, Industrial, Test and Measurement, Mass Transit	**LSH**	**3 / 103**
0.40	PC/104 Embedded Consortium	Space, Mil/Aero	**PC/104+**	**3 / 105**

Rectangular Connectors (continued)

	Description	Pitch mm	Contact Positions	Nominal Current
	**Miniature rectangular connectors**	2.20, 2.00 off set grid	12 or 21	3 Amps
	**VME64X ruggedized connector**	Outer bays: 2.54 Center bay: 2.00	434	Outer bays: 2.5 Amps Center bay: 1 Amp

Modular Connectors

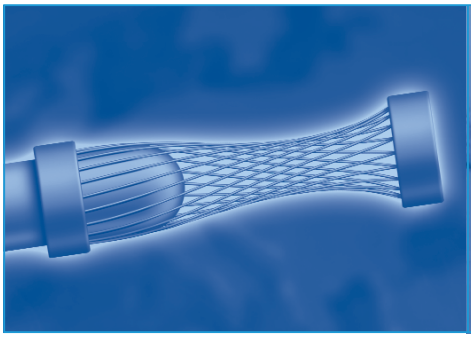
	Description	Contact Positions	Nominal Current
	**Modular connectors**	Up to 300	4 to 200 Amps
	**Mini modular connectors**	Up to 900	1 to 25 Amps

Rectangular Connectors

Nominal PIN DIA mm	Approvals/ Conformity	Main Markets	Connector Series	Page
0.60	IEEE 1394	Mil/Aero	**SnapTac Rectangular**	**3 / 111**
Outer bays: 0.50 Center bay: 0.40	ANSI/VITA 1.7 IEEE-1101.2 (1992)	Mil/Aero, Communications, Mass Transit	**VME64X**	**3 / 119**

Modular Connectors

Nominal PIN DIA mm	Approvals/ Conformity	Main Markets	Connector Series	Page
0.60 to 6.08	N/A	Mil/Aero, Mass Transit, Industrial, Space, Medical, Test and Measurement, Marine	**L**	**4 / 1**
0.40 to 2.50	N/A	Mil/Aero, Mass Transit, Industrial, Space, Medical, Test and Measurement, Marine	**N**	**4 / 23**

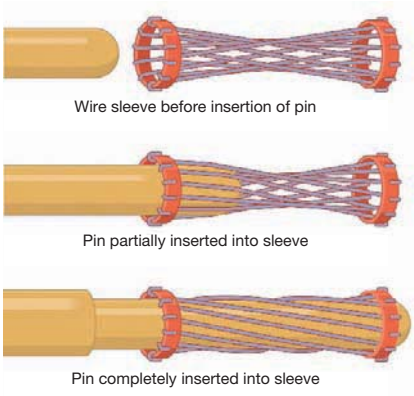


TECHNOLOGIES

Superior Contact Design

Hypertac® is an advanced contact design that satisfies performance requirements previously considered impossible. The shape of the contact sleeve is formed by wires strung at an angle to the socket's axis. When the pin is inserted into this sleeve, the wires stretch around it, providing a number of linear contact paths.

The superior design of the Hypertac contact system offers several features and benefits.



Feature

Low Insertion/Extraction Forces
The controlled angle of the socket wires allows tight control of the pin insertion and extraction forces. The spring wires are smoothly deflected to make line contact with the pin.

Long Contact Life
The smooth and light wiping action minimizes wear on the contact surfaces. Hypertac Contacts perform up to 100,000 insertion/extraction cycles with no degradation in performance.

Lower Contact Resistance
Hypertac multiple line contacts provide far greater contact area than other contacts of comparable size. The wiping action of the wires insures a clean and polished contact surface. Tests have shown Hypertac contacts have about half the resistance of conventional contact designs.

Higher Current Ratings
The design parameters of the Hypertac contact may be modified for any special requirement. For example, the number of wires can be increased in order to distribute the contact area over a larger surface of the mating pin. Thus, the high current carried by each wire because of its intimate line contact, can be multiplied many times.

Immunity to Shock and Vibration
The low mass and low inertia of the wires enable them to follow the most abrupt or extreme excursions of the pin without the loss of contact. The contact area extends 360° around the pin and is uniform over its entire length. The 3 dimensional symmetry of the Hypertac contact design guarantees electrical continuity regardless of the direction or intensity of external or internal forces.

Benefit

High Density Interconnect Systems
Significant reductions in size and weight of sub-system designs can be achieved by employing Hypertac high density connectors with a large number of contacts that do not require additional hardware to overcome mating and un-mating forces.

Low Cost of Ownership
Hypertac is ideal for applications that require frequent connector mating cycles, thus eliminating the burden and cost of having to replace the connector or the entire subsystem.

Low Power Consumption
The lower contact resistance of the Hypertac contact results in a lower voltage drop across the connector which reduces the power consumption and heat generation within the system.

Maximum Contact Performance
The lower contact resistance of the Hypertac reduces heat build up; therefore Hypertac contacts are able to handle far greater current in smaller contact assemblies without the detrimental effects of high temperature.

Reliability Under Harsh Environmental Conditions
Harsh environmental conditions require connectors that will sustain their electrical integrity even under the most demanding conditions such as shock and vibration. Hypertac provides unmatched stability in demanding environments when failure is not an option.

Discrete Custom Hypertac® Contacts Signal and Power

In addition to Hypertronics extensive line of ultra reliable Hypertac hyperboloid socket contacts, discrete custom contacts can be designed to meet application specific demands in both signal and power versions. With contact diameters from 0.40 to 16.50mm and current ranges from 1 to over 500 Amps, Hypertronics can solve almost any specific form, fit, or function challenges design engineers may face. By modifying design variables and production parameters to the Hypertac process, certain features and benefits can be emphasized dependent on requirements. This means engineers can receive all the advantages of high cycle life, low insertion/withdrawal forces, low contact resistance, and exceptional performance under shock and vibration in a custom contact system that suits their application perfectly. For applications requiring test, burn–in and/or high power use, Hypertronics can customize the solution.

Technical Information

Contact Diameter	0.40mm	0.45mm	0.60mm	0.76mm	1.02mm	1.50mm	2.50mm	3.50mm	4.30mm	6.12mm	12.70mm	16.50mm
Contact Styles	Male (M) and Female (F)											
Crimp	M / F	M / F	M / F		M / F	M	M / F		M	M / F		
Solder Cup	M / F	M	M / F		M / F	M / F	M / F	M / F	M			
Straight Dip	M / F	M / F	M / F	M / F	M	M / F						
Open Both Ends	F	F			F	F		F				
Closed End		F		F	F	F	F					
Threaded Stud						F		M / F	M / F	M / F	M / F	M / F
Press In							F	F	F	F		
Right Angle Block								M / F				
Contact Resistance (milliohms)	< 8.0	< 8.0	< 5.0	< 5.0	< 2.5	< 2.5	< 0.8	< 0.5	< 0.37	< 0.25	< 0.08	< 0.04
Current rating (Amps)	1	2.5	4	5	8	10	15	25, 40 and 50	100	200	350	500
Extraction Force (Ounces unless otherwise noted)	0.3 - 1.6	0.5 - 1.6	0.3 - 2.0	0.5 - 3.2	1.0 - 3.9	1.2 - 5.0	6.0 - 25.0	7.0 - 32.0	15.0 - 90.0	80.0 - 160.0	9.0 - 20.0 lb.	20.0 - 37.0 lb.
Contact Life	Up to 100,000 mating cycles											
Materials	Beryllium copper wire and brass body											

Features and Benefits

- Contacts from 1 to 500 Amps
- 0.016 to 0.650 [0.40 to 16.50] diameter pins with mating sockets
- Up to 100,000 mating cycles
- Contact resistance from 0.04 to 8.0 milliohms
- Ideal for test, burn-in and high power use

NOTE:
Performance specifications are based on mating Hypertronics contacts

Dimensions are in inches [mm]

ClearImage™ Series

Hypertronics ClearImage product line features non-magnetic contacts designed specifically for interconnections in imaging systems, beds, coils and other associated accessories. These contacts are non-magnetic versions of the highly reliable Hypertac hyperboloid contact technology.

All of products in Hypertronics ClearImage series are free of any material that could potentially distort magnetic flux. ClearImage products include offerings for power, signal and coax – each meeting or exceeding the magnetic permeability requirements for MRI usage. These non-magnetic contacts feature a self-cleaning wiping action, high cycle life, low mating force and are impervious to contact fretting caused by the vibration of imaging equipment.

Hypertronics offers ClearImage non-magnetic contacts in various combinations of kits to fully accommodate development projects and production orders. Many ClearImage kits are available with quick-turn delivery.

ClearImage cable assemblies come preloaded with non-magnetic contacts and are available in four different channel designs. Many ClearImage cables are available with quick-turn delivery.

Tools and accessories are also available.

ClearImage Contacts - General Specifications

- Magnetic Permeability: $\pm 30 \times 10^{-5}$ μ_r Max. differential
- Current Rating: 4 to 50 Amps per contact
- Contact Resistance: Up to < 8 milliohms
- Extraction Force: Pin and Socket - 0.5 to 32.0 oz.; Coax - 3.0 to 160.0 oz.
- Impedance (Coax Only): 50 ohms
- Contact Life Cycles: Up to 25,000 Cycles
- Temperature Rating: -55º C to 125º C
- Contact Material: (Coax, Pins and Sockets) Non-magnetic brass, beryllium copper, phosphor bronze
- Plating: Gold over copper flash over base metal

Features and Benefits

- Non-Magnetic Hypertac High Reliability Contacts
- Magnet permeability to $\pm 30 \times 10^{-5}$ μ_r
- High cycle life
- Self-cleaning wiping action
- Low mating forces
- Immunity to contact fretting caused by vibration
- One-stop shopping for R&D and production

ClearImage Series Ordering Information

Contact Kits

- CLR-CKIT0001*: Coax and DC Kit - (32) 3.15mm coax, (60) 0.6mm pins and sockets
- CLR-CKIT0002*: Coax and DC Kit - (64) 3.15mm coax, (120) 0.6mm pins and sockets
- CLR-CKIT0003*: Power DC and Coax Kit - (32) 3.5mm pins and sockets, (32) 3.15mm coax
- CLR-CKIT0004*: Power DC and Coax Kit - (32) 3.5mm pins and sockets, (32) 3.15mm coax, (32) 0.6mm pins and sockets
- CLR-CKIT0005: Power Coax and DC Kit - (6) 8.6mm power coax, (32) 3.15mm coax, (60) 0.6mm pins and sockets
- CLR-CKIT0006: Power Coax and DC Kit - (12) 8.6mm power coax, (64) 3.15mm coax, (120) 0.6mm pins and sockets

Cable Assemblies

- CLR-RC0001: 4 Channel Cable Assembly - 4 Channel 12 DC
- CLR-RC0002*: 8 Channel Cable Assembly - 8 Channel 32 DC
- CLR-RC0003*: 16 Channel Cable Assembly - 16 Channel 17 DC
- CLR-RC0004: 32 Channel Cable Assembly - 32 Channel 34 DC

Accessories

- CLR-PLUGKIT0001*: Plug Handle and insulator kit for cable assemblies
- CLR-RECKIT0001*: Receptacle housing and insulator for cable assemblies
- CLR-SR0001: Slide/glue on 4 channel strain relief for 4 channel cable assembly
- CLR-SR0002*: Slide/glue on 8 channel strain relief for 8 channel cable assembly
- CLR-SR0003*: Slide/glue on 16 channel strain relief for 16 channel cable assembly
- CLR-SR0004: Slide/glue on 32 channel strain relief for 32 channel cable assembly

* Indicates that product is available with quick-turn delivery.

COAXTAC® Coaxial Contacts

Hypertronics has combined its legendary Hypertac® contact technology with RF technology to create the patented COAXTAC coaxial contact, providing greater performance in those applications where high cycle life, low insertion and withdrawal forces, low contact resistance, and exceptional performance under shock and vibration are required. COAXTAC contacts are ideal for those critical applications where the performance parameters of a coaxial contact and ultimate contact reliability are essential. COAXTAC contacts maintain their electrical and mechanical characteristics over the life of the contact.

The uniqueness of the COAXTAC system stems from the double Hypertac configuration within each coaxial contact. By placing one Hypertac contact within another, the high forces typically associated with an industry standard contact are reduced and contact life is extended. Additionally, the combination of the Hypertac technology with that of a coaxial connector design creates an 18 GHz double Hypertac coaxial contact that gives new meaning to the word "performance." When compared to other coaxial contacts, COAXTAC is able to withstand the harshest conditions and still deliver the performance that is required from a contact system.

COAXTAC contacts can be housed in DIN 411612 insulator cavities or in a variety of standard Hypertronics products. The contacts are MIL-PRF-39012 qualified having met, and in some cases exceeded,

the qualification requirements. Test results prove that even with the slightest wear of the mating surfaces, COAXTAC contacts are able to deliver exceptional performance and are able to withstand conditions that other coaxial contacts cannot.

COAXTAC contacts are currently available in Hypertronics D, L and N Series connectors. Cabling is also available with COAXTAC contacts in the form of RG316 single braided cables.

Technical Information

General Specifications for 3.15mm, 5.5mm, 8.6mm Contacts

- Nominal Impedance: 50 ohms
- Frequency Range: DC to 18 GHz
- Temperature Rating: -55°C to 125°C
- Materials: Brass, copper, beryllium copper, phosphor bronze, PTFE
- Finishes: Gold over nickel over copper

Electrical Parameters (Cable Dependent)

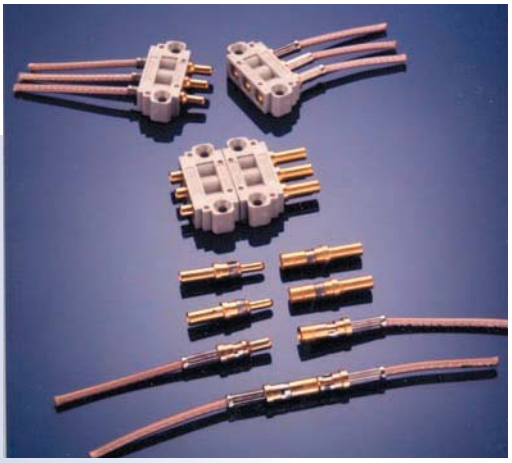
- Voltage Standing Wave Ratio (VSWR): DC to 3 GHz 1.20:1
  : 3 GHz to 18 GHz 1.50:1
- RF Transmission Loss: 0.50 dB maximum at 3 GHz
- Insulation Resistance: 5,000 megohms minimum
- Dielectric Withstanding Voltage: 500V RMS

Contact Resistance for 3.15mm, 5.5mm, 8.6mm Contacts

- Inner Contact: 8 milliohms, 4 milliohms, 2 milliohms maximum
- Outer Contact: 2 milliohms, 1 milliohm, 0.5 milliohms maximum

Mechanical Parameters

- Extraction Force: 3 ounces, 10 ounces, 112 ounces average
- Connector Durability: More than 25,000 cycles



Features and Benefits

- 1.20:1 VSWR maximum to 3 GHz
- 1.50:1 VSWR maximum to 18 GHz
- More than 25,000 mating cycles
- 50 Ohm impedance
- 3.15mm version mounts in DIN 41612 insulator cavities
- Available in Hypertronics D, L and N Series connectors
- Hypertac inner and outer contacts
- Non-magnetic versions available (consult factory)

HTT Series Contacts

HTT Series contacts are high temperature resistant versions of the ultra reliable Hypertac® hyperboloid contact technology. Made from corrosion resistant materials that enable continuous operation in extreme environments well above 400° C ambient, HTT Series contacts are ideal for mission critical interconnect systems within thermic environments.

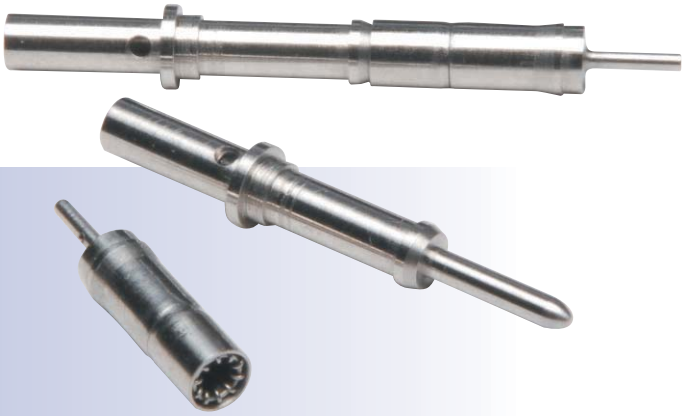
With the proven performance of Hypertac sockets, HTT Series contacts can significantly outperform and outlast any previous high temperature contact option. Engineers can now select contacts which are both immune to harsh shock and vibration conditions and are capable of dwelling in a wide range of high temperature states.

Able to withstand numerous thermal cycles, HTT Series contacts behave consistently in ambient conditions from -65° C to 440° C with no appreciable performance degradation. Whether the thermal environment is composed of rapid heating and cooling as in landing gear, brake systems and weapon discharges, or is characterized by long durations as in aircraft engines, gas turbines and down-hole drill rigs, HTT Series contacts ensure electrical connectivity when failure is not an option.

For decades, military, aerospace and industrial engineers have trusted Hypertronics to provide interconnect solutions for the most demanding applications. Now Hypertronics extends its proven reliability for rugged solutions capable of defeating the most extreme environmental conditions by introducing the HTT Series for high temperature demands.

HTT Series contacts are ideal for critical high temperature applications such as:

- Rocket, jet and turbine engines
- Industrial machinery
- Mining and geological survey
- Oil and gas exploration
- Power generation
- Armament and fire control



Features and Benefits

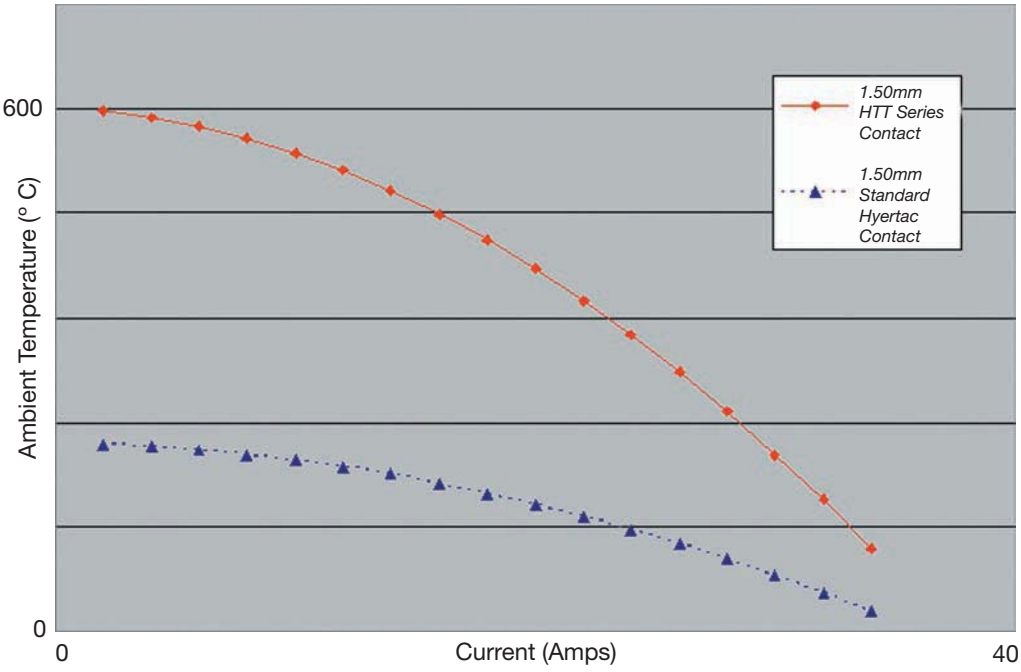
- Operating temperatures in excess of 440° C
- Corrosion resistant
- Proven Hypertac technology
  - Multiple points of contact
  - Immune to severe shock and vibration
  - Self-cleaning wiping action

HTT Series contacts have been extensively tested to demonstrate their superior benefits in thermal conditions. The contact type comparison table details the difference between an HTT Series contact and standard Hypertac contact. Given a 10 Amp current rating, an HTT Series contact operates continuous at 440° C while a standard Hypertac contact is limited to 180° C.

Contact Type Comparisons (Per Contact)

Performance Parameter	Standard 1.50mm Hypertac Contact	1.50mm HTT Series Contact
Resistance, LLCR	< 2.5 milliohms	10 milliohms
Current Rating	8 to 10 Amps	10 Amps
Extraction Forces[1]	5 ounces maximum	20 ounces maximum
Maximum Temperature[2, 3]	125° C typical, 180° C maximum	440° C maximum

Testing was based on MIL-STD-1344A with thermal cycles lasting hundreds of hours. The Ambient Temperature vs. Current chart provides a comparative analysis of ambient temperatures relative to current amperage for a 1.50mm HTT Series contact and a standard 1.5mm Hypertac contact.



NOTES
1) Methods available to reduce insertion force dependent upon application.
2) While conducting maximum current in mated condition.
3) Tested at 6 Amps continuous current in 440° C dwell for 500 hours.

ImplanTac™ Contacts

Hypertronics ImplanTac socket contacts are made of bio-compatible materials for use in implantable medical devices where reliability, dependability and ease of use are critical. Such applications include pacemakers, implantable cardioverter-defibrillators, neurostimulators, metabolic controls, circulation pumps, bone growth stimulators and pain management devices.

ImplanTac highly reliable implantable contact solutions are based on the low-force, low resistance Hypertac® hyperboloid socket technology. Hypertronics offers both standard and customizable ImplanTac solutions. With ImplanTac contacts, medical device manufacturers with critical applications are guaranteed reliable, high performance interconnect solutions for applications in which malfunction or failure could be life threatening.

ImplanTac bio-compatible contacts provides surgeons the ability to easily mate implanted leads into devices without misalignment, damage to the system, or risk to the patient. Typical implanted devices are encapsulated in a housing then implanted into the body cavity. Electrical leads are connected to the device, and directly to the patient's body, during a surgical procedure. The leads monitor and apply electrical energy based on sensory inputs; therefore the connection between the leads and the device must be of the ultimate reliability.

Many medical industry leaders have turned to Hypertronics to solve the problems they've encountered with other implantable interconnect technologies. With ImplanTac, Hypertronics is able to offer the high reliability of the Hypertac contact system in combination with the specialty materials required for critical implantable applications.

Features and Benefits

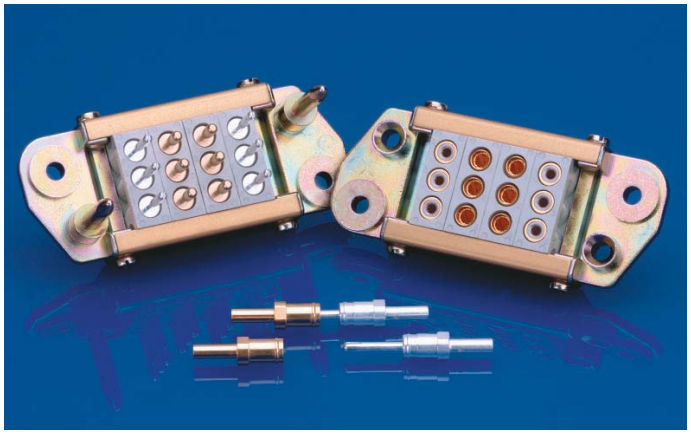
- Bio-compatible Hypertac contacts perform flawlessly in harsh environments
- Low-force, low resistance contacts are easy to use and resist damage during mating
- Available in signal or power versions
- Standard and customizable contacts designed for ultra high reliability
- Ideal for such critical applications as:
  - Pacemakers
  - ICDs (implantable cardioverter-defibrillators)
  - Neurostimulators
  - Metabolic Controls
  - Circulation Pumps
  - Bone Growth Stimulators
  - Pain Management Devices

Hot Plug Contacts

Hypertronics patented Hot Plug contacts offer the high reliability performance properties of the Hypertac contact, while allowing for frequent engagement and disengagement of “live” electrical systems, without causing system failures or other costly downtimes.

Hot Plug contacts are designed to ensure signal integrity under the harsh electrical conditions present in such applications as power supplies, power generators, AC/DC converters, telecommunications systems and data communications systems. The contacts provide live plug capability to over 50 mating cycles and are immune to the effects of shock and vibration. They have low contact resistance and have been tested to applicable sections of the UL1977 Safety Standard.

Hot Plug contacts can be used alone or in combination with any Hypertronics signal, power and coax contacts. The contacts are an enhancement to Hypertronics L Series and N Series modular connectors. Custom connectors can also be designed to incorporate Hot Plug contacts.



Technical Specifications

- Pin Diameter: 2.00mm and larger
- Available Terminations: crimp, solder cup, straight dip
- Wire Size: 13 - 14 AWG
- Sacrificial forward ring on receptacle
- Spring loaded tip on plug

Qualifications Testing

- UL1977, section 15: Tested to 50 cycles under load
- EIA 64, test procedure 70: Rated to 28 Amps for non-hot plug applications
- UL1977, section 16 temperature rise: Rated to 16 Amps 115V AC for hot plug applications (after 50 cycles)

Features and Benefits

- Live plug capability to over 50 mating cycles
- Hypertac high reliability sockets
- Immune to vibration
- Low contact resistance
- Silver plated pin and forward ring resists arc damage and reduces contact resistance

HyperBand Contact Technology

HyperBand power contacts use a compliant contact band. Stamped HyperBand contacts create a "current bridge" system comprised of one active and two static contact members. This unique construction provides enhanced electrical performance by providing greater current transfer and mechanical stability. A high current carrying capacity is achieved by providing multiple contact bridge points per unit length. Reduced weight and low contact insertion and withdrawal forces are additional features of the HyperBand contact system.

General Specifications		
Temperature Range		-55° C to 180° C
Material		Beryllium copper
Finish		Silver or gold
Short Circuit Temperature		270° C
Pin Diameter	**Current Rating**	
	0.006 [0.15] Band	**0.008 [0.20] Band**
0.315 [8.00]	200 Amps	250 Amps
0.394 [10.00]	300 Amps	350 Amps
0.472 [12.00]	400 Amps	450 Amps
0.551 [14.00]	500 Amps	550 Amps

Per One Current Bridge (with silver plate)	**Specifications**	
	0.006 [0.15] Band	**0.008 [0.20] Band**
Mechanical Data		
Contact Force*	7.2 oz.	25.12 oz.
Sliding Force*	2.56 oz.	8.96 oz.
Working Range (Height)	0.035 - 0.055 [0.90 - 1.40]	0.035 - 0.055 [0.90 - 1.40]
Cycle Life	> 500	> 500
Electrical Data**		
Current Capacity	25 Amps	30 Amps
Contact Resistance	800 µΩ	500 µΩ
Short Circuit Current (1 Sec, 3 Sec)	0.85 kA, 0.55 kA	0.95 kA, 0.63 kA
Surge Current	2.0 kA	2.5 kA

Features and Benefits

- Extremely low contact resistance
- Low insertion/extraction force
- Exceptional heat dissipation and temperature rating
- High current density
- High number of mating cycles
- Termination options available for both bus bar and cable applications
- Available in single and multi-pole configurations; with both flat and round geometrics
- 0.006 [0.15] and 0.008 [0.20] band thickness available

* For standard compression to a height of 0.040 [1.00]
** Data shown is only valid when cross sections of the assembly (ie: wall thickness and cable sizes) correspond to the rated currents.

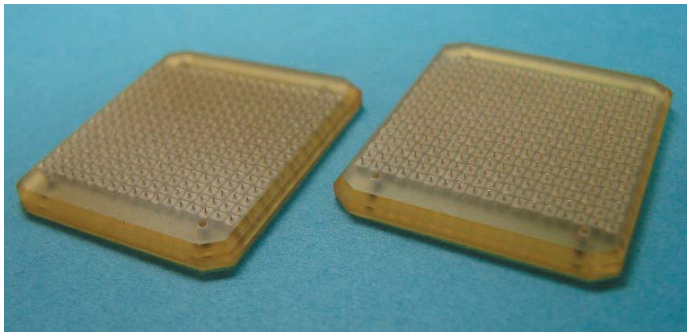
Dimensions are in inches [mm]

HyperGrid® Contact Technology

HyperGrid is a scalable interconnect technology that provides engineers with a high performance, robust “drop-in” replacement for pogo pin, elastomer-based and fuzz button connectors. Suitable for mezzanine level, IC-to-board, or board-to-board interconnect requirements, engineers can feel confident that HyperGrid contacts will replace any pogo pin or other discrete I/O compliant contact in interconnect environments constrained by space and weight limitations.

Based on a patented, Z axis compliant floating contact, HyperGrid provides an electrically-efficient connection, with a very consistent resistance value from pin to pin. The 0.50 to 1.27mm pitch contacts have a low self-inductance and use a repeatable, low contact force (0.35 - 1.59 oz.).

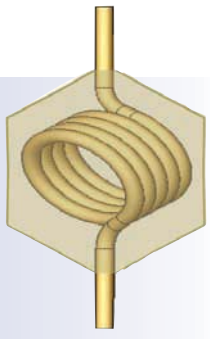
The technology delivers an interconnection that adheres to any standard and non-standard footprint and is easy to customize. HyperGrid is available in a number of connector and interposer products that can meet the most demanding requirements for signal integrity, reliability and performance. Suitable application areas include high speed microwave MMIC, flat panel displays, flexible cables, printed circuit board and parallel boards, and solderless, multiple-termination connectors for Mil/Aero avionics and various medical applications.



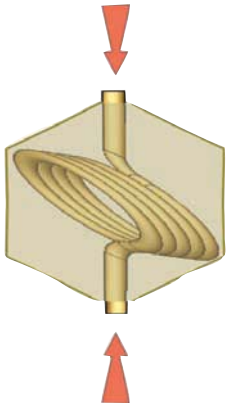
General Specifications	
Materials	Beryllium copper wire
Plating	Gold over nickel
Mechanical Specifications	
Pitch	0.5 - 1.27mm
Test Height	0.81 - 2.28mm
Full Travel	0.15 - 0.50mm
Recommended Travel	0.10 - 0.38mm
Overall Length	0.91 - 2.67mm
Contact Force	0.35 - 1.59 oz.
Electrical Specifications	
Current Rating	Up to 2.5 Amps
Self-inductance	Down to 0.5 nH
Character Impedance	56 ohms
< - 1 dB Bandwidth	Up to 37 GHz
DC Resistance	< 50 milliohms

Features and Benefits

- Compliant contact provides high reliability with space and weight savings
- Discrete nodes, all metal, no elastomers
- Low contact self inductance
- Consistent resistance across nodes
- Minimum of 100,000 mating cycles
- Scalable interconnect by pitch
- Customizable footprint
- Superior signal intergrity
- Known discrete-node resistance-measurements
- Known repeatable force-deflection characteristics



HyperGrid Coils
Before Compression
(Unmated)



HyperGrid Coils
During Compression
(Mated)

HyperSpring® Contact Technology

HyperSpring contacts combine the high reliability of the Hypertac hyperboloid contact technology with the mechanical features of a spring-loaded contact to produce interconnections with improved signal integrity, high reliability and current density, and proven parametric stability over time.

The key innovation in a HyperSpring contact is that the spring itself is not used for electrical conduction: instead, conduction is handled by a Hypertac hyperboloid socket placed between the barrel and the plunger of a common spring-loaded contact. This means that the material used to form the spring may be chosen solely on the basis of its mechanical properties, primarily its elasticity. As a consequence it is possible to optimize the physical performance of the overall system.

HyperSpring produces superior electrical performance because the electrical properties of the conducting material do not need to be balanced with its physical performance. The use of the hyperboloid contact inside the HyperSpring guarantees all the features and benefits of the Hypertac technology.

General Specifications			
Contact Diameter	0.50mm	0.60mm	0.76mm
Current Rating	3 Amps	3 Amps	8 Amps
Spring Force	Max. 6.35 oz.	4.23 oz.	7.05 oz.
Contact Resistance	< 20 mΩ	< 10 mΩ	< 8 mΩ
Mating Cycles	100,000		
Contact Material			
Non functional parts	Brass plated with gold or nickel		
Spring contact element	Beryllium copper plated with 1.27µm gold		
Spring element	Stainless steel AISI 302 passivated		
Interface pin connection	Bronze or beryllium copper plated with 1.27µm gold		
Plug contact terminations	Brass or bronze plated with 1.27µm gold		

Features and Benefits

- Spring-loaded contact with Hyperboloid socket
- Available with Hypertac Coax, Power and Signal Contacts
- Suitable for low height printed circuit board interconnect, and high density applications
- Provides cleaning contact action on harsh connection environment
- Provides reliable connection: mechanical provided by internal spring and electrical provided by internal pin and socket mating
- Easy replacement and maintenance
- Connection test system for microchip wafer testing

CIRCULAR

ARINC628

D Series

HBB Series

HyperGrip

HyperRel

SnapTac Series – Circular

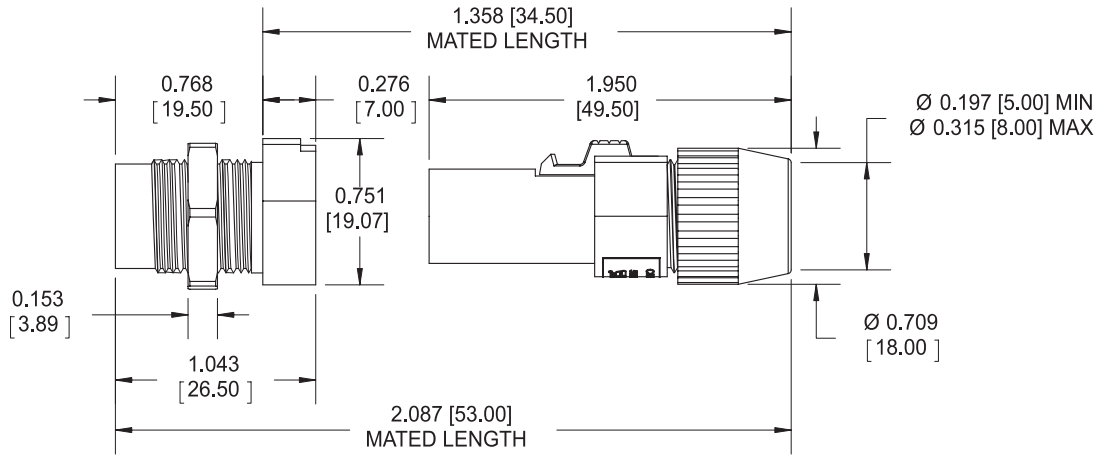
All products are available on 3D Config

ARINC 628 Circular Connectors

- Industry standard
- 2 Power and 2 signal contacts
- Optional 5 signal positions
- Quick disconnect push button release
- Alignment and keying provided by housing
- Crimp contacts

Connector Dimensions

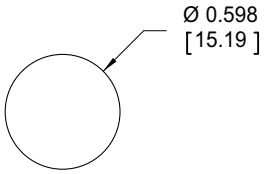
EE = Receptacle (Panel Mount) **P = Plug (Cable)**



General Specifications		
Contacts	**Power**	**Signal**
Number of Contacts	2	2
Diameter	0.059 [1.50]	0.018 [0.50]
Current Rating (Amps)	8	2.50
Wire Size (AWG)	16 – 20	22 – 26
Contact Resistance	< 2.0 milliohms	< 8.0 milliohms
Insertion / Extraction Force Per Contact	1.8 to 5.4 oz.	0.3 to 1.6 oz.
Insulator Material Receptacle Plug	Polycarbonate Polycarbonate	
Flammability	UL94V0	
Contact Plating Male Pins Female Sockets	G = 10µin gold (min) over nickel H = 50µin gold (min) over nickel AH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination	
Contact Material Pins Sockets	Brass Beryllium copper wires and brass body	
Temperature Rating **Insulation Resistance**	-40° C to 85° C > 10 Mohm at 500 VDC	

Dimensions are in inches [mm]

Mounting Dimensions



Mounting Plate Material	Maximum Recommended Thickness to Use Hole Punch
Steel	0.062 [1.60]
Other	0.094 [2.40]

Replacement Contacts		
	Power	Signal
Pin	YPN015-038G or H	YPN005-049G or H
Socket	YSK015-053AH	YSK005-036AH

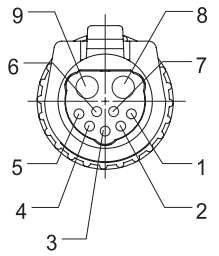
Accessories		
	Power	Signal
Crimp Tool	AF8	AFM8
Positioner (Pin)	T1165	T870
Positioner (Socket)	TP688	T870
Removal Tool	T1124	—
Insertion Tool	—	T1215

Ordering Information

Male Plug	Plating
D02PBMRT-0024 D02PBMRTH-0025	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Receptacle	
D02EEBFRTAH-0022	50µin gold (min) over nickel on mating surface, and gold flash over nickel on socket bodies

Typical Application Wiring

(Connectors Are Not Shipped Pre-Wired)
In-Seat Power Interfaces



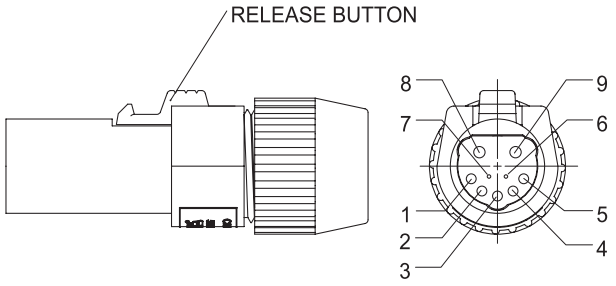
Receptacle Viewed from the Mating Side

Receptacle Contact Assignments

1	NOT USED
2	NOT USED
3	NOT USED
4	NOT USED
5	NOT USED
6	OUTPUT ENABLE
7	OUTPUT ENABLE RTN
8	OUTPUT POWER (+)
9	OUTPUT POWER RTN (-)

Power contact in position 8 and 9 only.
Signal contacts in positions 6 and 7 only.

Power or Adapter Cable Plug



Plug Contact Assignments

1	NOT USED
2	NOT USED
3	NOT USED
4	NOT USED
5	NOT USED
6	OUTPUT ENABLE
7	OUTPUT ENABLE RTN
8	OUTPUT POWER (+) — To PED or DC Voltage Adapter
9	OUTPUT POWER RTN (-) — To PED or DC Voltage Adapter

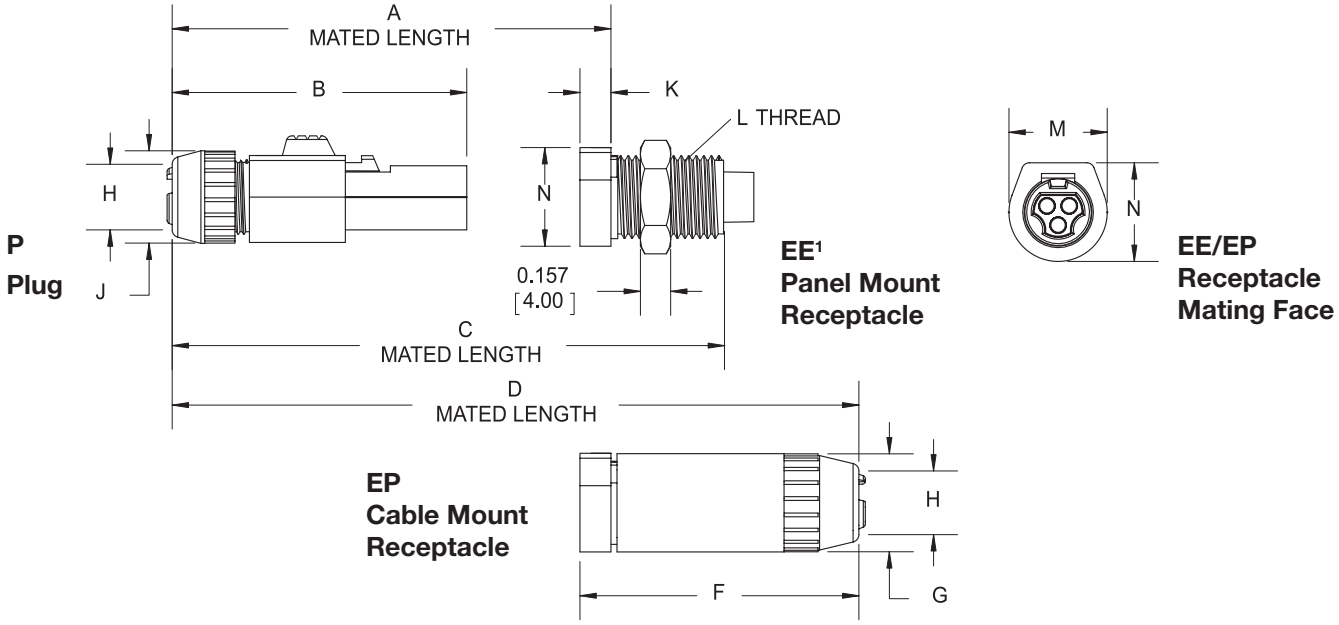
NOTE:
1) Connectors are not shipped pre-wired.

Dimensions are in inches [mm]

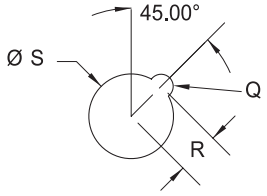
Circular Plastic Connectors

- 3, 4, 7, 9, 12 and 25 position models
- 1 to 8 Amps per contact
- Mixed signal and power or coax available
- recognized components File No. 102195
- Each connector half accepts pins or sockets
- High impact plastic body
- Quick disconnect push button release
- Alignment and polarization provided by housing
- Crimp, solder cup, and pc contacts
- Color coding available

Connector Dimensions



Mounting Dimensions



Hole Punches

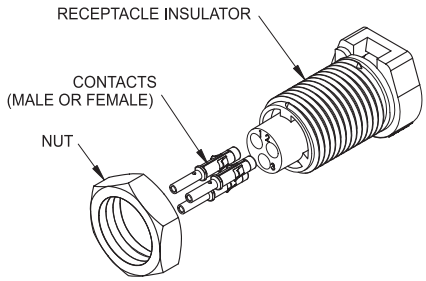
Part Number	Series	Maximum Recommended Panel Thickness in Steel	Maximum Recommended Panel Thickness in Alum.
T1903	D01	0.048 [1.25]	0.075 [1.90]
T1904	D02	0.062 [1.60]	0.094 [2.40]

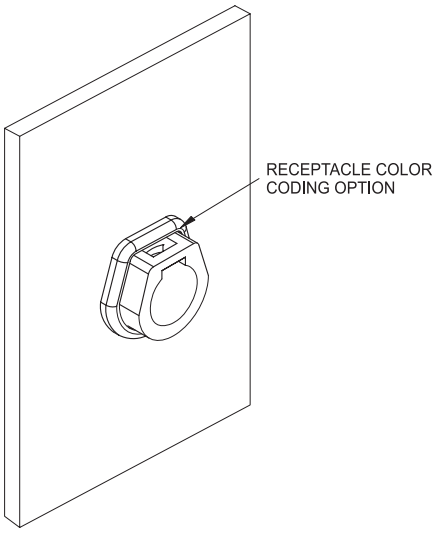
Dimension	D01 Housing	D02 Housing
A	1.142 [29.00]	1.358 [34.50]
B	1.614 [41.00]	1.950 [49.50]
C	1.732 [44.00]	2.087 [53.00]
D	2.400 [61.00]	2.953 [75.00]
F	1.500 [38.00]	1.772 [45.00]
G Dia.	0.512 [13.00]	0.709 [18.00]
H Dia.	0.118 [3.00] Min. 0.216 [5.50] Max.	0.197 [5.00] Min. 0.315 [8.00] Max.
J Dia.	0.472 [12.00]	0.709 [18.00]
K	0.161 [4.10]	0.278 [7.00]
L	M11 X 1.00 Thd.	M15 X 1.00 Thd.
M	0.512 [13.00]	0.669 [17.00]
N	0.512 [13.00]	0.689 [17.50]
Q Dia.	0.220 [5.60]	0.100 [2.54]
R	0.126 [3.20]	0.295 [7.50]
S Dia.	0.441 [11.20]	0.598 [15.20]

Dimensions are in inches [mm]

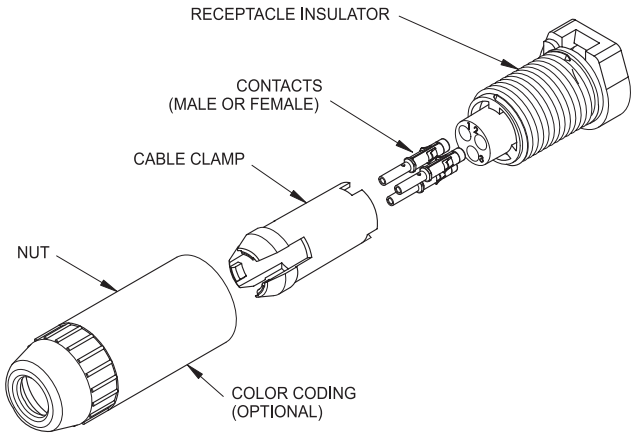
NOTE:
1) Recommended tightening torque for panel mount receptacle (0.452–0.678 N•M) for both D01 and D02.

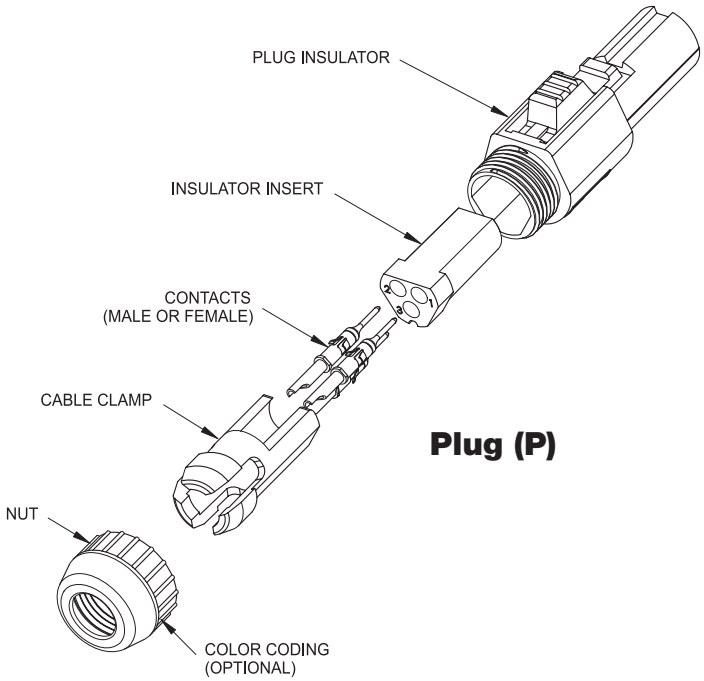
Panel Mount Receptacle (EE)





Cable Mount Receptacle (EP)





Plug (P)

Dimensions are in inches [mm]

D01 General Specifications

	3 Pin	4 Pin	9 Pin
Contact Diameter	0.024 [0.60]	0.024 [0.60]	0.016 [0.40]
Current Rating (Amps)	4	4	1
Contact Resistance (milliohms)	< 5	< 5	< 8
Extraction Force Per Contact (oz.)	0.50 to 2.00	0.50 to 2.00	0.60 to 1.60
Contact Life Cycles	100,000	100,000	100,000
Breakdown Voltage Between Contacts	> 2250V	> 2250V	> 1000V
Dielectric Withstanding Voltage	1650V	1650V	750V
Contact			
Socket Material	Beryllium copper wires and brass body (socket)		
Pin Material	Brass (pin)		
Plating Material	Gold over nickel		
Insulation Resistance	> 10^3 megohms at 500 VDC		
Temperature Rating*			
Polycarbonate (D01 - 3 and 4 pin only)	-40° C to 85° C		—
Polyetherimide (D01 - 9 pin only)	—		-40° C to 125° C*

Accessories	3 Pin	4 Pin	9 Pin
Crimp Tool	AFM8 or (M22520/2-01)	AFM8 or (M22520/2-01)	AFM8 or (M22520/2-01)
Positioner	K547	K547	T1914
Removal Tool	S/DEM1.0060	S/DEM1.0060	—
Insertion Tool	T1866	T1866	T1916

D02 General Specifications

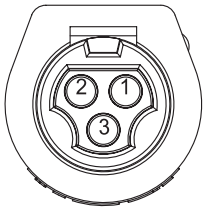
	3 Pin	7 Pin	9 Pin	12 Pin	25 Pin
Contact Diameter	0.059 [1.50]	0.024 [0.60]	0.024 [0.60]	0.018 [0.50]	0.016 [0.40]
Current Rating (Amps)	8	4	4	2.5	1
Contact Resistance (milliohms)	< 2	< 5	< 5	< 8	< 8
Extraction Force Per Contact (oz.)	1.80 to 5.40	0.50 to 2.00	0.50 to 2.00	0.30 to 1.60	0.30 to 1.60
Contact Life Cycles	100,000	100,000	100,000	100,000	100,000
Breakdown Voltage Between Contacts	> 2250	> 2000	> 1560	> 1000	> 1000
Dielectric Withstanding Voltage	1650	1500	1150	750	750
Contact					
Socket Material	Beryllium copper wires and brass body (socket)				
Pin Material	Brass (pin)				
Plating Material	Gold over nickel				
Insulation Resistance	> 10^3 megohms at 500 VDC				
Temperature Rating*					
Polycarbonate (D02 - 3, 7, 9 and 12 pin only)	-40° C to 85° C				—
Polyetherimide (D02 - 25 pin only)	—				-40° C to 125° C*

Accessories	3 Pin	7 and 9 Pin	12 Pin	25 Pin
Crimp Tool	AF8	AFM8 or M22520/2-01	AFM8 or M22520/2-01	AFM8 or M22520/2-01
Positioner	TP688	K623	T870	T1914
Removal Tool	S/DEM5.0150	S/DEM1.0060	—	—
Insertion Tool	T1888	T1866	T1271	T1916

*If color coding option is specified, maximum temperature rating is 85° C.

Dimensions are in inches [mm]

D01
3 Pin



Receptacle seen from mating side

Housing Options	Example Part Numbers
Receptacle Panel Mount	D01EEB306FRTAH
Receptacle Cable	D01EPB306FRTAH
Plug	D01PB306MRT
Contact Options	
Crimp Socket – 22-26 AWG Crimp Socket – 18-20 AWG Solder Cup Socket – up to 22 AWG Crimp Pin – 22-26 AWG Crimp Pin –18-20 AWG Solder Cup Pin – up to 22 AWG	See part number configurator on page 2/17 for complete ordering information.
Tools	
Crimp Tool	AFM8 or M22520/2-01
Crimp Positioner	K547
Removal Tool	S/DEM1.0060
Insertion Tool	T1866

D01
4 Pin

Receptacle seen from mating side

Housing Options	Example Part Numbers
Receptacle Panel Mount	D01EEB406FRTAH
Receptacle Cable	D01EPB406FRTAH
Plug	D01PB406MRT
Contact Options	
Crimp Socket – 22-26 AWG Crimp Socket – 18-20 AWG Solder Cup Socket – up to 22 AWG Crimp Pin – 22-26 AWG Crimp Pin –18-20 AWG Solder Cup Pin – up to 22 AWG	See part number configurator on page 2/17 for complete ordering information.
Tools	
Crimp Tool	AFM8 or M22520/2-01
Crimp Positioner	K547
Removal Tool	S/DEM1.0060
Insertion Tool	T1866

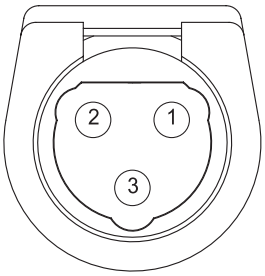
D01
9 Pin

Receptacle seen from mating side

Housing Options	Example Part Numbers
Receptacle Panel Mount	D01EEB904FRUTAH
Receptacle Cable	D01EPB904FRUTAH
Plug	D01PB904MRUT
Contact Options	
Crimp Socket – 26-28 AWG Solder Cup Socket – up to 26 AWG Crimp Pin – 26-28 AWG Solder Cup Pin – up to 26 AWG	See part number configurator on page 2/17 for complete ordering information.
Tools	
Crimp Tool	AFM8 or M22520/2-01
Crimp Positioner	T1914
Insertion Tool	T1916

Dimensions are in inches [mm]

D02 3 Pin



Receptacle seen from mating side

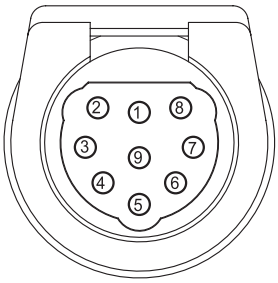
Housing Options	Example Part Numbers
Receptacle Panel Mount Receptacle Cable Plug	D02EEB315FRTAH D02EPB315FRTAH D02PB315MRT
Contact Options	See part number configurator on page 2/17 for complete ordering information.
Crimp Socket – 18 and 20 AWG Solder Cup Socket – up to 16 AWG Crimp Pin –18 and 20 AWG Solder Cup Pin – up to 16 AWG	
Tools	
Crimp Tool Crimp Positioner Removal Tool Insertion Tool	AF8 TP688 S/DEM5.0150 T1888

D02 7 Pin

Receptacle seen from mating side

Housing Options	Example Part Numbers
Receptacle Panel Mount Receptacle Cable Plug	D02EEB706FRTAH D02EPB706FRTAH D02PB706MRT
Contact Options	See part number configurator on page 2/17 for complete ordering information.
Crimp Socket – 22-26 AWG Solder Cup Socket – up to 22 AWG Crimp Pin – 22-26 AWG Solder Cup Pin – up to 22 AWG	
Tools	
Crimp Tool Crimp Positioner Removal Tool Insertion Tool	AFM8 or M22520/2-01 K623 S/DEM1.0060 T1866

D02 9 Pin



Receptacle seen from mating side

Housing Options	Example Part Numbers
Receptacle Panel Mount Receptacle Cable Plug	D02EEB906FRTAH D02EPB906FRTAH D02PB906MRT
Contact Options	See part number configurator on page 2/17 for complete ordering information.
Crimp Socket – 22-26 AWG Solder Cup Socket – up to 22 AWG Crimp Pin – 22-26 AWG Solder Cup Pin – up to 22 AWG	
Tools	
Crimp Tool Crimp Positioner Removal Tool Insertion Tool	AFM8 or M22520/2-01 K623 S/DEM1.0060 T1866

Dimensions are in inches [mm]

D02
12 Pin

Receptacle seen from mating side

Housing Options	Example Part Numbers
Receptacle Panel Mount Receptacle Cable Plug	D02EEB125FRTAH D02EPB125FRTAH D02PB125MRT See part number configurator on page 2/17 for complete ordering information.
Contact Options	
Crimp Socket – 22-26 AWG Solder Cup Socket – up to 22 AWG Crimp Pin – 22-26 AWG Solder Cup Pin – up to 22 AWG	
Tools	
Crimp Tool Crimp Positioner Insertion Tool	AFM8 or M22520/2-01* T870 T1271

D02
25 Pin

Receptacle seen from mating side

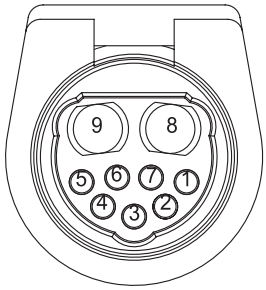
Housing Options	Example Part Numbers
Receptacle Panel Mount Receptacle Cable Plug	D02EEB2504FRUTAH D02EPB2504FRUTAH D02PB2504MRUT See part number configurator on page 2/17 for complete ordering information.
Contact Options	
Crimp Socket – 26-28 AWG Solder Cup Socket – up to 26 AWG Crimp Pin – 26-28 AWG Solder Cup Pin – up to 26 AWG	
Tools	
Crimp Tool Crimp Positioner Insertion Tool	AFM8 or M22520/2-01 T1914 T1916

Dimensions are in inches [mm]

Combination Connectors Power and Signal

• Two 8 Amp and seven 2.5 Amp Signal Contacts • Crimp Contacts

D02
Power and Signal



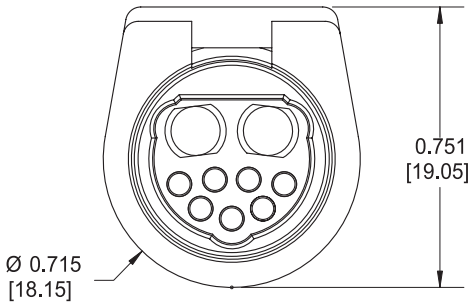
Receptacle seen from mating side

Housing Options	Example Part Numbers*
Receptacle Panel Mount Plug	D02EEB215/705FRTAH D02PB215/705MRT See part number configurator on page 2/17 for complete ordering information.
Contact Options	
Power Socket – 16-20 AWG Power Pin – 16-20 AWG Signal Socket – 22-26 AWG Signal Pin – 22-26 AWG	
Tools	

	Power	**Signal**
Crimp Tool	AF8	AFM8
Crimp Positioner (Pin)	T1164	T870
Crimp Positioner (Socket)	TP688	T870
Removal Tool	T1124	—
Insertion Tool	—	T1215

General Specifications

Contacts	**Power**	**Signal**
Number of Contacts	2	7
Diameter	0.059 [1.50]	0.018 [0.50]
Current Rating (Amps)	8	2.50
Contact Resistance	< 2.0 milliohms	< 8.0 milliohms
Extraction Force	1.8 to 5.4 oz.	0.3 to 1.6 oz.
Contact Material		
Pins Sockets	Brass Beryllium copper wires and brass body	
Insulator Material		
Receptacle Plug	Polycarbonate Polycarbonate	
Flammability	UL94V0	
Temperature Rating	-40° C to 85° C	
Insulation Resistance	> 10 Mohm at 500 VDC	

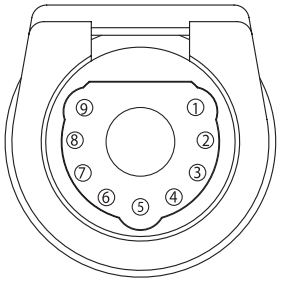


NOTE:
*B = Black Polycarbonate Available in Power and Signal.

Dimensions are in inches [mm]

Combination Connectors Coax or Power and Signal

D02
Coax or Power and Signal



Receptacle seen from mating side

Housing Options

Receptacle Panel Mount
Receptacle Cable
Plug

Contact Options

Coax Crimp Socket – RRG 316, RG316DB
Coax Solder Cup Socket – RG405, T-Flex 405
Coax Crimp Pin – RG316, RG316DB
Coax Solder Cup Pin – RG405, T-Flex 405
Power Crimp Socket – 12 AWG
Power Crimp Pin – 12 AWG
Signal Crimp Socket – 22-26 AWG
Signal Solder Cup Socket – 22-26 AWG
Signal Crimp Pin – 22-26 AWG
Signal Solder Cup Pin – 22-26 AWG

Example Part Numbers[1]

D02EEB905FR1C1FRUTHA
D02EPB905FR1C1FRUTHA
D02PB905MR1C1MRUT

See part number configurator on page 2/17 for complete ordering information.

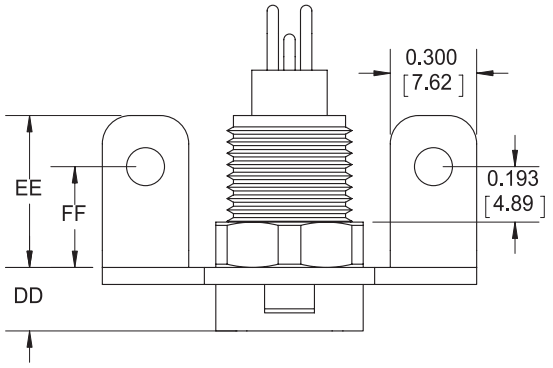
Tools

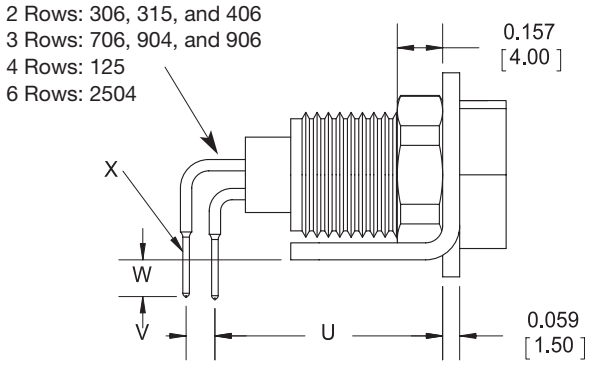
	Coax	Power	Signal
Crimp Tool	HX3 (Outer) AFM8 (Inner)	M309 –	AFM8 –
Crimp Die Set	T1958 (Outer) or T2019 (Outer for RG316DB)	– – –	– – –
Crimp Positioner	T1957 (Inner)	T1981	T870
Removal Tool	T1982	T1982	–
Insertion Tool	–	–	T1215

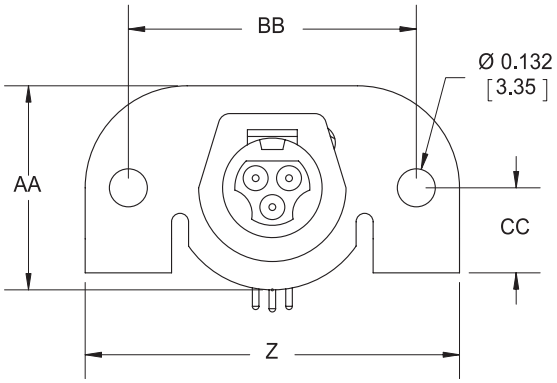
NOTES:
1) H = Black Polyetherimide (High Temperature).
2) Available in Coax or Power and Signal.

Dimensions are in inches [mm]

Printed Circuit Board Receptacles (Right Angle)







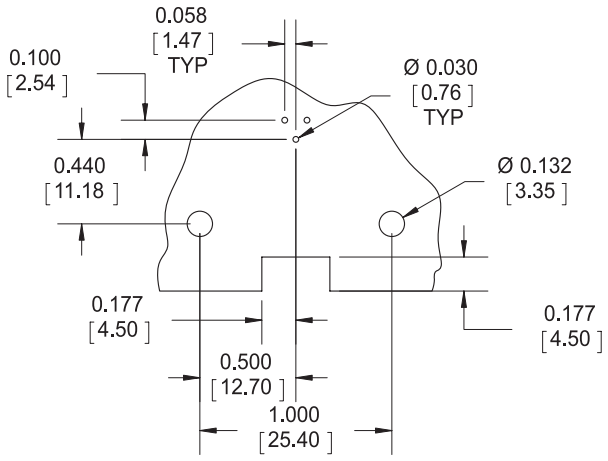
Dimension	D01 Housing 3 and 4 Position	D01 Housing 9 Position	D02 Housing 3 Position	D02 Housing 7 and 9 Position	D02 Housing 12 Position	D02 Housing 25 Position
U	0.790 [20.07]	0.700 [17.79]	0.834 [21.19]	0.742 [18.85]	0.689 [17.50]	0.655 [16.65]
V	0.100 [2.54]	0.075 [1.90]	0.150 [3.81]	0.100 [2.54]	0.100 [2.54]	0.075 [1.90]
W	0.187 [4.74]	0.181 [4.60]	0.184 [4.68]	0.177 [4.50]	0.173 [4.39]	0.181 [4.60]
X Dia.	0.024 [0.60]	0.015 [0.38]	0.059 [1.50]	0.024 [0.60]	0.017 [0.435]	0.015 [0.38]
Z	1.300 [33.02]	1.300 [33.02]	1.500 [38.10]	1.500 [38.10]	1.500 [38.10]	1.500 [38.10]
AA	0.709 [18.00]	0.709 [18.00]	0.866 [22.00]	0.866 [22.00]	0.866 [22.00]	0.866 [22.00]
BB	1.000 [25.40]	1.000 [25.40]	1.200 [30.48]	1.200 [30.48]	1.200 [30.48]	1.200 [30.48]
CC	0.236 [6.00]	0.236 [6.00]	0.315 [8.00]	0.315 [8.00]	0.315 [8.00]	0.315 [8.00]
DD	0.220 [5.60]	0.220 [5.60]	0.335 [8.50]	0.335 [8.50]	0.335 [8.50]	0.335 [8.50]
EE	0.528 [13.40]	0.528 [13.40]	0.610 [15.50]	0.610 [15.50]	0.610 [15.50]	0.610 [15.50]
FF	0.350 [8.89]	0.350 [8.89]	0.400 [10.16]	0.400 [10.16]	0.400 [10.16]	0.400 [10.16]

Dimensions are in inches [mm]

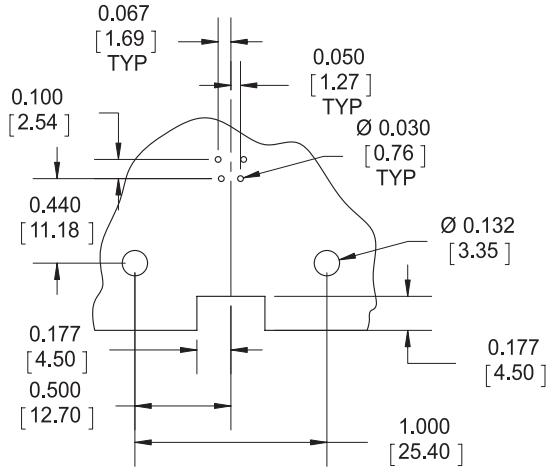
Mounting Dimensions

Right Angle Daughter Board Application

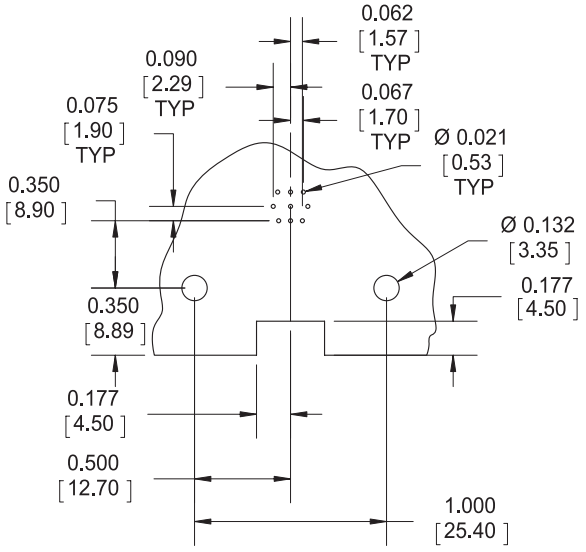
Printed Circuit Board Shown From Component Side



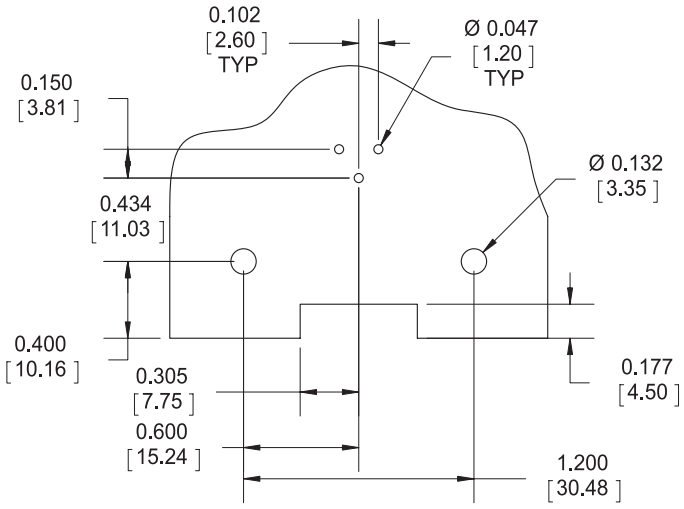
Printed Circuit Board Layout for D01EEB306FB24TABH



Printed Circuit Board Layout for D01EEB406FB24TABH



Printed Circuit Board Layout for D01EEB904FB24UTABH



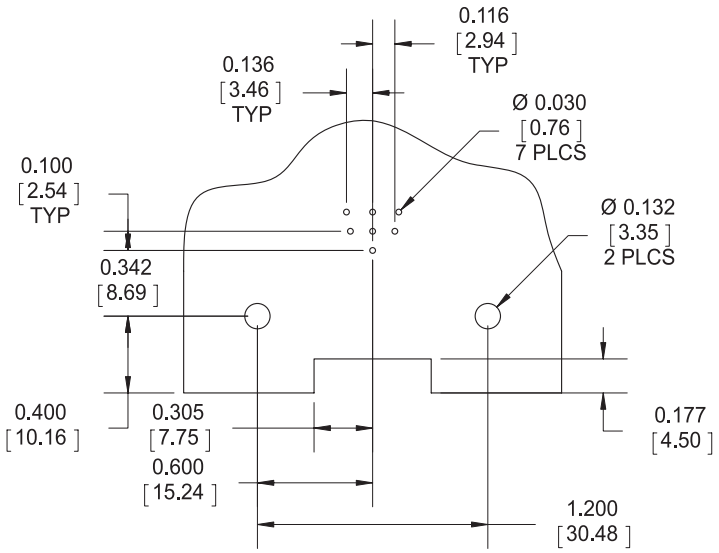
Printed Circuit Board Layout for D02EEB315FB24TABH

Dimensions are in inches [mm]

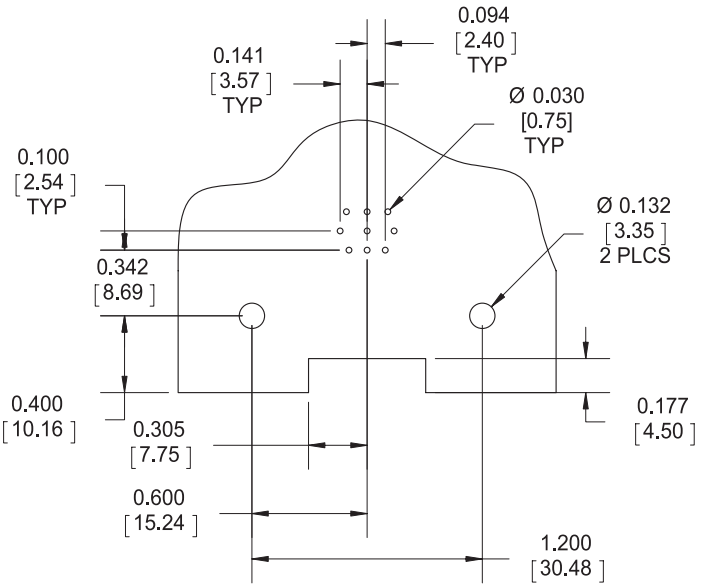
Mounting Dimensions

Right Angle Daughter Board Application

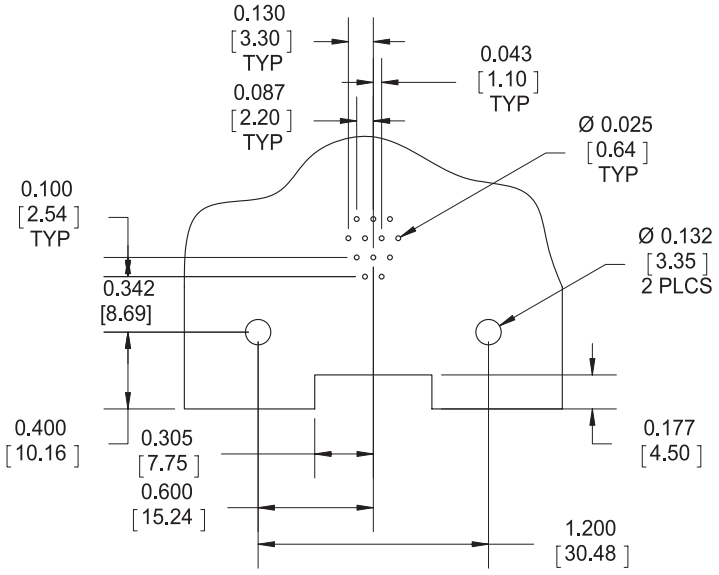
Printed Circuit Board Shown From Component Side



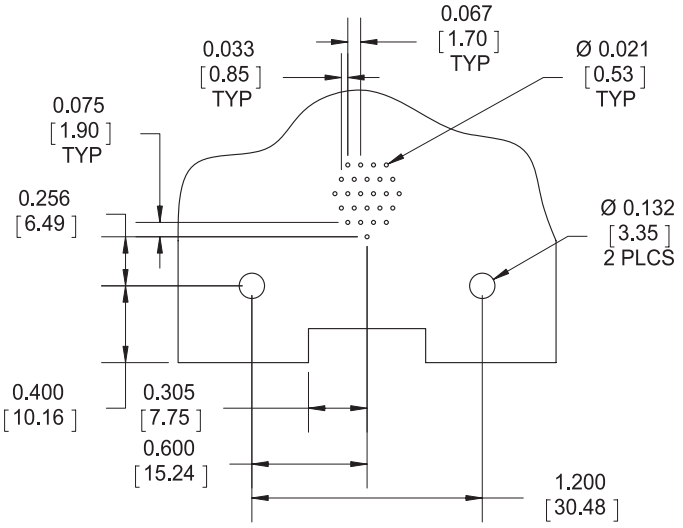
Printed Circuit Board Layout for D02EEB706FB24TABH



Printed Circuit Board Layout for D02EEB906FB24TABH



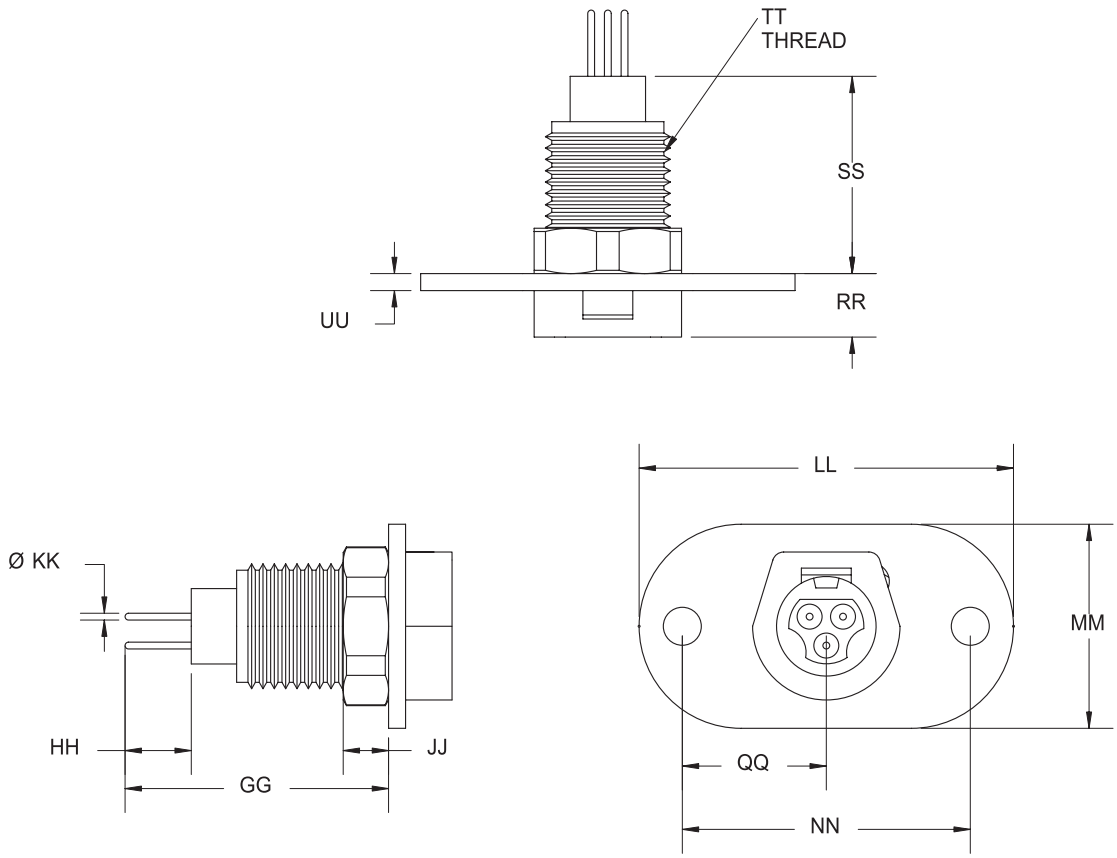
Printed Circuit Board Layout for D02EEB125FB24TABH



Printed Circuit Board Layout for D02EEB2504FB24UTABH

Dimensions are in inches [mm]

Printed Circuit Board Receptacles (Straight Dip Solder)



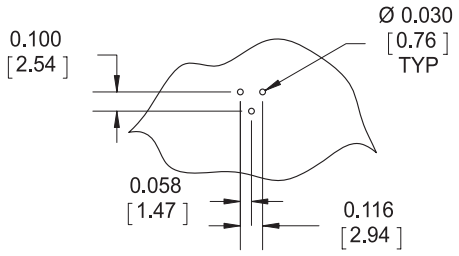
Dimension	D01 Housing 3 and 4 Position	D01 Housing 9 Position	D02 Housing 3 Position	D02 Housing 7 and 9 Position	D02 Housing 12 Position	D02 Housing 25 Position
GG	0.914 [23.23]	0.866 [22.00]	1.059 [26.91]	0.989 [25.12]	0.923 [23.45]	0.870 [22.10]
HH	0.229 [5.82]	0.181 [4.60]	0.193 [4.91]	0.221 [5.61]	0.233 [5.94]	0.260 [4.60]
JJ	0.157 [4.00]	0.157 [4.00]	0.157 [4.00]	0.157 [4.00]	0.157 [4.00]	0.157 [4.00]
KK	0.023 [0.58]	0.015 [0.38]	0.039 [1.00]	0.023 [0.58]	0.017 [0.43]	0.015 [0.38]
LL	1.300 [33.02]	1.300 [33.02]	1.500 [38.10]	1.500 [38.10]	1.500 [38.10]	1.500 [38.10]
MM	0.709 [18.00]	0.709 [18.00]	0.866 [22.00]	0.866 [22.00]	0.866 [22.00]	0.866 [22.00]
NN	1.000 [25.40]	1.000 [25.40]	1.200 [30.48]	1.200 [30.48]	1.200 [30.48]	1.200 [30.48]
QQ	0.500 [12.70]	0.500 [12.70]	0.600 [15.24]	0.600 [15.24]	0.600 [15.24]	0.600 [15.24]
RR	0.220 [5.60]	0.220 [5.60]	0.335 [8.50]	0.335 [8.50]	0.335 [8.50]	0.335 [8.50]
SS	0.685 [17.40]	0.685 [17.40]	0.866 [22.00]	0.768 [19.50]	0.689 [17.50]	0.689 [17.50]
TT	M11 x 1.00 Thd.	M11 x 1.00 Thd.	M15 x 1.00 Thd.	M15 x 1.00 Thd.	M15 x 1.00 Thd.	M15 x 1.00 Thd.
UU	0.059 [1.50]	0.059 [1.50]	0.059 [1.50]	0.059 [1.50]	0.059 [1.50]	0.059 [1.50]

Dimensions are in inches [mm]

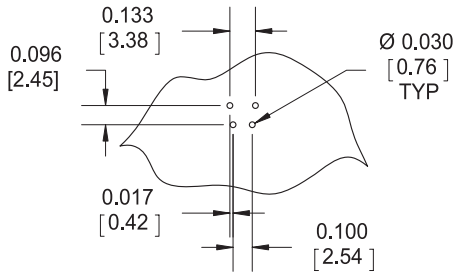
Mounting Dimensions

Straight Contact Printed Circuit Board Application

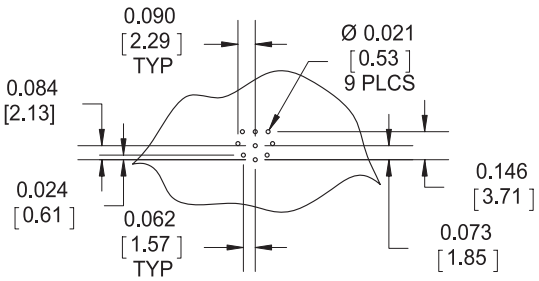
Printed Circuit Board Shown From Component Side



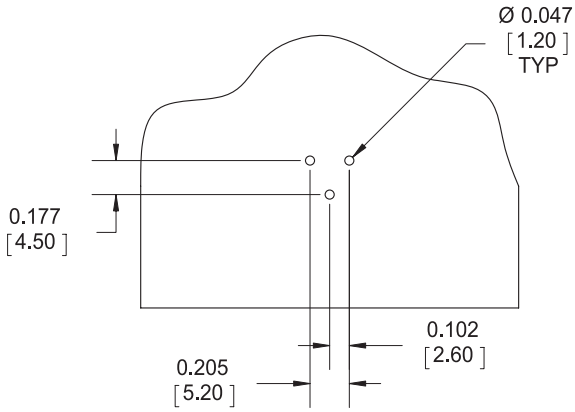
Printed Circuit Board Layout for D01EEB306FD21TABH



Printed Circuit Board Layout for D01EEB406FD21TABH



Printed Circuit Board Layout for D01EEB904FD21UTABH



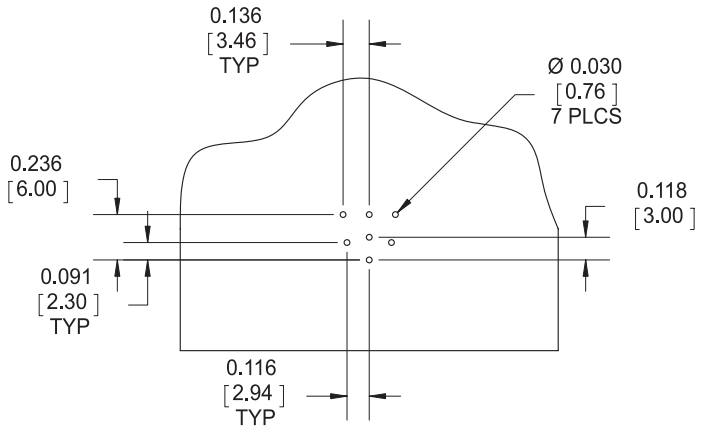
Printed Circuit Board Layout for D02EEB315FD21TABH

Dimensions are in inches [mm]

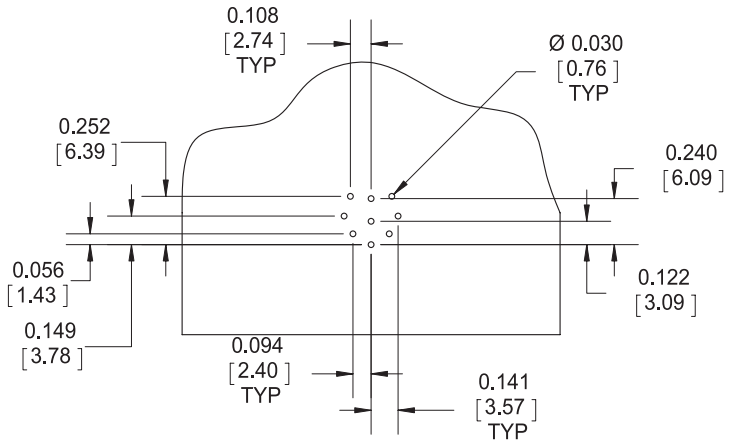
Mounting Dimensions

Straight Contact Printed Circuit Board Application

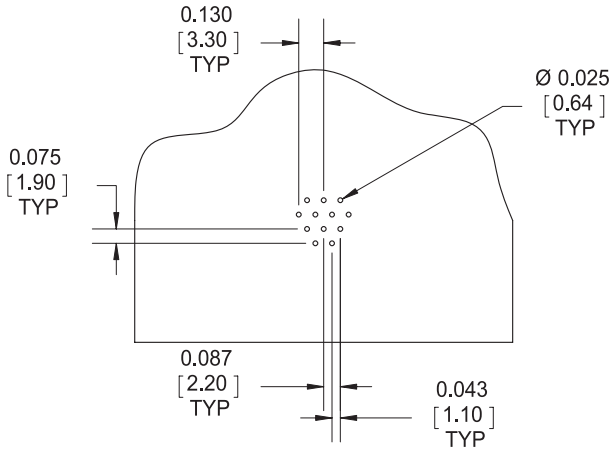
Printed Circuit Board Shown From Component Side



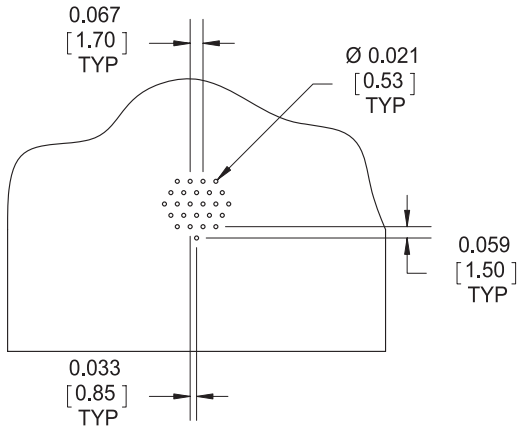
Printed Circuit Board Layout for D02EEB706FD21TABH



Printed Circuit Board Layout for D02EEB906FD21TABH



Printed Circuit Board Layout for D02EEB125FD21TABH



Printed Circuit Board Layout for D02EEB2504FD21UTABH

Dimensions are in inches [mm]

Ordering Information

D01	V	P	B	306	F	B	24	U	TABH

Connector Housing: D01, D02

Color Code Indicator*:
D = Blue
R = Red
T = Orange
V = Green
W = White
Y = Yellow
Omit character if not required

Insulator:
P = Plug
EE = Receptacle panel mount
EP = Receptacle cable mount
(EP Not available for 215/705 style)

Main Body Color: B = Black

Contact Arrangement:
D01 3 Pin = 306
D01 4 Pin = 406
D01 9 Pin = 904
D02 3 Pin = 315
D02 7 Pin = 706
D02 9 Pin = 906
D02 12 Pin = 125
D02 25 Pin = 2504
D02 Power/Signal = 215/705

Plating: See Plating Reference

Material:
Omit for Polycarbonate
U = Polyetherimide
D01 904 and
D02 2504 only

00 = B&D terminal connectors with no bracket
21 = Mounting for straight printed circuit board
24 = Mounting for right angle print circuit board
Omit for cable and front panel mount on R&S terminal.

Terminal Styles:
B = Right angle (female printed circuit mount only)[1]
D = Straight (female printed circuit mount only)[1]
R = Crimp for 22-26 AWG (shipped unassembled)
RR = Crimp for 18-20 AWG (D01/306 and D01/406 only. (shipped unassembled)
S = Solder cup (shipped unassembled)
Leave blank for no contacts

Contact Gender:
M = Male
F = Female
N = No contacts

Note: Color code indicators are custom order only. Components are polycarbonate material.

D02 Coax or Power and Signal Ordering Information

D02	V	P	B	905	M	R	1C1	M	R	U	TH

Connector Housing: D02

Color Code Indicator*: Omit character if not required

Insulator:
P = Plug
EE = Receptacle panel mount
EP = Receptacle cable mount

Color: B = Black

Contact Arrangement: 905

Signal Contact Gender:
M = Male
F = Female
N = No signal contacts

Terminal Styles:
R = Crimp
S = Solder
N = No contacts

Plating: See Plating Reference

Material: U = Polyetherimide (black)

Terminal Styles:
R = Crimp
S = Solder
Omit for connector without power/coax contacts

Coax Contact Gender:
M = Male
F = Female
N = No coax / power contacts

Coaxial/Power Cable Type:
1C1 = RG316 (crimp)
1C2 = T-Flex 405, RG 405 (solder only, cannot be used with crimp)
1C3 = RG316DB
1P1 = 12 AWG
N = No contacts

Note: Color code indicators are custom order only. Components are polycarbonate material.

Plating Reference	
Male Pins:	T = 10µin gold (min) over nickel TH = 50µin gold (min) over nickel
Female Sockets:	TAH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination TABH = 50µin gold (min) over nickel on mating surface, tin lead over nickel on termination (D & B only)

NOTE:
1) Check factory for availability.

Dimensions are in inches [mm]

Single Pole Power Connectors

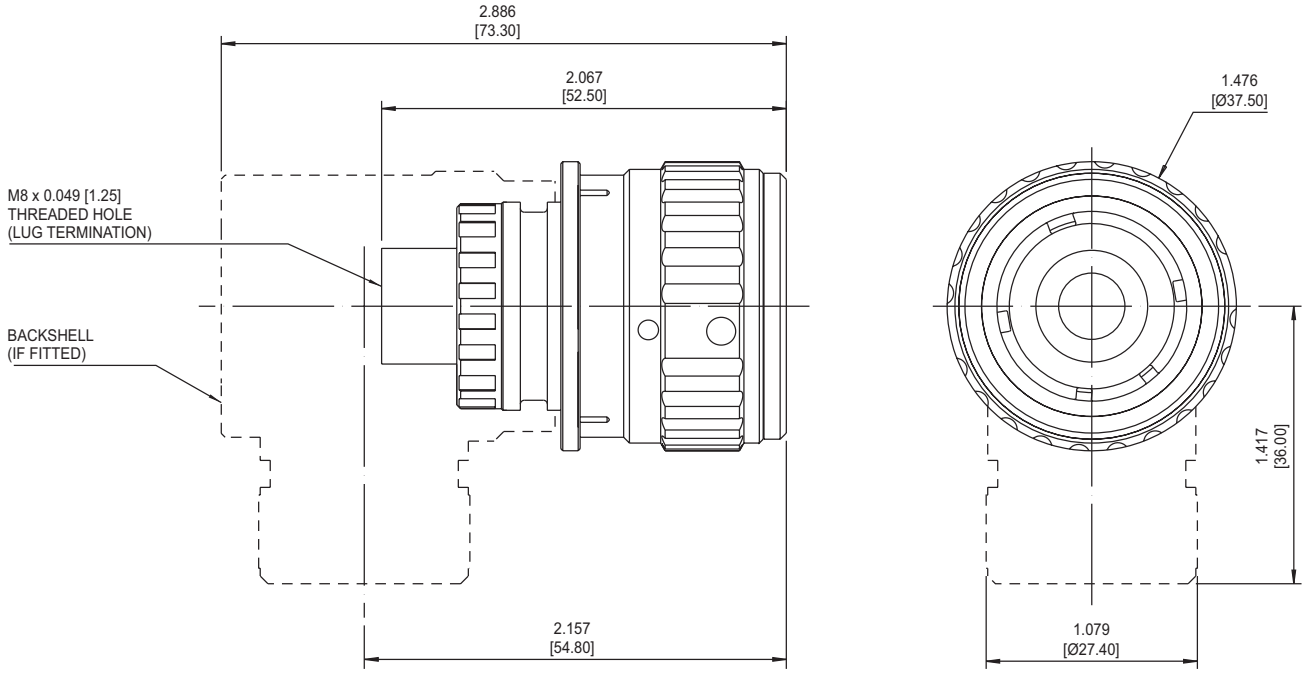
- Size and power options – 300 and 500 Amps
- Quick release metal shell or plastic body depending on customer requirements
- IP67 rated
- 90 degree or straight cable entry
- Low weight and space efficient
- Applications include power distribution, delivery and storage
- Meets the requirements of:
  - "Pit-stop" maintenance programs,
  - The harshest environments,
  - RFI screening – optional

Performance / Specification	
Insulator Material	Glass reinforced thermoplastic
Contact Material	Copper alloy
Metal Shell Material	Aluminum alloy
Fixings	Stainless steel
Contact Plating	Silver or gold
Contact Resistance	300 Amp – 0.1 mΩ max 500 Amp – 0.5 mΩ max
Current Rating	300 Amp and 500 Amp
Mechanical Endurance	5000 min. without EMI band 2000 min. with EMI band
Temperature Range	Fluorosilicone seals: -55° to 150° C Viton seals: -20° to 150° C
Voltage Rating	Plastic connectors: 1000 VDC or AC peak Metal connectors: 750 VDC or AC peak
IP Rating	IP67 (when sealed)

Dimensions are in inches [mm]

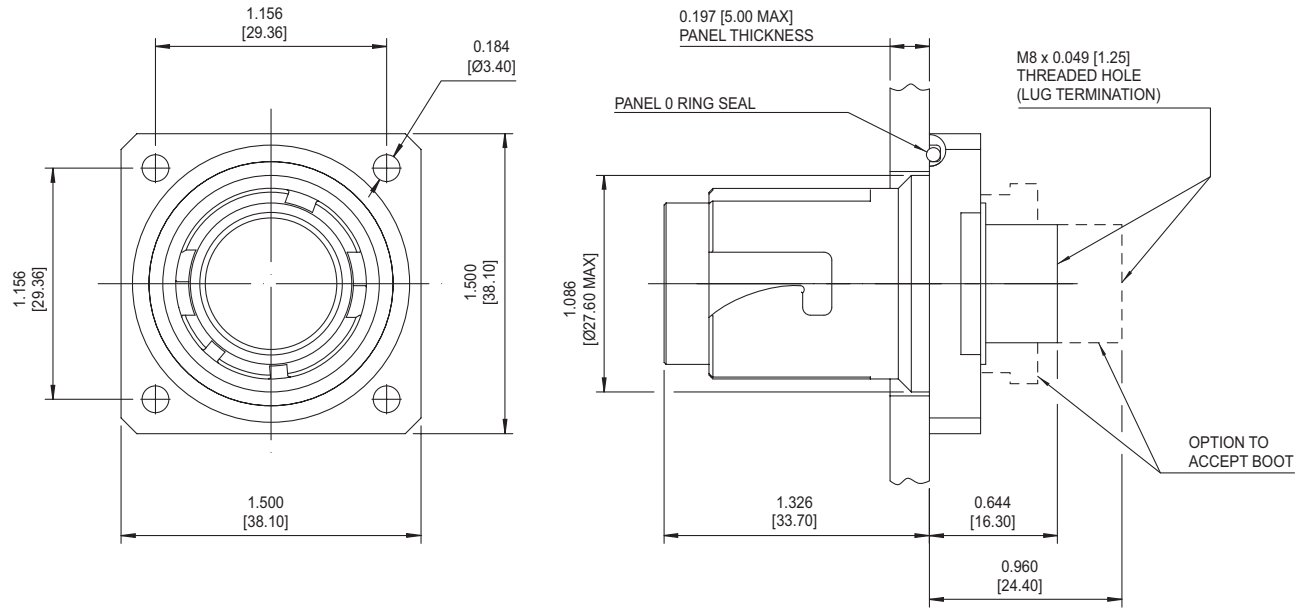
Connector Variants

(300 Amp – Plastic Plug)



Connector Variants

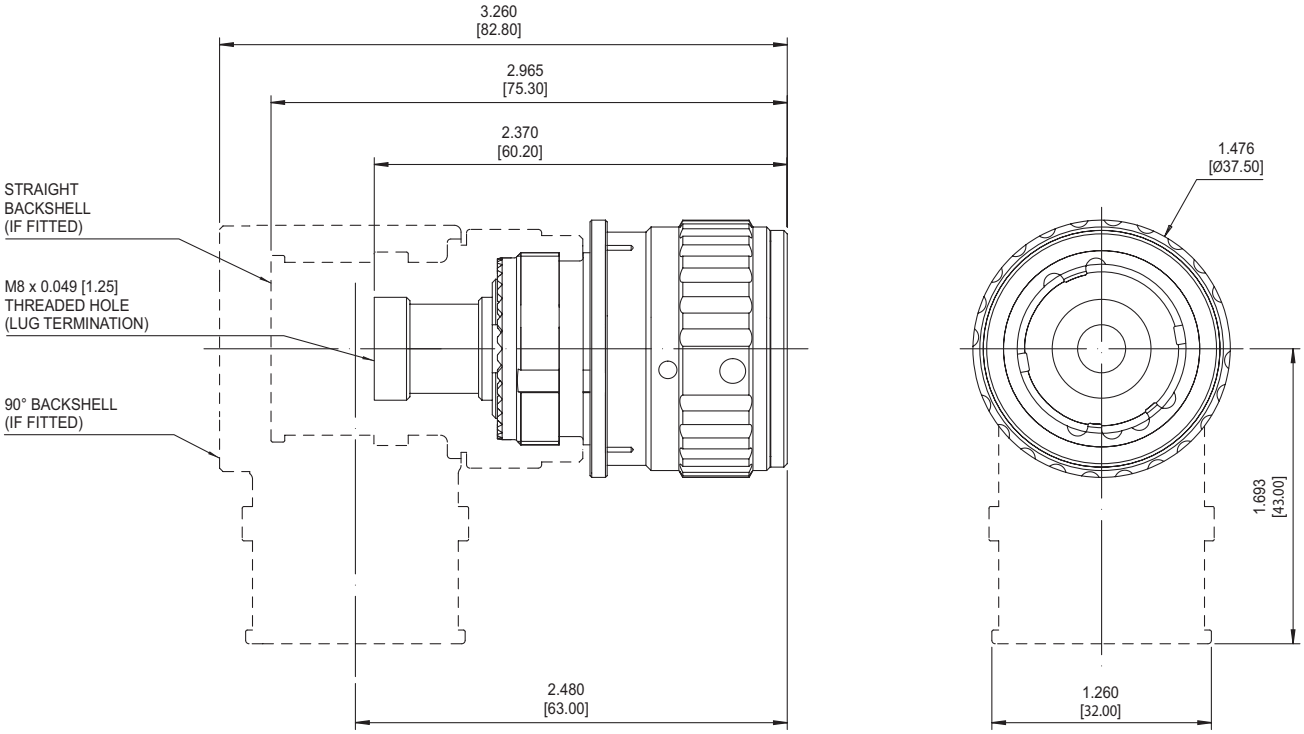
(300 Amp – Plastic Receptacle)



Dimensions are in inches [mm]

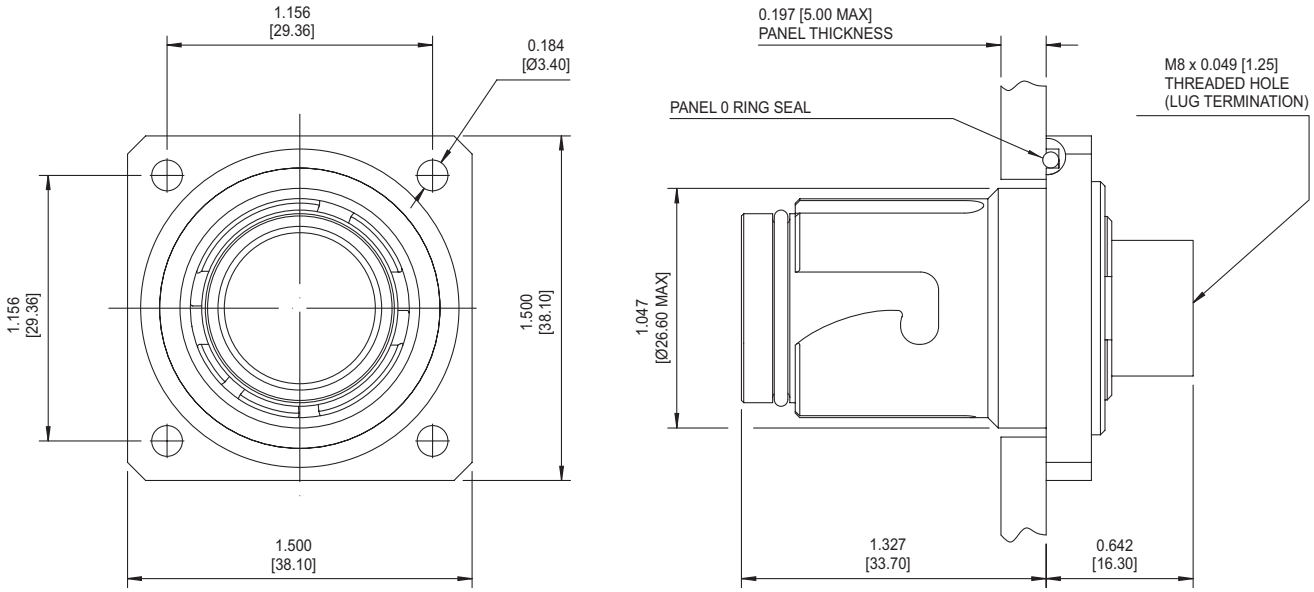
Connector Variants

(300 Amp – Metal Plug)



Connector Variants

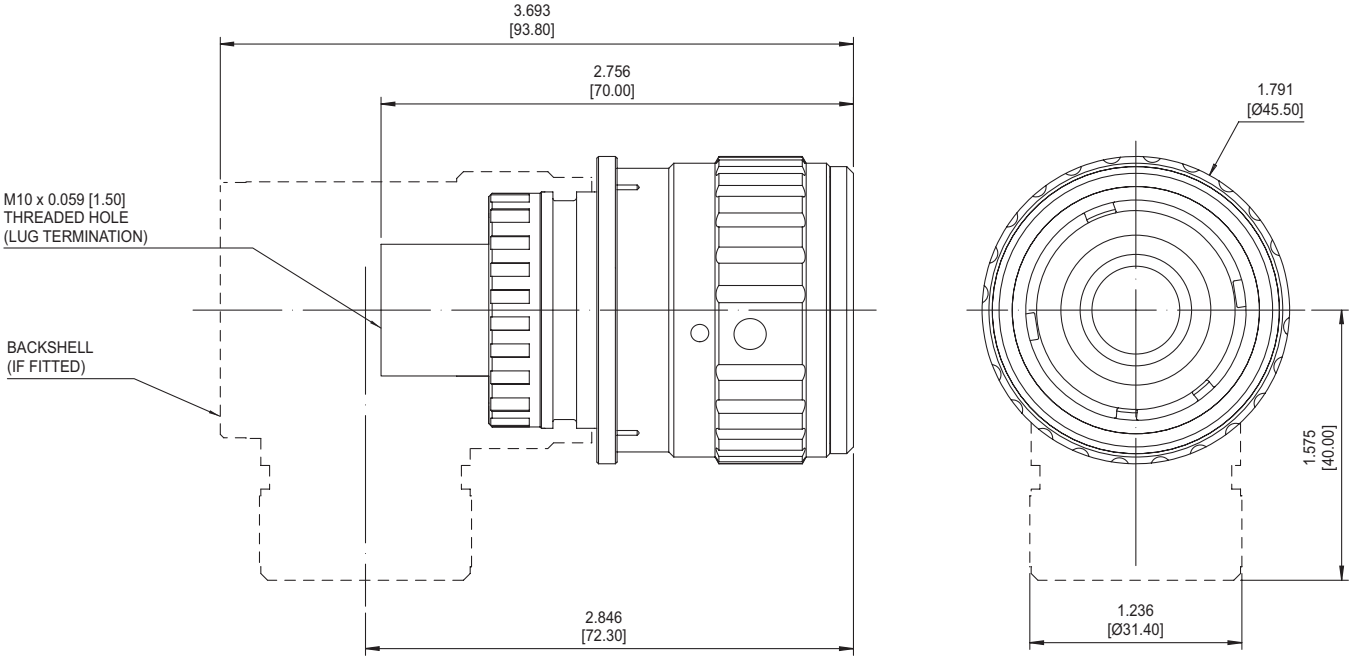
(300 Amp – Metal Receptacle)



Dimensions are in inches [mm]

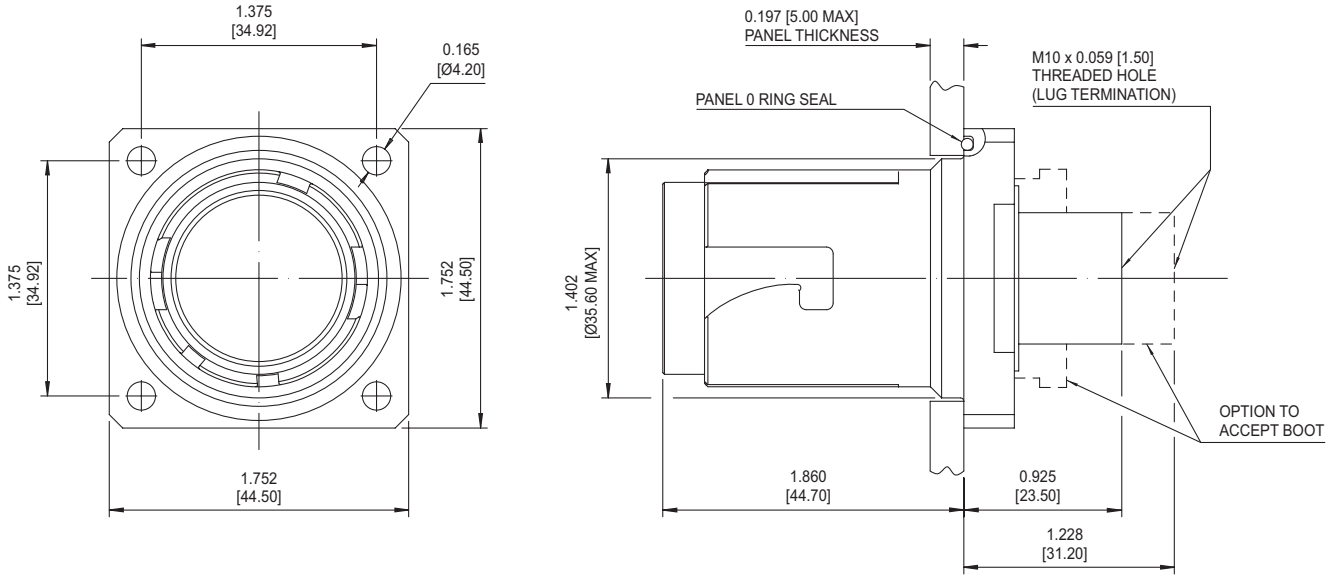
Connector Variants

(500 Amp – Plastic Plug)



Connector Variants

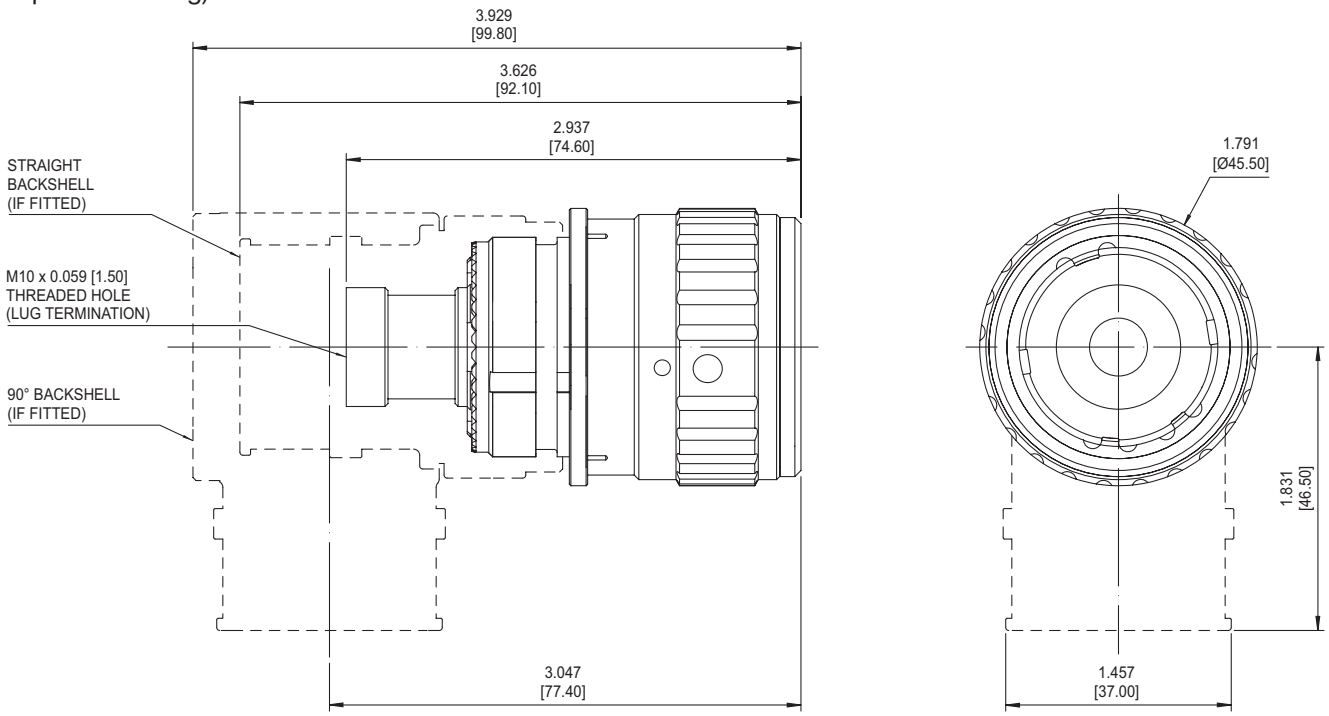
(500 Amp – Plastic Receptacle)



Dimensions are in inches [mm]

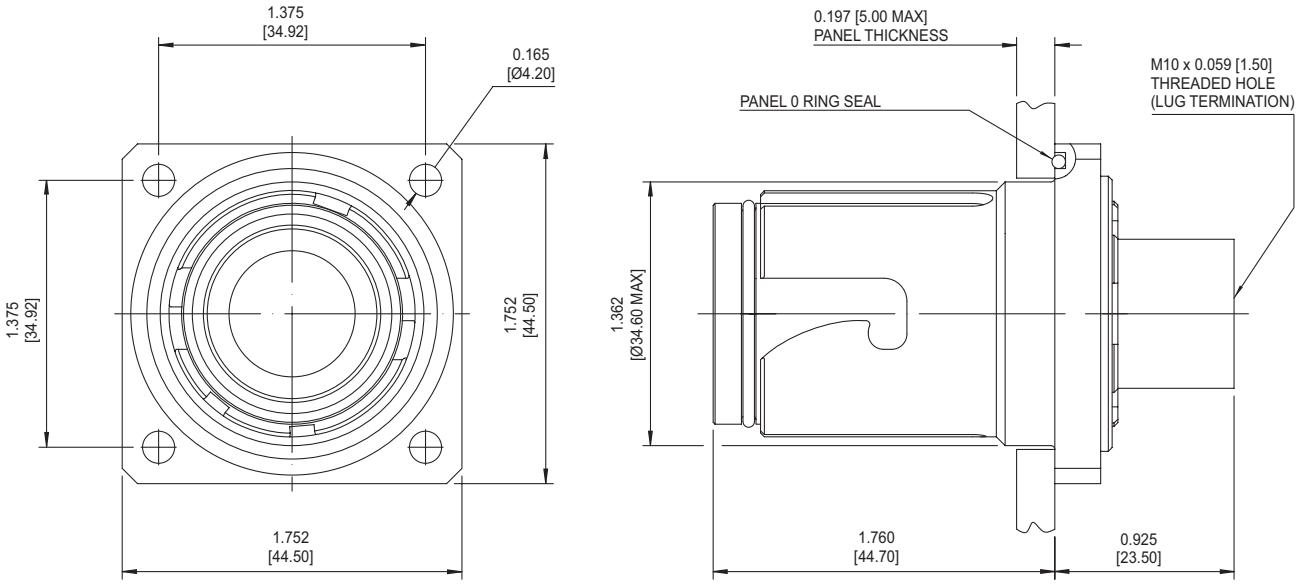
Connector Variants

(500 Amp – Metal Plug)



Connector Variants

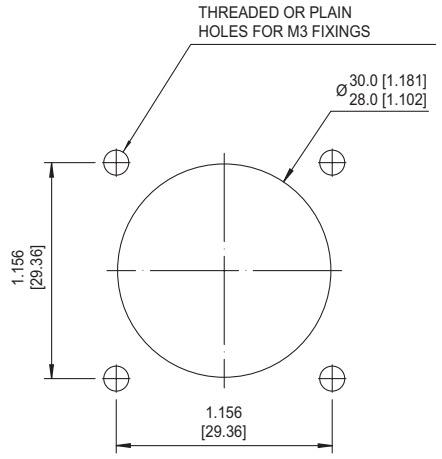
(500 Amp – Metal Receptacle)



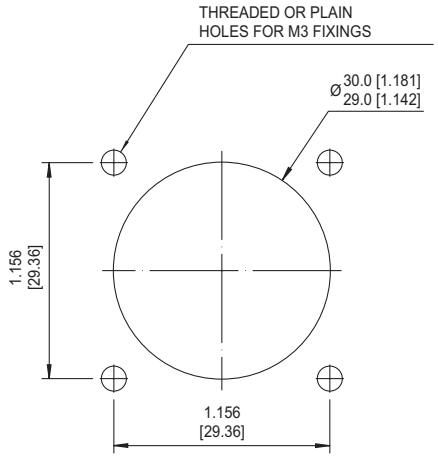
Dimensions are in inches [mm]

Panel Cutout

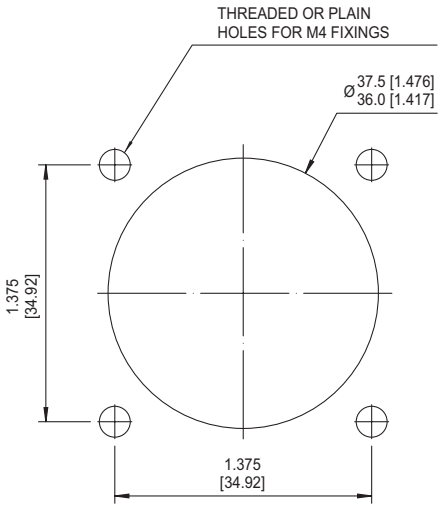
300 Amp Metal



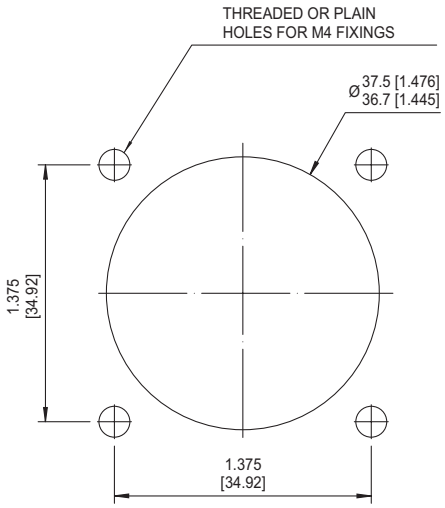
300 Amp Plastic



500 Amp Metal



500 Amp Plastic



NOTES
1. Maximum panel thickness is 0.197 [5.00].
2. If panel is more than 0.118 [3.00] thick fixing holes to be countersunk (CSK) or cheese head screws are to be used.

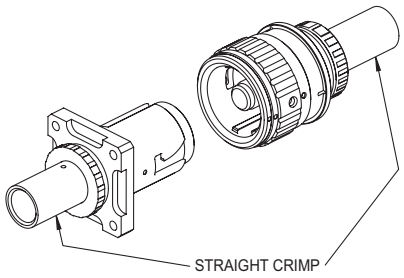
Dimensions are in inches [mm]

General Information

Straight Crimp Terminations

The following straight crimps are available:

- 300 Amp connector: 35 and 50mm²
- 500 Amp connector: 70, 95 and 120mm²



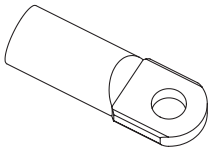
Backshell Cable Sizes

These are the maximum size cables that can be accommodated in backshells:

- 300 Amp connector: 70mm² (Ø 12mm conductor)
- 500 Amp connector: 120mm² (Ø 15mm conductor)

Crimp Lugs

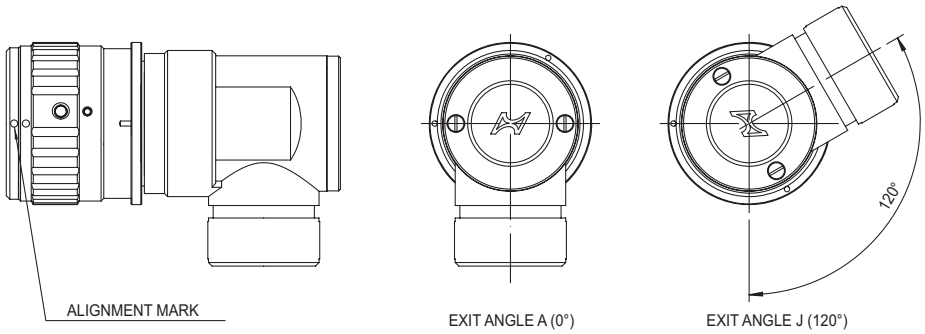
Hole Diameter	Crimp Size	Part Number
8	35	HBB-936
8	50	HBB-905
8	70	HBB-910
10	95	HBB-937
10	120	HBB-921



Hypertronics crimp lugs must be used with 90° backshell connectors.

90° Backshell Exit Angles

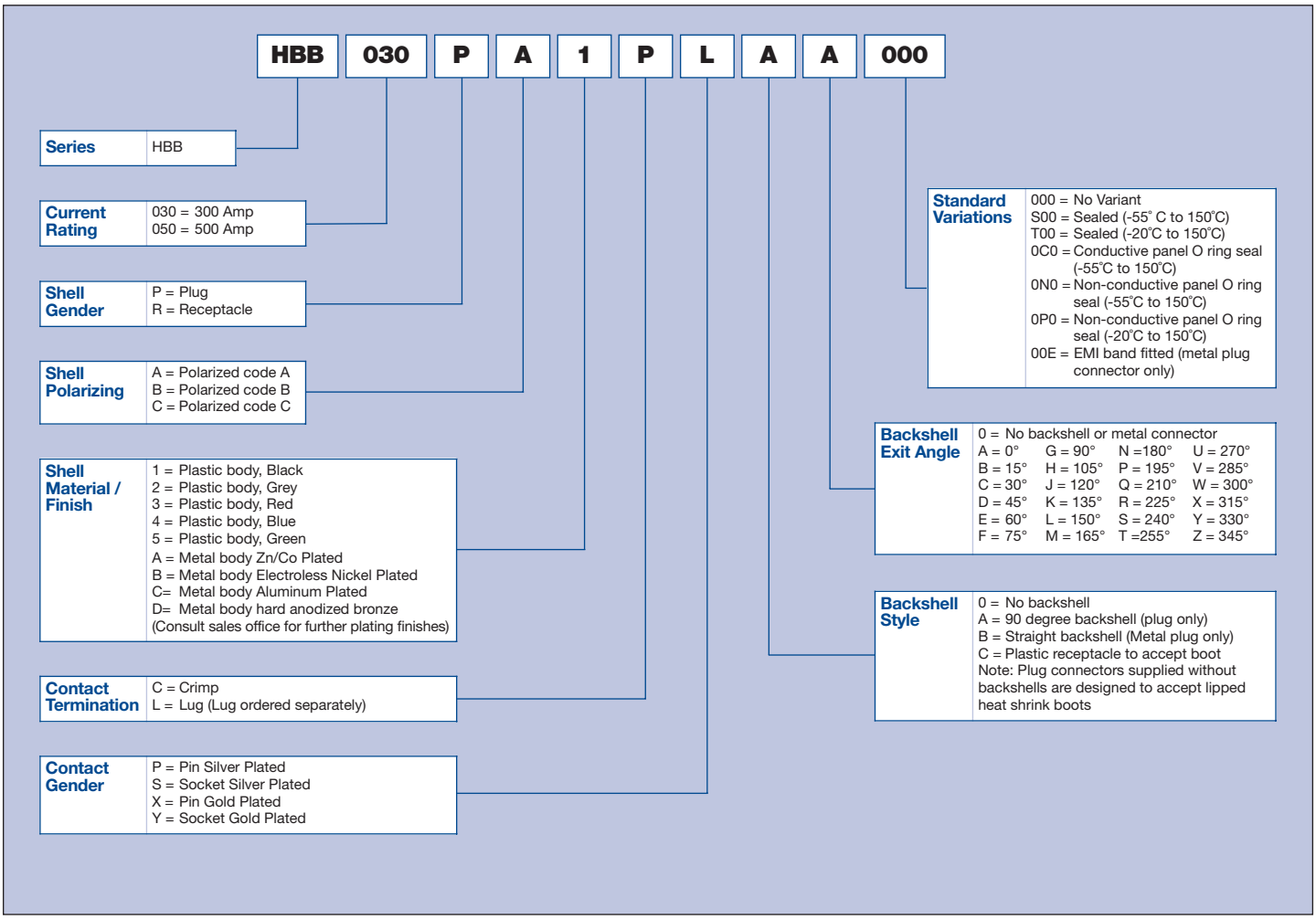
Plastic connectors are supplied with backshells fitted at a specific angle (15° increments) and are not removable. See figure below.



Metal connectors are supplied with backshells unfitted

Dimensions are in inches [mm]

Part Number Configurator

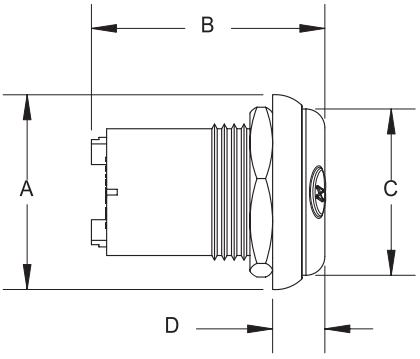


Dimensions are in inches [mm]

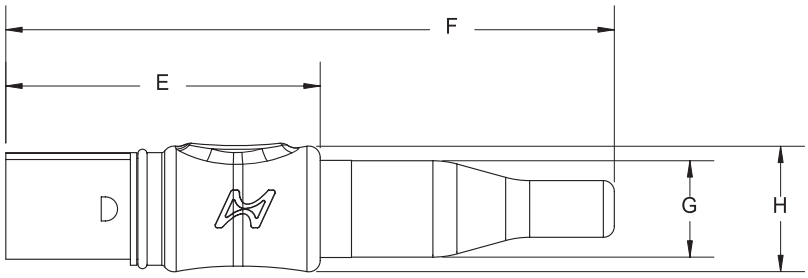
HyperGrip® - Push/Pull Plastic Circular Connectors

- For medical and other high reliability applications
- Customer-keyable (6 positions)
- 12 (HG2), 19 (HG3), 33 (HG4), or 80 (HG6) contact positions
- Other contact configurations available upon request
- 1 Amp per contact
- Color coding
- Overmoldable plug design
- Front or rear panel mount receptacle design
- High-end engineering plastic components meet medical sterilizing and cleaning requirements
- Crimp and solder cup contact terminations available (printed circuit tails available on panel mount receptacle)
- Sealing option: IP67 (temporary immersion) when mated
- Meets fingerproofing requirements of UL544 and IEC60601

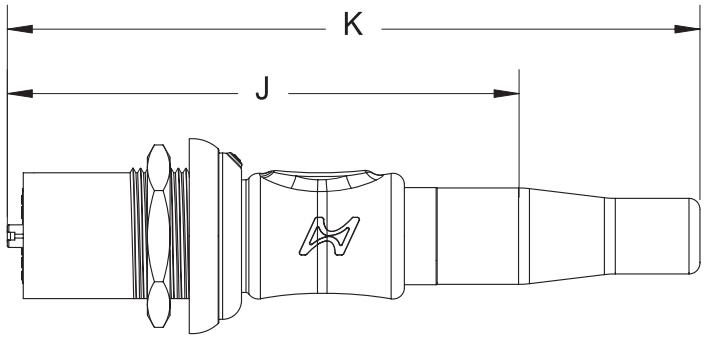
	HG2	HG3	HG4
A	Ø1.014 [25.76]	Ø1.172 [29.77]	Ø1.250 [31.77]
B	1.220 [30.98]	1.137 [28.87]	1.137 [28.87]
C	Ø0.866 [22.00]	Ø1.007 [25.59]	Ø1.090 [27.80]
D	0.272 [6.91]	0.272 [6.91]	0.272 [6.91]
E	1.637 [41.59]	1.637 [41.59]	1.637 [41.59]
F	3.265 [82.93]	3.500 [88.88]	3.500 [88.88]
G	Ø0.502 [12.75]	Ø0.650 [16.50]	Ø0.710 [18.15]
H	Ø0.656 [16.66]	Ø0.800 [20.36]	Ø0.880 [22.47]
J	2.700 [68.56]	2.890 [73.47]	2.890 [73.47]
K	3.724 [94.60]	3.880 [98.45]	3.880 [98.45]



"E" Receptacle

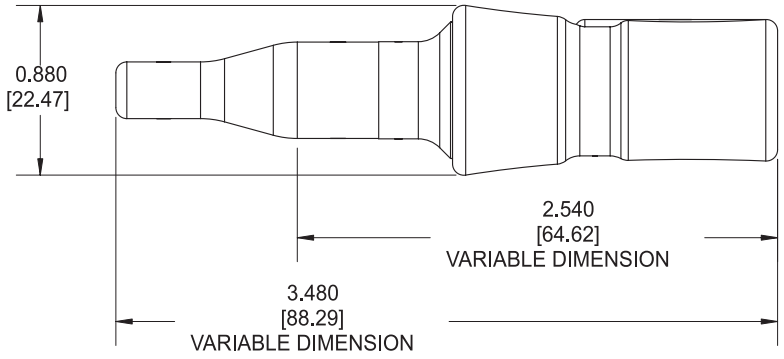


"P" Plug

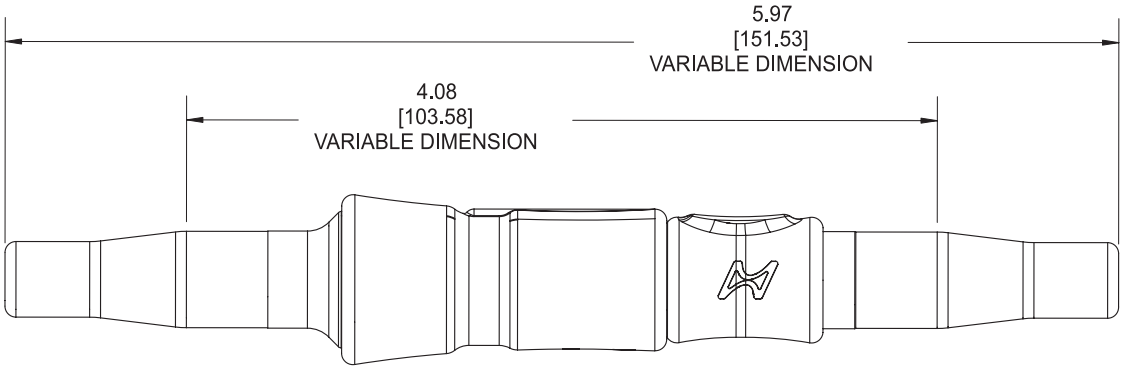


Plug/Receptacle Mated with Strain Relief

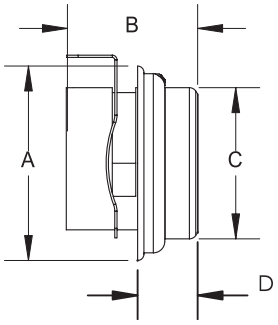
Dimensions are in inches [mm]

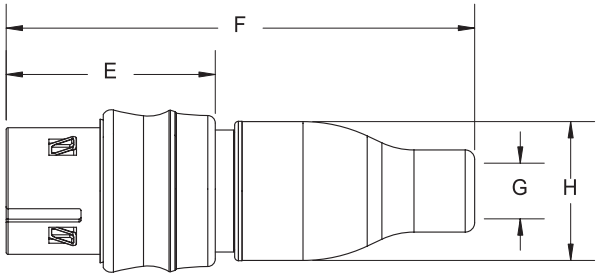


“C” Cable Receptacle
HG2 Only

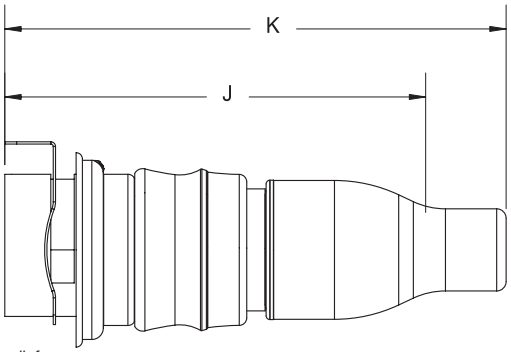


Plug/Cable Receptacle Mated
HG2 Only





HG6 Only



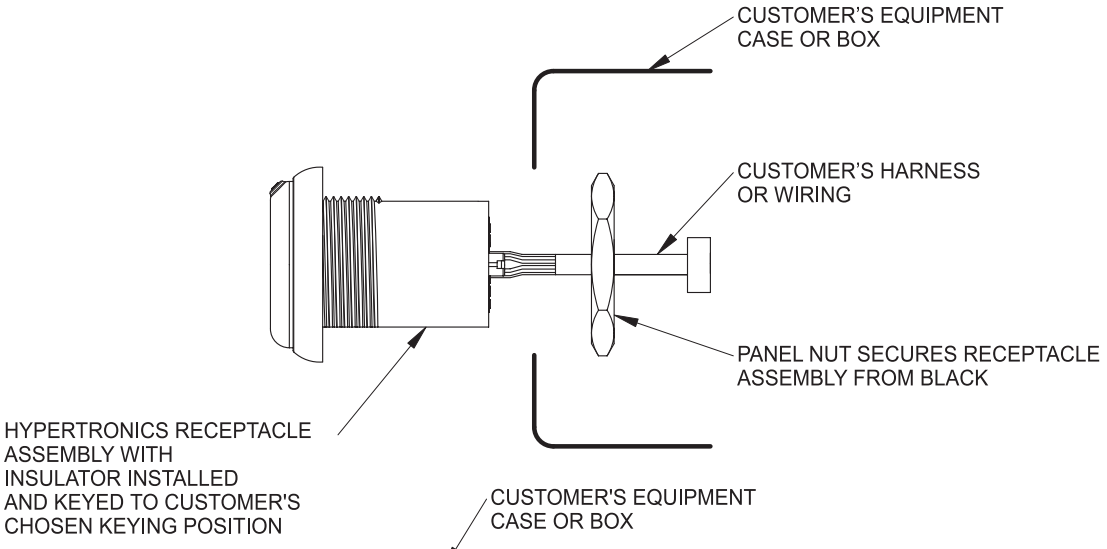
	HG6
A	Ø2.026 [51.45]
B	1.452 [36.87]
C	Ø1.789 [45.45]
D	0.669 [17.00]
E	2.224 [56.50]
F	4.950 [125.72]
G	Ø1.452 [36.88]
H	Ø1.467 [37.00]
J	4.371 [111.02]
K	5.265 [133.72]

NOTE:
HG6 drawings are reduced to 50 percent and show optional strain relief.

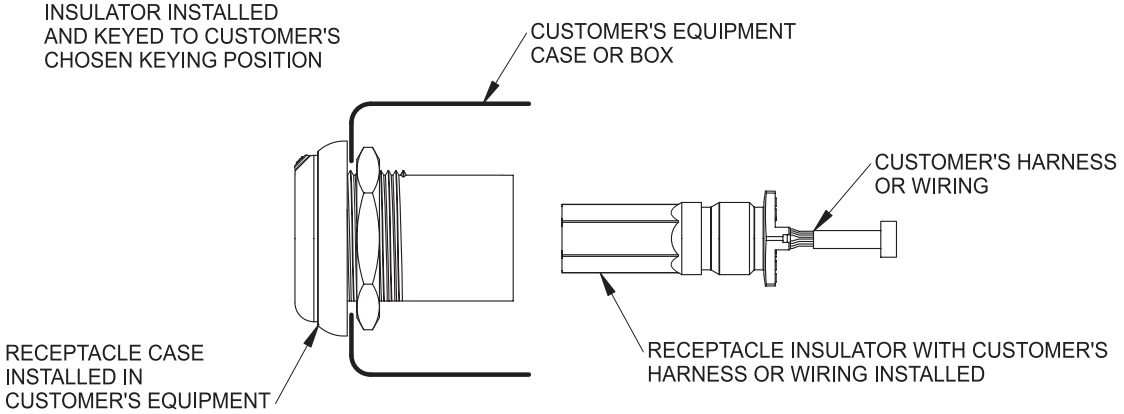
Dimensions are in inches [mm]

General Specifications - HyperGrip	
Contact Diameter	0.016 [0.40]
Current Rating	1 Amp
Contact Resistance	< 8 milliohms
Contact Extraction Force Each	0.5 – 1.6 oz.
Contact Life Cycles	Up to 100,000
Plug Cycle Life	Up to 20,000
Breakdown Voltage Between Contacts	> 1000V
Dielectric Withstanding Voltage	> 750V
Contact Material and Plating	**Sockets:** Beryllium copper wires and brass body components 50µin gold over nickel on wires, gold flash over nickel on termination **Pins:** Brass 50µin gold over nickel
Insulation Resistance	> 5 x 10^4 megohms at 500 VDC
Temperature Rating Polyetherimide, LCP, Silicone	-40° C to 125° C Up to 185° C processing
Sterilization	Steam autoclave, Gamma, ETO

Front Mounting Installation



Rear Mounting Installation



Dimensions are in inches [mm]

Ordering Information

HG	2	P	4	3	G	G	12	04	M	R	H

HyperGrip Plastic Circular

Size	Size: (2), (3), (4), (6)
Type	P = Plug E = Receptacle/panel C = Receptacle/cable (C available on HG2 only)
Sealing Option	1 = Sealed 4 = Unsealed
Strain Relief Size Options	0 = No strain relief 3 = 3.00 - 4.50mm cable dia. range (HG2 only - optional) 4 = 4.50 - 6.50mm cable dia. range (HG2 only - standard) 5 = 7.00 - 9.00mm cable dia. range (HG3 only) 6 = 9.00 - 11.00mm cable dia. range (HG4 only)
Outer Shell Color	G = LT gray
Color Coding	G = LT Gray (standard) D = Blue M* = Brown R = Red V = Green B* = Black Y = Yellow W* = White N[1] = No color code
Plating	H = Pins: 50µin gold on contact surfaces, gold flash on terminations AH = Sockets: 50µin gold on contact surfaces, gold flash on terminations (Omit for no contacts)
Termination	S = Solder cup (optional) R = Crimp (standard) D = Straight dip printed circuit (optional) Panel receptacle only (Omit for no contacts)
Contact Gender	F = Female sockets (standard receptacle) M = Male pins (standard plug) N = No contacts

Size	HG2	HG3	HG4	HG6
Contact Diameter	0.40mm	0.40mm	0.40mm	0.40mm
Positions	12	19	33	80

** Color is special order only.*

Available Contacts	**Wire Gauge** (AWG)
Female Receptacle - Standard	
Crimp Socket (standard) Solder Cup Socket (optional) Printed Circuit Terminal Socket (optional)	26 – 28 26 Max. N/A
Male Plug - Standard	
Crimp Pin (standard) Solder Cup Pin (optional)	26 – 28 26 Max.
Male Receptacle - Special Order Only	
Crimp Pin Solder Cup Pin Printed Circuit Terminal Pin	26 – 28 26 Max. N/A
Female Plug - Special Order Only	
Crimp Pin Solder Cup Pin	26 – 28 26 Max.

Accessories	**Part Numbers**
Crimp Tool	AFM8 or M22520/2-01
Positioner	T2030
Insertion Tool	T1916
Receptacle Insulator Extraction Tool	T2057 (HG2) T2085-20 (HG3) T2085-34 (HG4) T2085-85 (HG6)

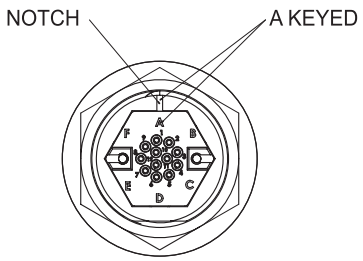
NOTE:
1) If N applies: Plug and cable receptacle - specify no strain relief.
Panel receptacle - specify unsealed (no panel color code).

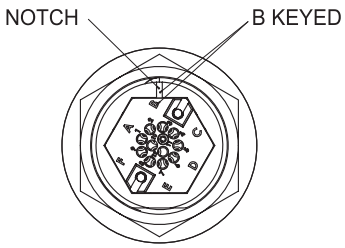
Dimensions are in inches [mm]

Keying Position A
(Receptacle Wiring End)

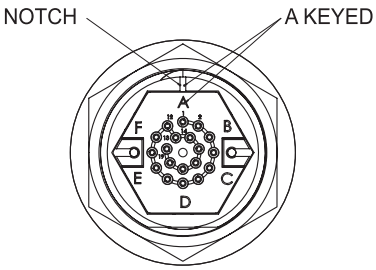
Keying Position B
(Receptacle Wiring End)

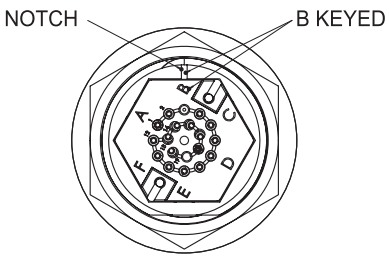
HG2



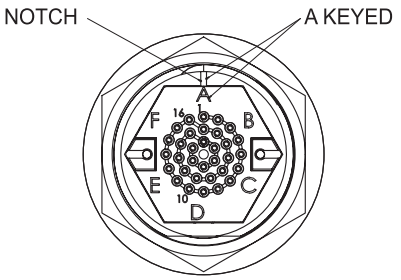


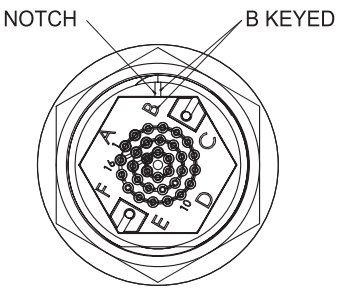
HG3



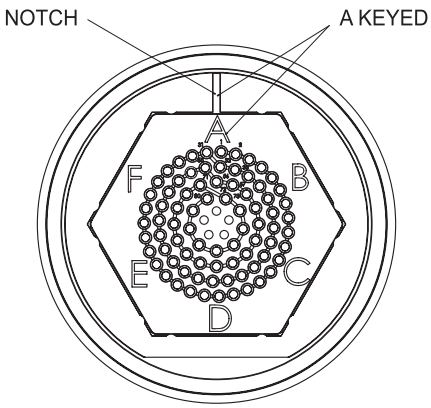


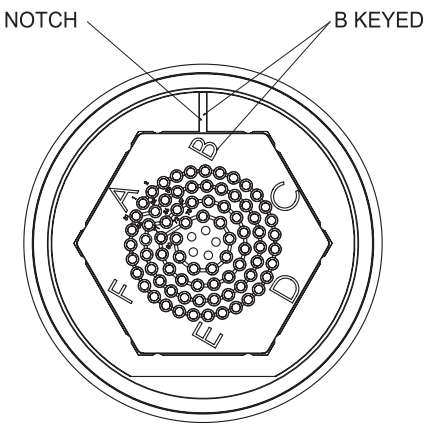
HG4





HG6





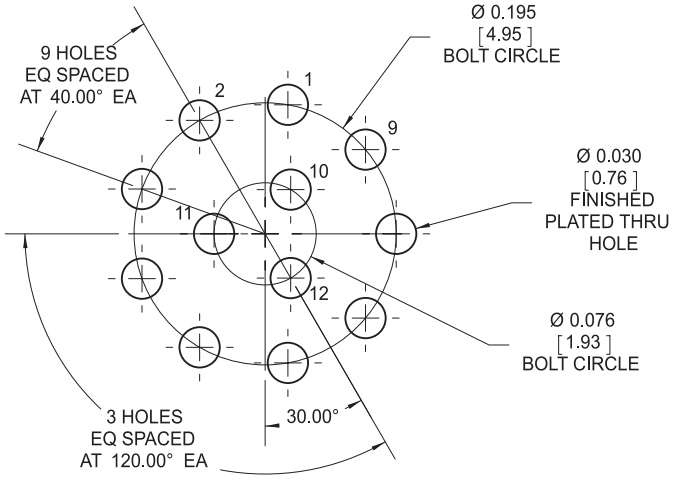
NOTE:
6 different keying positions possible - A through F.

Dimensions are in inches [mm]

HG2 Panel Receptacles

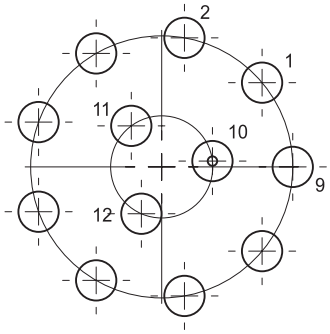
12 Position Printed Circuit Board Cutout

"A" Key (D Termination)



12 Position Printed Circuit Board Cutout

"B" Key (D Termination)

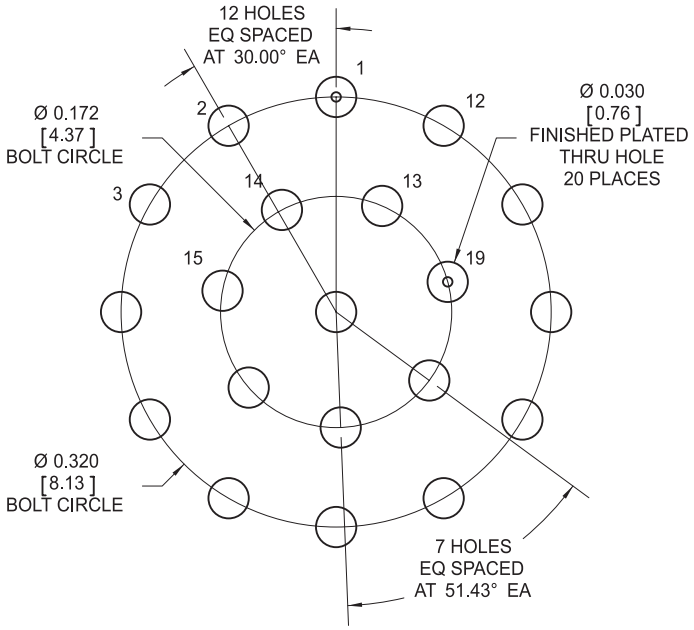


Dimensions are in inches [mm]

HG3 Panel Receptacles

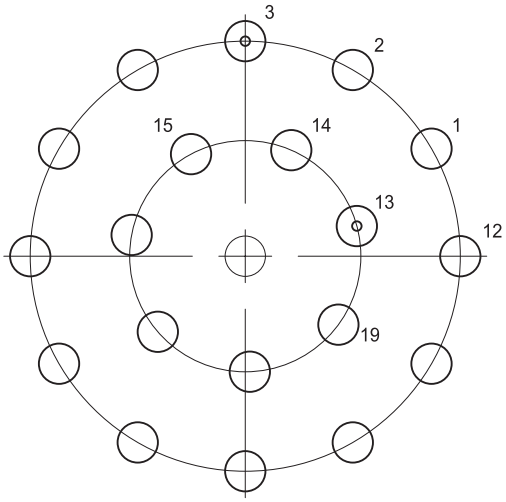
19 Position Printed Circuit Board Cutout

"A" Key (D Termination)



19 Position Printed Circuit Board Cutout

"B" Key (D Termination)

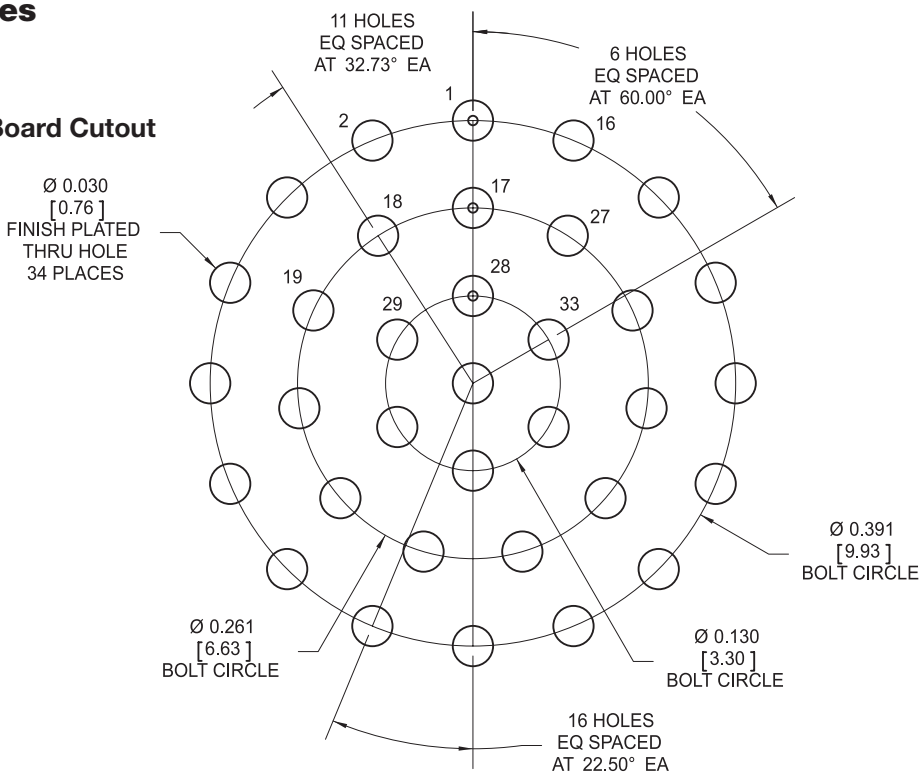


Dimensions are in inches [mm]

HG4 Panel Receptacles

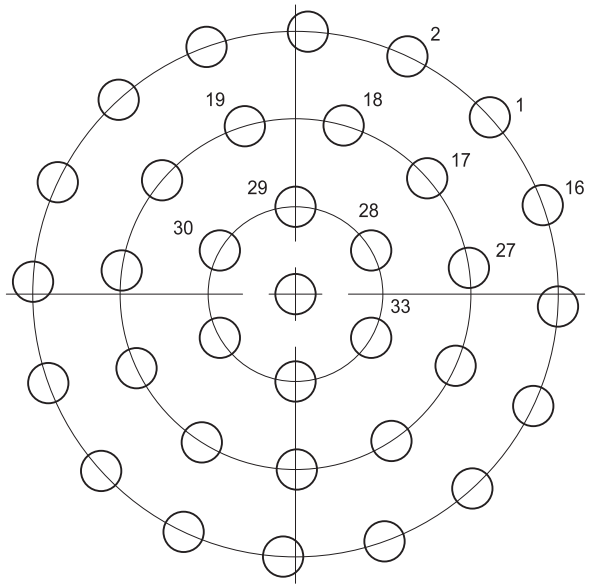
33 Position Printed Circuit Board Cutout

"A" Key (D Termination)



33 Position Printed Circuit Board Cutout

"B" Key (D Termination)

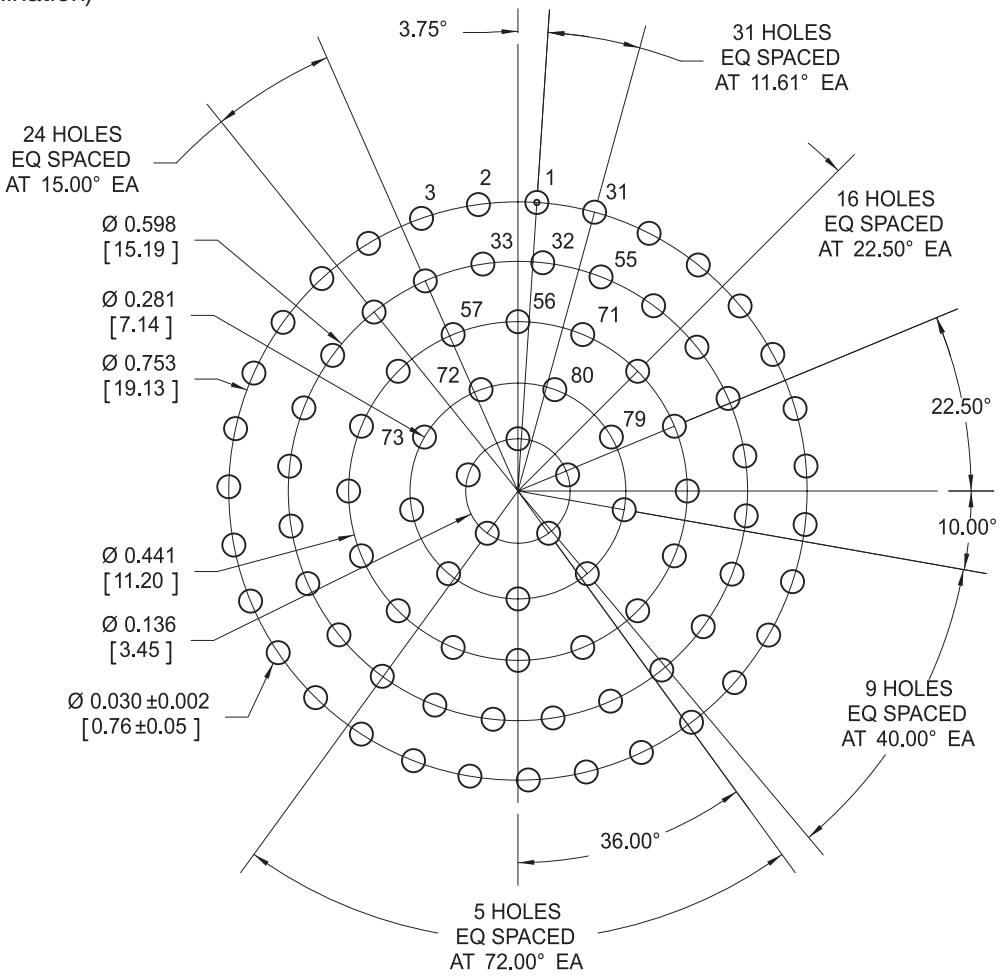


Dimensions are in inches [mm]

HG6 Panel Receptacles

80 Position Printed Circuit Board Cutout

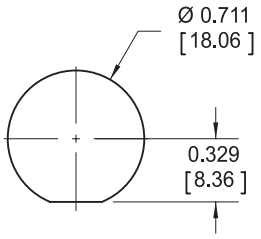
"A" Key (D Termination)



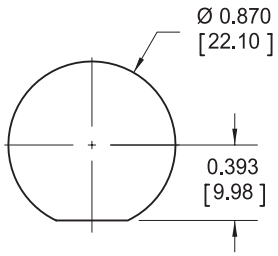
Dimensions are in inches [mm]

Panel Cutouts

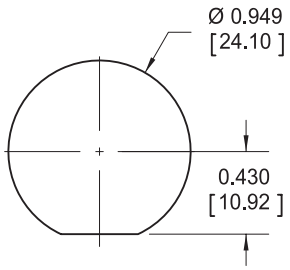
HG2



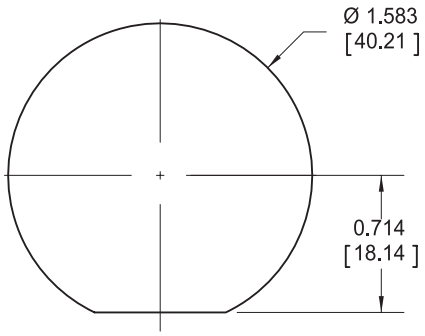
HG3



HG4



HG6



Dimensions are in inches [mm]

HyperRel Series

Ruggedized Connectors Intermateable with MIL-DTL-38999 Series III

- Available with metal (HRM) and composite (HRC) shells
- Ruggedized socket interconnects
- High shock and vibration resistance
- Metal and composite shell styles
- Hypertac® style 39029 contacts
- Intermateable with industry standard Mil 38999 Series III connectors
- Cable-to-cable and panel mount styles available
- Available with high temperature hyperboloid contact technology

HRC (HyperRel Composite): Highlights

The HyperRel HRC is a high performance composite connector intermateable with MIL-DTL-38999 Series III connectors. The combination of the legendary Hypertac contact with the superior design of the composite shell/insert, along with the respective strain reliefs, favorably influence intra-system life-cycle performance and costs.

Shells: The total performance of the HRC connector is matched by the individual components within the system. For example, the use of composite materials increases the durability of the connector housing and coupling mechanism to 1500 cycles.

Contacts:

- Up to 80% less mating force
- 50% reduction in resistance
- 300% increase in mating cycles
- Vibration/shock proven at 2 nano seconds
- Five times more contact elements than the MIL-C-39029 (e.g. Size number 22)
- Hypertac contact life expectancy (fretting) is 100 times longer than the MIL-C-39029 contact

The HRC eliminates the largest contributing factor in advanced systems malfunction: corrosion – the main cause of mechanical, electrical, and electromagnetic connector degradation. Electromotive force differentials between many dissimilar metals found in connectors and accessories produce galvanic action. The HRC eliminates these dissimilar metals resulting in an interconnect system that withstands over 2000 hours of salt spray.

Specifications:

EMI shielding effectiveness

Meets and exceeds the requirements of MIL-DTL-38999, paragraph 3.3.1

Fluid immersion

Meets and exceeds the requirements of MIL-DTL-38999, paragraph 3.33

Temperature

The metal surface will not delaminate from the composite material even after extreme temperature excursions. The HRC meets all requirements of MIL-DTL-38999, paragraph 3.8

Magnetic permeability

The magnetic permeability of the fully assembled HRC connector is less than 2.0 μ, meeting all the requirements of MIL-DTL-38999, paragraph 3.3.4

Materials

All the materials used in the shell and inserts in the HRC are in accordance with MIL-DTL-38999, paragraph 3.3. The contacts are in accordance with MIL-C-39029, paragraph 3.3

Finish

Shells: Meet the requirements of MIL-DTL-38999
Contacts: Meets the requirements of MIL-C-39029

Insulation resistance

Meets all the requirements of MIL-DTL-38999, paragraph 3.13

Dielectric withstanding voltage

Meets all the requirements of MIL-DTL-38999, paragraph 3.14

Dimensions are in inches [mm]

HRM (HyperRel Metal): Highlights

The HyperRel HRM is a high performance metal connector with triple start, self-locking, threaded coupling and crimp-type terminations, intermateable with MIL-DTL-38999 Series III.

HyperRel connectors are built upon the legendary Hypertac contact technology that outperforms other interconnect options in terms of performance reliability, number of mating cycles, contact forces, contact resistance and value.

The HyperRel HRM has a rugged design that offers the maximum in vibration, shock and EMI resistance. A general duty threaded connector, the HRM series offers thicker wall sections and greater coupling surface with 100% metal-to-metal bottoming, a superior anti-coupling system, and proven dielectric contact retention. The positive metal-to-metal coupling design, superior interfacial seals, and cadmium over nickel plating provide excellent EMI, moisture and corrosion resistance. In a 360 degrees turn of the coupling nut, the HRM quickly mates and self-locks. Blunting of the thread makes cross-threading virtually impossible. Elongated mounting holes permit the HRM connector to intermount with existing standard MS/38999 box or wall mount receptacles, providing a design replacement advantage.

Specifications

Shock

High impact per MIL-S-901

EMI Shielding

Effective over a range of 100 MHz to 10 GHz

With a minimum 50 dB effectiveness at 10 GHz

Insulation Resistance

5000 megaohms min at 25° C (77° F)

Corrosion (Class W)

500 hours salt spray per MIL-DTL-38999

Crimp Contact Rating and Wire AWG

Size 22D: 5.0 Amps (accepts 22 thru 28 AWG)
Size 20: 7.5 Amps (accepts 20 thru 24 AWG)
Size 16: 13.0 Amps (accepts 16 thru 20 AWG)
Size 12: 23.0 Amps (accepts 12 thru 14 AWG)

Contact Resistance (Size 22D)

50% reduction in contact resistance compared to MIL-C-39029

Vibration / Shock (Size 22D)

Proven at 2 nano seconds compared to MIL-C-39029 (which is proven at 1 micro second)

Fluid Immersion

Fluid resistant to many fuels, coolants and solvents per MIL-DTL-38999

Mating Force

Up to 80% less mating force compared to MIL-C-39029 requirements

Mating Cycles

300% increase in mating cycles compared to MIL-C-39029 requirements

Contact Elements (Size 22D)

10 off springs compared to 2 off springs on a MIL-C-39029 contact; five times more contact elements means higher reliability

Contact Points (Size 22D)

10 off lines compared to 4 off points on a MIL-C-39029 contact; infinitely more points (reliability)

Fretting (Size 22D)

Hypertac hyperboloid contact has a life expectancy 100 times greater than MIL-C-39029 requires

Materials

Shell: Aluminum alloy
Contacts: Copper alloy
Inserts: Plastic; silicone

Finish

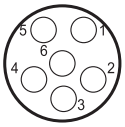
Shell: Olive drab cadmium over nickel (class W)
Nickel plated (class F)

Contacts: Gold over nickel

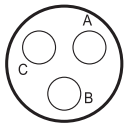
Dimensions are in inches [mm]

A full complement of HRC and HRM inserts

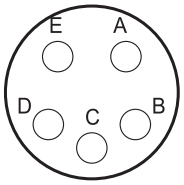
6 Size 22D Contacts
A35 (HRC)
9-35 (HRM)



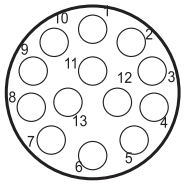
3 Size 20 Contacts
A98 (HRC)
9-98 (HRM)



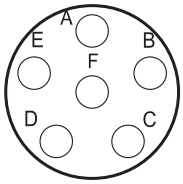
5 Size 20 Contacts
B05 (HRC)
11-5 (HRM)



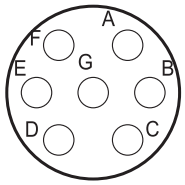
13 Size 22D Contacts
B35 (HRC)
11-35 (HRM)



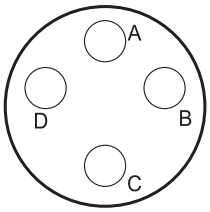
6 Size 20 Contacts
B98 (HRC)



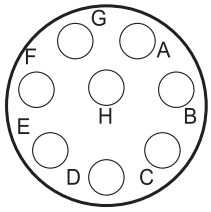
7 Size 20 Contacts
B99 (HRC)
11-99 (HRM)



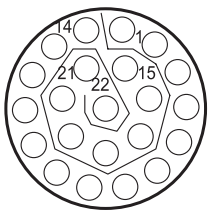
4 Size 16 Contacts
C04 (HRC)
13-4 (HRM)



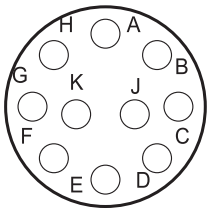
8 Size 20 Contacts
C08 (HRC)



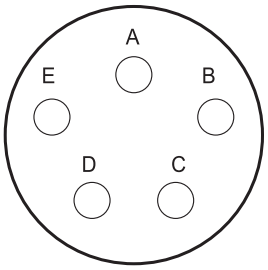
22 Size 22D Contacts
C35 (HRC)
13-35 (HRM)



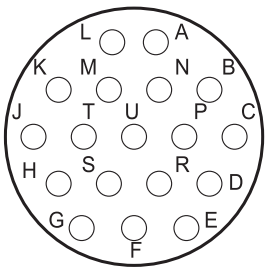
10 Size 20 Contacts
C98 (HRC)
13-98 (HRM)



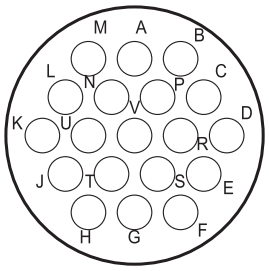
5 Size 16 Contacts
D05 (HRC)
15-5 (HRM)



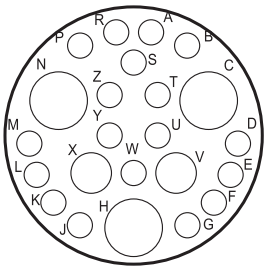
18 Size 20 Contacts
D18 (HRC)
15-18 (HRM)



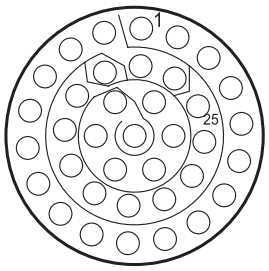
19 Size 20 Contacts
D19 (HRC)



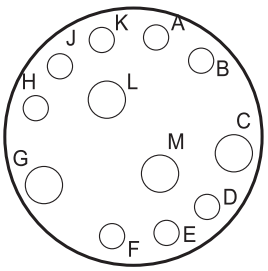
3 Size 16 Contacts
2 Size 20 Contacts
18 Size 22 Contacts
D23 (HRC)



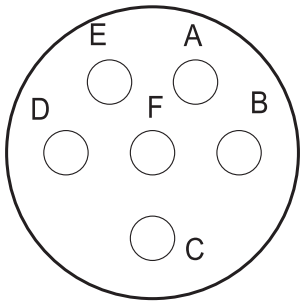
37 Size 22D Contacts
D35 (HRC)
15-35 (HRM)



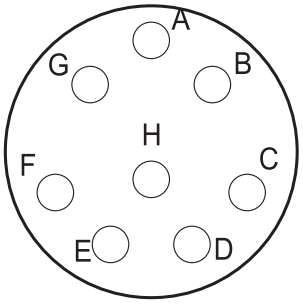
4 Size 16 Contacts
8 Size 20 Contacts
D97 (HRC)
15-97 (HRM)



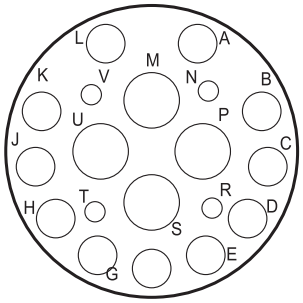
6 Size 12 Contacts
E06 (HRC)
17-6 (HRM)



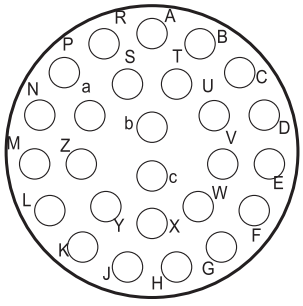
8 Size 16 Contacts
E08 (HRC)
17-8 (HRM)



4 Size 16 Contacts
11 Size 20 Contacts
4 Size 22 Contacts
E19 (HRC)



26 Size 20 Contacts
E26 (HRC)
17-26 (HRM)

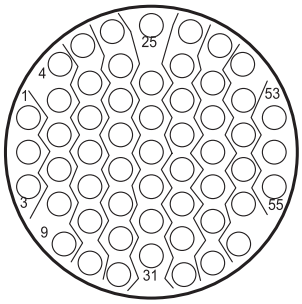


NOTE
Insert drawings are not to scale.

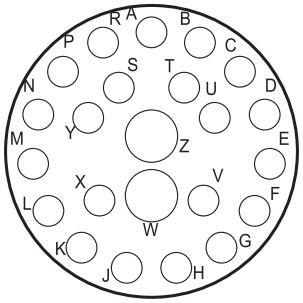
Dimensions are in inches [mm]

A full complement of HRC and HRM inserts

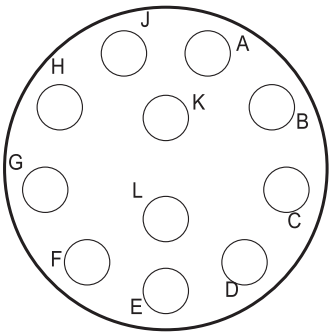
55 Size 22D Contacts
E35 (HRC)
17-35 (HRM)



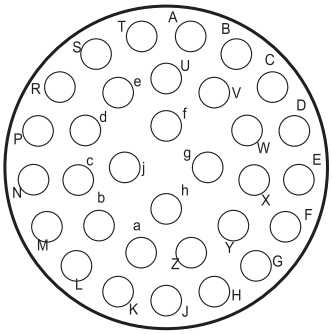
21 Size 20 Contacts
2 Size 16 Contacts
E99 (HRC)



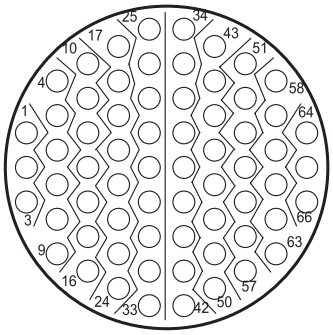
11 Size 16 Contacts
F11 (HRC)
19-11 (HRM)



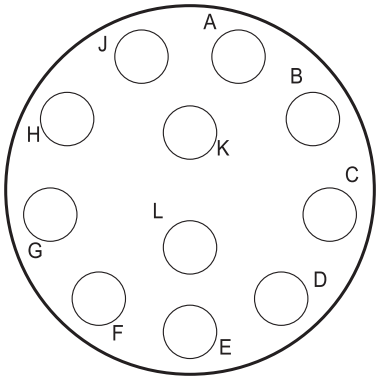
32 Size 20 Contacts
F32 (HRC)
19-32 (HRM)



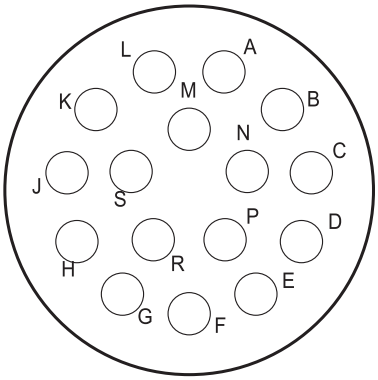
66 Size 22D Contacts
F35 (HRC)
19-35 (HRM)



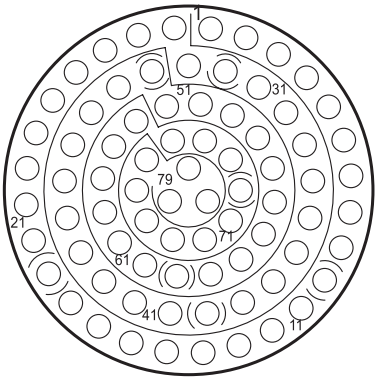
11 Size 12 Contacts
G11 (HRC)
21-11 (HRM)



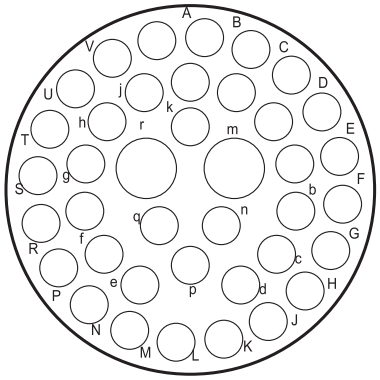
16 Size 16 Contacts
G16 (HRC)
21-16 (HRM)



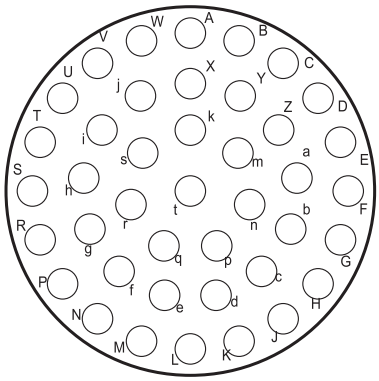
79 Size 22D Contacts
G35 (HRC)
21-35 (HRM)



37 Size 20 Contacts
G39 (HRC)



41 Size 20 Contacts
G41 (HRC)
21-41 (HRM)

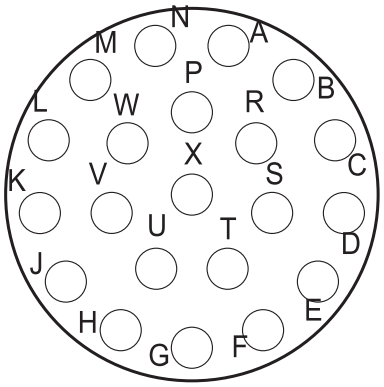


NOTE
Insert drawings are not to scale.

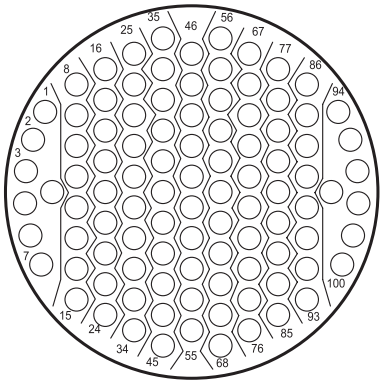
Dimensions are in inches [mm]

A full complement of HRC and HRM inserts

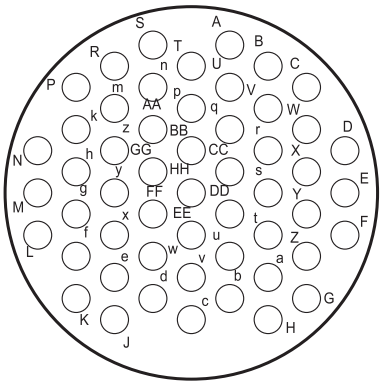
21 Size 16 Contacts
H21 (HRC)
23-21 (HRM)



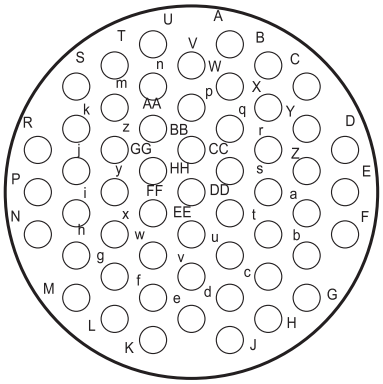
100 Size 22D Contacts
H35 (HRC)
23-35 (HRM)



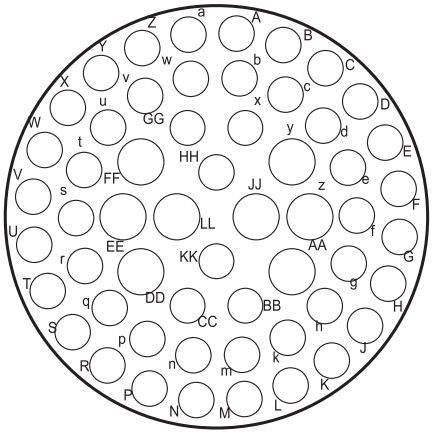
53 Size 20 Contacts
H53 (HRC)
23-53 (HRM)



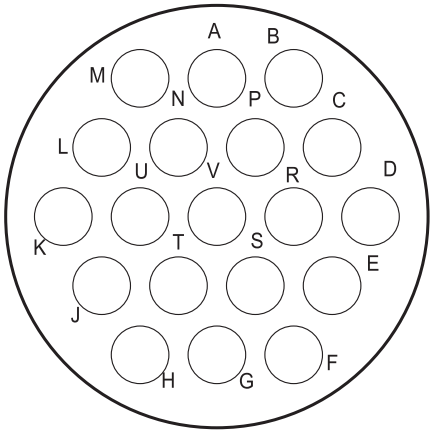
55 Size 20 Contacts
H55 (HRC)
23-55 (HRM)



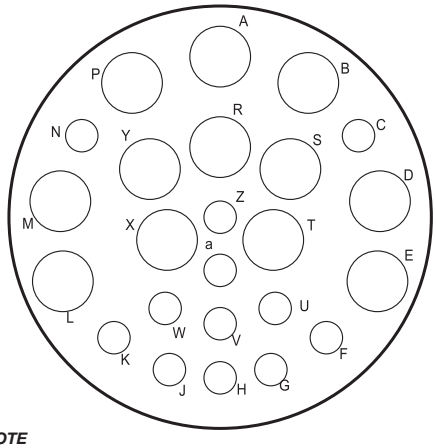
8 Size 16 Contacts
48 Size 20 Contacts
J04(HRC)
25-4 (HRM)



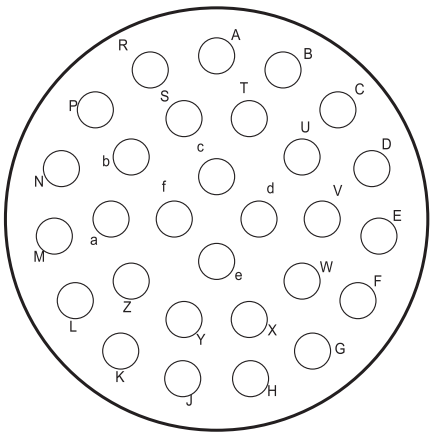
19 Size 12 Contacts
J19 (HRC)
25-19 (HRM)



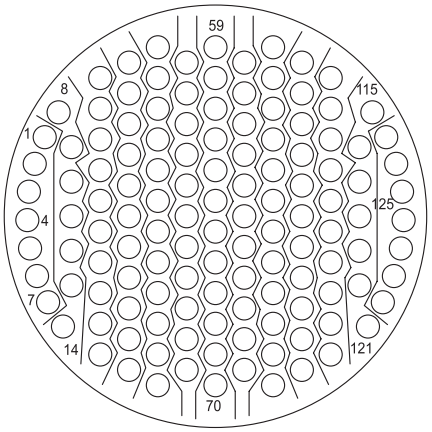
12 Size 12 Contacts
12 Size 16 Contacts
J24 (HRC)
25-24 (HRM)



29 Size 16 Contacts
J29 (HRC)
25-29 (HRM)



128 Size 22D Contacts
J35 (HRC)
25-35 (HRM)

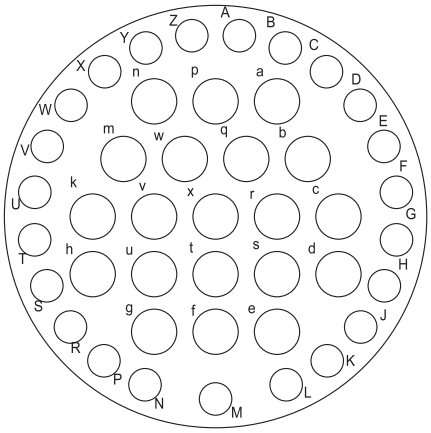


NOTE
Insert drawings are not to scale.

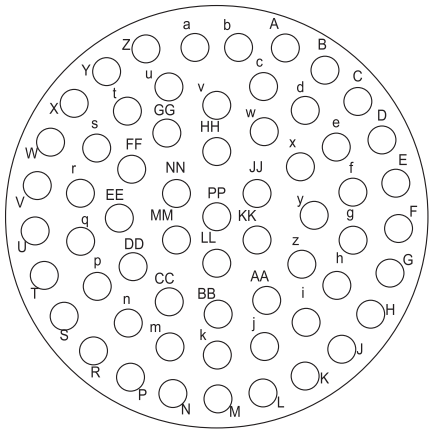
Dimensions are in inches [mm]

A full complement of HRC and HRM inserts

20 Size 16 Contacts
23 Size 20 Contacts
J43 (HRC)



61 Size 20 Contacts
J61 (HRC)
25-61 (HRM)

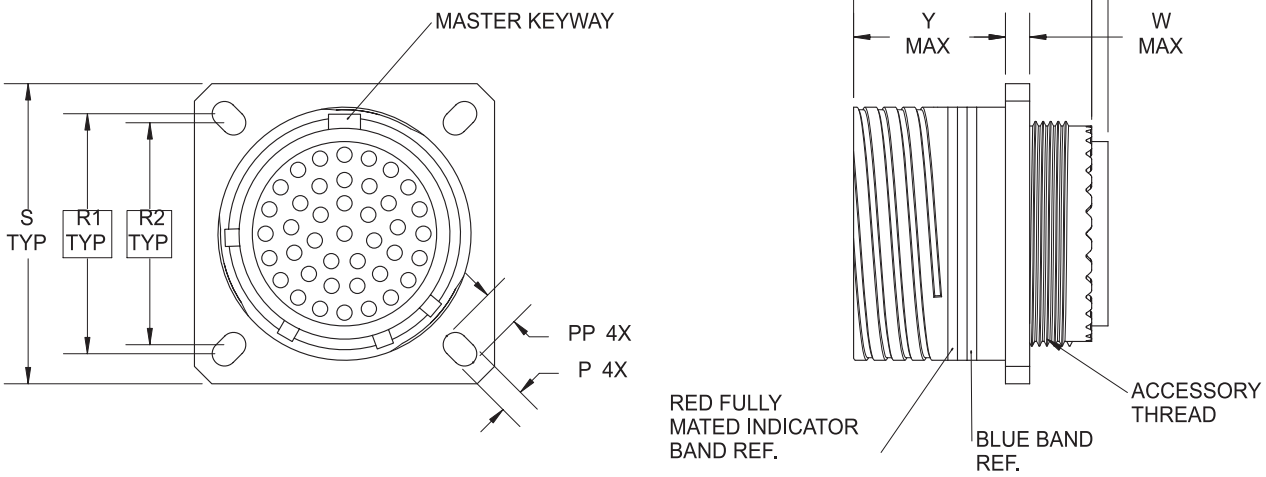


Arrangements are shown looking at mating face of plug.
Cavity identifying letters and numbers are for reference only.
Actual marking shall be as required by applicable specifications.

NOTE
Insert drawings are not to scale.

Dimensions are in inches [mm]

Square Flange Receptacle - HRC/HRM



Shell Size		Accessory Thread	P+0.004/-0.002	PP+0.004/-0.002	R1	R2	S ±0.001	Y Min.		W Max.	
HRC	HRM							HRC	HRM	HRC	HRM
A	9	M12x1.0-6g 0.100R	0.128 [3.25]	0.216 [5.49]	0.719 [18.26]	0.594 [12.09]	0.937 [23.80]	0.769 [19.51]	0.822 [20.88]	0.144 [3.66]	0.098 [2.49]
B	11	M15x1.0-6g 0.100R	0.128 [3.25]	0.194 [4.93]	0.812 [20.63]	0.719 [18.26]	1.031 [26.19]	0.769 [19.51]	0.822 [20.88]	0.144 [3.66]	0.098 [2.49]
C	13	M18x1.0-6g 0.100R	0.128 [3.25]	0.194 [4.93]	0.906 [23.01]	0.812 [20.63]	1.126 [28.60]	0.769 [19.51]	0.822 [20.88]	0.144 [3.66]	0.098 [2.49]
D	15	M22x1.0-6g 0.100R	0.098 [2.49]	0.769 [19.51]	0.822 [20.88]	0.144 [3.66]	0.098 [2.49]	0.769 [19.51]	0.822 [20.88]	0.144 [3.66]	0.098 [2.49]
E	17	M25x1.0-6g 0.100R	0.098 [2.49]	0.769 [19.51]	0.822 [20.88]	0.144 [3.66]	0.098 [2.49]	0.769 [19.51]	0.822 [20.88]	0.144 [3.66]	0.098 [2.49]
F	19	M28x1.0-6g 0.100R	0.098 [2.49]	0.769 [19.51]	0.822 [20.88]	0.144 [3.66]	0.098 [2.49]	0.769 [19.51]	0.822 [20.88]	0.144 [3.66]	0.098 [2.49]
G	21	M31x1.0-6g 0.100R	0.126 [3.20]	0.736 [18.69]	0.791 [20.09]	0.171 [4.34]	0.126 [3.20]	0.736 [18.69]	0.791 [20.09]	0.171 [4.34]	0.126 [3.20]
H	23	M34x1.0-6g 0.100R	0.126 [3.20]	0.736 [18.69]	0.791 [20.09]	0.171 [4.34]	0.126 [3.20]	0.736 [18.69]	0.791 [20.09]	0.171 [4.34]	0.126 [3.20]
J	25	M37x1.0-6g 0.100R	0.126 [3.20]	0.736 [18.69]	0.791 [20.09]	0.171 [4.34]	0.126 [3.20]	0.736 [18.69]	0.791 [20.09]	0.171 [4.34]	0.126 [3.20]

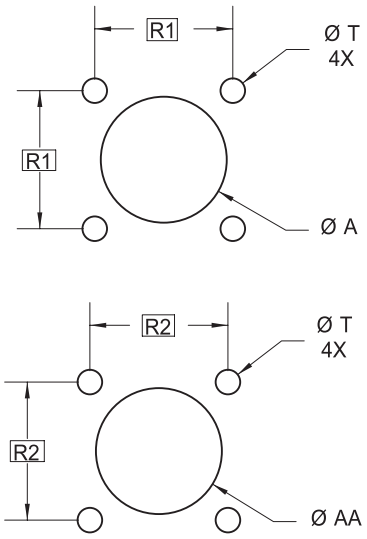
Mounting Cutouts

Back Panel Mounting

Max (R1) distance between mounting screws

Front Panel Mounting

Max (R2) distance between mounting screws

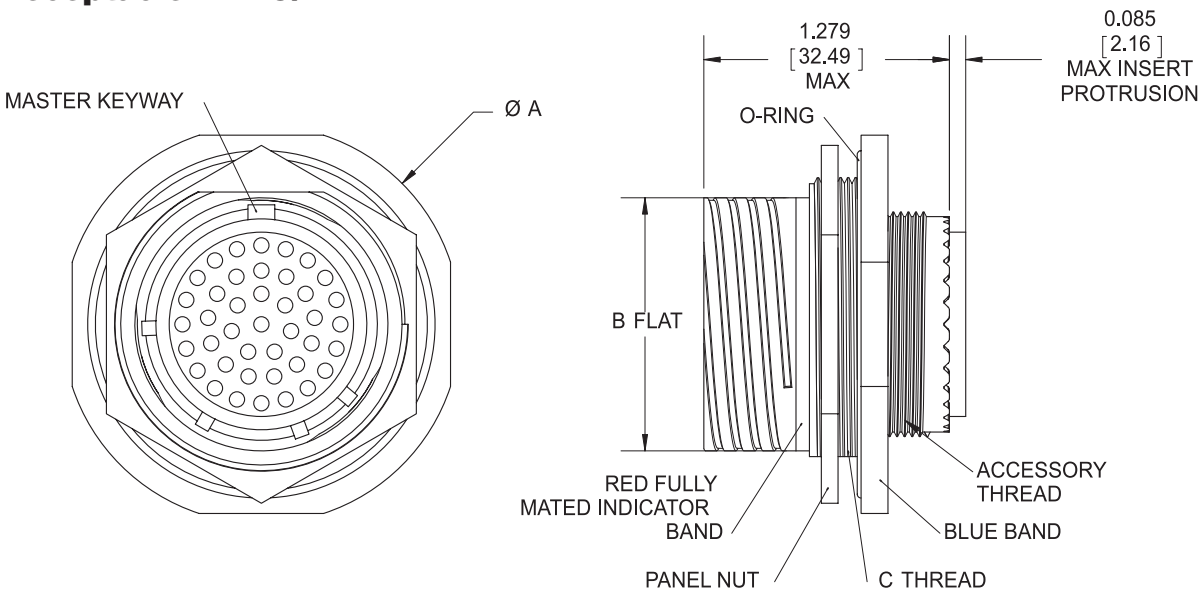


Shell Size		A Dis. Min	AA Dis. Min.	R1	R2	T Dia. ±0.005
HRC	HRM					
A	9	0.656 [16.66]	0.516 [13.11]	0.719 [18.26]	0.594 [12.09]	0.128 [3.25]
B	11	0.795 [20.19]	0.625 [15.88]	0.812 [20.63]	0.719 [18.26]	0.128 [3.25]
C	13	0.922 [23.42]	0.750 [19.05]	0.906 [23.01]	0.812 [20.63]	0.128 [3.25]
D	15	1.047 [26.59]	0.906 [23.01]	0.969 [24.61]	0.906 [23.01]	0.128 [3.25]
E	17	1.219 [30.96]	1.016 [25.81]	1.062 [26.97]	0.969 [24.61]	0.128 [3.25]
F	19	1.297 [32.94]	1.141 [28.98]	1.156 [29.36]	1.062 [26.97]	0.128 [3.25]
G	21	1.442 [36.63]	1.266 [32.16]	1.250 [31.75]	1.156 [29.36]	0.128 [3.25]
H	23	1.547 [39.29]	1.375 [34.93]	1.375 [34.93]	1.250 [31.75]	0.154 [3.91]
J	25	1.572 [39.93]	1.485 [37.72]	1.500 [38.10]	1.375 [34.93]	0.154 [3.91]

NOTE:
R2 dimension may be substituted for mounting screw locations (R1) or front mount cutouts.

Dimensions are in inches [mm]

Jam Nut Receptacle - HRC/HRM

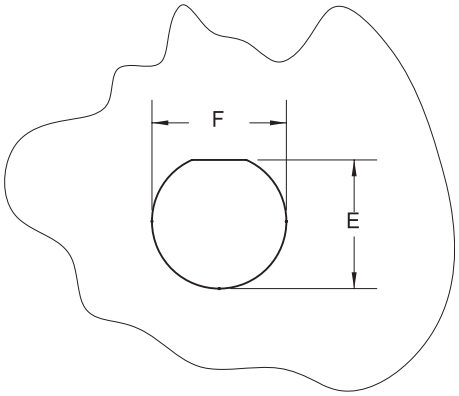


Shell Size		AØ ±0.011	B ±0.005	C Thread	Accessory Thread
HRC	HRM				
A	9	1.189 [30.20]	0.650 [16.51]	M17x1.0-6g 0.100R	M12x1.0-6g 0.100R
B	11	1.374 [34.90]	0.750 [19.05]	M20x1.0-6g 0.100R	M15x1.0-6g 0.100R
C	13	1.500 [38.10]	0.937 [23.80]	M25x1.0-6g 0.100R	M18x1.0-6g 0.100R
D	15	1.626 [41.30]	1.061 [26.95]	M28x1.0-6g 0.100R	M22x1.0-6g 0.100R
E	17	1.752 [44.50]	1.186 [30.12]	M32x1.0-6g 0.100R	M25x1.0-6g 0.100R
F	19	1.937 [49.20	1.311 [33.30]	M35x1.0-6g 0.100R	M28x1.0-6g 0.100R
G	21	2.063 [52.40]	1.436 [36.47]	M38x1.0-6g 0.100R	M31x1.0-6g 0.100R
H	23	2.189 [55.60]	1.561 [39.65]	M41x1.0-6g 0.100R	M34x1.0-6g 0.100R
J	25	2.311 [58.70]	1.686 [42.15]	M44x1.0-6g 0.100R	M37x1.0-6g 0.100R

Jam Nut Mounting

Panel Thickness

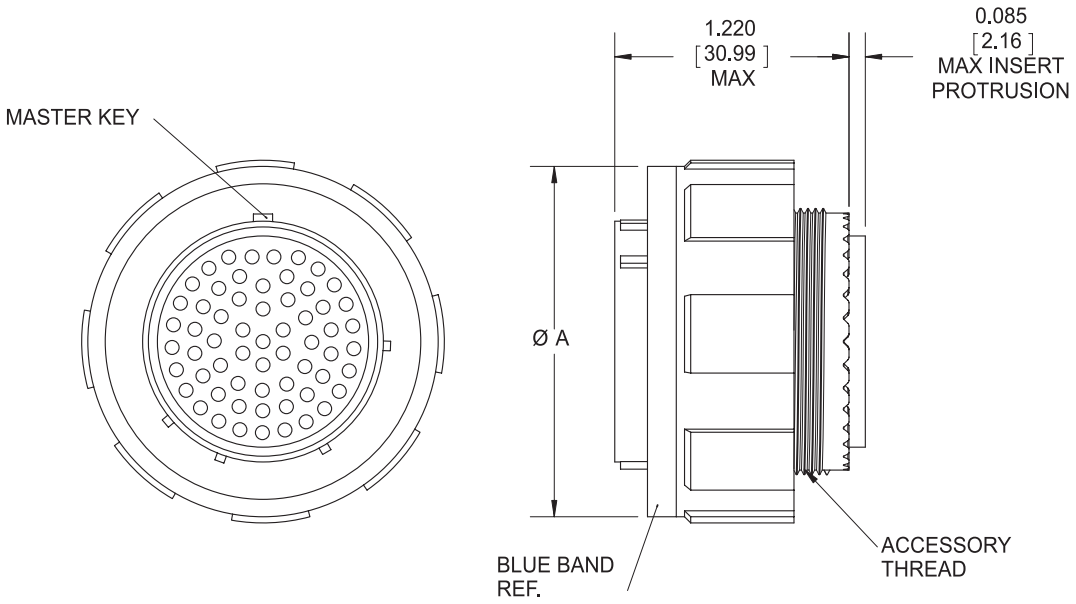
0.062 - 0.126 [1.58 - 3.2]



Shell Size		Inch-Lbs. Torque	E Flat +0.000 -0.010	F +0.010 -0.000
HRC	HRM			
A	9	30/36	0.670 [17.02]	0.700 [17.78]
B	11	40/45	0.771 [19.58]	0.825 [20.96]
C	13	55/60	0.955 [24.26]	1.010 [25.65]
D	15	70/75	1.085 [27.56]	1.135 [28.83]
E	17	80/85	1.210 [30.73]	1.360 [34.54]
F	19	90/95	1.335 [33.90]	1.385 [35.18]
G	21	100/110	1.460 [37.08]	1.510 [38.35]
H	23	110/120	1.585 [40.26]	1.635 [41.53]
J	25	120/130	1.710 [43.43]	1.760 [44.70]

Dimensions are in inches [mm]

Plug

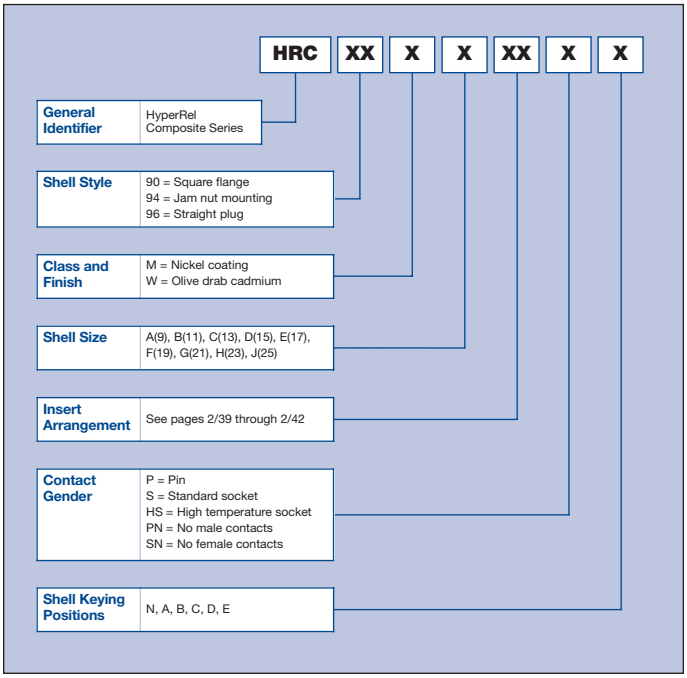


Shell Size		Accessory Thread	AØ Max
HRC	HRM		
A	9	M12x1.0-6g 0.100R	0.858 [21.79]
B	11	M15x1.0-6g 0.100R	0.984 [24.99]
C	13	M18x1.0-6g 0.100R	1.157 [29.39]
D	15	M22x1.0-6g 0.100R	1.280 [32.51]
E	17	M25x1.0-6g 0.100R	1.406 [35.71]
F	19	M28x1.0-6g 0.100R	1.516 [38.51]
G	21	M31x1.0-6g 0.100R	1.642 [41.71]
H	23	M34x1.0-6g 0.100R	1.768 [44.91]
J	25	M37x1.0-6g 0.100R	1.890 [48.00]

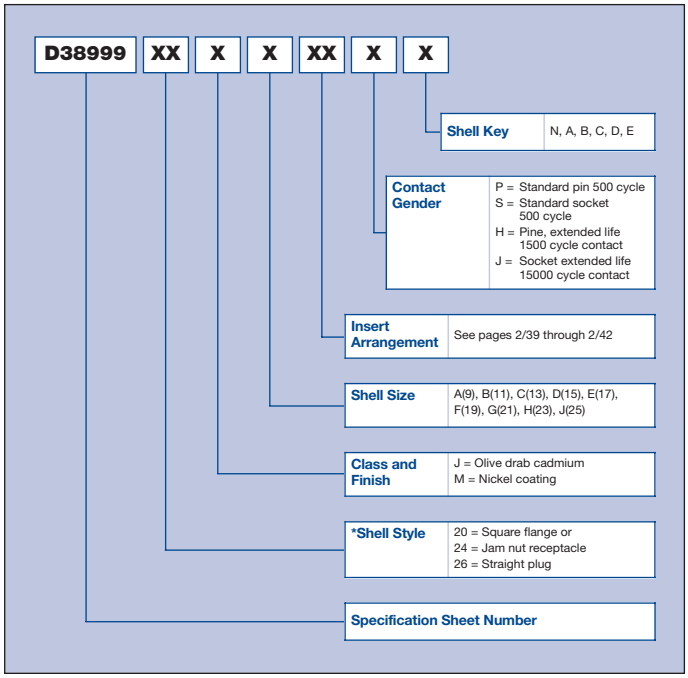
Dimensions are in inches [mm]

HRC Ordering Information

Hypertronics Part Numbers

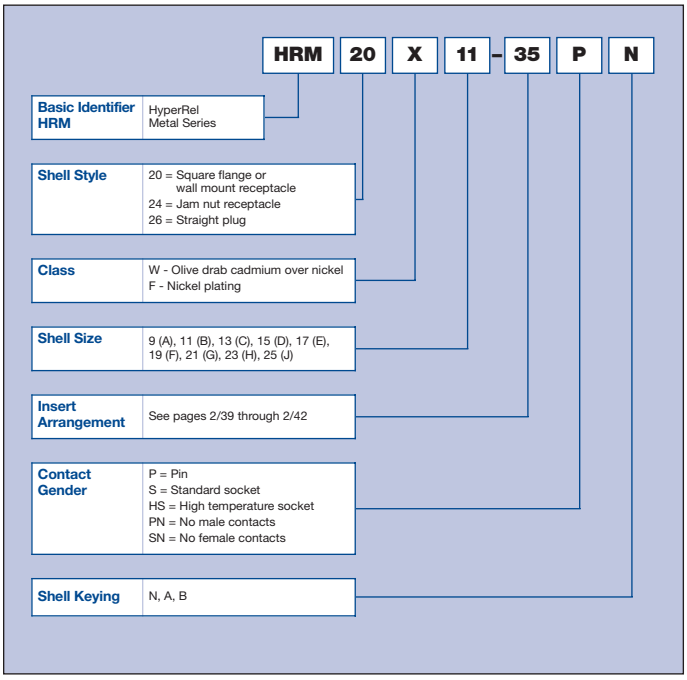


HRC (Non-QPL'D Military Cross Reference)

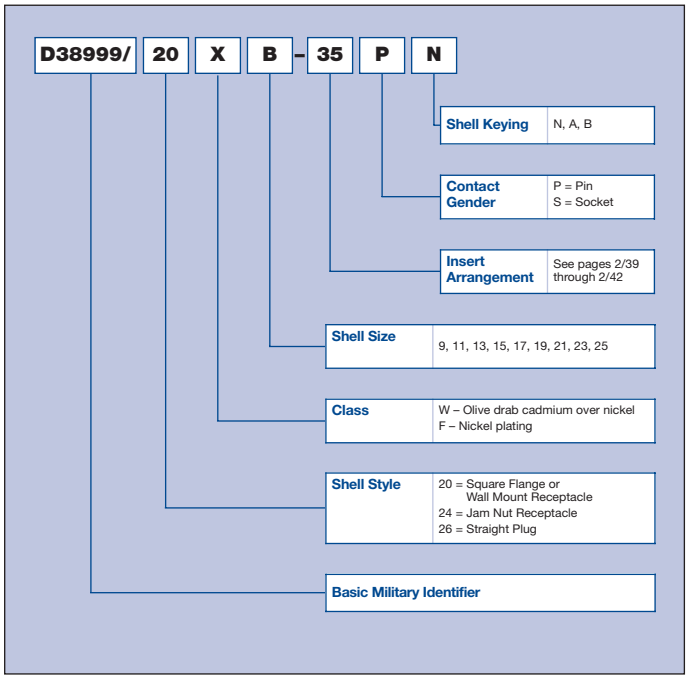


HRM Ordering Information

Hypertronics Part Numbers



HRM (Non-QPL'D Military Cross Reference)

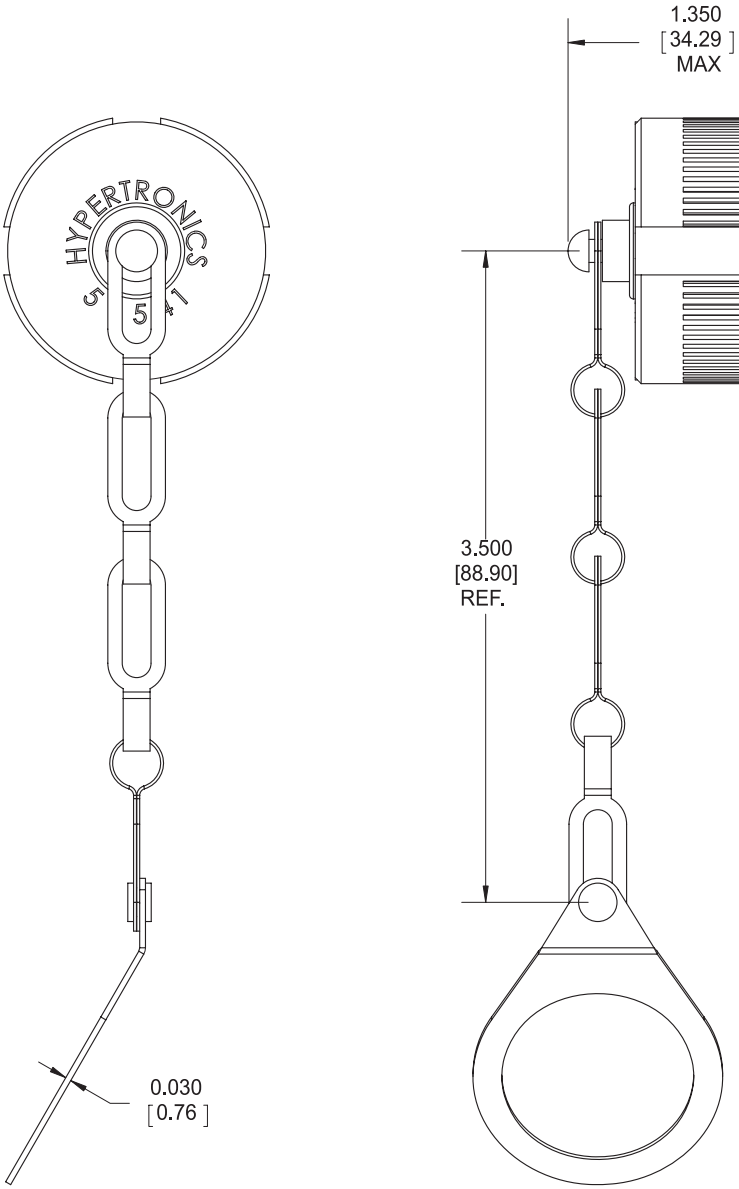


Dimensions are in inches [mm]

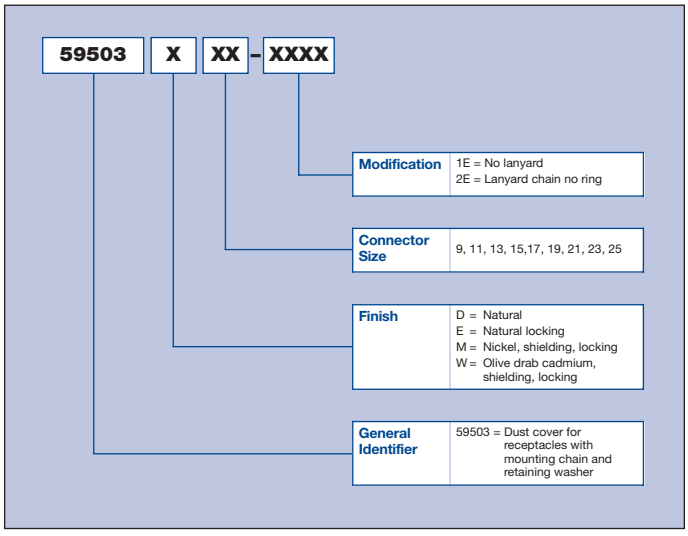
Contact and Tooling Information

Size	Contact Hypertronics Part Number	Style	Wire Gauge	Crimp Tool (Positioner)	Military Insertion Extraction Tool	Strip Length	Sealing Plugs Hypertronics Part Number	Color Code
22D	YPN0076-145H	Pin	22 thru 28	M22520/7-01	M81969/14-01	0.160 - 0.190 [4.06 - 4.83]	MS27488-22	Green
22D	YSK0076-181AH	Socket (Std.)	22 thru 28	M22520/7-01	M81969/14-01	0.160 - 0.190 [4.06 - 4.83]	MS27488-22	Green
22D	YHTSK0076-001AH	Socket (High Temp.)	22 thru 28	M22520/7-01	M81969/14-01	0.160 - 0.190 [4.06 - 4.83]	MS27488-22	Green
20	YPN0102-037H	Pin	20 thru 24	M22520/1-01	M81969/14-10	0.230 -0.260 [5.84 - 6.60]	4113-4-2001	Red
20	YSK0102-095AH	Socket (Std.)	20 thru 24	M22520/1-01	M81969/14-10	0.230 -0.260 [5.84 - 6.60]	4113-4-2001	Red
20	YHTSK0102-001AH	Socket (High Temp.)	20 thru 24	M22520/1-01	M81969/14-10	0.230 -0.260 [5.84 - 6.60]	4113-4-2001	Red
16	YPN0158-003H	Pin	20 thru 16	M22520/1-01	M81969/14-03	0.230 -0.260 [5.84 - 6.60]	0613-1-1601	Blue
16	YSK0158-012AH	Socket (Std.)	20 thru 16	M22520/1-01	M81969/14-03	0.230 -0.260 [5.84 - 6.60]	0613-1-1601	Blue
16	YHTSK0158-001AH	Socket (High Temp.)	20 thru 16	M22520/1-01	M81969/14-03	0.230 -0.260 [5.84 - 6.60]	0613-1-1601	Blue
12	YPN02309-001	Pin	12 thru 14	M22520/1-01	M81969/14-04	0.230 -0.260 [5.84 - 6.60]	0613-1-12-1	Yellow
12	YSK0239-001AH	Socket (Std.)	12 thru 14	M22520/1-01	M81969/14-04	0.230 -0.260 [5.84 - 6.60]	0613-1-12-1	Yellow
12	YHTSK0239-001AH	Socket (High Temp.)	12 thru 14	M22520/1-01	M81969/14-04	0.230 -0.260 [5.84 - 6.60]	0613-1-12-1	Yellow

Protective Covers for HRM Connectors



Part Numbers

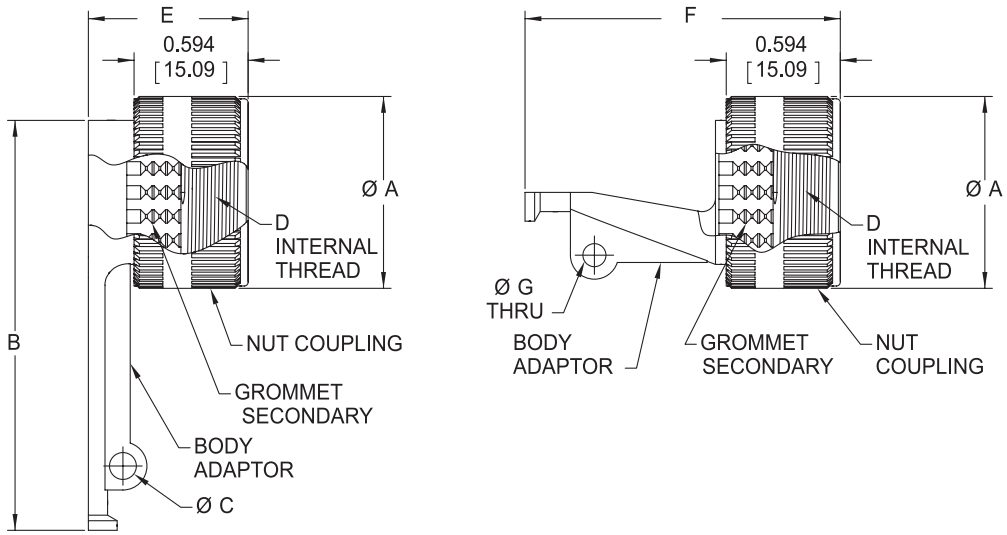


Available in both environmental and environmental RFI/EMI (shielding)

Dimensions are in inches [mm]

Lightweight, Strain Relief, Tie-Type

The HRC provides additional environment protection by offering a systems approach to rear accessories. The HRC Strain Relief, Tie-Type is made from durable, lightweight, corrosion proof composite materials, and is supplied with a secondary grommet. The secondary grommet provides true strain relief and vibration dampening while providing dynamic moisture intrusion seals.

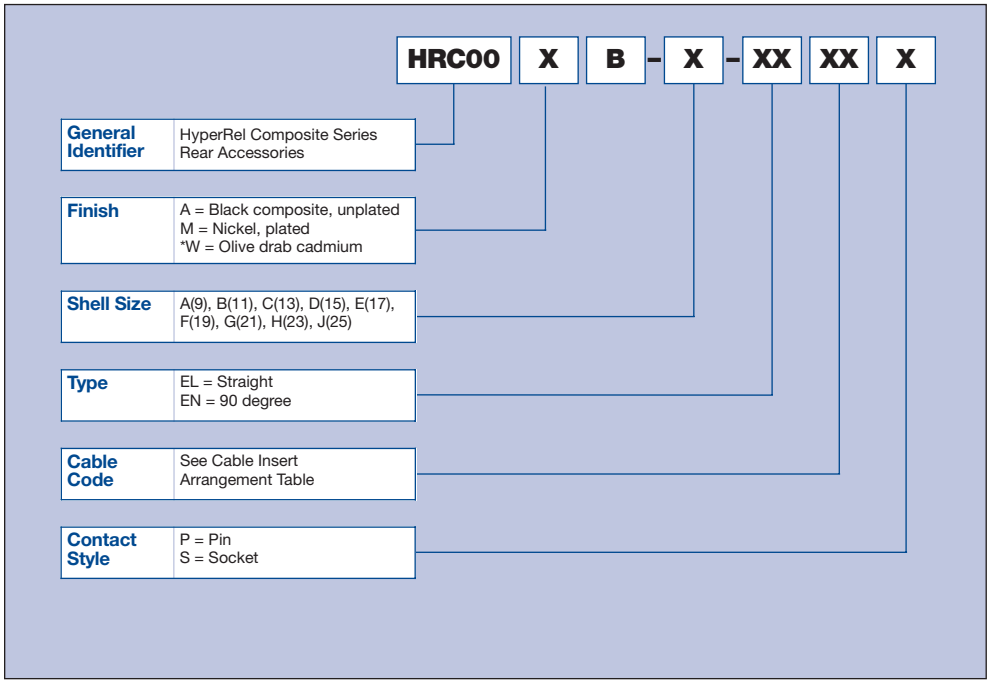


Shell Size	±0.015 "A" Ø	±0.080 "B"	±0.010 "C" Ø	"D" Metric Thread	±0.015 "E"	±0.080 "F"	± 0.010 "G" Ø
A	0.650 [16.51]	1.948 [49.48]	0.140 [3.56]	M12X1.0-6H0.100R	0.832 [21.13]	1.642 [41.71]	0.120 [3.05]
B	0.775 [19.69]	2.010 [51.05]	0.140 [3.56]	M15X1.0-6H0.100R	0.832 [21.13]	1.642 [41.71]	0.120 [3.05]
C	0.905 [22.99]	2.075 [52.71]	0.140 [3.56]	M18X1.0-6H0.100R	0.832 [21.13]	1.642 [41.71]	0.120 [3.05]
D	1.030 [26.16]	2.135 [54.23]	0.140 [3.56]	M22X1.0-6H0.100R	0.832 [21.13]	1.642 [41.71]	0.120 [3.05]
E	1.160 [29.46]	2.198 [55.83]	0.140 [3.56]	M25X1.0-6H0.100R	0.832 [21.13]	1.642 [41.71]	0.140 [3.56]
F	1.270 [32.36]	2.258 [57.35]	0.140 [3.56]	M28X1.0-6H0.100R	0.832 [21.13]	1.642 [41.71]	0.140 [3.56]
G	1.400 [35.56]	2.320 [58.93]	0.140 [3.56]	M31X1.0-6H0.100R	0.832 [21.13]	1.642 [41.71]	0.140 [3.56]
H	1.525 [38.74]	2.383 [60.53]	0.140 [3.56]	M34X1.0-6H0.100R	0.832 [21.13]	1.642 [41.71]	0.140 [3.56]
J	1.655 [42.04]	2.445 [62.10]	0.140 [3.56]	M37X1.0-6H0.100R	0.832 [21.13]	1.642 [41.71]	0.140 [3.56]

Dimensions are in inches [mm]

Strain Relief Ordering Information

Hypertronics Strain Relief Part Numbers



*Consult factory for availability.

Cable Insert Arrangements

Cable Code	Insert Arrangements
38	A-35
39	A-98
40	B-05
41	B-35
42	B-99
43	C-04
44	C-35
45	C-98
46	D-05
47	D-18
48	D-35
49	D-97
50	E-06
51	E-08
52	E-26

Cable Code	Insert Arrangements
53	E-35
54	F-11
55	F-32
56	F-35
57	G-11
58	G-16
59	G-35
60	G-41
61	H-21
62	H-35
63	H-53
64	H-55
65	J-04
66	J-19
67	J-20

Cable Code	Insert Arrangements
68	J-24
69	J-29
70	J-35
71	J-61
92	B-98
93	D-19
94	C-08
95	E-99
96	G-39
97	J-43
98	D-23
99	E-19
100	D-26

Dimensions are in inches [mm]

Miniature Circular Connectors

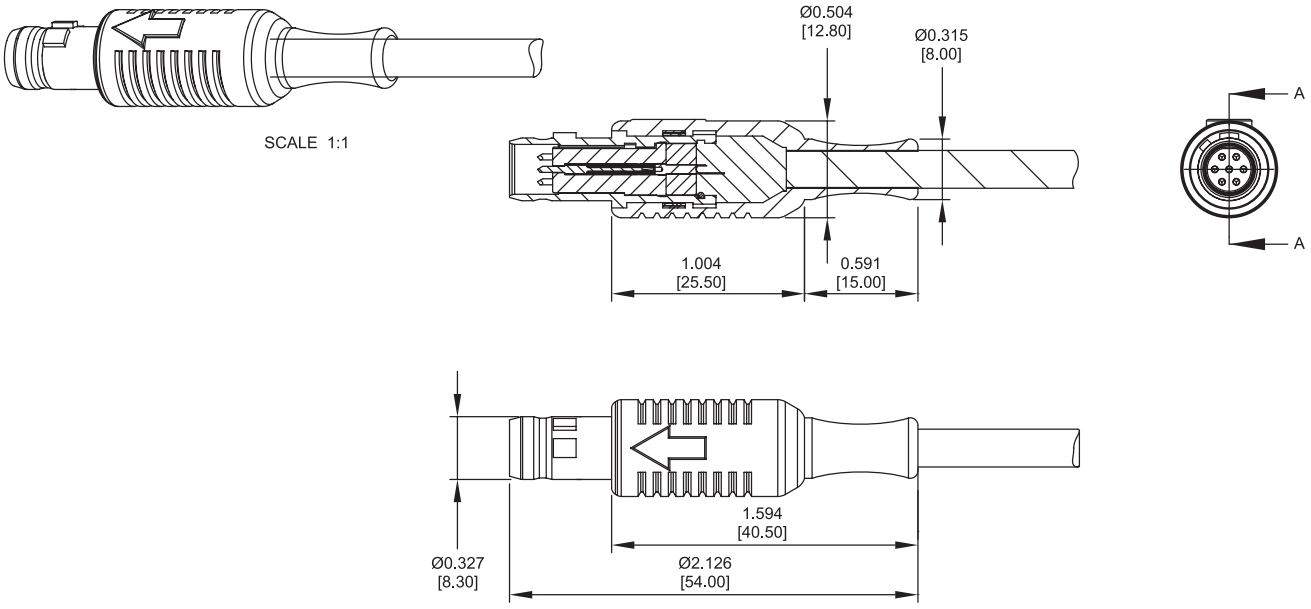
- HyperSpring® spring loaded contacts, self-cleaning wiping action
- 7, 13, or 19 contact configurations
- Combine robust environmental performance with compact size and light weight
- Easy and fast snap on locking mechanism
- Full line EMI shielding
- IP67 sealing when mated and unmated
- Different hardware coding to avoid mismatching
- Overmolding solutions
- Upgrade commercial high speed Fast Ethernet, USB, IEEE 1394 interconnect to Mil Spec performances
- Protection cup available on request

General Specifications

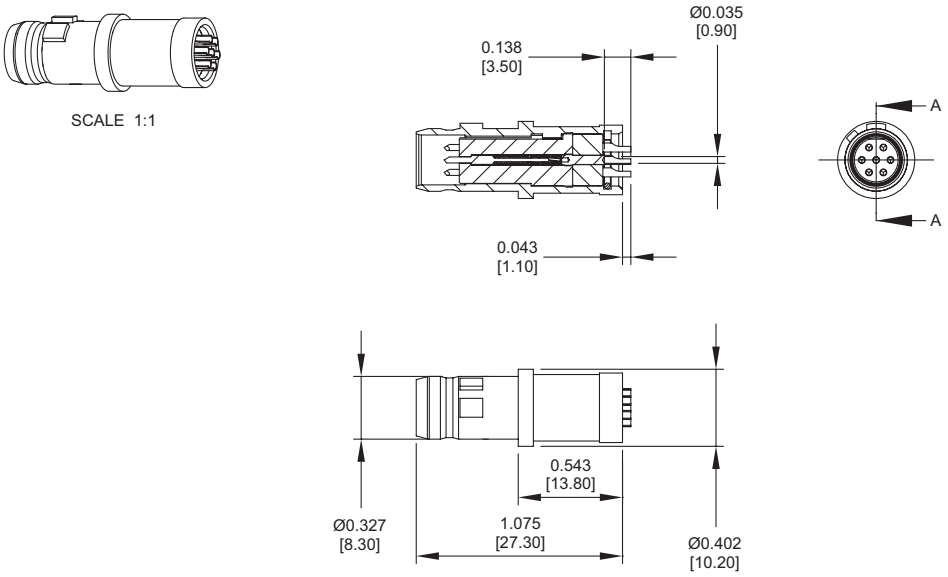
General	
Number of Contacts	7, 13, 19
Receptacle Terminations	Solder Cup, Dip Solder
Plug Termination	Solder Cup
Cable Diameter Range	7 Contacts: 0.236 [6.00] max., 13 Contacts: 0.295 [7.50] max., 19 Contacts: 0.335 [8.50] max.
AWG Contact	24 - 28
HyperSpring Force	5.5 oz. max. per contact
Connector Unmating Force	140.0 oz. max.
Electrical and Mechanical Characteristics	
EMI Shielding	Yes
Current Rating	3 Amps at 25° C
Breakdown Voltage	625V
Dielectric Withstanding Voltage (between contacts)	500V
Contact Resistance (low level)	< 15 milliohms
Insulation Resistance	5000 Megohms at 500VDC - EIA364.21
Vibration	EIA364.28 Condition III
Shock	EIA364.27 Condition G
Weight (Plug and Receptacle – with contacts – without cabling)	7 Contacts: 0.3 oz., 13 Contacts: 0.5 oz., 19 Contacts: 0.56 oz.
Materials and Plating	
Housing – Material – Plating	 Aluminum alloy Zinc cobalt conductive – RoHS compliant
Overmolding (Plug)	Thermoplastic hotmelt
Contact – Material – Plating	 Brass, beryllium copper Gold
Environmental Characteristics	
Temperature Range	-65° C to 80° C
Salt Spray	EIA364.26 Condition A (mated connectors)
Humidity	EIA364.31 Method IV
IP Level	67 mated and unmated

Dimensions are in inches [mm]

7 Contact Plug With Overmolding and Cabling

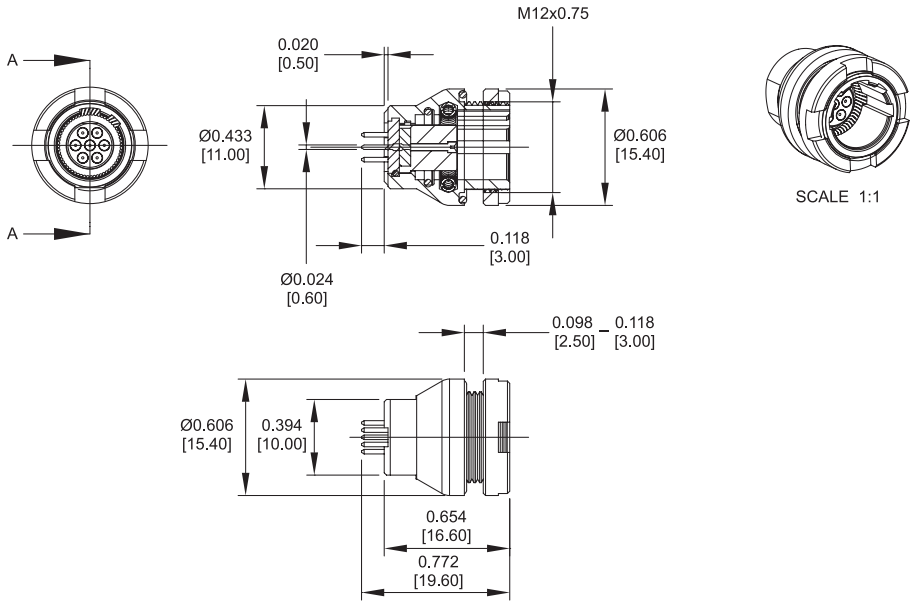


7 Contact Plug - Solder Cup Termination

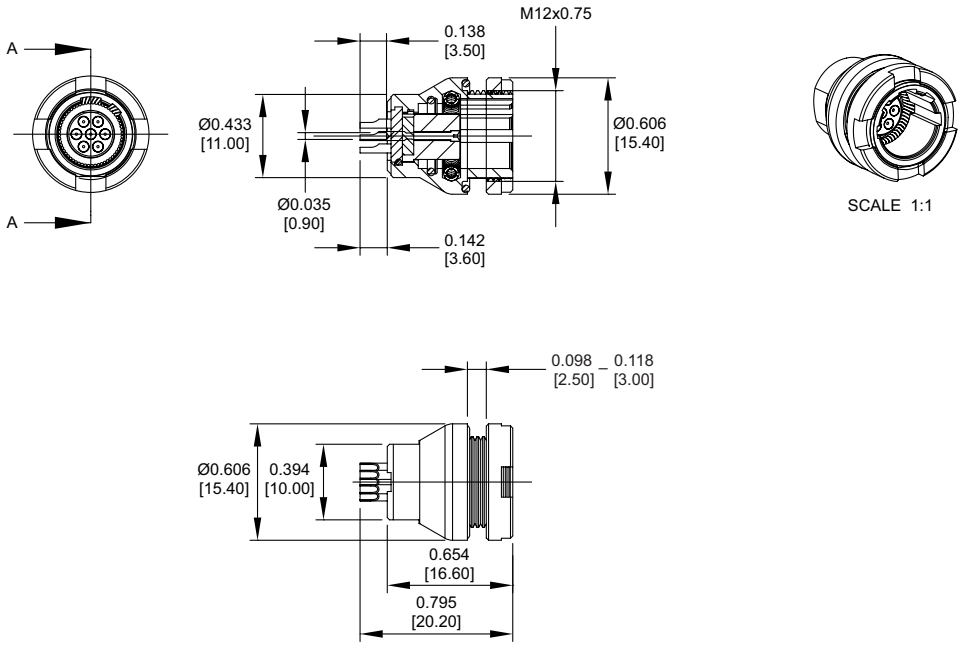


Dimensions are in inches [mm]

13 Contact Receptacle - Dip Solder Termination

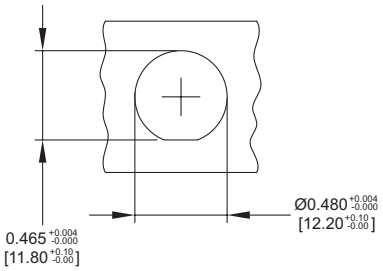


13 Contact Receptacle - Solder Cup Termination



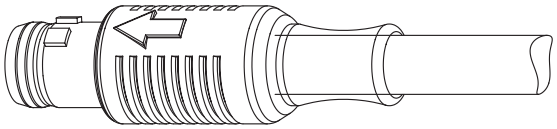
Panel Cutout

Panel thickness 0.118 [3.00] max.

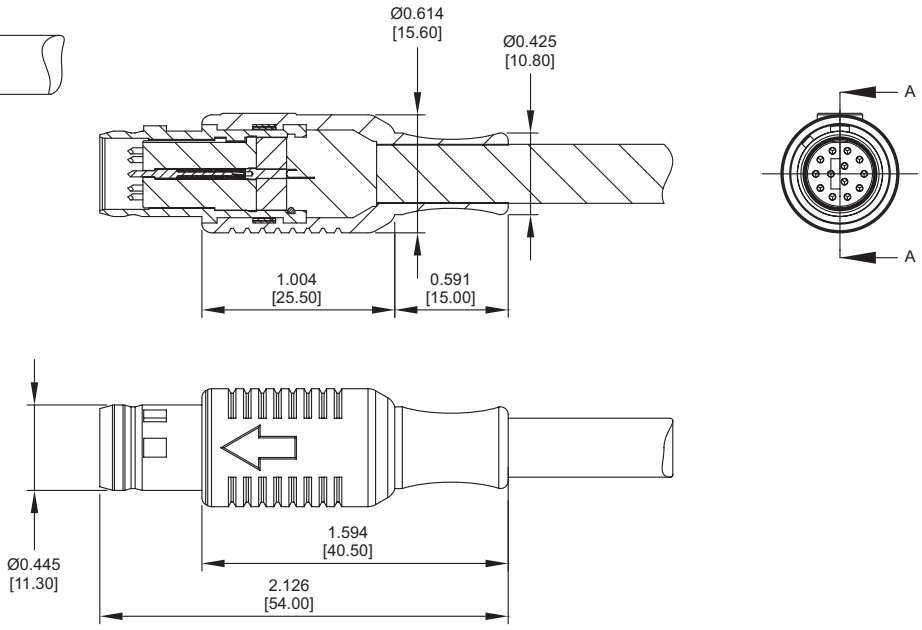


Dimensions are in inches [mm]

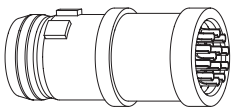
13 Contact Plug With Overmolding and Cabling



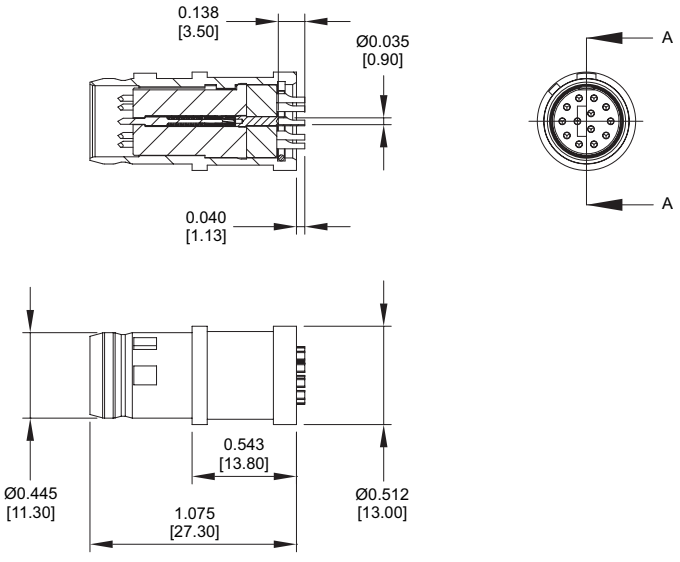
SCALE 1:1



13 Contact Plug - Solder Cup Termination

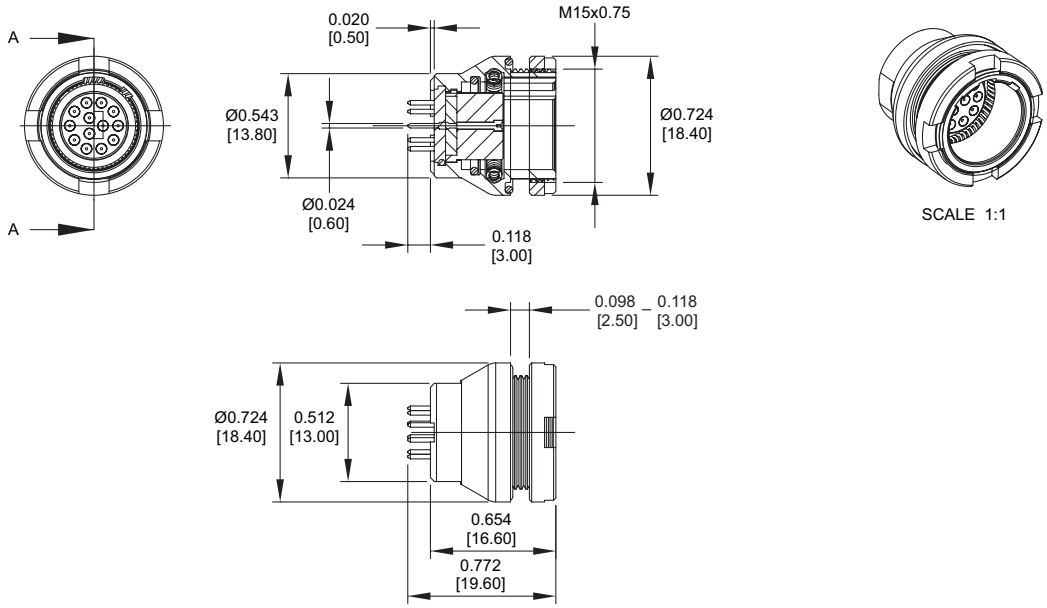


SCALE 1:1

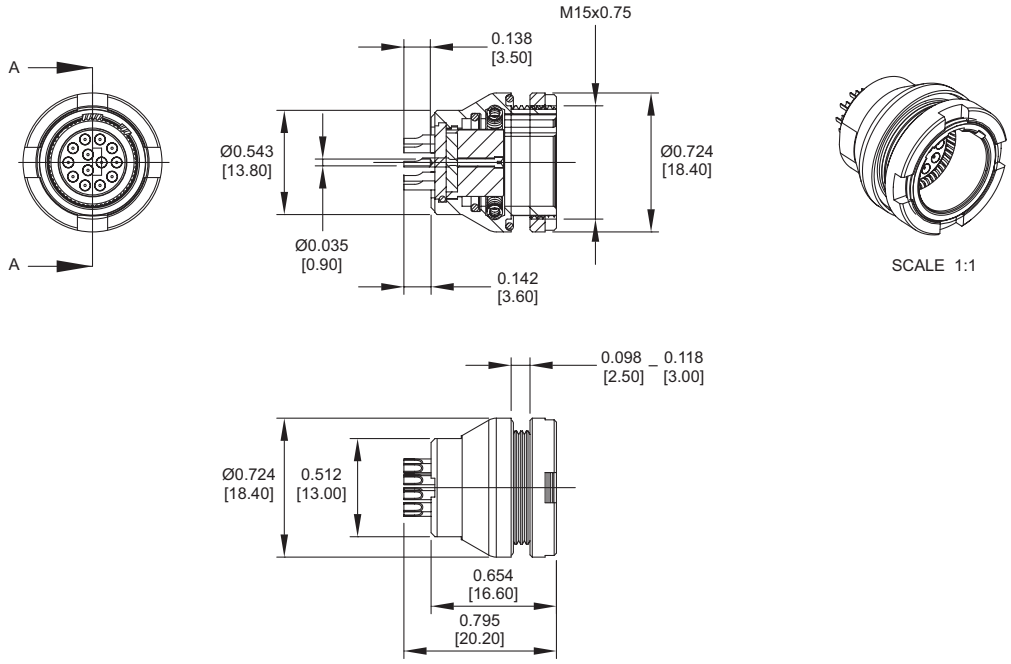


Dimensions are in inches [mm]

13 Contact Receptacle - Dip Solder Termination

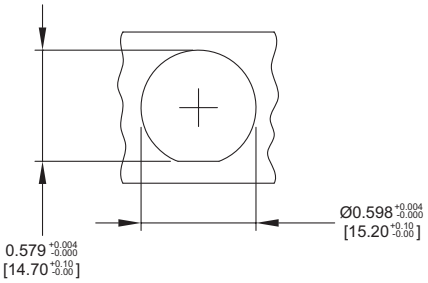


13 Contact Receptacle - Solder Cup Termination



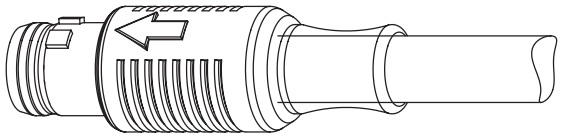
Panel Cutout

Panel thickness 0.118 [3.00] max.

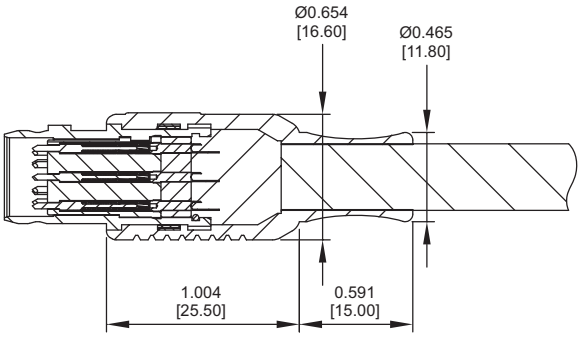


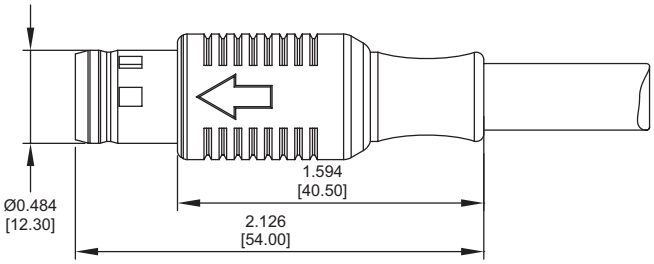
Dimensions are in inches [mm]

19 Contact Plug With Overmolding and Cabling

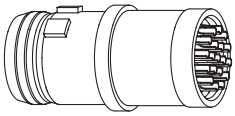


SCALE 1:1

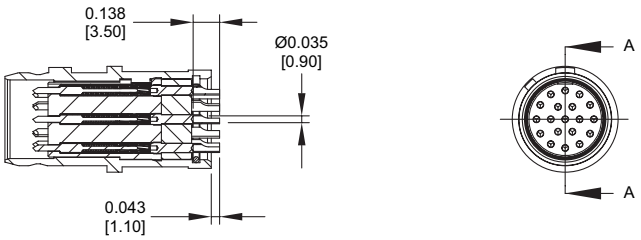


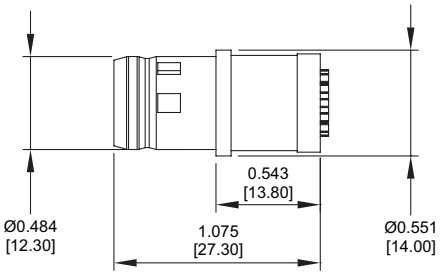


19 Contact Plug - Solder Cup Termination



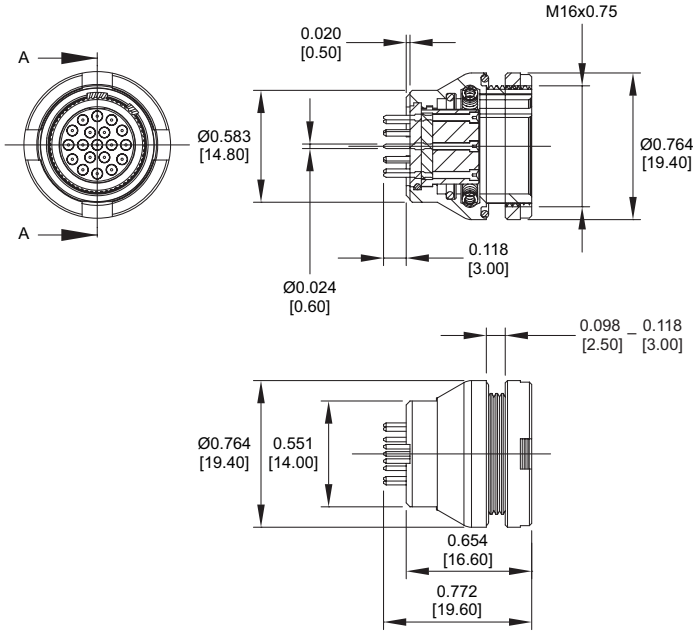
SCALE 1:1

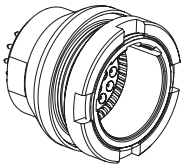




Dimensions are in inches [mm]

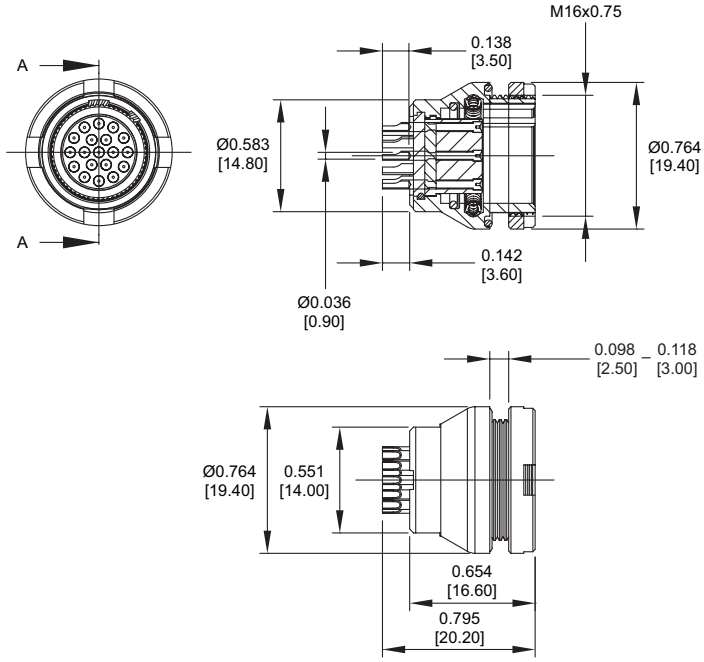
19 Contact Receptacle - Dip Solder Termination

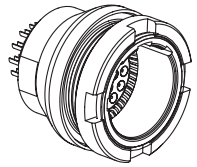




SCALE 1:1

19 Contact Receptacle - Solder Cup Termination

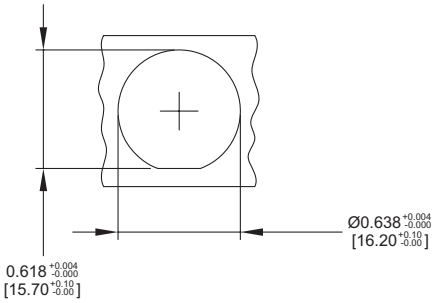




SCALE 1:1

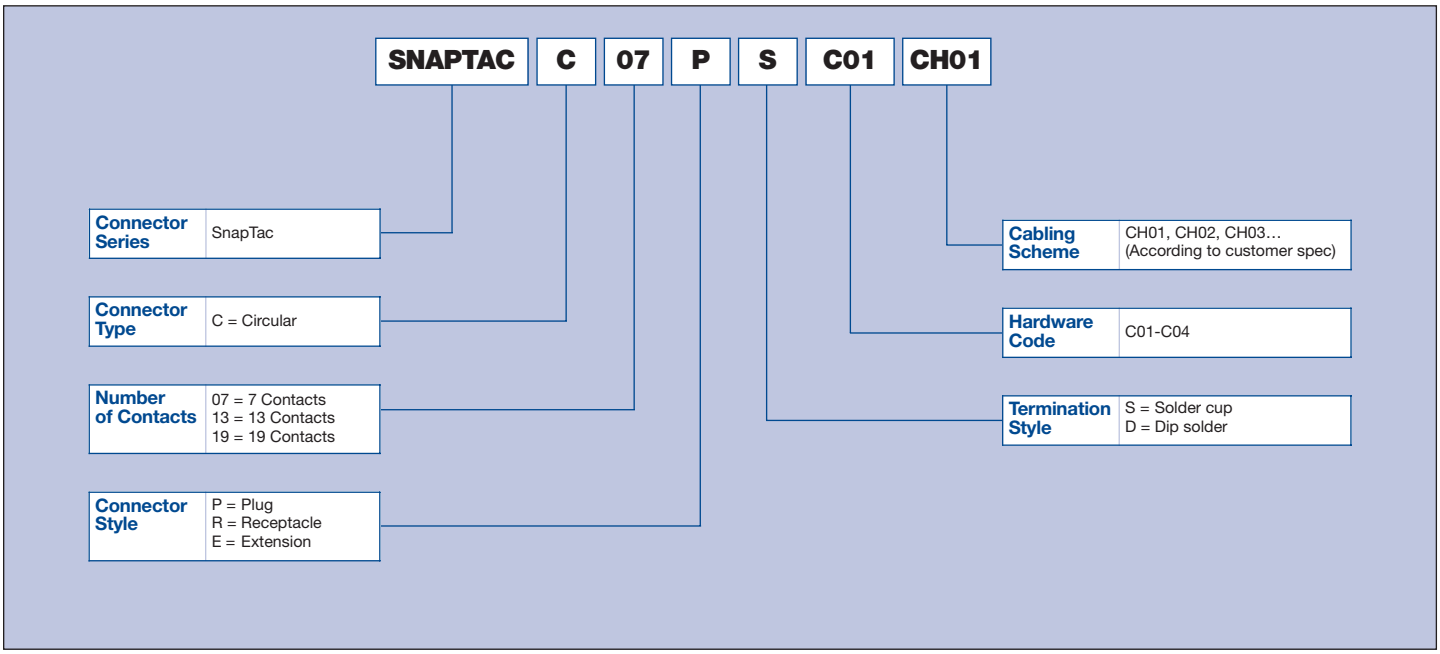
Panel Cutout

Panel thickness 0.118 [3.00] max.



Dimensions are in inches [mm]

Ordering Information

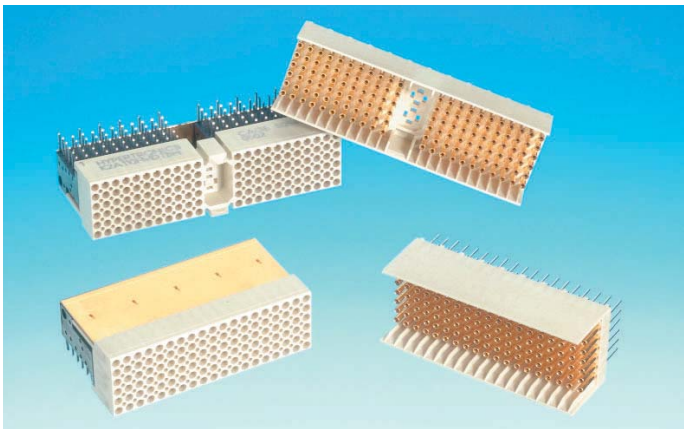


Dimensions are in inches [mm]

RECTANGULAR

- cPCI Series (2mm)
- HDL Series
- HDLP Series
- HMD Series
- KA Series
- KFT Series
- KGA Series
- KMR Series
- KS Series
- LSH Series
- PC/104+ Series
- SnapTac Series – Rectangular
- VME64X

All products are available on 3D Config



Subject to Export Control Procedure

cPCI Series (2mm) Connectors

Interchangeable with cPCI COTS Systems

- Hypertac® contacts provide the highest reliability available
- Standard 2mm footprint of cPCI PICMG 2.0
- Immune to shock and vibration
- High-temperature LCP insulator meets NASA outgassing requirements
- Compatible with IEC 1076-4 101
- Press-in/compliant termination is also available for receptacle assembly: consult factory
- NASA GSFC qualified part numbers available

Qualification Testing

The 2mm cPCI family of connectors meets MIL-DTL-55302, EEE-INST-002, and GEVS-SE Rev. A. NASA space flight qualified parts are tested according to NASA GSFC S-311-P-822 source control drawing.

Testing includes but is not limited to:

LLCR: Low Level Contact Resistance

DWV: Dielectric Withstanding Voltage

CRD: Contact Resistance

IR: Insultation Resistance

MFG: Mixed Flowing Gas

Should you require more information, please contact Technical Support.

General Specifications

3U / 6U Form Factor	P1 / P4	P2 / P5	P3	J1 / J4	J2 / J5	J3
Part Number Reference	K2A110FMD	K2B110FMD	K2B95FMD	K2A110FFD	K2B110FFD	K2B95FFD
Design Criteria	IEC 1076-4 101					
Contact Gender	Male Pin			Hypertac 0.40mm socket		
Contact Termination	Solder tail tin/lead (63/37) per MIL-P-81728					
Contact Spacing	2.00mm					
Number of Contacts	110 signal 22 ground		95 signal 19 ground	110 signal 22 ground (top shield)		95 signal 19 ground (top shield)
Contact Current Rating	1 Amp					
Temperature Range	-55° C to 125° C					
Insulator Material	30% Glass Filled LCP (meets NASA outgassing specification)					
Flammability Rating	94 V-O					
Insulation Resistance	> 5000 megohm					
Contact Material	Beryllium copper pin contacts			Beryllium copper Hypertac socket wires and brass body		
Mating Contact Plating	50µin gold / 50µin nickel					
Suggested Printed Circuit Board Hole Diameter	0.70mm after plating			0.60mm after plating		
Weight	0.55 oz.	0.53 oz.	0.38 oz.	0.38 oz.	0.45 oz.	0.31 oz.

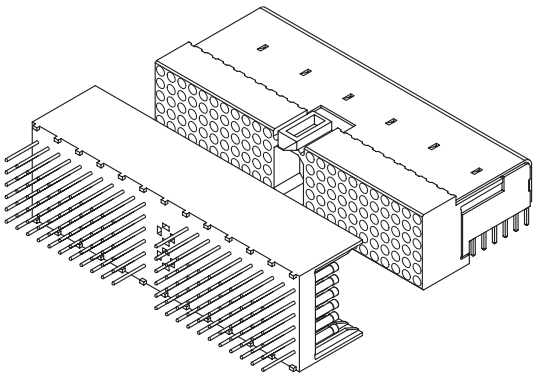
Dimensions are in inches [mm]

Performance Specifications						
3U / 6U Form Factor	**P1 / P4**	**P2 / P5**	**P3**	**J1 / J4**	**J2 / J5**	**J3**
Part Number Reference	K2A110FMD	K2B110FMD	K2B95FMD	K2A110FFD	K2B110FFD	K2B95FFD
CRD (Resistance at Rated Current)	4.85 milliohms average					
LLCR (Low Level Contact Resistance)	7.20 milliohms average					
DWV (Dielectric Withstanding Voltage)	1000V RMS					
Contact Life (Mate / Demate)	> 4000 Cycles (per mated connector pair)					
Mating Force	16.38 LBF average (per mated connector pair)					
Demating Force	13.2 LBF average (per mated connector pair)					
Vibration (Sinusoidal)*	Frequency 10 to 2000 HZ at 15 G (MIL-DTL-55302)					
Vibration (Random)**	Flight chassis unit level vibration (NASA Goddard GEVS SE Rev A)					
Mechanical Shock*	100 G peak value (MIL-DTL-55302)					

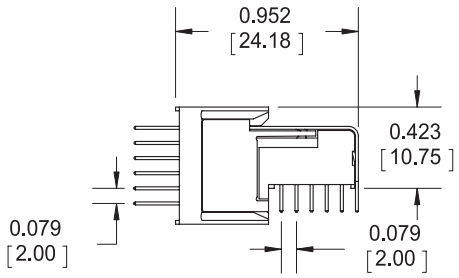
* Testing was performed to determine if fretting occurs due to mechanical motion and to evaluate the integrity of the Hypertac contact system relative to severe shock. To validate the test, low nanosecond event detection was performed at 10 nanoseconds. **There were no events recorded.**

** Testing was performed using a 6U Flight Chassis to determine if fretting occurs due to mechanical motion and to evaluate the integrity of the test samples relative to severe mechanical environment. To validate the test, low nanosecond event detection was performed at 50 nanoseconds. **There were no events recorded.**

2mm Connector



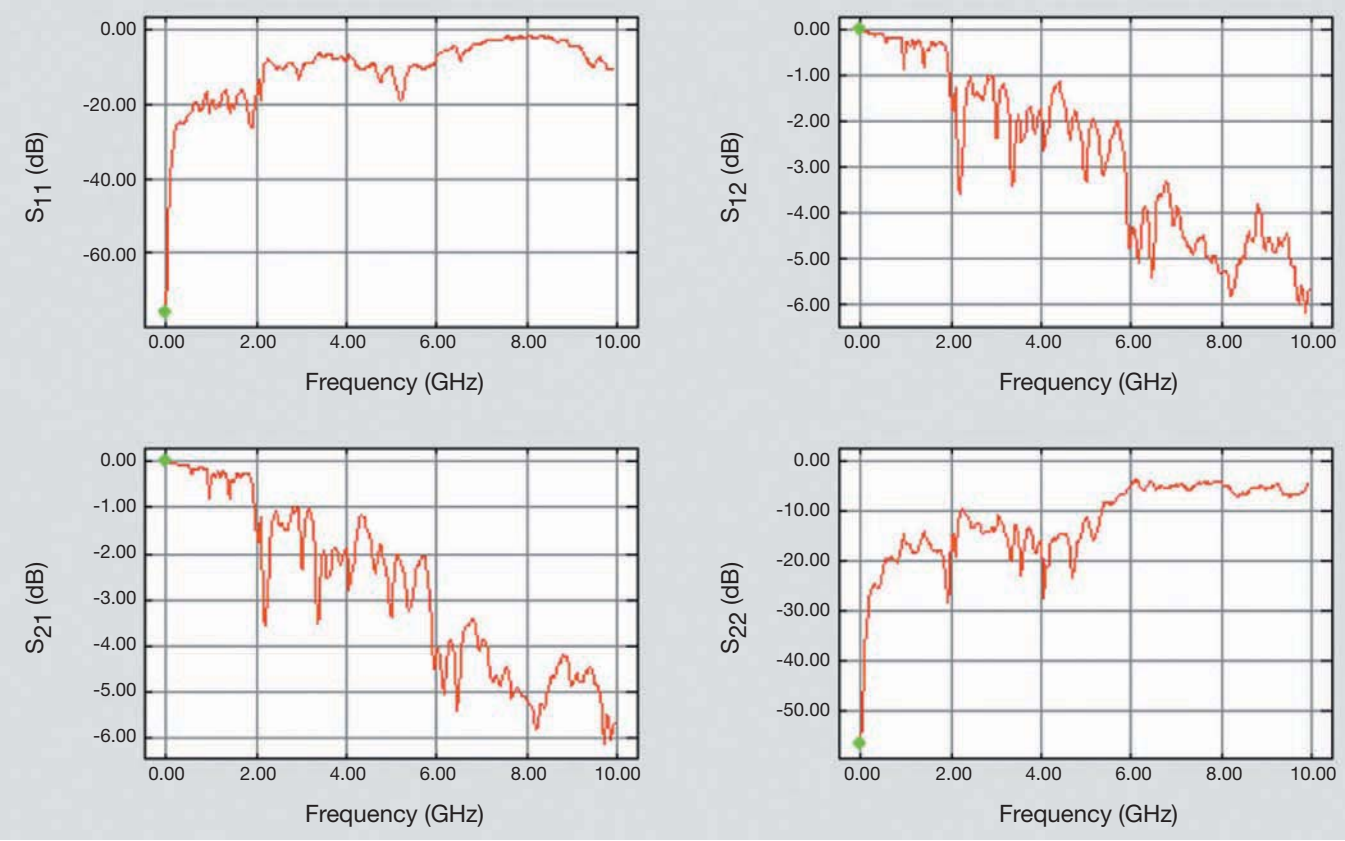
2mm Connector Mated Pair



Dimensions are in inches [mm]

J0/P0 High Speed Electrical Performance

1. Differential S-parameter [1, 2]



2. Propagation Delay and Skew

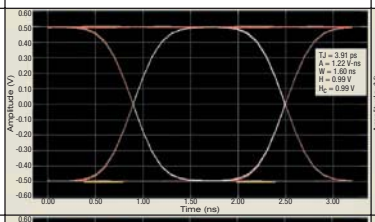
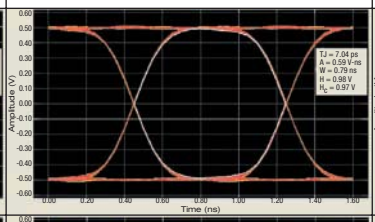
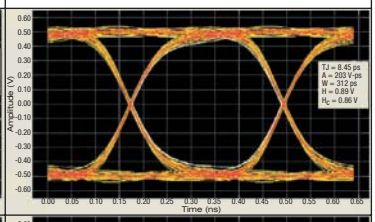
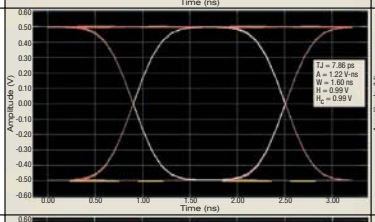
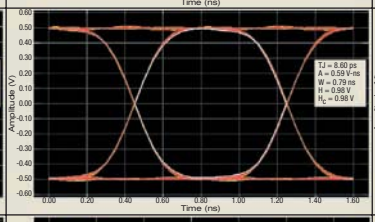
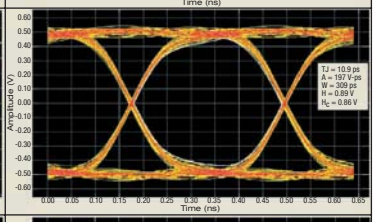
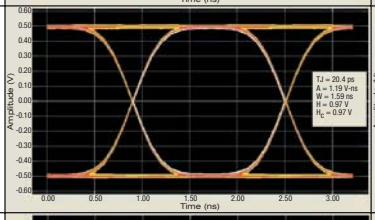
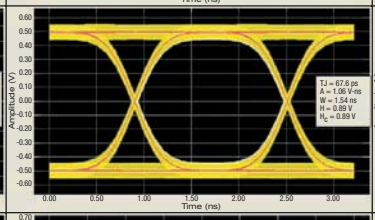
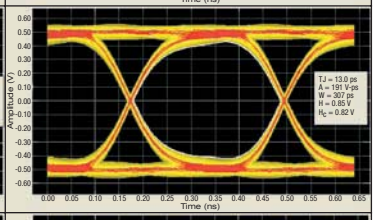
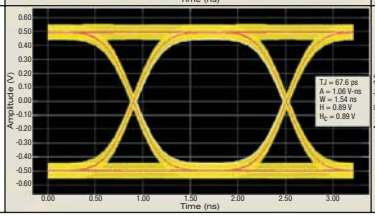
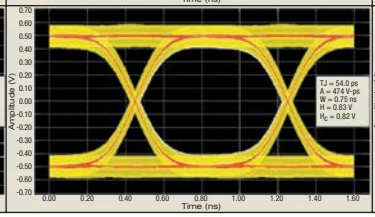
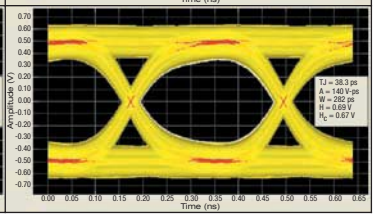
Propagation delay through the intrinsic connector assembly is estimated by making a measurement on the reflected signal received on the same broadband fixture that is used to obtain the full vector scattering parameters. In these measurements, there is no inclusion of any other pin lengths other than what is within the intrinsic connector.

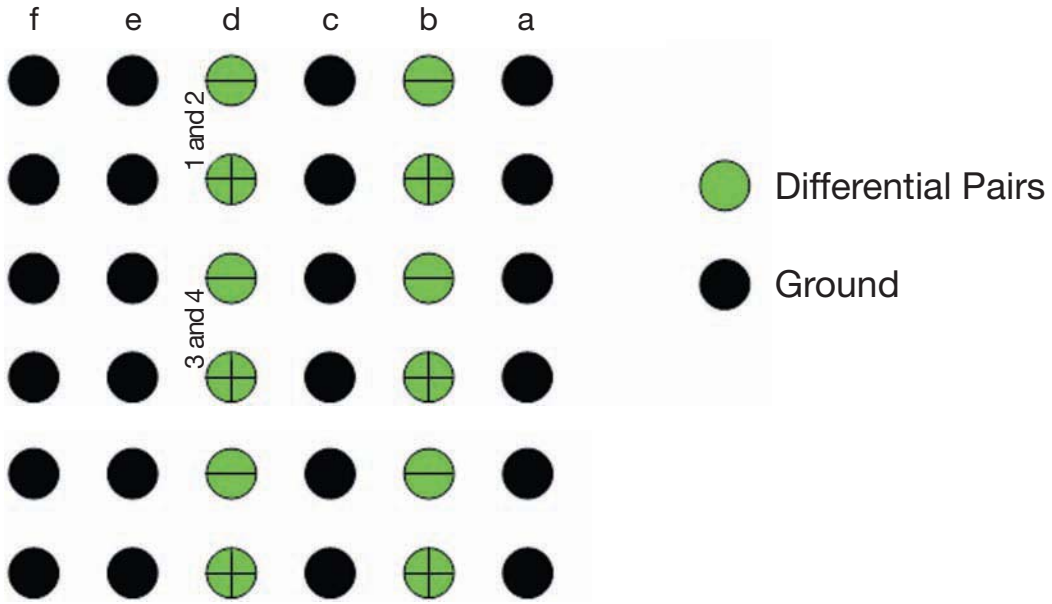
Parameters	Connector Row				
	A	B	C	D	E
Propagation Delay (ps)	68	90	112	134	156
Skew (ps)	22	22	22	22	
Maximum Data Rate[2]	3.125 Gb/s				

NOTES:
1) Pattern illustrated in the figure on next page was used in the S-parameter and cross talk measurements.
2) Please refer to the full characterization test report for details.

Dimensions are in inches [mm]

3. Connector Eye-Pattern-Diagram[1, 2]

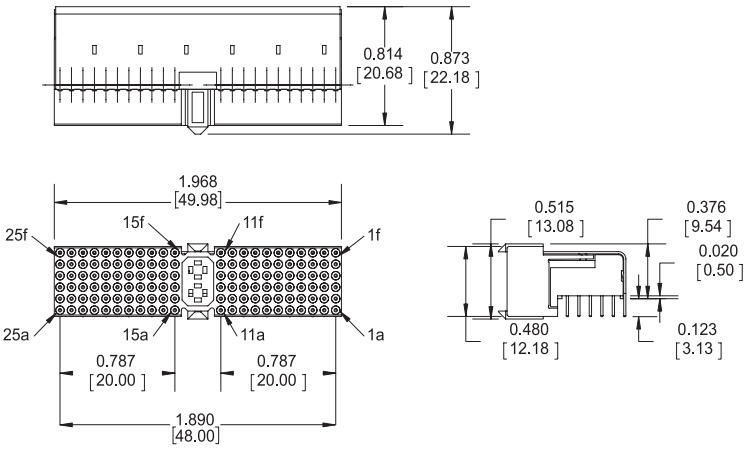
	622 Mb/s	1.25 Gb/s	3.125 Gb/s
Intrinsic			
With Inclusion of Printed Circuit Board VIAs			
With Inclusion of Near End Cross Talk (Aggressor / Victim = 30%)			
With Inclusion of Near End Cross Talk (Aggressor / Victim = 120%)			



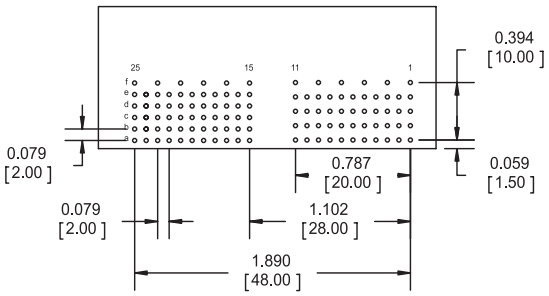
NOTES:
1) Pattern illustrated in the figure above was used in the S-parameter and cross talk measurements.
2) Please refer to the full characterization test report for details.

Dimensions are in inches [mm]

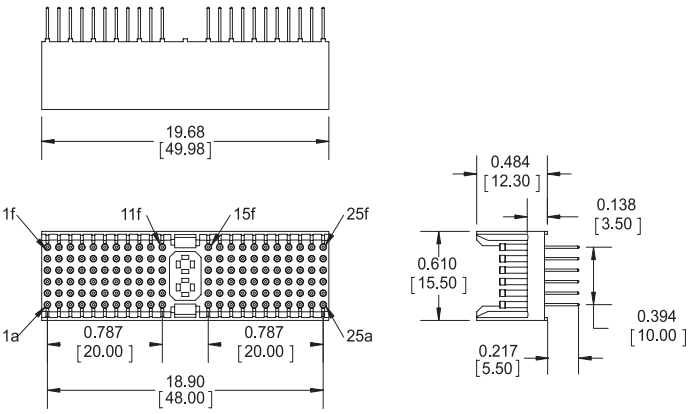
K2A Male - K2A110FMDTBH



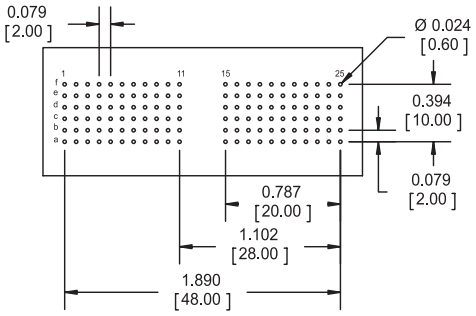
Printed Circuit Board Layout



K2A Female - K2A110FFDTABH

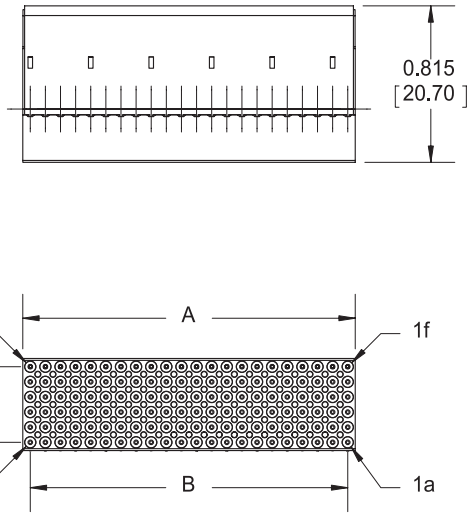


Printed Circuit Board Layout

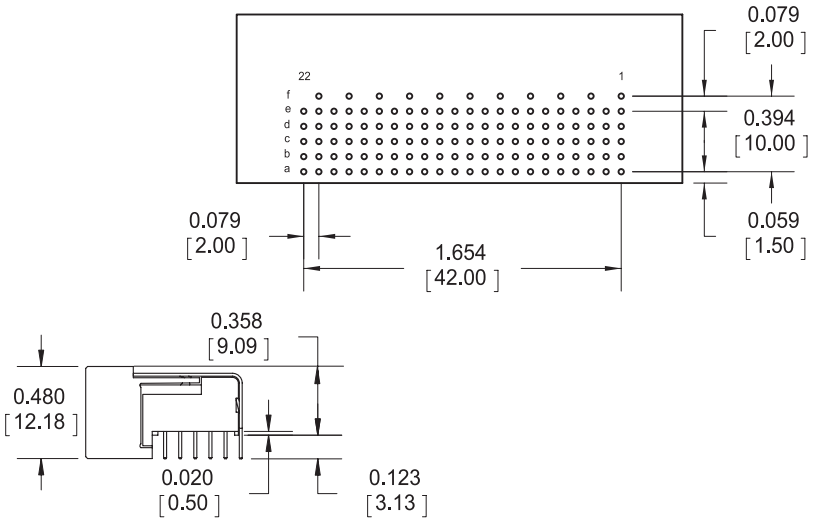


Dimensions are in inches [mm]

K2B Male



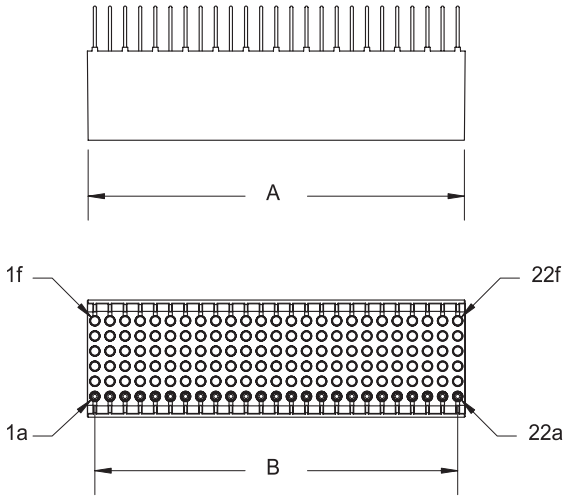
Printed Circuit Board Layout



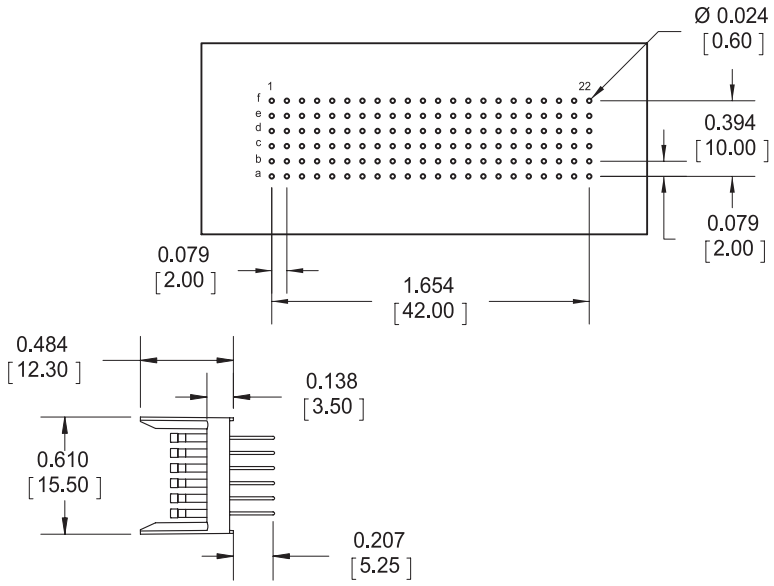
Connector Dimensions for K2B Male			
	K2B95FMD	**K2B110FMD**	**K2B125FMD**
A	1.495 [37.98]	1.731 [43.98]	1.968 [49.98]
B	1.417 [36.00]	1.654 [42.00]	1.890 [48.00]

Dimensions are in inches [mm]

K2B Female



Printed Circuit Board Layout



Connector Dimensions for K2B Female			
	K2B95FFD	**K2B110FFD**	**K2B125FFD**
A	1.495 [37.98]	1.731 [43.98]	1.959 [49.77]
B	1.417 [36.00]	1.654 [42.00]	1.890 [48.00]

Dimensions are in inches [mm]

Ordering Information

K2	A	110	F	M	D	4	TBH

Connector Family
K2

Connector Style*
(Per IEC 1076-4-101)
A = With multi-purpose center (MPC; polarization feature)
B = Without MPC

Number of Signal Pins
110 = 110 contacts
095 = 95 contacts

Number of Rows
E = No shields (5 row)
F = Top shield (6 row)

Contact Gender
M = Male
F = Female

Terminal Styles
D = Straight dip solder
C = Compliant (backplane only)

Plating
TAH = 50µin gold over nickel (mating surface only)
TABH = Same as TAH with tin/lead (63/37) over nickel on contact terminations (female contacts only)
TH = 50µin gold over nickel (male contacts only)
TBH = Same as TH with tin/lead (63/37) over nickel on contact terminations (male contacts only)

Contact Terminal Length

Designation	Backplane Connector Tail Length	Daughter Board Connector Tail Length
D	0.216 [5.50]	0.123 [3.12]
D1	TBD	TBD
D2	0.630 [16.00]	TBD
D3	TBD	TBD
D4	0.166 [4.22]	0.166 [4.22]
D5	0.265 [6.73]	TBD

* Pin one location per IEC 1076-4-101

NASA Goddard Part Numbers and Ordering Information

311P822	MC	110	AS	D4

Goddard Designator

Connector Gender Designation
MC = Male connector
FC = Female connector
MA = Male adapter
FA = Female adapter
FFA = Female-to-female adapter

Number of Contacts
110 = 110 contacts
095 = 95 contacts

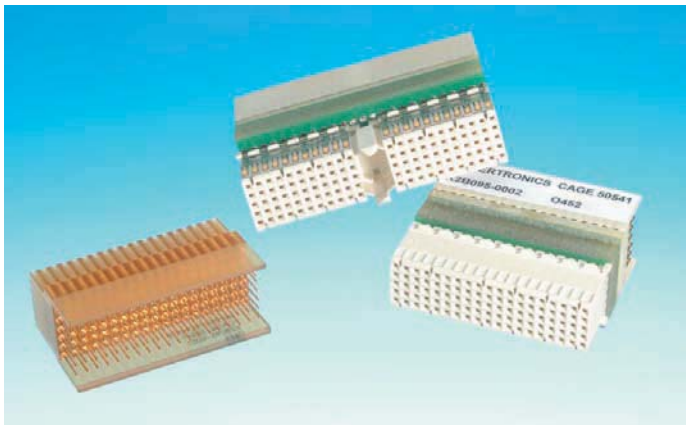
Connector Style
A = With multi-purpose center (MPC; polarization feature)
B = Without MPC

Solder Tail Length

Designation	Backplane Connector Tail Length	Daughter Board Connector Tail Length
D	0.216 [5.50]	0.123 [3.12]
D1	TBD	TBD
D2	0.630 [16.00]	TBD
D3	TBD	TBD
D4	0.166 [4.22]	0.166 [4.22]
D5	0.265 [6.73]	TBD

Solder Tail Finish
G = Gold flash over nickel
S = 63/37 tin/lead solder over nickel

Dimensions are in inches [mm]



Subject to Export Control Procedure

2mm Adapters and Solder Fixtures*

Designed to provide interface between commercial cPCI connectors and Hypertronics 2mm connector series

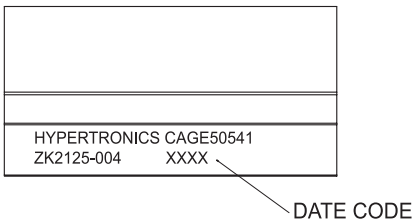
- Hypertronics adapters provide a simple way to interface with commercial equipment
- K2A110-0001, K2B110-0001 and K2B095-0001 adapt commercial cPCI daughter card connectors to Hypertronics backplane connectors
- K2A110-0002, K2B110-0002 and K2B095-0002 adapt commercial cPCI backplane connectors to Hypertronics daughter card connectors

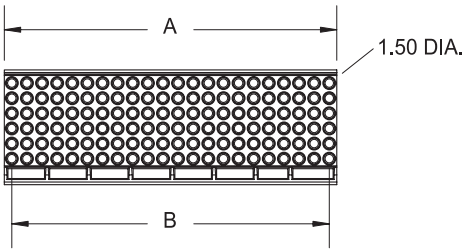
General Specifications

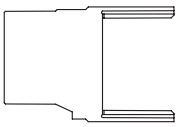
- High-temperature LCP insulator material
- Hypertac® contact technology
- 50 micro inches gold plating on all contact surfaces
- Mechanical printed circuit board layout conforms to IEC 61076-101 standard

*Adapters are not flight qualified

2mm Solder Fixtures - ZK2 Series







ZK2 series solder fixtures provide an economical method for stabilizing the socket contact during the hand soldering and reflow solder process.

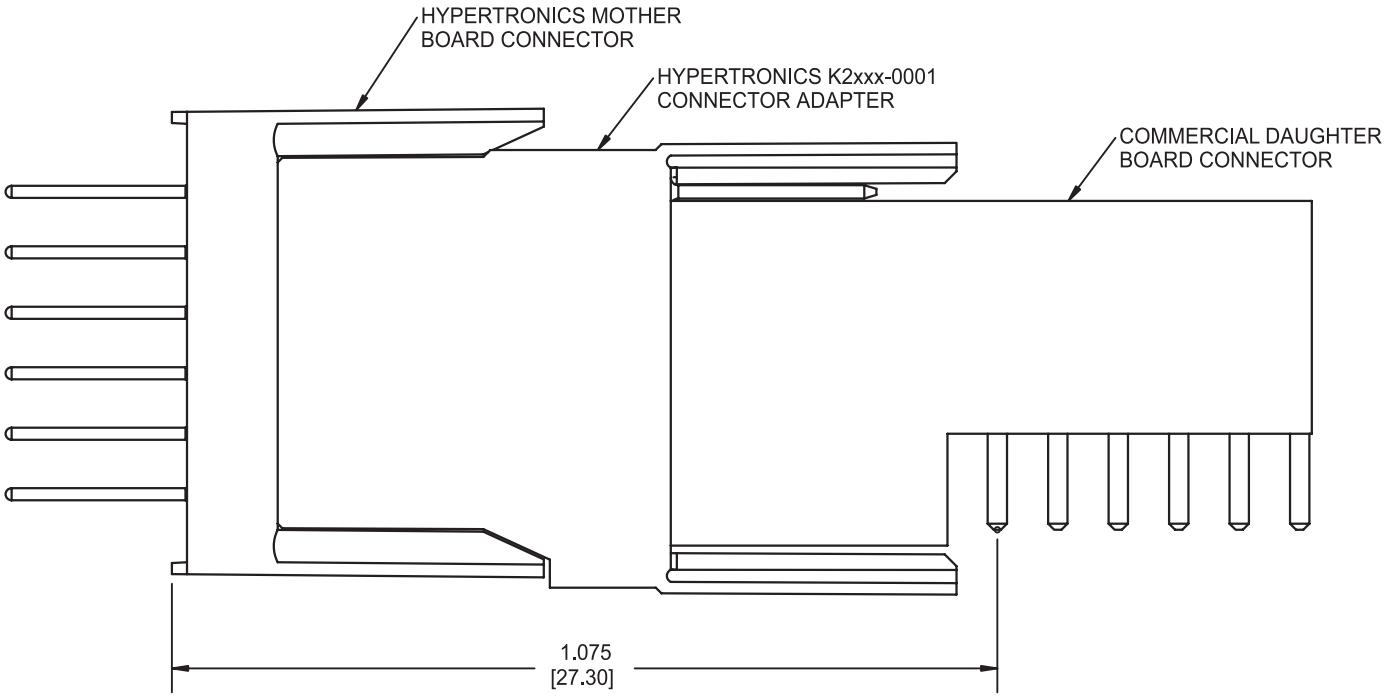
Marking to include fixture part number, cage code and date code.

Fixture Number	Used with K2A	A	B
ZK2095-005	K2B95FFDTABH	1.495 [37.98]	1.417 [36.00]
ZK2110-008	K2B110FFDTABH	1.731 [43.98]	1.654 [42.00]
ZK2125-004	K2B125FFDTABH	1.968 [49.98]	1.890 [48.00]
ZK2110-007	K2A110FFDTABH	1.968 [49.98]	1.890 [48.00]

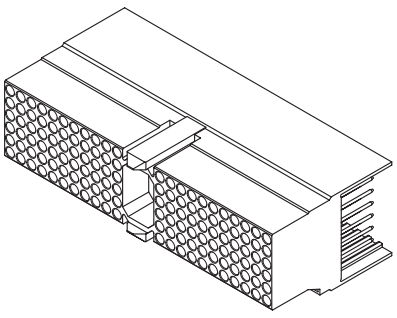
Dimensions are in inches [mm]

2mm Mated Adapter - K2xxx-0001

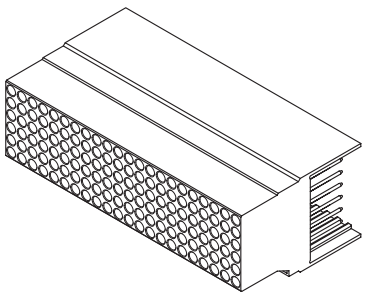
Used to mate a commercial daughter board connector to a Hypertronics mother board connector.



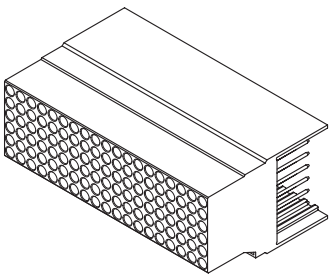
K2A110-0001



K2B110-0001



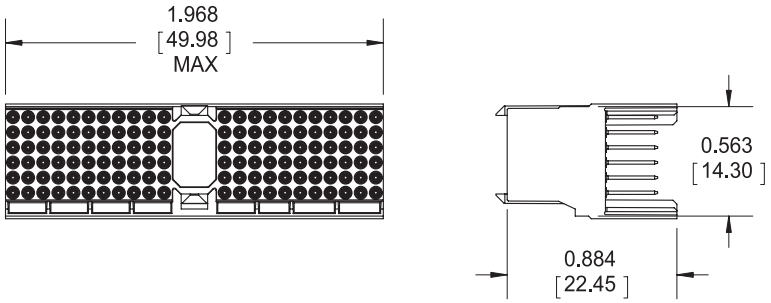
K2B095-0001



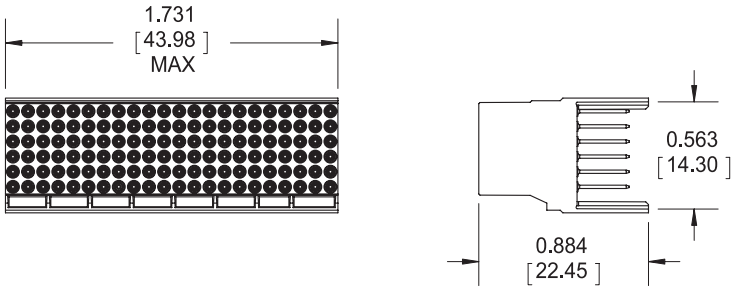
Dimensions are in inches [mm]

K2A110-0001, K2B110-0001 and K2B095-0001 adapt commercial cPCI daughter card connectors to Hypertronics backplane connectors.

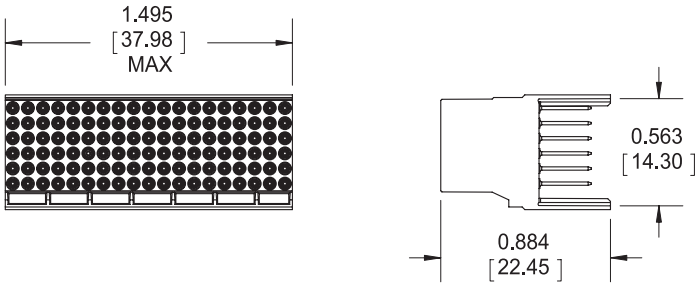
K2A110-0001



K2B110-0001



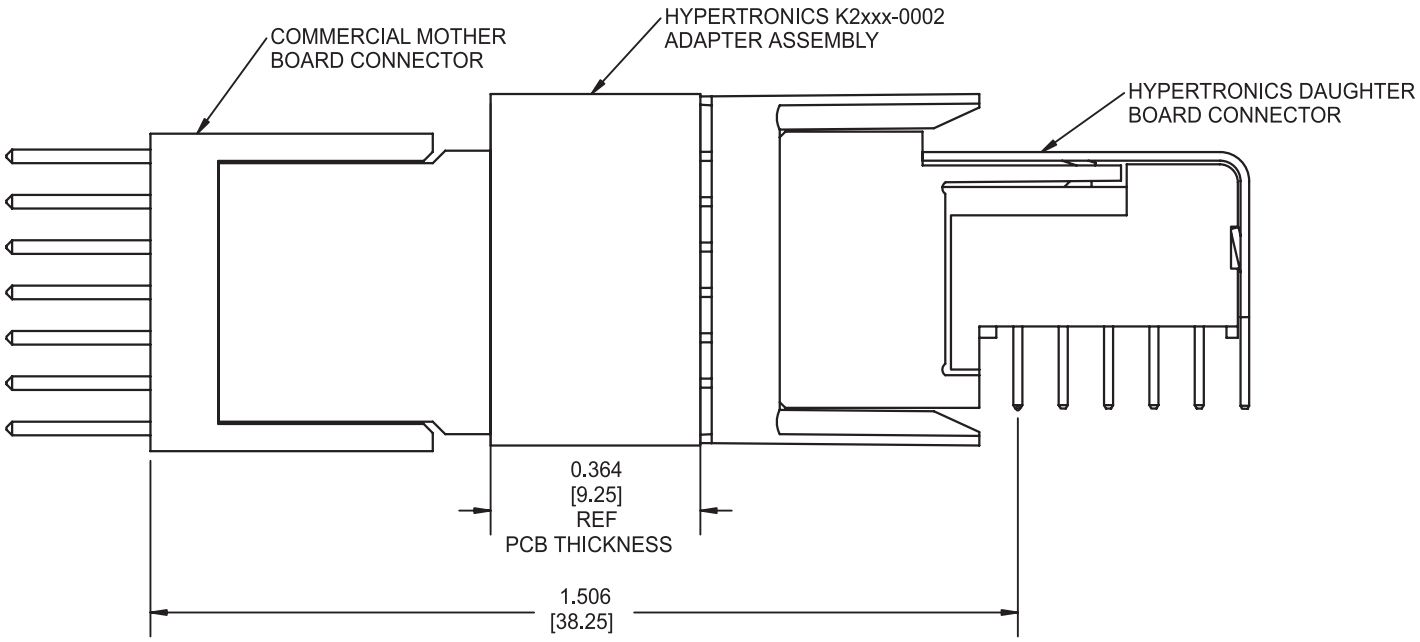
K2B095-0001



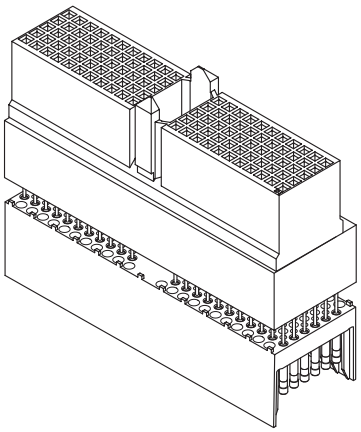
Dimensions are in inches [mm]

2mm Mated Adapter – K2xxx-0002

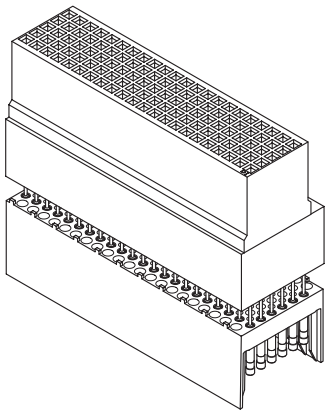
Used to mate a commercial mother board connector to a Hypertronics daughter board connector.



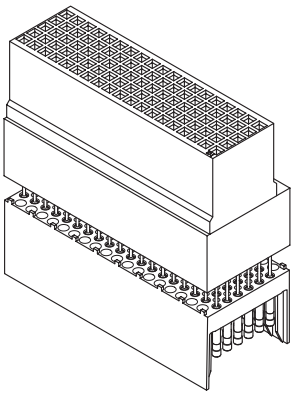
K2A110-0002



K2B110-0002



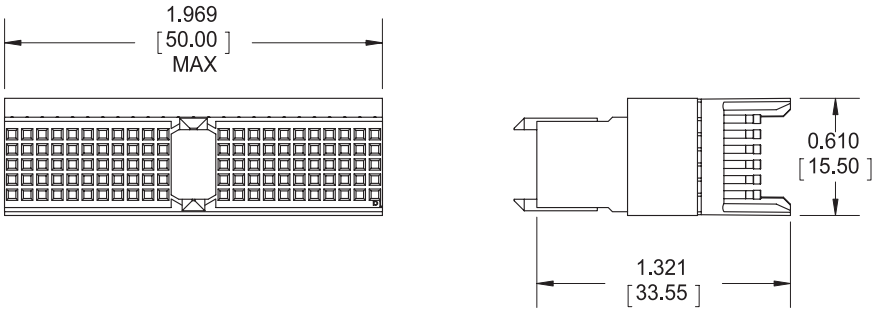
K2B095-0002



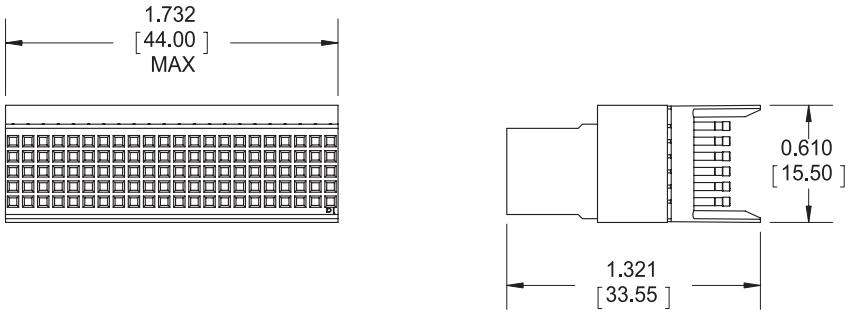
Dimensions are in inches [mm]

K2A110-0002, K2B110-0002 and K2B095-0002 adapt commercial cPCI backplane connectors to Hypertronics daughter card connectors.

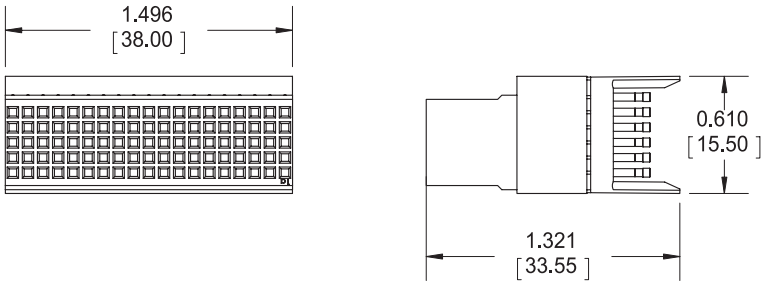
K2A110-0002



K2B110-0002



K2B095-0002



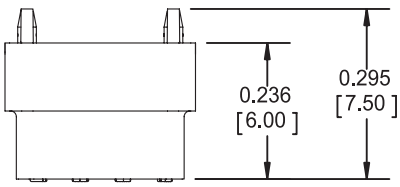
Dimensions are in inches [mm]

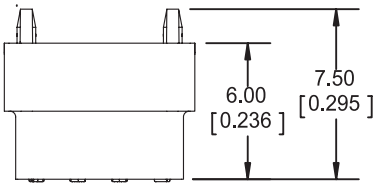
Recommended Alignment Fixturing and Tooling

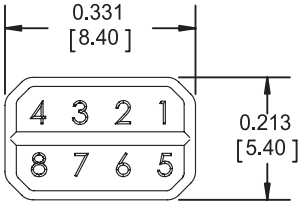
Alignment Tool	Description	Work Instructions
T2066	Standard cPCI 6U backplane	S50475
T2081	Standard 6U cPCI daughtercard with mating pin alignment	S50476
T2082	Standard 6U cPCI daughtercard without mating pin alignment	S50476

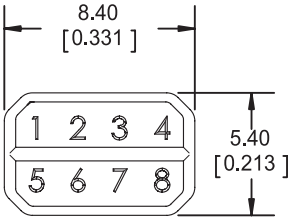
Consult factory for alignment tool and work instructions information

MCP (multi-purpose center) Keying Options Available Per IEC Specification





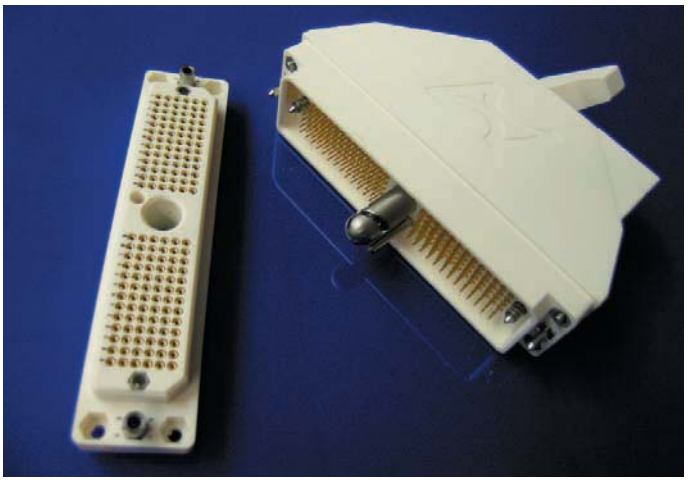




Matching Codes Male Side (PBC)	Keyset MPC Key P/N
1234	ZK2000-002-01
1236	ZK2000-002-03
1237	ZK2000-002-04
1238	ZK2000-002-05
1246	ZK2000-002-07
1247	ZK2000-002-08
1268	ZK2000-002-14
1345	ZK2000-002-16
1348	ZK2000-002-19
1357	ZK2000-002-21
1358	ZK2000-002-22
1378	ZK2000-002-25
1457	ZK2000-002-27
1467	ZK2000-002-29
1478	ZK2000-002-31
1568	ZK2000-002-33
1678	ZK2000-002-35
2346	ZK2000-002-37
3467	ZK2000-002-59
3478	ZK2000-002-61
4678	ZK2000-002-69

Matching Codes Female Side (Backplane)	Keyset MPC Key P/N
5678	ZK2000-001-01
4578	ZK2000-001-03
4568	ZK2000-001-04
4567	ZK2000-001-05
3578	ZK2000-001-07
3568	ZK2000-001-08
3457	ZK2000-001-14
2678	ZK2000-001-16
2567	ZK2000-001-19
2468	ZK2000-001-21
2467	ZK2000-001-22
2456	ZK2000-001-25
2368	ZK2000-001-27
2358	ZK2000-001-29
2356	ZK2000-001-31
2347	ZK2000-001-33
2345	ZK2000-001-35
1578	ZK2000-001-37
1258	ZK2000-001-59
1256	ZK2000-001-61
1235	ZK2000-001-69

Dimensions are in inches [mm]



Test Equipment Connectors

- Quick release standard density signal test connector (0.100 x 0.100 [2.54 x 2.54] pitch)
- Drop-in replacement for standard ZIF connectors
- Half-turn quick mating device
- Self-cleaning, high reliability contacts
- Rugged design

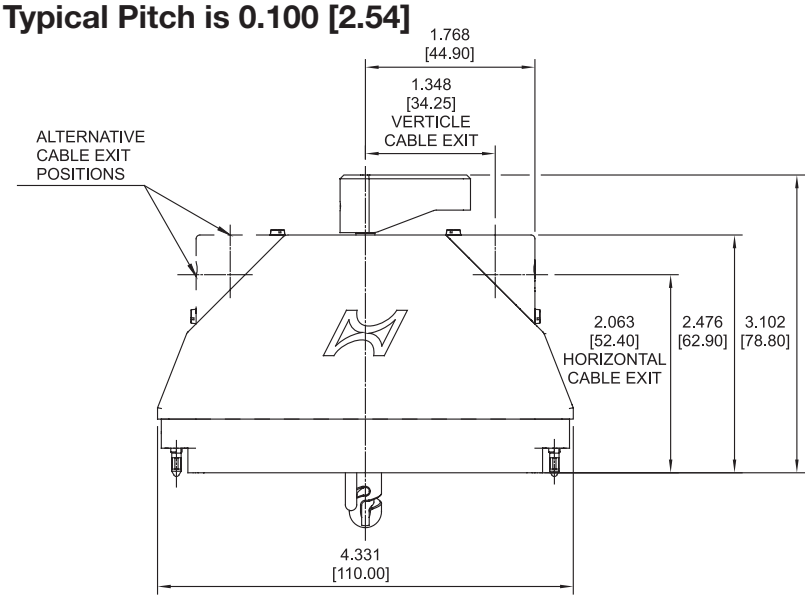
General Specifications	
Number of Contacts	60, 96, 156
Insulator Material	Glass reinforced thermoplastic
Contact Material	Brass
Socket Wire Material	Beryllium copper
All Other Metal Part Material	Stainless steel
Cover Material	High impact, flame retardant thermoplastic resin
Contact Plating	ASTM-488-B gold plate
Contact Diameter	0.024 [0.60] nominal
Contact Resistance	7 milliohms max.
Current Rating	4 Amps nominal
Voltage Rating	170 VDC or AC peak nominal
Insulation Resistance	5 Gigohms min. at 500 VDC
Contact Life Cycles	1,500 min.
Extraction Force	1.0 oz. per contact
Temperature Range	-55° to 125° C
Proof Voltage	1.0 kV min.

Dimensions are in inches [mm]

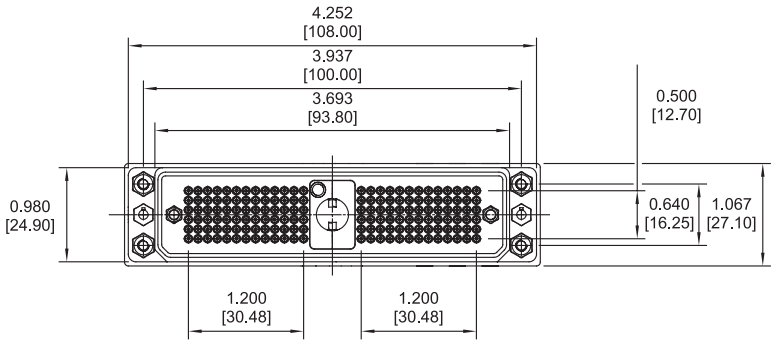
HDL 156 Contact Connector

Male Connector
(Shown with Cover Fitted)

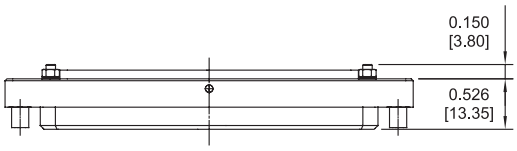
Typical Pitch is 0.100 [2.54]



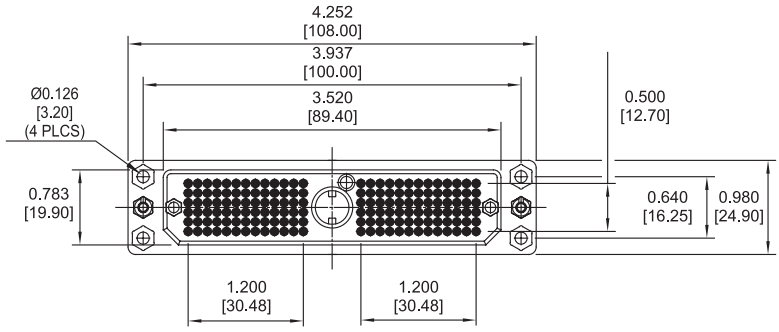
Male Connector
(Mating Face)



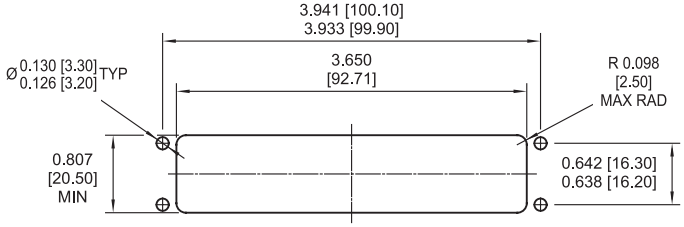
Female Connector



Female Connector
(Mating Face)



Panel Cutout

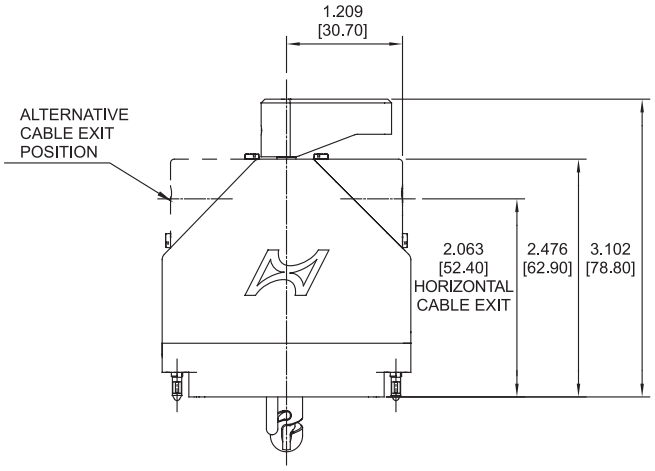


Dimensions are in inches [mm]

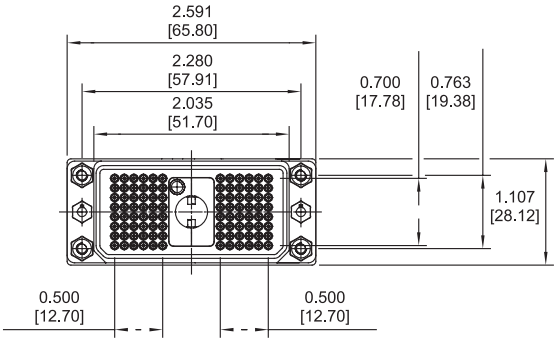
HDL 96 Contact Connector

Typical Pitch is 0.100 [2.54]

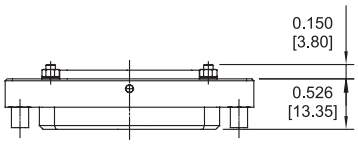
Male Connector
(Shown with Cover Fitted)



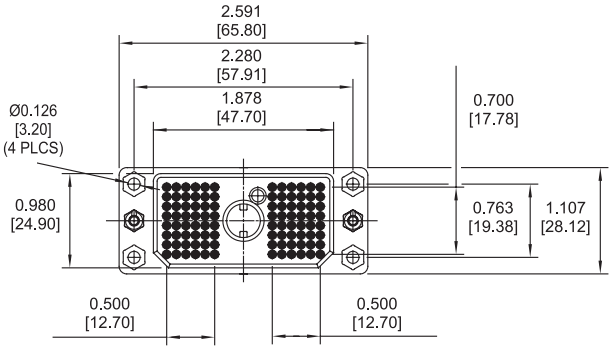
Male Connector
(Mating Face)



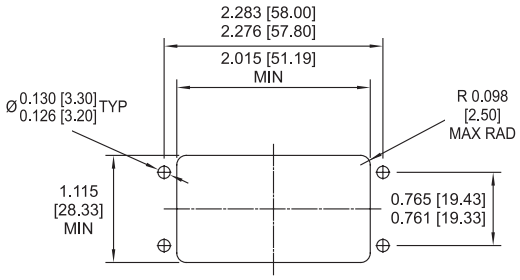
Female Connector



Female Connector
(Mating Face)



Panel Cutout

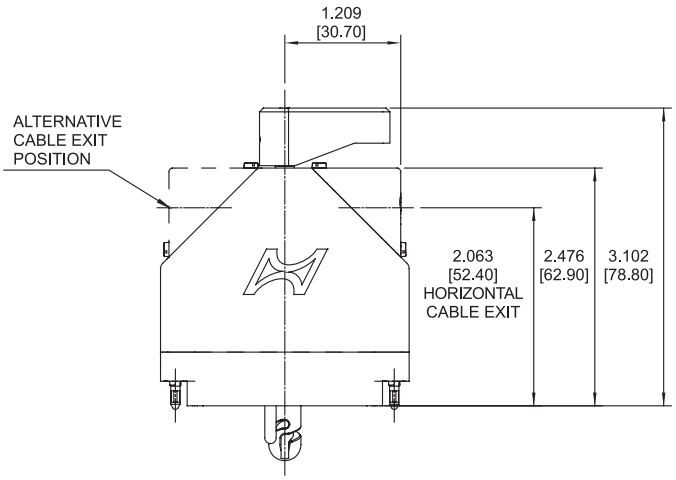


Dimensions are in inches [mm]

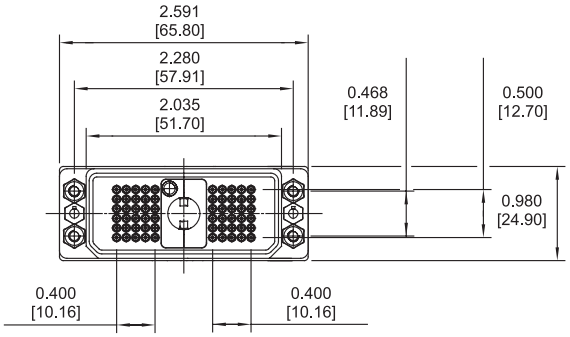
HDL 60 Contact Connector

Typical Pitch is 0.100 [2.54]

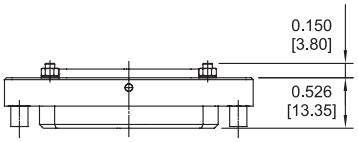
Male Connector
(Shown with Cover Fitted)



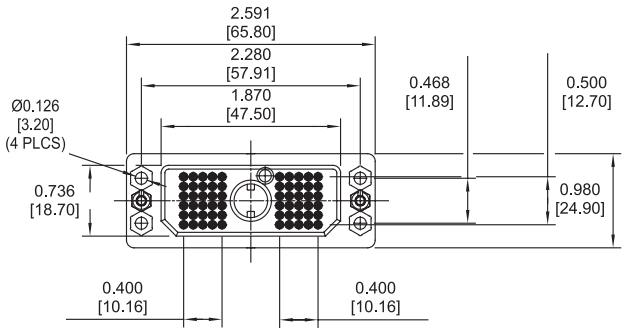
Male Connector
(Mating Face)



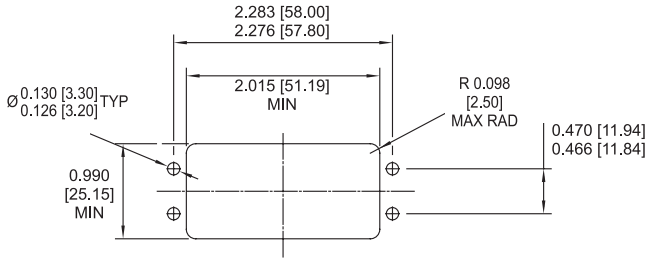
Female Connector



Female Connector
(Mating Face)

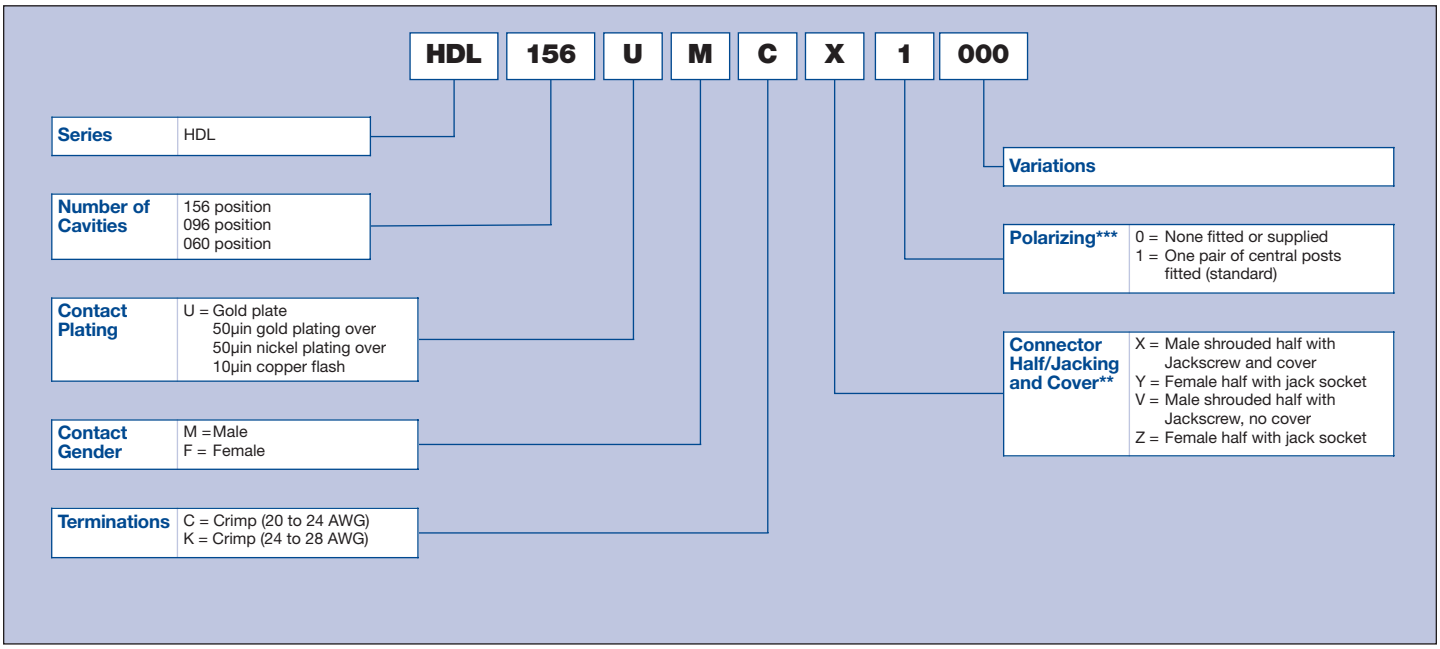


Panel Cutout



Dimensions are in inches [mm]

Part Number Configurator



** Covers, cable clamps and jack knobs will be supplied loose.
*** Polarizing settings to be carried out by customer.

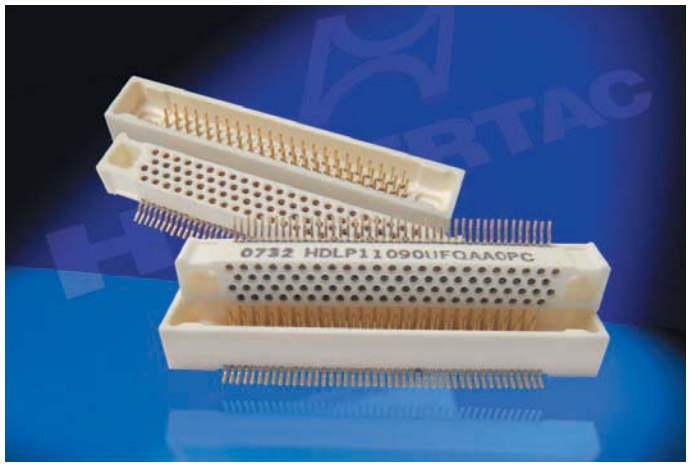
Crimping Information

AWG	Number of Wires	Nominal Diameter of Wires	Crimp Tool Selector Setting Position
20	19	0.20mm	6
22	19	0.15mm	5
24	7	0.20mm	4
26	7	0.15mm	3
28	7	0.125mm	2

Tools

Contact Extraction Tool.....HPD 286
Spare Tips for Extraction Tool.....HPD 280
Contact Insertion Tool.....Use non-ferrous long pointed tweezers
Crimp Tool Positioner .....HPD 309A
Crimp Tool MIL-C-22520/2-01

Dimensions are in inches [mm]



High Density Low Profile Connectors

- High density contact arrangement
- Light weight Low profile mated height
- Surface mount termination technology
- Miniature hyperboloid socket contacts
- Interfacial seal
- Polarized and scoop proof
- Pick and place compatible

General Specifications	
Insulator Material	Liquid crystal polymer (LCP)
Contact Material	Copper alloy
Socket Wire Material	Beryllium copper
Interfacial Seal Material	Fluorosilicone
Guides Material	Stainless steel
Contact Plating	ASTM-488-B (Type II, grade C, Class 1)
Contact Resistance	8 milliohms max.
Current Rating	2 Amps per contact
Contact Life Cycles	2,000+ operations
Extraction Forces	1.0 oz.
Temperature Range	-55° C to 125° C
Voltage Rating	110 VDC or AC peak nomial
Contact Diameter	0.015 [0.39]

Current Rating

The Hypertac® contact design and manufacturing tolerances endow the product with the following attributes:

- Double the current rating of other contact designs of similar size
- Low contact resistance in high current applications minimizes temperature rise thereby enabling higher density interconnects

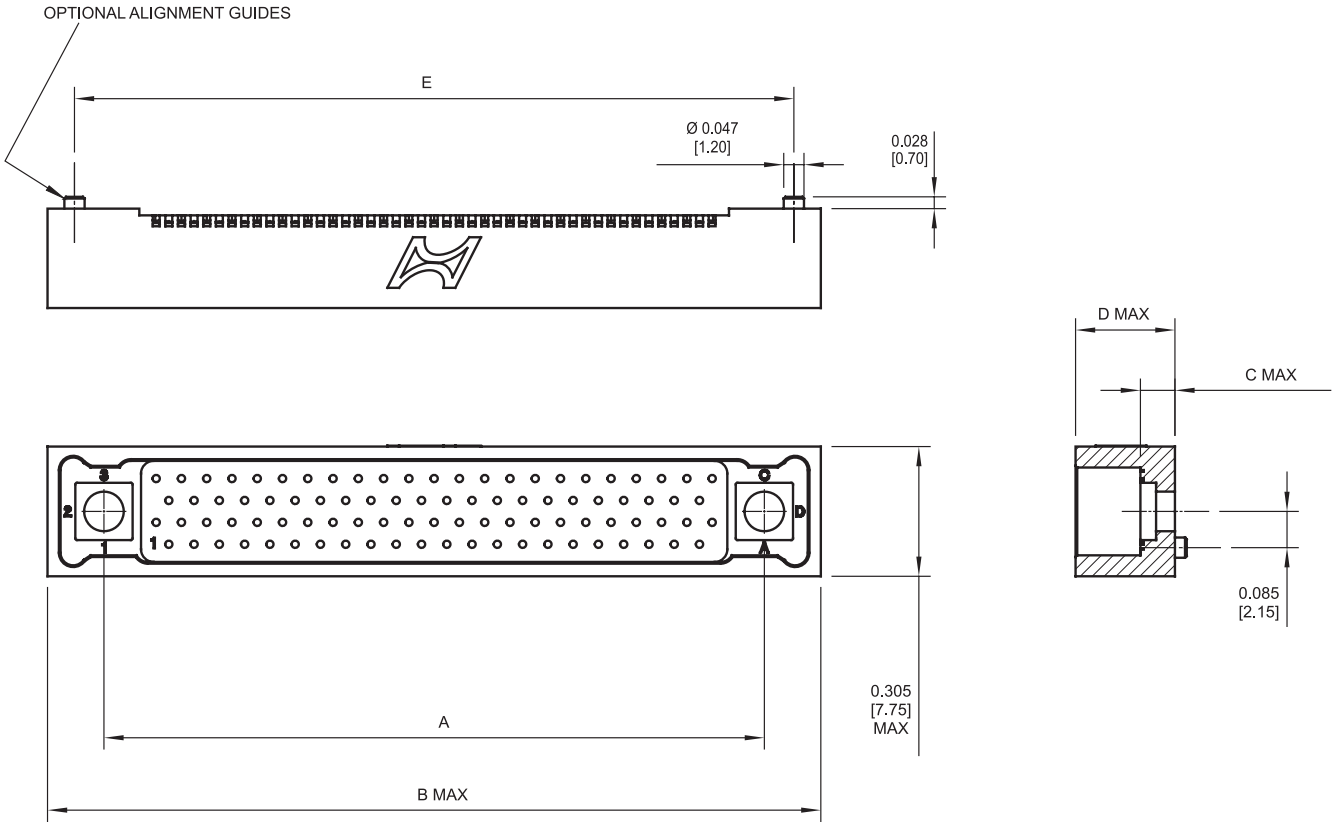
Contact Plating Finishes					
Connector Finish Ordering Code	Description	Component	Component Finish Ordering Code	Conforms To	Plating Thickness*
U	Gold Plate	Socket	-/9	ASTM-488-B (Type II, Grade C, Class 1)	1.27 µm gold plate min. 50 µin gold plate min.
		Pin	-/7	ASTM-488-B (Type II, Grade C, Class 1)	1.27 µm gold plate min. 50 µin gold plate min.

* PLATING THICKNESS
These values apply to mating surfaces.

Dimensions are in inches [mm]

HDLP Insulators

Straight Male

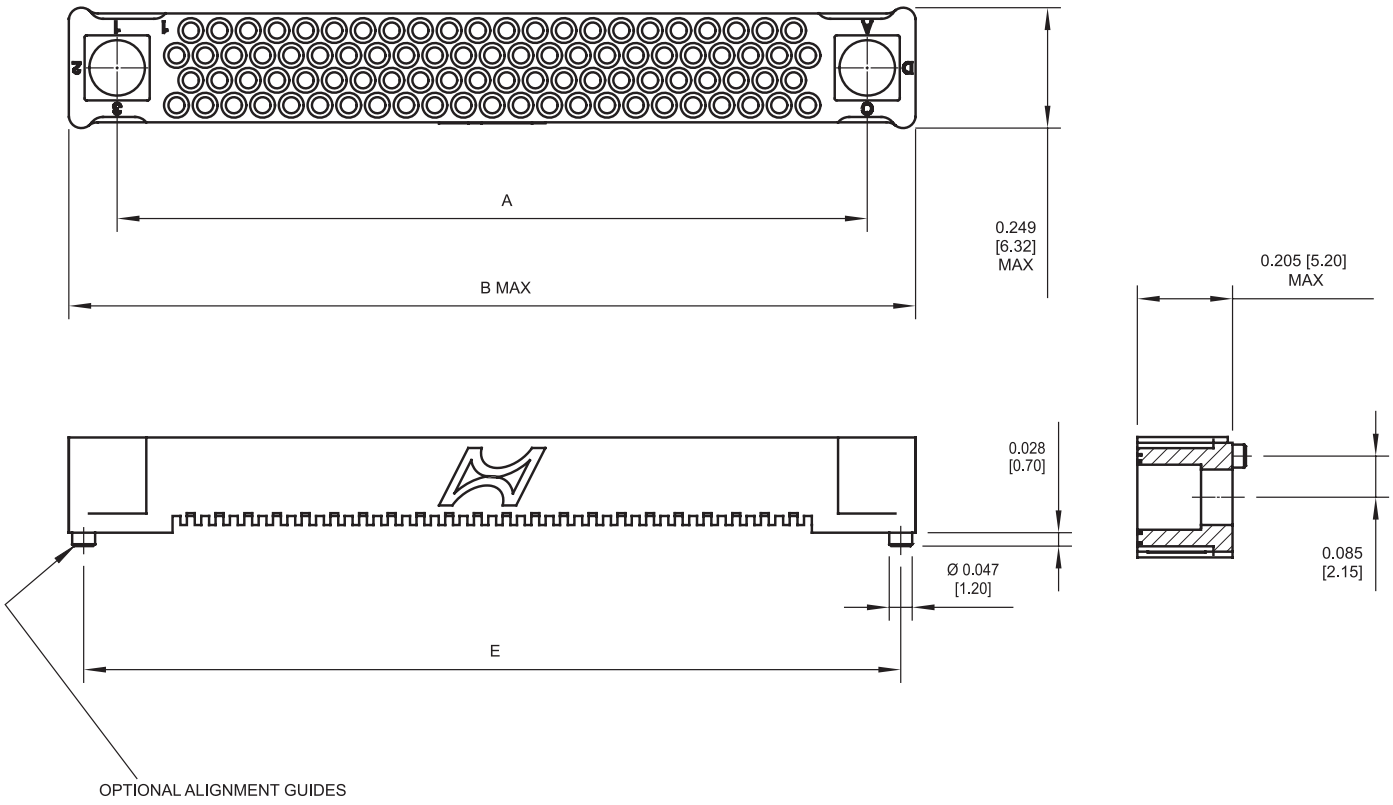


Straight Male								
Number of Contacts	30		58		90		118	
	Single	Double	Single	Double	Single	Double	Single	Double
Dimension A	0.657 [16.70]	–	1.070 [27.20]	–	1.543 [39.20]	–	1.957 [49.70]	–
Dimension B	0.923 [23.45]	–	1.337 [33.95]	–	1.809 [45.95]	–	2.222 [56.45]	–
Dimension C	0.090 [2.28]	0.270 [6.85]	0.090 [2.28]	0.270 [6.85]	0.090 [2.28]	0.270 [6.85]	0.090 [2.28]	0.270 [6.85]
Dimension D	0.243 [6.18]	0.423 [10.75]	0.243 [6.18]	0.423 [10.75]	0.243 [6.18]	0.423 [10.75]	0.243 [6.18]	0.423 [10.75]
Dimension E	0.795 [20.20]	–	1.209 [30.70]	–	1.681 [42.70]	–	2.094 [53.20]	–

Dimensions are in inches [mm]

HDLP Insulators

Straight Female

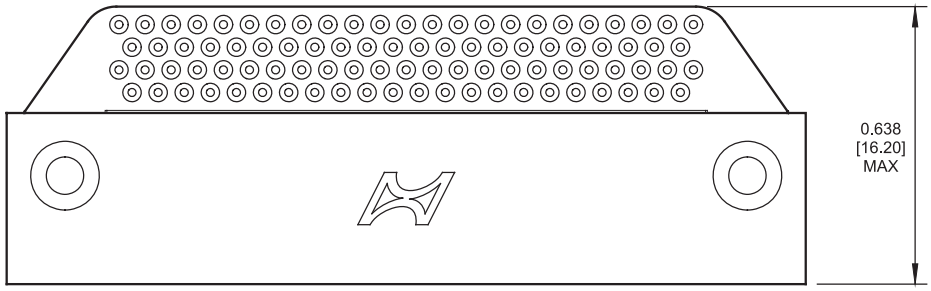


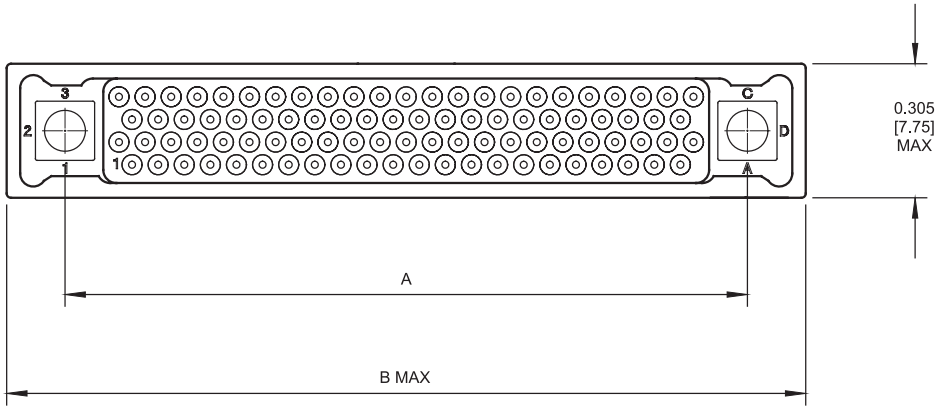
Straight Female				
Number of Contacts	30	58	90	118
Dimension A	0.657 [16.70]	1.070 [27.20]	1.543 [39.20]	1.957 [49.70]
Dimension B	0.858 [21.80]	1.272 [32.30]	1.744 [44.30]	2.157 [54.80]
Dimension E	0.795 [20.20]	1.209 [30.70]	1.681 [42.70]	2.094 [53.20]

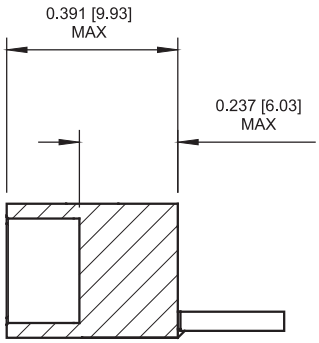
Dimensions are in inches [mm]

HDLP Insulators

90° Male





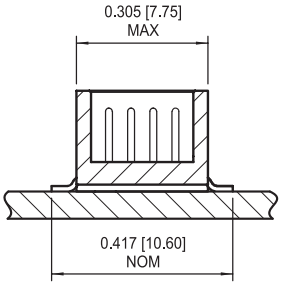


90° Male				
Number of Contacts	30	58	90	118
Dimension A	0.657 [16.70]	1.070 [27.20]	1.543 [39.20]	1.957 [49.70]
Dimension B	0.923 [23.45]	1.337 [33.95]	1.809 [45.95]	2.222 [56.45]

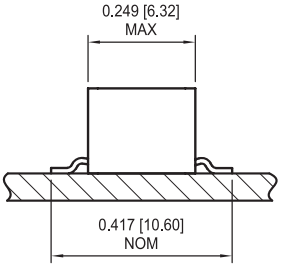
Dimensions are in inches [mm]

HDLP Contact Terminations

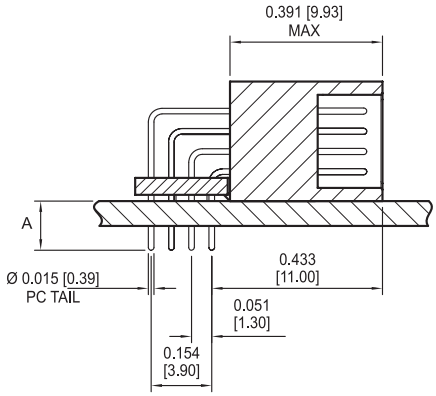
Male SMT



Female SMT

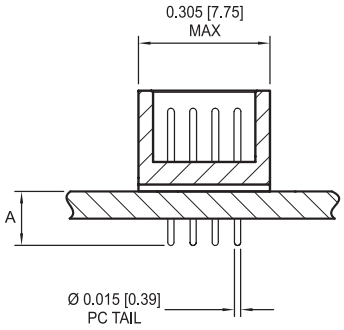


Male 90° Printed Circuit Board



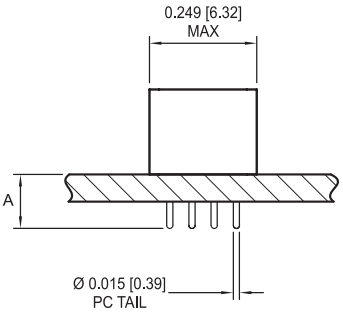
Termination Style	Dimension A
H	0.089 [2.26]
J	0.124 [3.16]
K	0.152 [3.86]

Male Vertical Printed Circuit Board



Termination Style	Dimension A
C	0.089 [2.26]
D	0.124 [3.16]
E	0.152 [3.86]

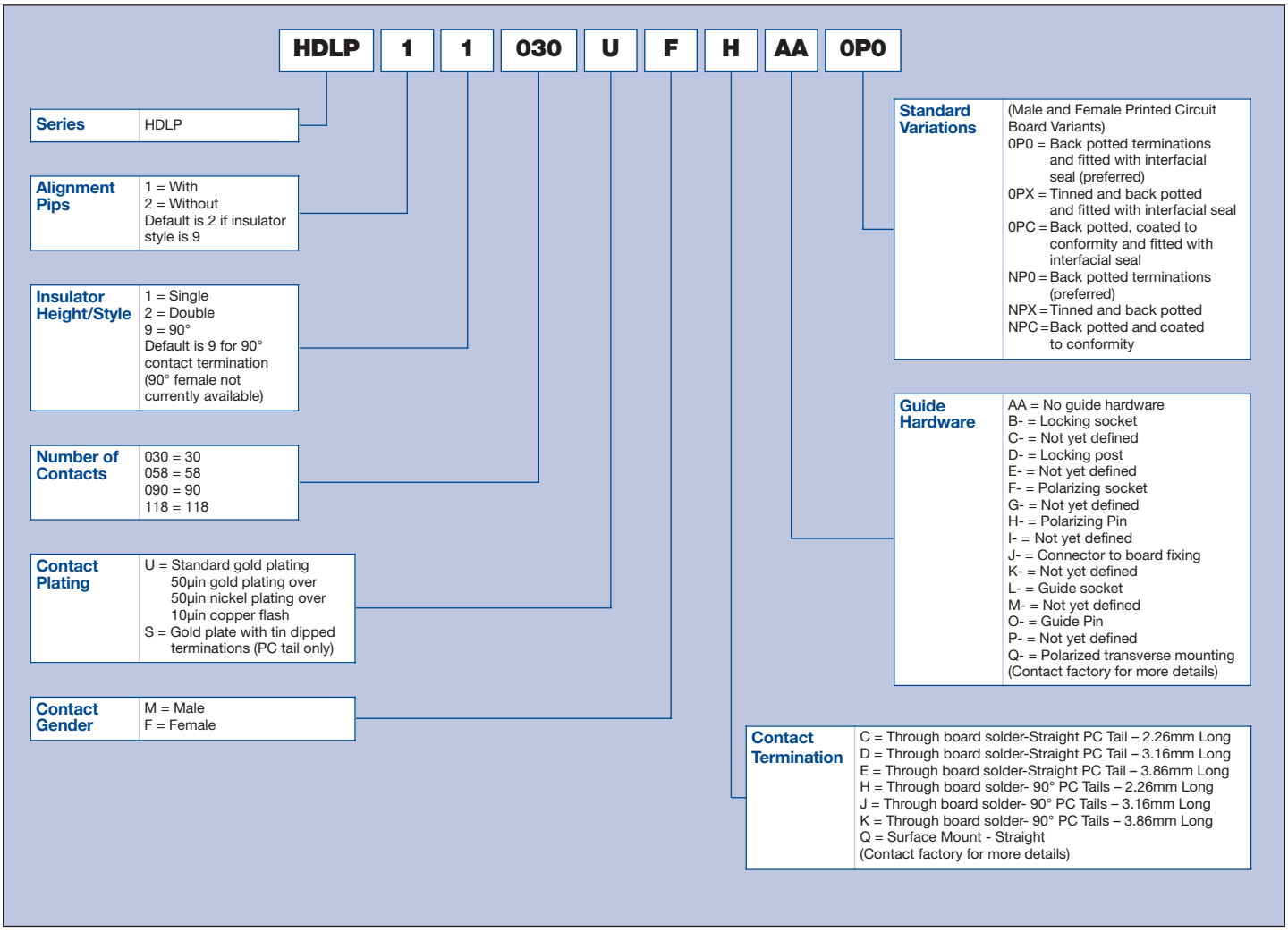
Female Vertical Printed Circuit Board



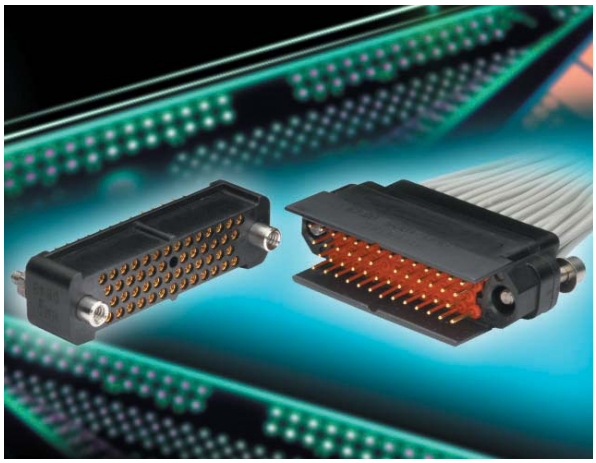
Termination Style	Dimension A
C	0.089 [2.26]
D	0.124 [3.16]
E	0.152 [3.86]

Dimensions are in inches [mm]

HDLP Part Number Configurator



Dimensions are in inches [mm]



Micro-D Style Signal Connectors

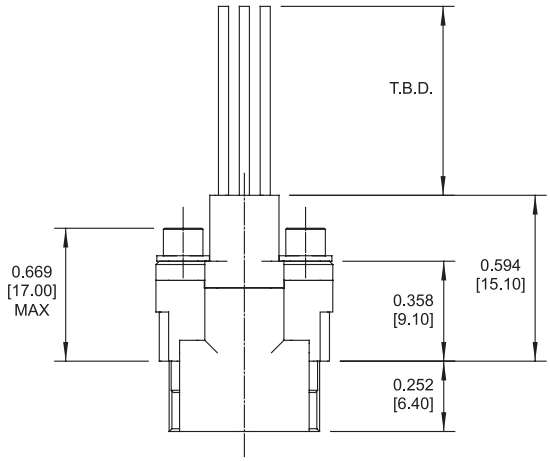
- High-density signal flying-lead top printed circuit board connector (0.078 x 0.078 [1.91 x 1.91] pitch)
- Large number of pin count options: 5, 9, 15, 21, 25, 31, 37 and 51 contact configurations
- Qualified at a system level on JSF
- Light weight, drop-in replacement for standard Micro-D connectors
- High reliability contacts
- Environmentally sealed
- Rugged design including pin connector shrouds and scoop proof features
- Assembly aids including termination combs and potting shrouds

General Specifications	
Insulator Material	Polyphenylene sulphide
Contact Material	Copper alloy
Socket Wire Material	Beryllium copper
Guides	Stainless steel
Contact Plating	MIL-G-45204 gold plate
Contact Diameter	0.60mm
Contact Resistance	7 milliohms max.
Current Rating	4 Amps
Insulation Resistance	5 Gigohms min. at 500 VDC
Mechanical Endurance	2000 operations min.
Contact Mating Force	1.0 oz. (average)
Withdrawal Force	1.5 oz. nominal per contact
Temperature Range	-55° to 125° C
Voltage Rating	170 VDC or AC peak nominal
Proof Voltage	800V minimum
Breakdown Voltage Between Contacts	1400 VAC (min.)
Dielectric Withstanding Voltage	1000 VAC (min.)

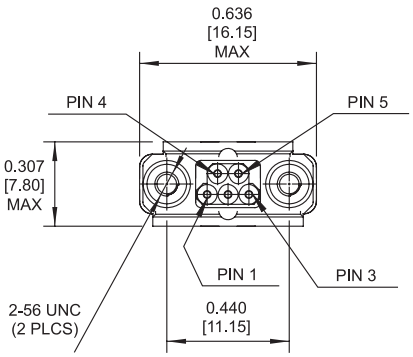
Dimensions are in inches [mm]

5 Contact Connectors

Male Half

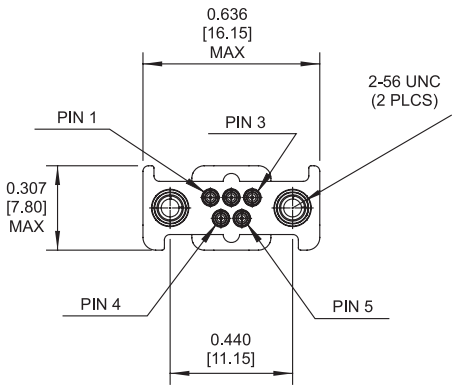


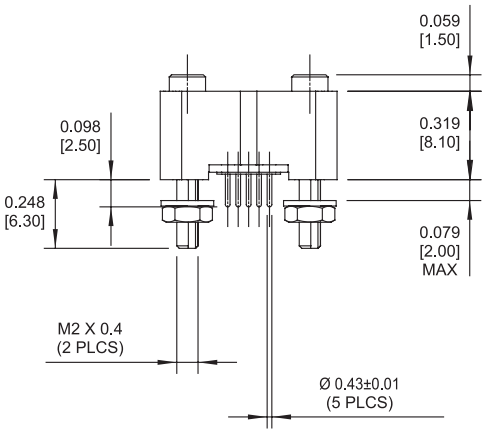
Mating Face



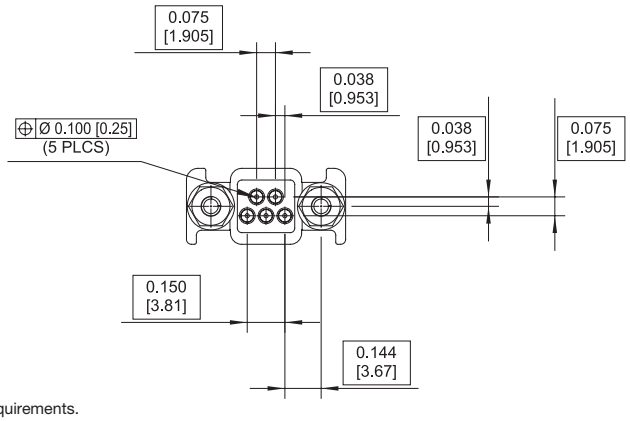
Female Half

Mating Face





Termination Face

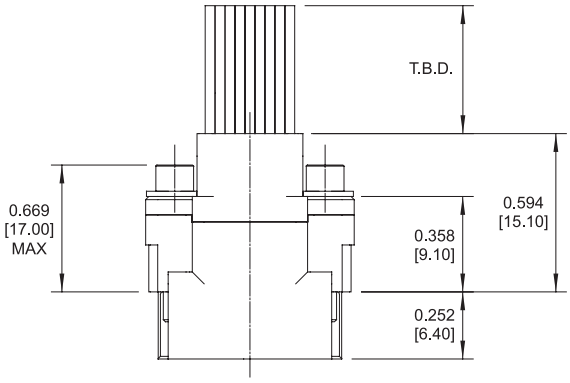


NOTE:
1) T.B.D.: Wire length to be determined based on customer requirements.
If not specified, standard 300mm wire length will be used.

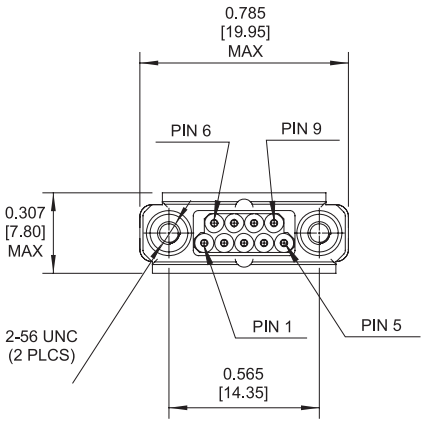
Dimensions are in inches [mm]

9 Contact Connectors

Male Half

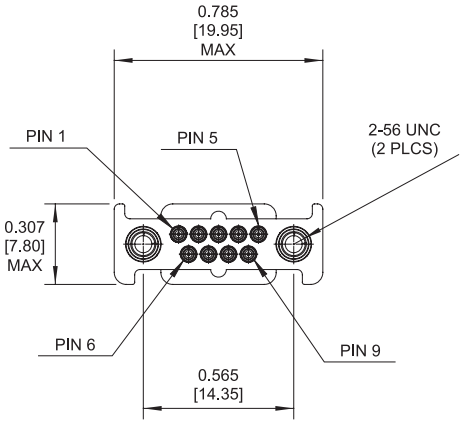


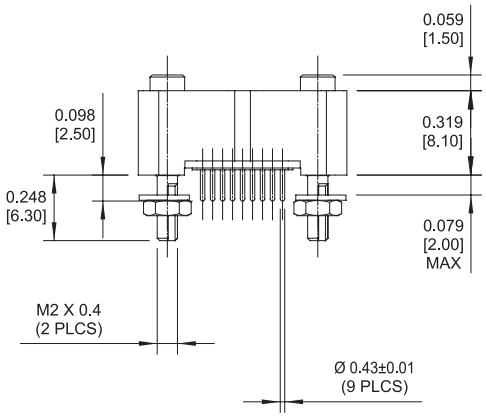
Mating Face



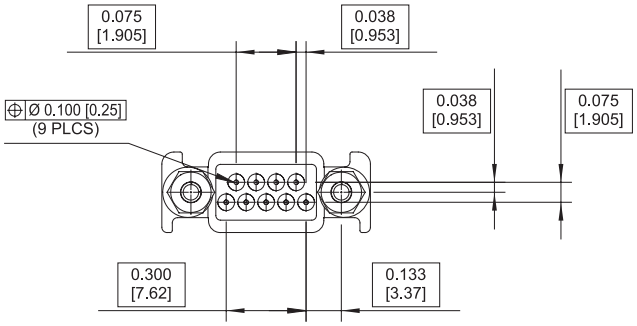
Female Half

Mating Face





Termination Face

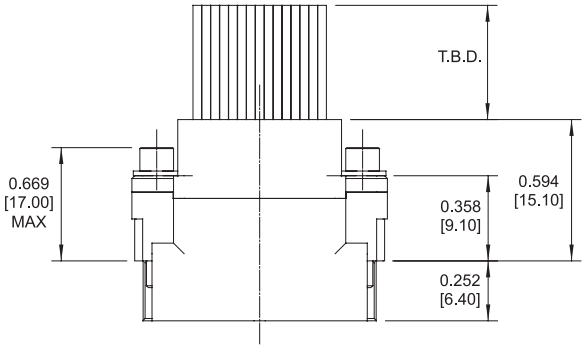


NOTE:
1) T.B.D.: Wire length to be determined based on customer requirements.
If not specified, standard 300mm wire length will be used.

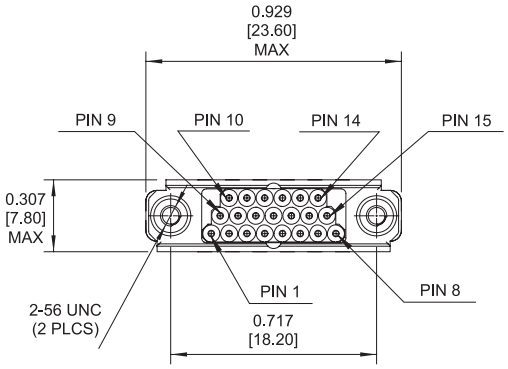
Dimensions are in inches [mm]

15 Contact Connectors

Male Half

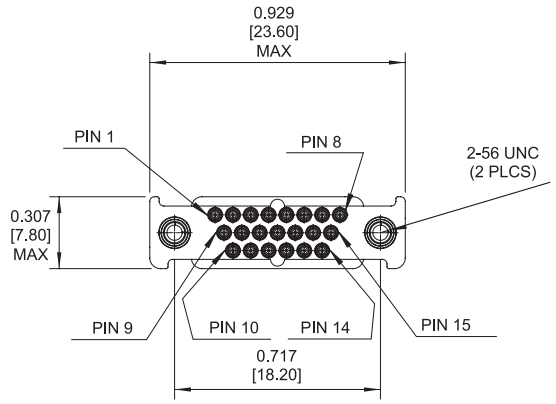


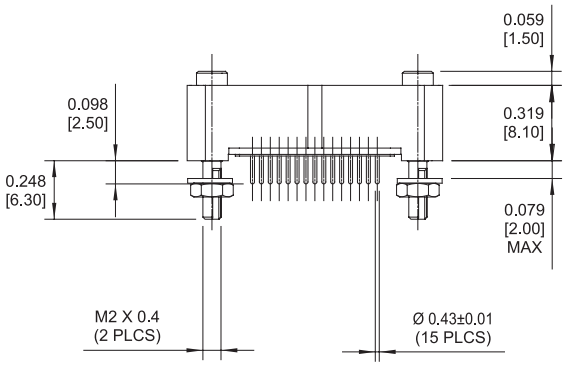
Mating Face



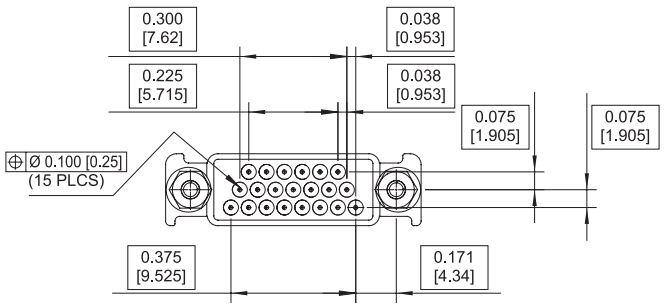
Female Half

Mating Face





Termination Face

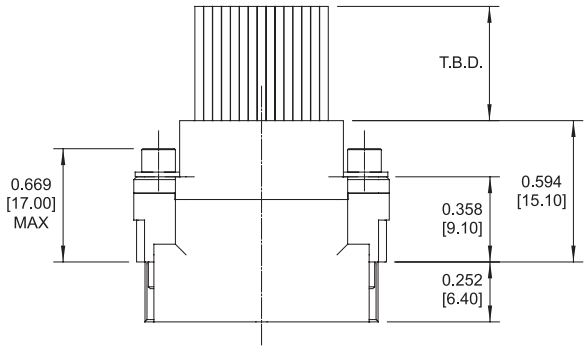


NOTE:
1) T.B.D.: Wire length to be determined based on customer requirements.
If not specified, standard 300mm wire length will be used.

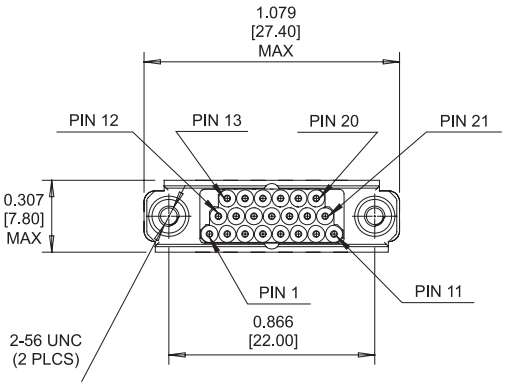
Dimensions are in inches [mm]

21 Contact Connectors

Male Half

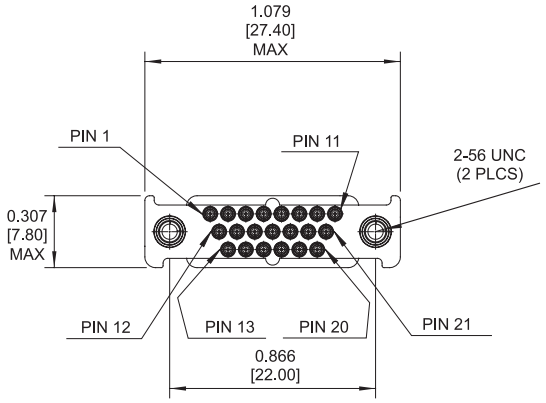


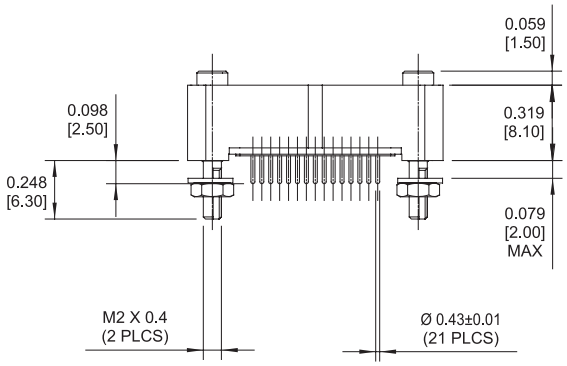
Mating Face



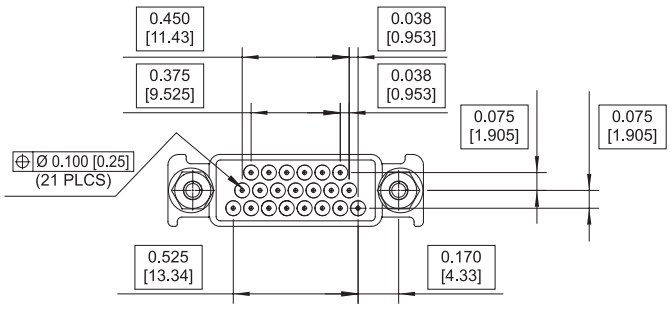
Female Half

Mating Face





Termination Face

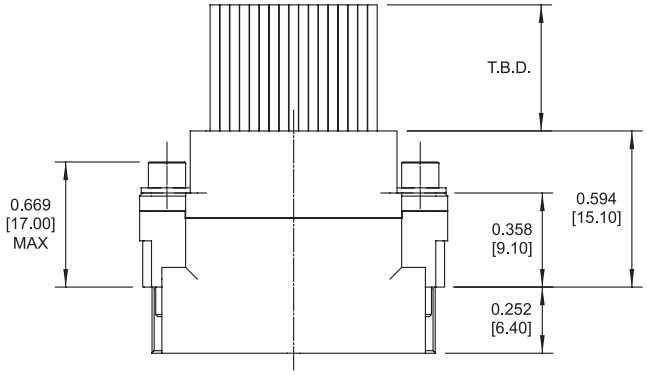


NOTE:
1) T.B.D.: Wire length to be determined based on customer requirements.
If not specified, standard 300mm wire length will be used.

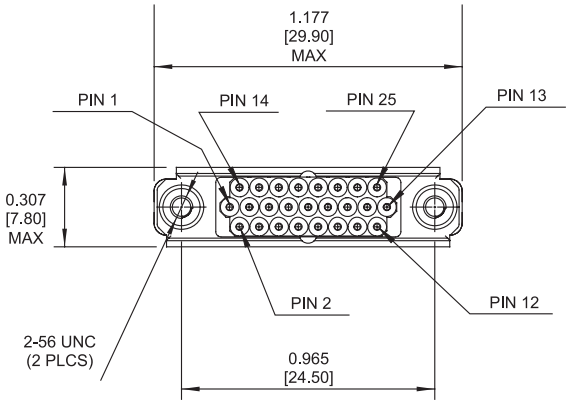
Dimensions are in inches [mm]

25 Contact Connectors

Male Half

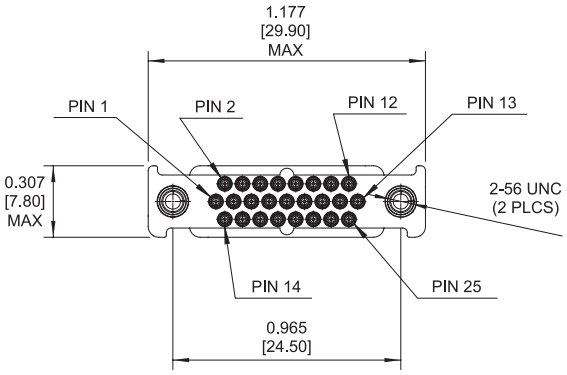


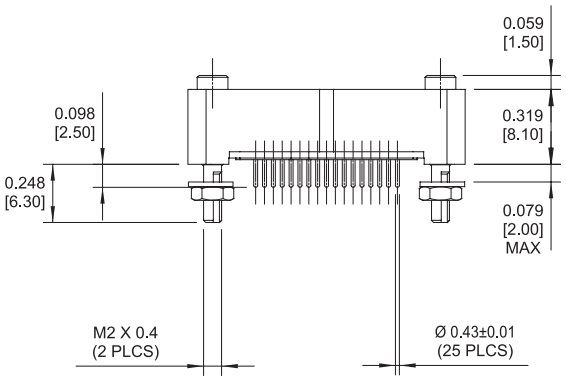
Mating Face



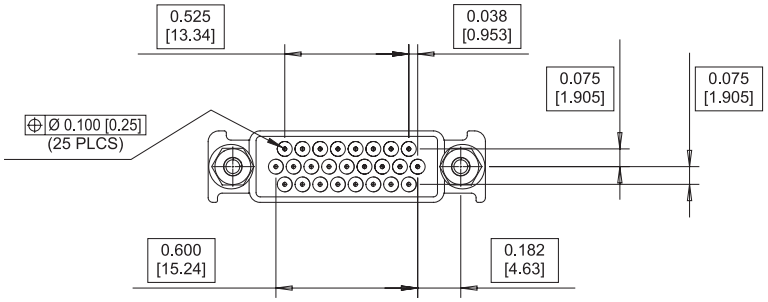
Female Half

Mating Face





Termination Face

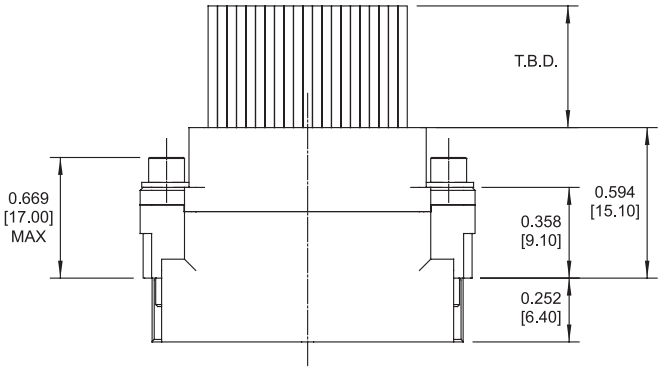


NOTE:
1) T.B.D.: Wire length to be determined based on customer requirements.
If not specified, standard 300mm wire length will be used.

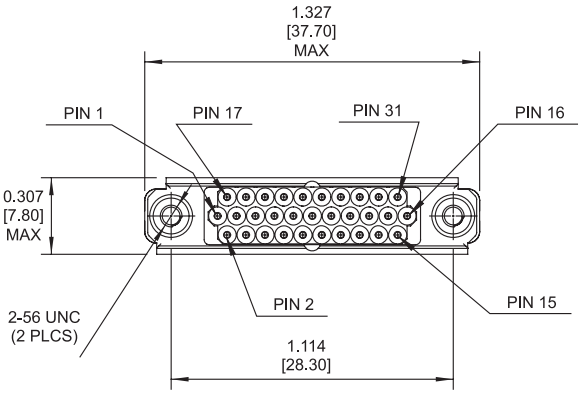
Dimensions are in inches [mm]

31 Contact Connectors

Male Half

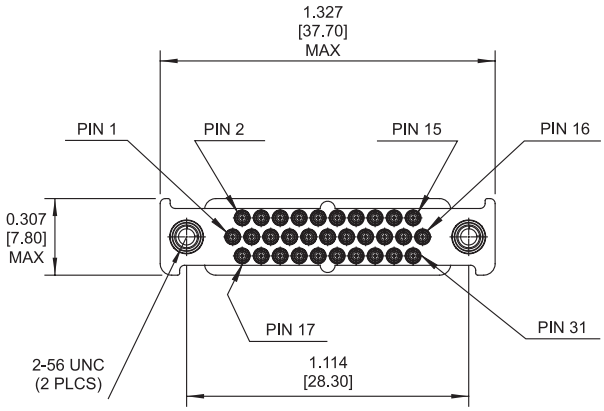


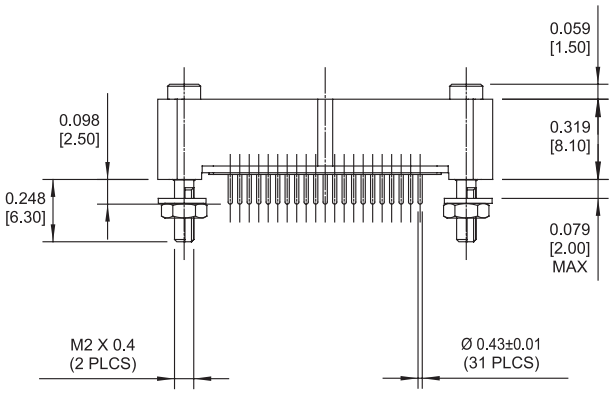
Mating Face



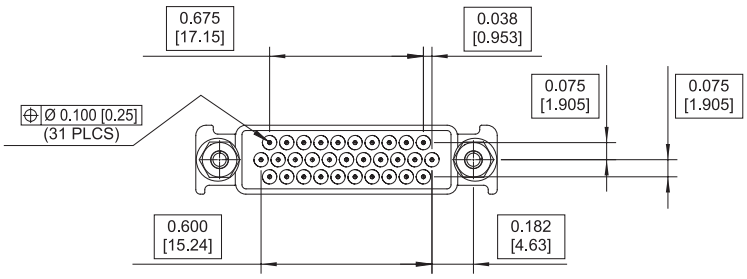
Female Half

Mating Face





Termination Face

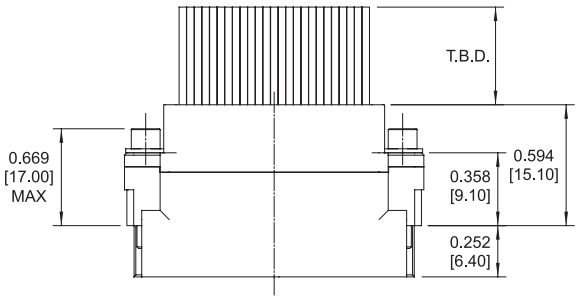


NOTE:
1) T.B.D.: Wire length to be determined based on customer requirements.
If not specified, standard 300mm wire length will be used.

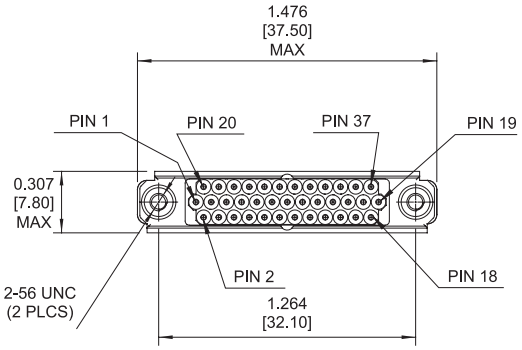
Dimensions are in inches [mm]

37 Contact Connectors

Male Half

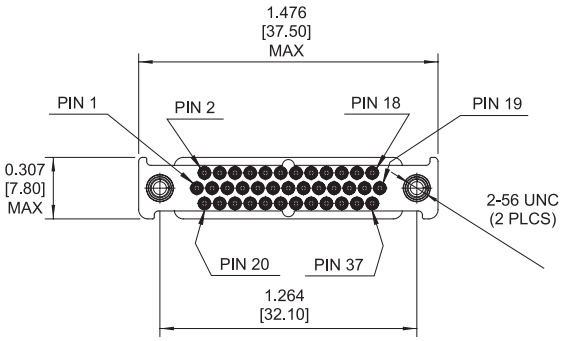


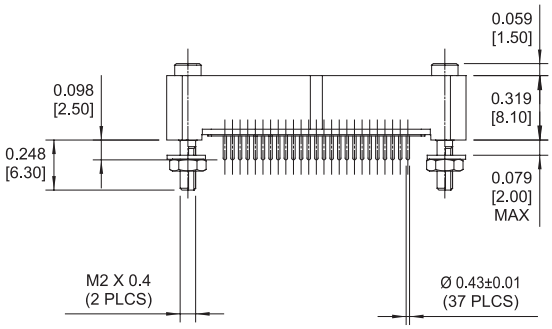
Mating Face



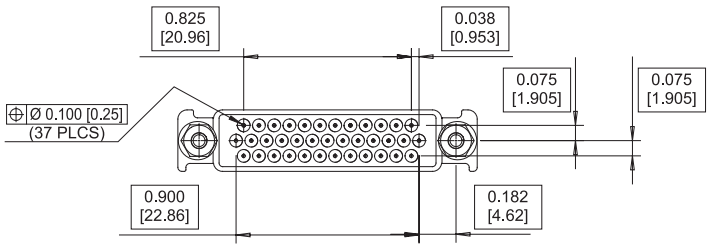
Female Half

Mating Face





Termination Face

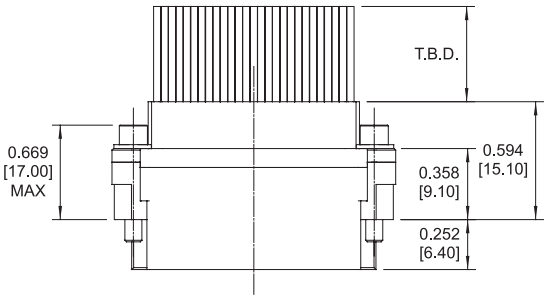


NOTE:
1) T.B.D.: Wire length to be determined based on customer requirements.
If not specified, standard 300mm wire length will be used.

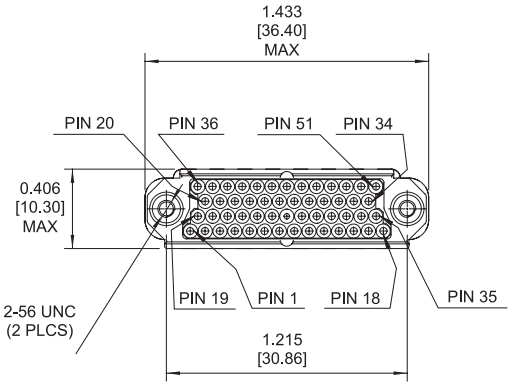
Dimensions are in inches [mm]

51 Contact Connectors

Male Half

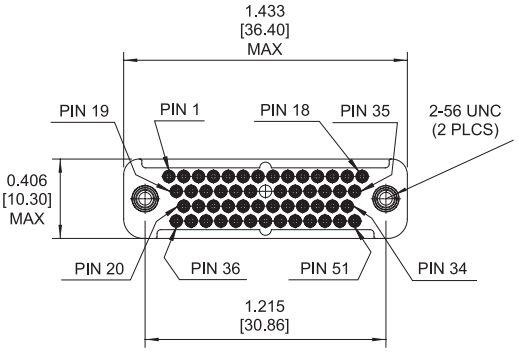


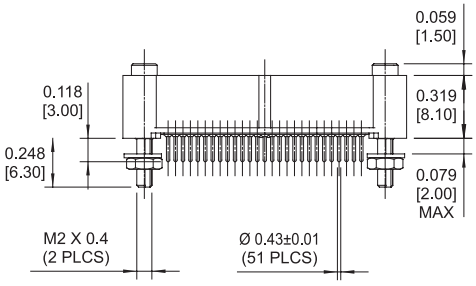
Mating Face



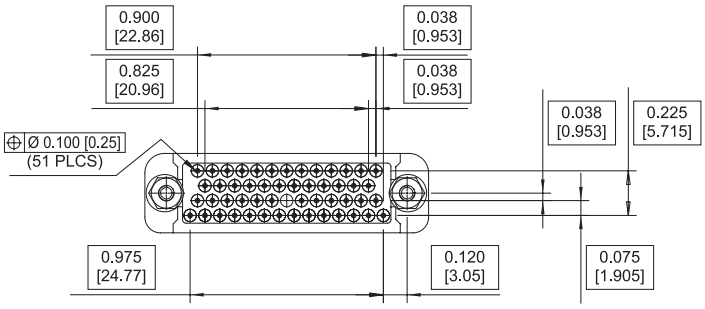
Female Half

Mating Face





Termination Face



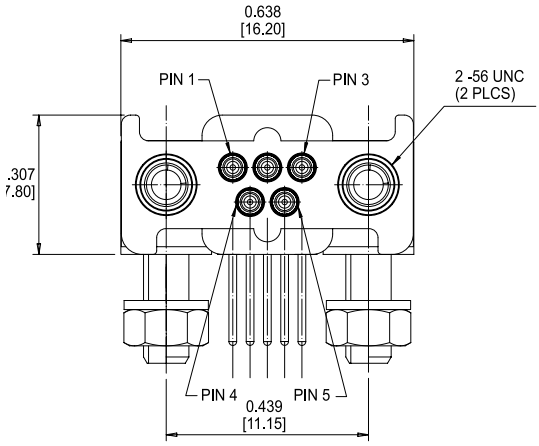
NOTE:
1) T.B.D.: Wire length to be determined based on customer requirements.
If not specified, standard 300mm wire length will be used.

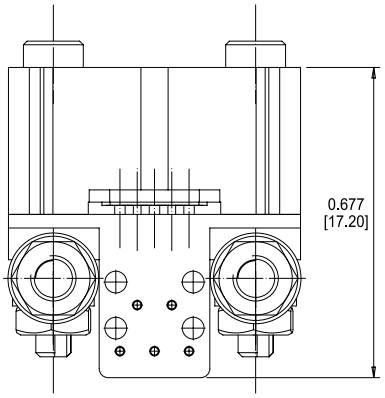
Dimensions are in inches [mm]

90° Female Printed Circuit Board Connectors

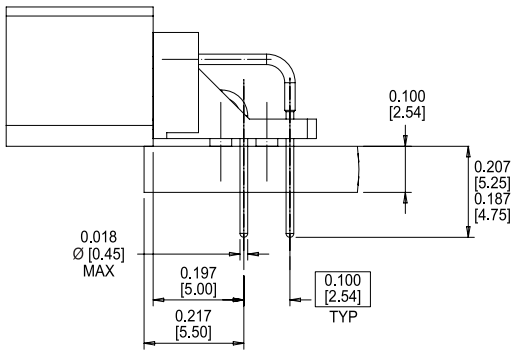
5 Contacts

Mating Face

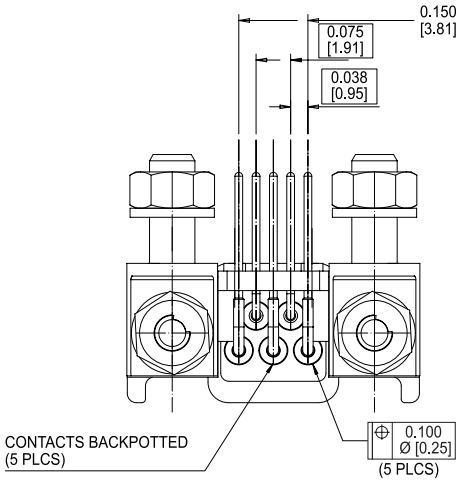




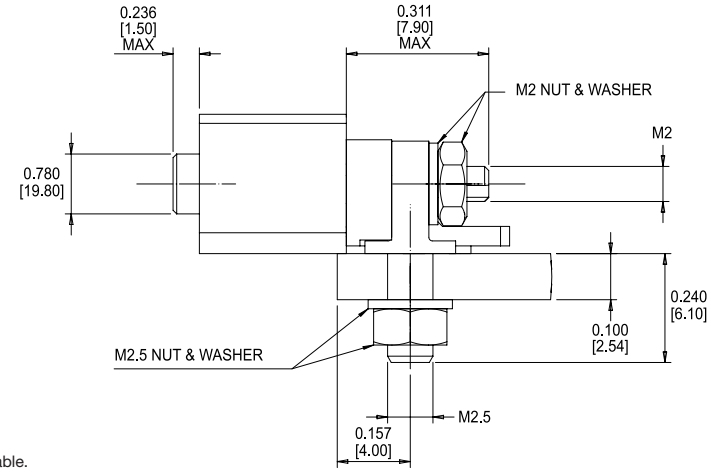
Termination Detail



Termination Face



Mounting Detail



NOTE:

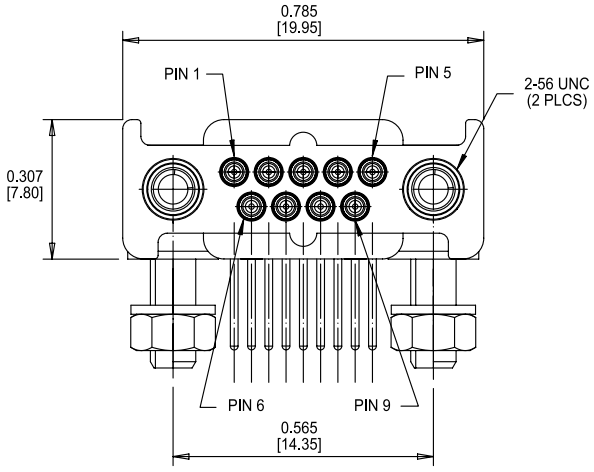
1) 90° male connectors are not yet available.
   90° female connectors mate with current offering of male connectors.
2) 90° female drawings are not to scale.

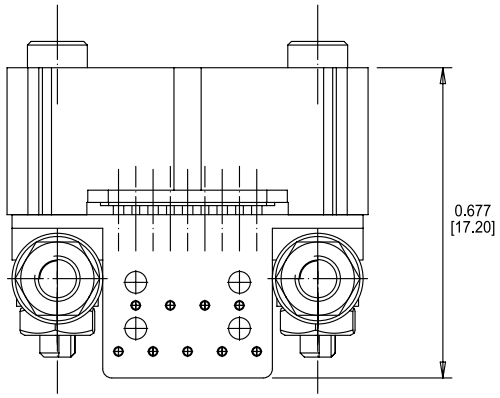
Dimensions are in inches [mm]

90° Female Printed Circuit Board Connectors

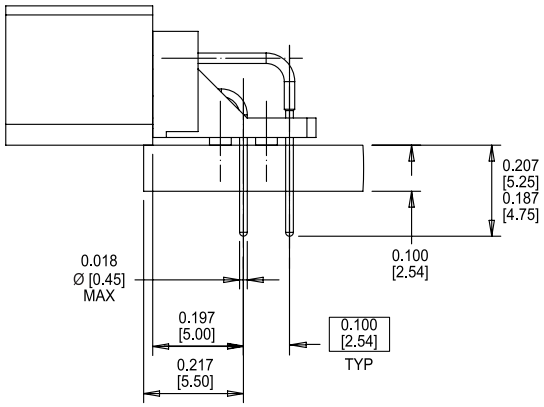
9 Contacts

Mating Face

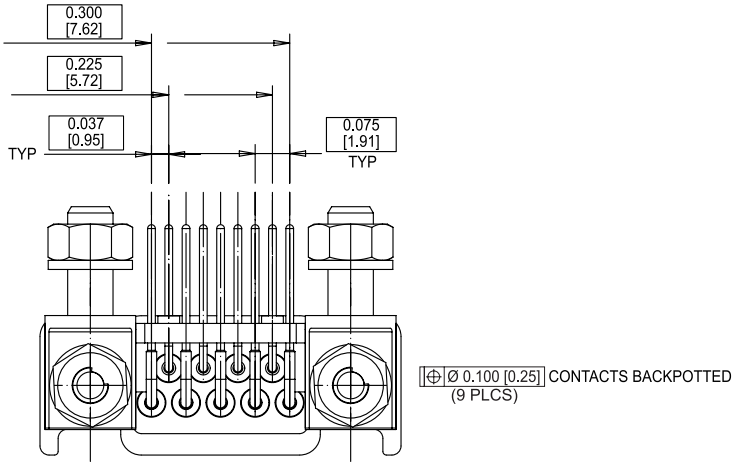




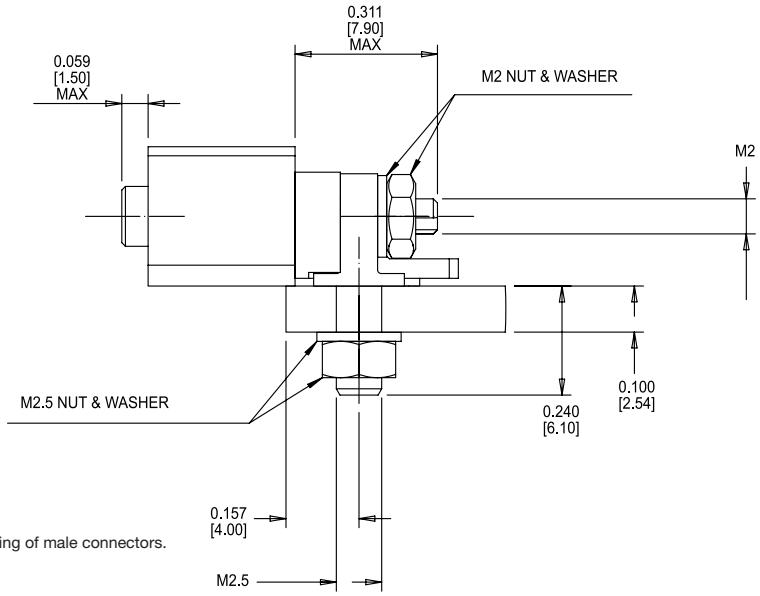
Termination Detail



Termination Face



Mounting Detail



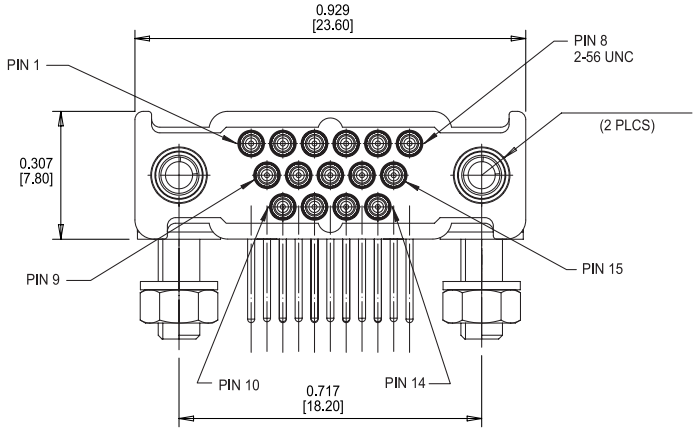
NOTE:
1) 90° male connectors are not yet available.
   90° female connectors mate with current offering of male connectors.
2) 90° female drawings are not to scale.

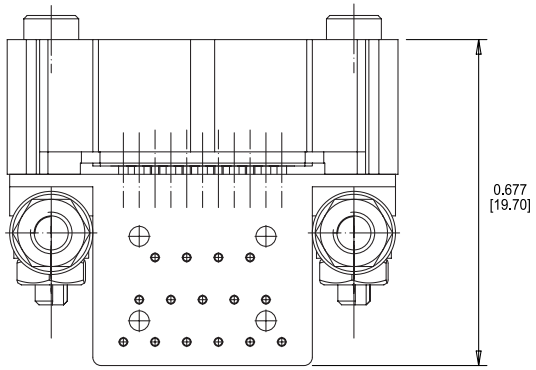
Dimensions are in inches [mm]

90° Female Printed Circuit Board Connectors

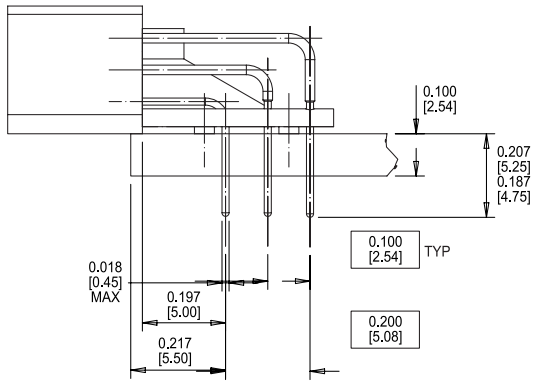
15 Contacts

Mating Face

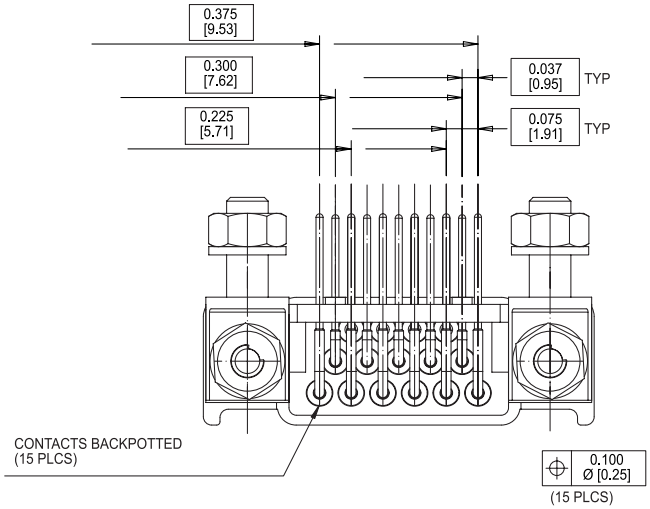




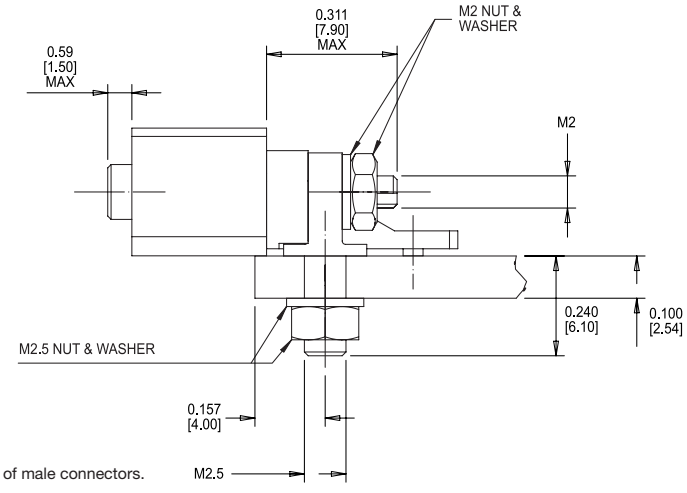
Termination Detail



Termination Face



Mounting Detail



NOTE:

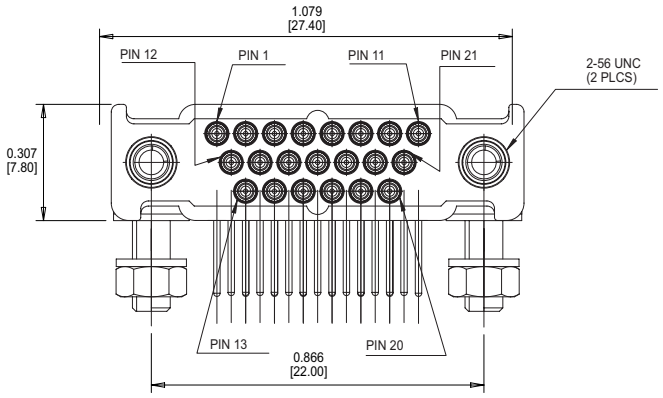
1) 90° male connectors are not yet available.
   90° female connectors mate with current offering of male connectors.
2) 90° female drawings are not to scale.

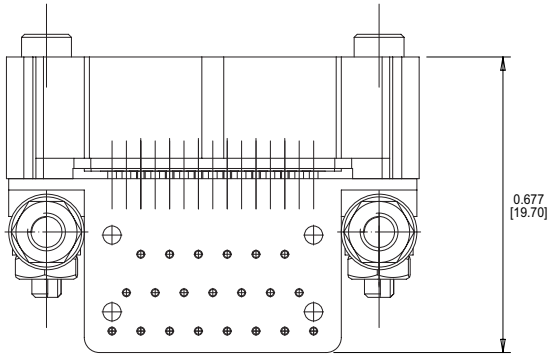
Dimensions are in inches [mm]

90° Female Printed Circuit Board Connectors

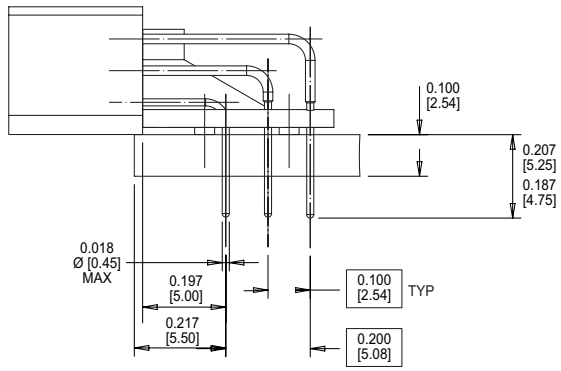
21 Contacts

Mating Face

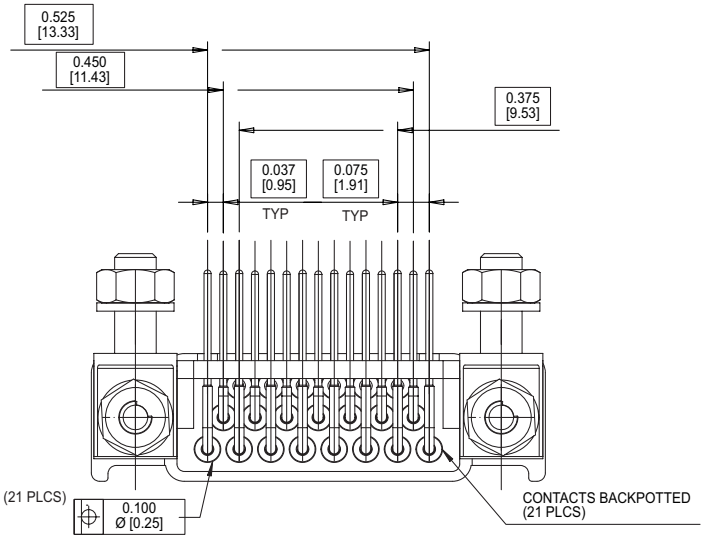




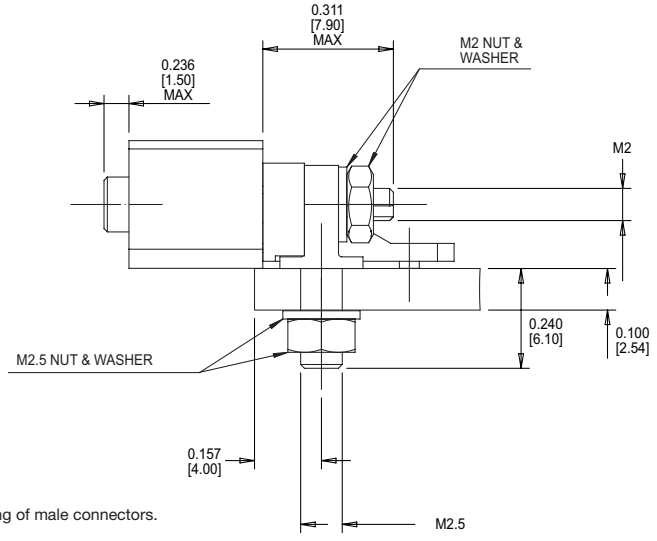
Termination Detail



Termination Face



Mounting Detail



NOTE:

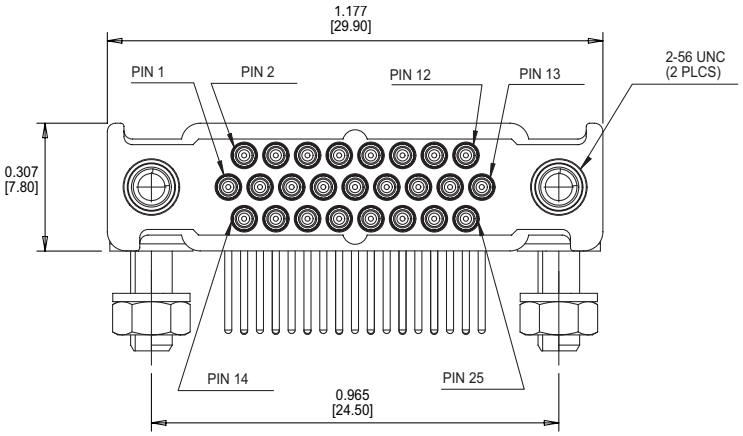
1) 90° male connectors are not yet available.
   90° female connectors mate with current offering of male connectors.
2) 90° female drawings are not to scale.

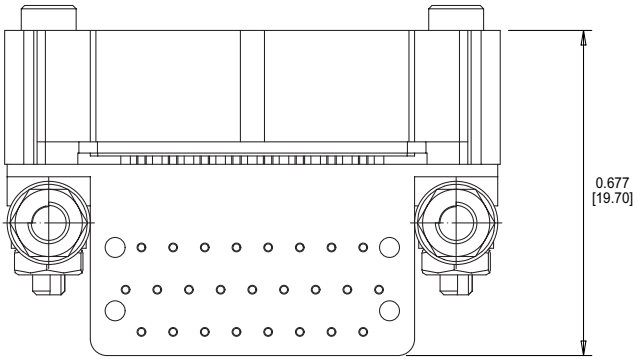
Dimensions are in inches [mm]

90° Female Printed Circuit Board Connectors

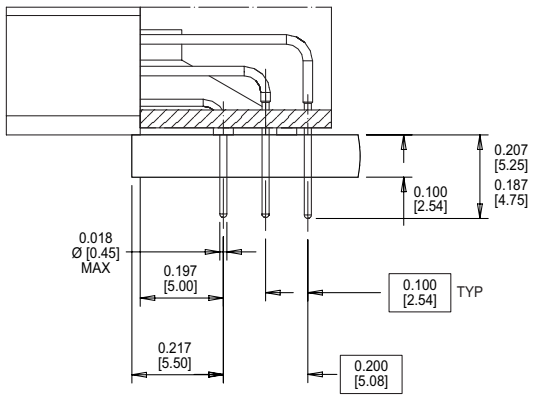
25 Contacts

Mating Face

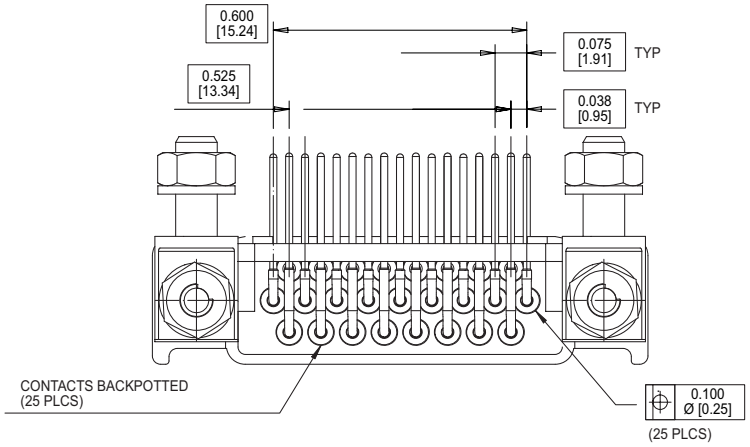




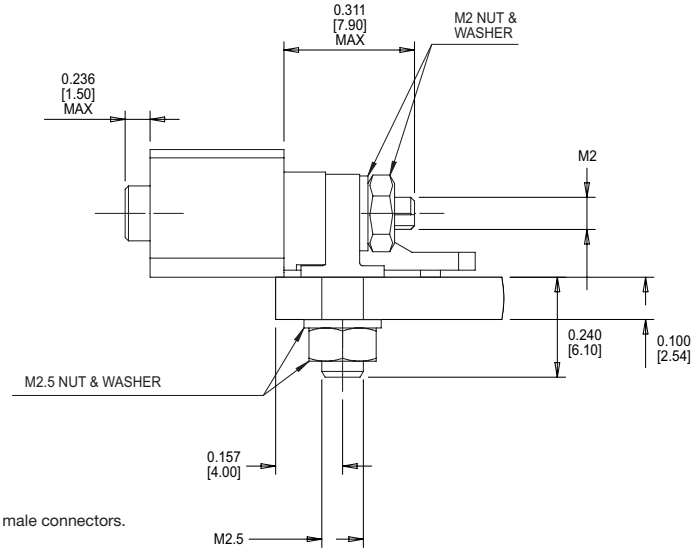
Termination Detail



Termination Face



Mounting Detail



NOTE:

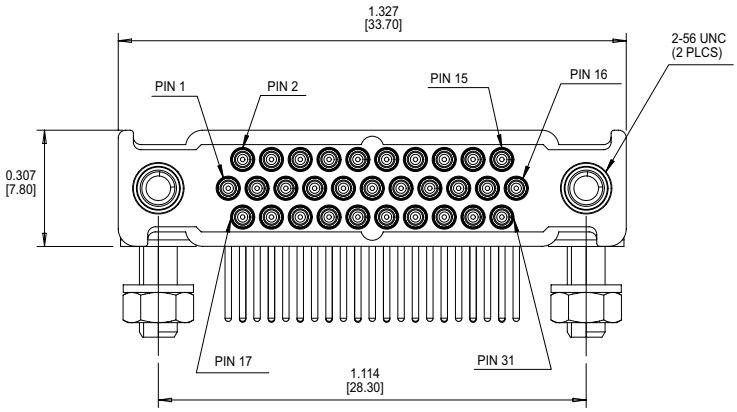
1) 90° male connectors are not yet available.
   90° female connectors mate with current offering of male connectors.
2) 90° female drawings are not to scale.

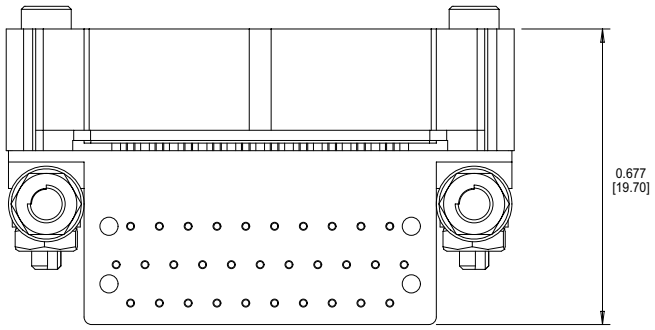
Dimensions are in inches [mm]

90° Female Printed Circuit Board Connectors

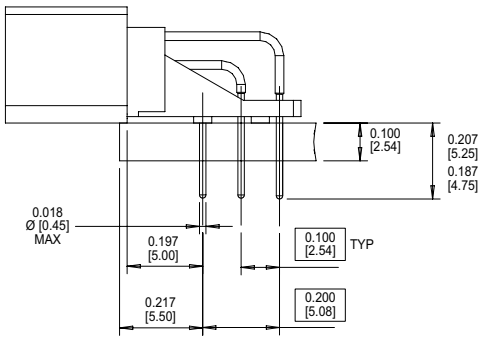
31 Contacts

Mating Face

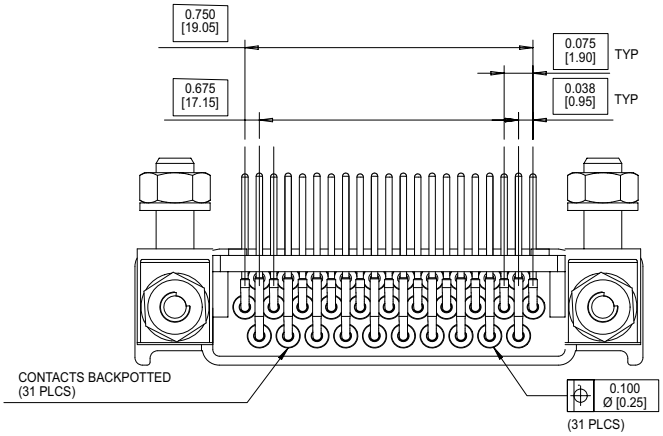




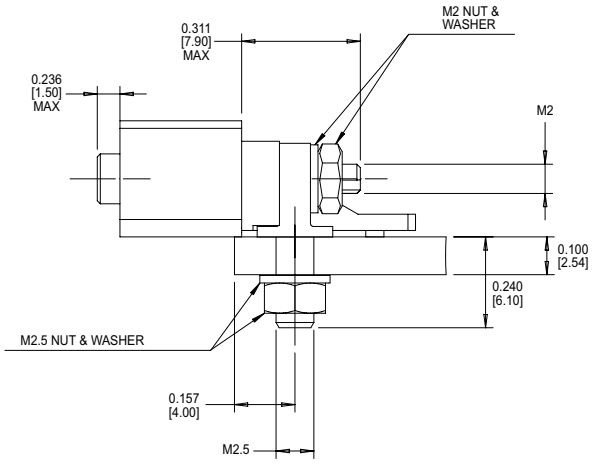
Termination Detail



Termination Face



Mounting Detail



NOTE:

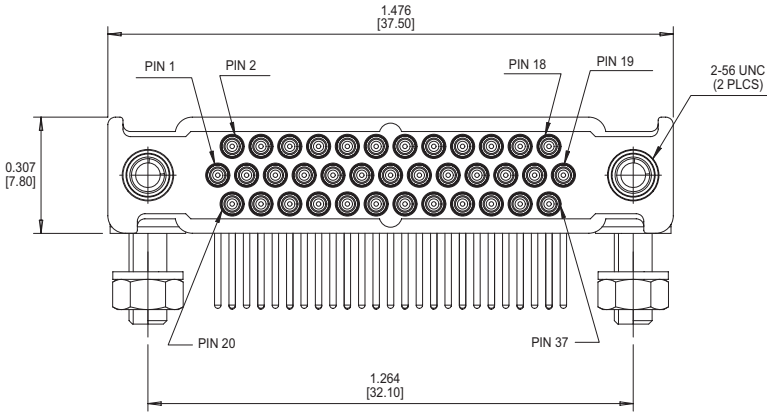
1) 90° male connectors are not yet available.
   90° female connectors mate with current offering of male connectors.
2) 90° female drawings are not to scale.

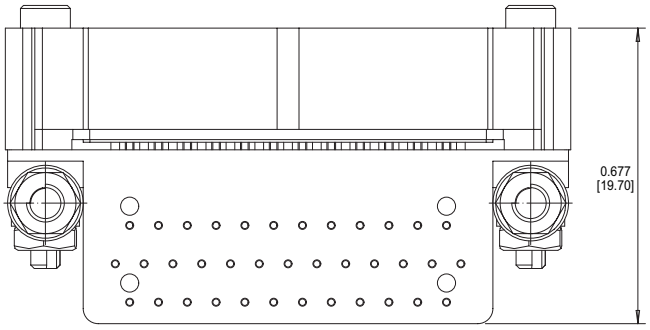
Dimensions are in inches [mm]

90° Female Printed Circuit Board Connectors

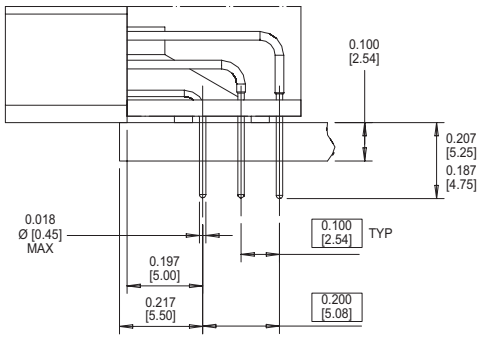
37 Contacts

Mating Face

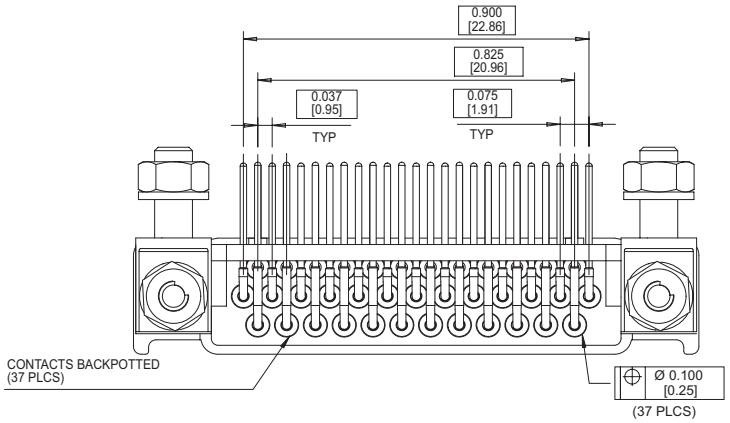




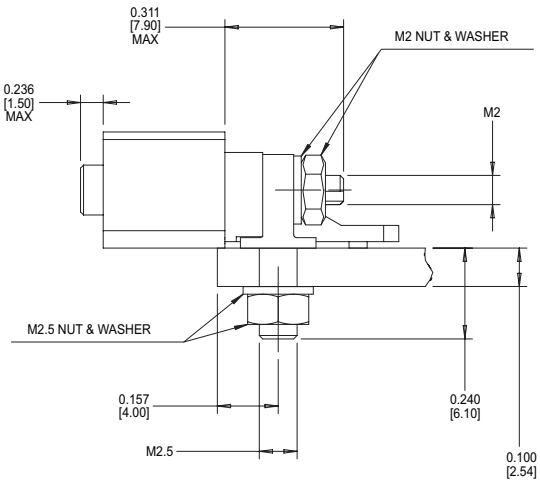
Termination Detail



Termination Face



Mounting Detail



NOTE:

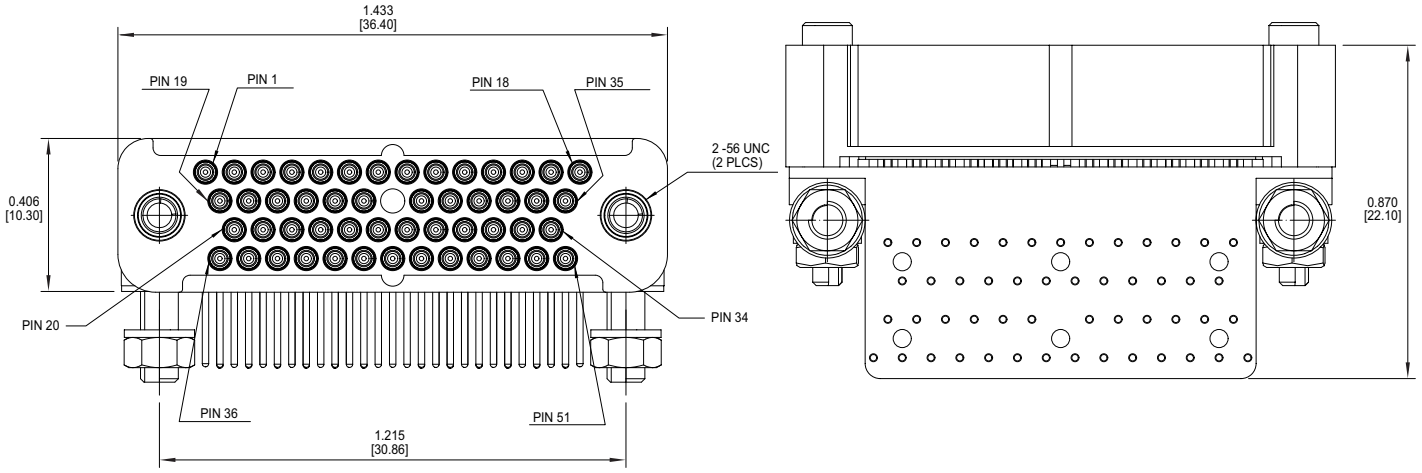
1) 90° male connectors are not yet available.
   90° female connectors mate with current offering of male connectors.
2) 90° female drawings are not to scale.

Dimensions are in inches [mm]

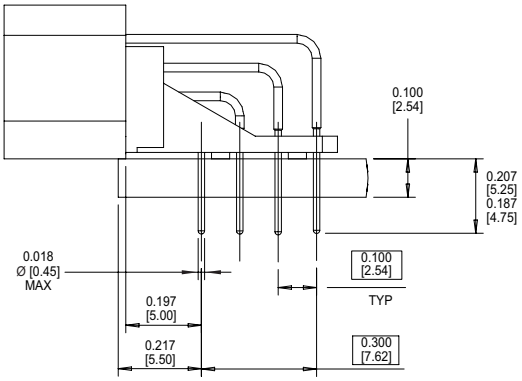
90° Female Printed Circuit Board Connectors

51 Contacts

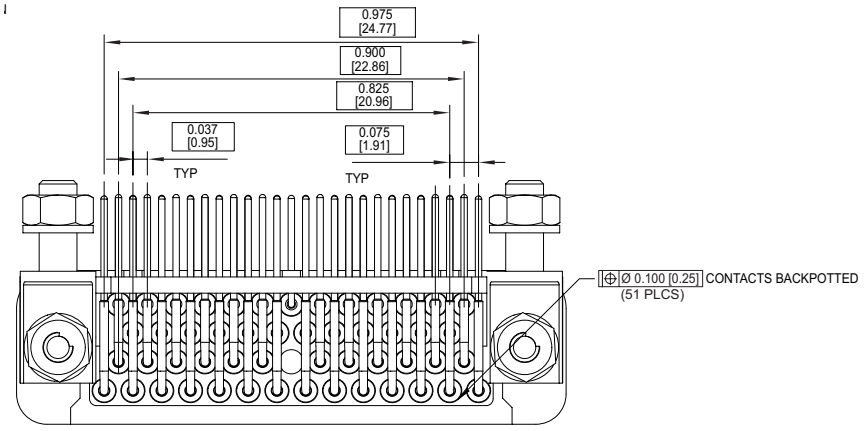
Mating Face



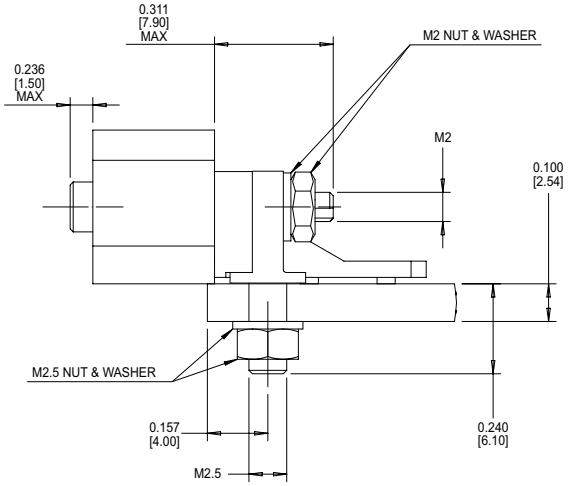
Termination Detail



Termination Face



Mounting Detail



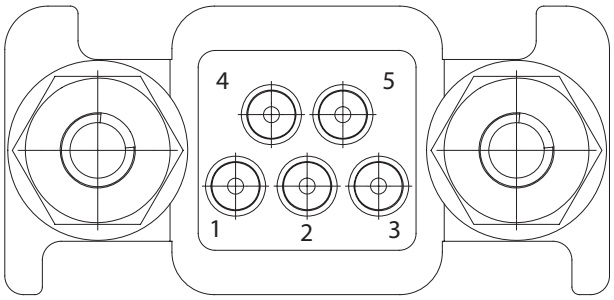
NOTE:

1) 90° male connectors are not yet available.
   90° female connectors mate with current offering of male connectors.
2) 90° female drawings are not to scale.

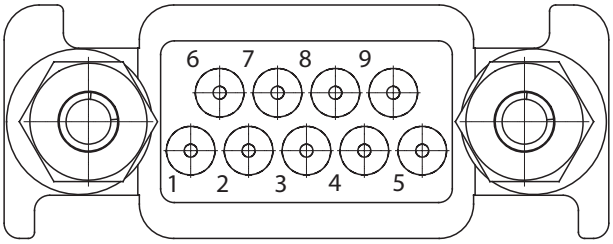
Dimensions are in inches [mm]

HMD Pin Count Identification

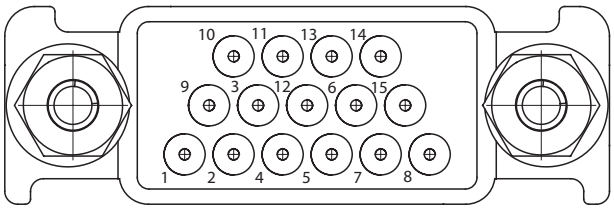
5 Contacts



9 Contacts



15 Contacts

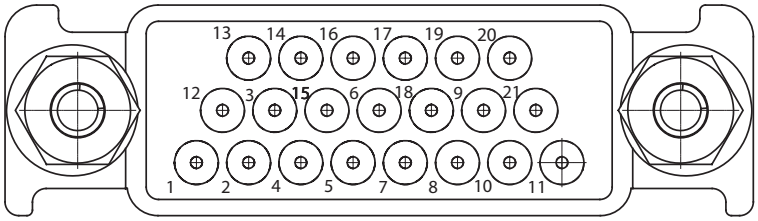


NOTE:
All views are of female connector termination face.

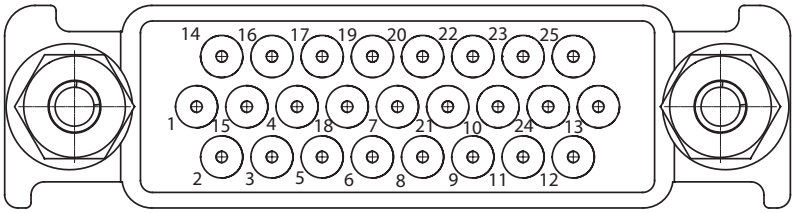
Dimensions are in inches [mm]

HMD Pin Count Identification

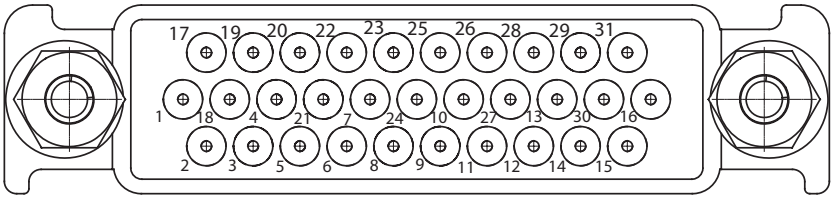
21 Contacts



25 Contacts



31 Contacts

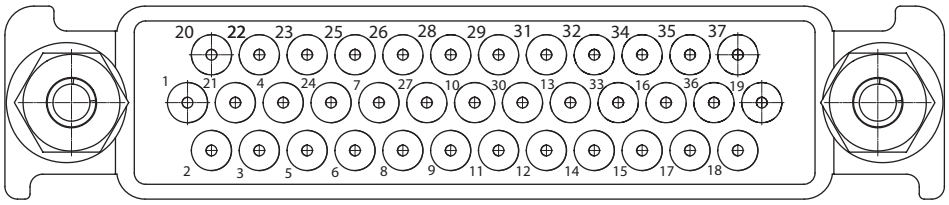


NOTE:
All views are of female connector termination face.

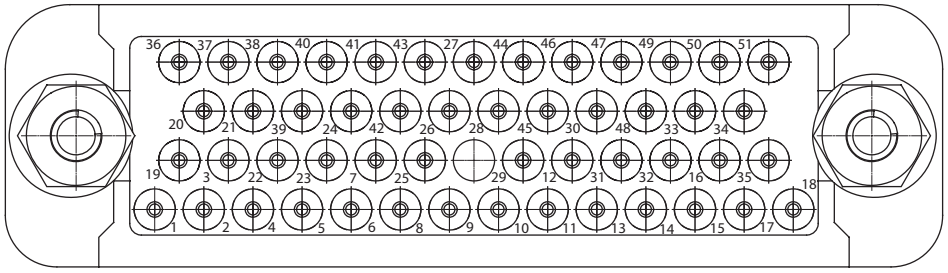
Dimensions are in inches [mm]

HMD Pin Count Identification

37 Contacts



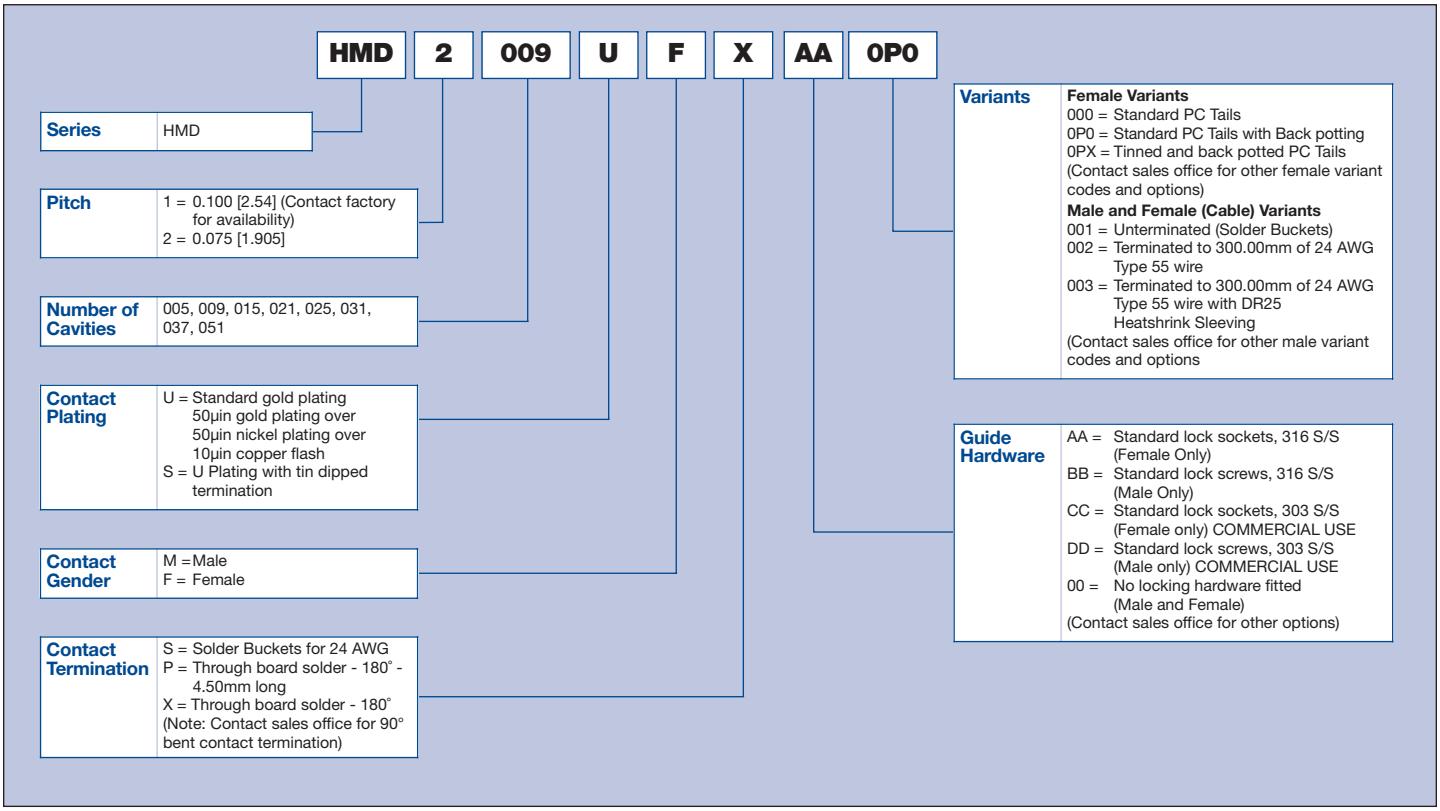
51 Contacts



NOTE:
All views are of female connector termination face.

Dimensions are in inches [mm]

Part Number Configurator



90° Female Printed Circuit Board Connectors Ordering Information

Number of Contacts	Part Number*
5	HMD-1022
9	HMD-1023
15	HMD-1024
21	HMD-1025
25	HMD-1026
31	HMD-1027
37	HMD-1028
51	HMD-1029

* Please contact factory to order.

NOTE:
1) 90° male connectors are not yet available. 90° female connectors mate with current offering of male connectors.

Dimensions are in inches [mm]

MIL-DTL-55302 QPL'D 2 and 3 Row Printed Circuit Board Connectors

17, 29, 33, 41, 53, 62, 65, 72, 80.1, 84, 96, 98, 120, 126, 160 and 160.4 Contacts

- 2 and 3 row printed circuit board connectors
- Provide applications flexibility not available with other MIL-DTL-55302 connectors
- Over 2,500 models can be constructed with available components
- 0.100 [2.54] on center (adjacent rows offset by 0.050 [1.27] to allow straight printed circuit traces)
- Straight dip, right angle solder, crimp, solder cup and Wire Wrap® terminations
- 0.024 [0.60] diameter pins/sockets rated at 4 Amps
- Average insertion/extraction force of 1 ounce per contact
- Contacts removable from wiring side (front release, rear removable)
- Front release, front removable option available on receptacle with 160 contacts
- Alignment and keying provided by the end guides – 36 combinations (user changeable)
- Male or female contacts and guides available in either plug or receptacle

General Specifications

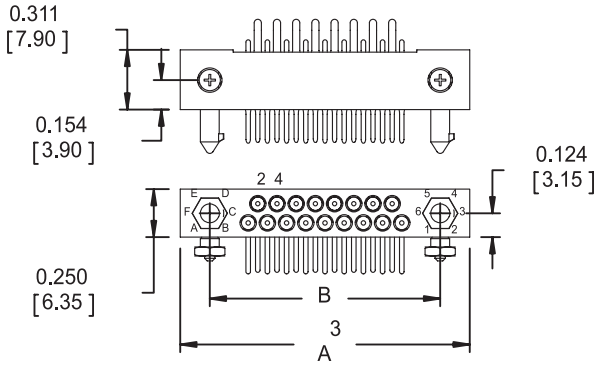
Number Contacts	17, 29, 33, 41, 53, 62, 65, 72, 80.1, 84, 96, 98, 120, 126, 160, 160.4
Contact Diameter	0.024 [0.60]
Current Rating	4 Amps at 30° C rise
Contact Resistance	< 5 milliohms
Extraction Force	0.30 – 2.00 oz. per contact
Contact Life Cycles	100,000
Breakdown Voltage Between Contacts	> 1600V RMS
Dielectric Withstanding Voltage	1200V RMS
Insulation Resistance	> 10^6 Megohms at 500 VDC
Temperature Rating	-55° C to 125° C
Insulator	Diallyl-phthalate
Contact Material Plating	 Beryllium copper wires and brass body Gold over nickel
Guide Hardware Material Plating	 Brass / Stainless steel Nickel / Passivated
Plating Reference Male Pins Female Socket	 T = 10µin gold (min) over nickel TH = 50µin gold (min) over nickel TAH = 50µin gold (min) over nickel on mating surface, 5µin gold over nickel on termination

Number of Contacts	17	29	33	41	53	65
A ± 0.020 [0.50]	1.508 [38.30]	2.106 [53.50]	2.307 [58.60]	2.709 [68.80]	3.307 [84.00]	3.909 [99.30]
B	1.200 [30.48]	1.801 [45.75]	2.000 [50.80]	2.401 [60.98]	3.000 [76.20]	3.600 [91.44]

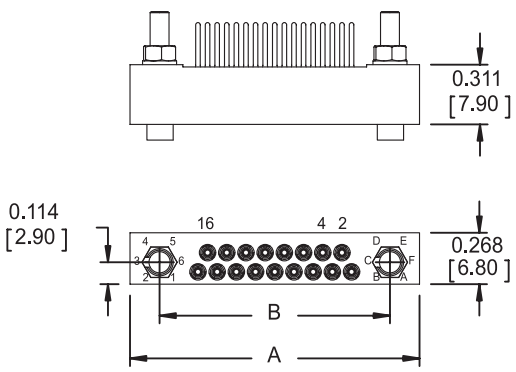
Connector Dimension

17 to 65 Contacts

Plug



Receptacle



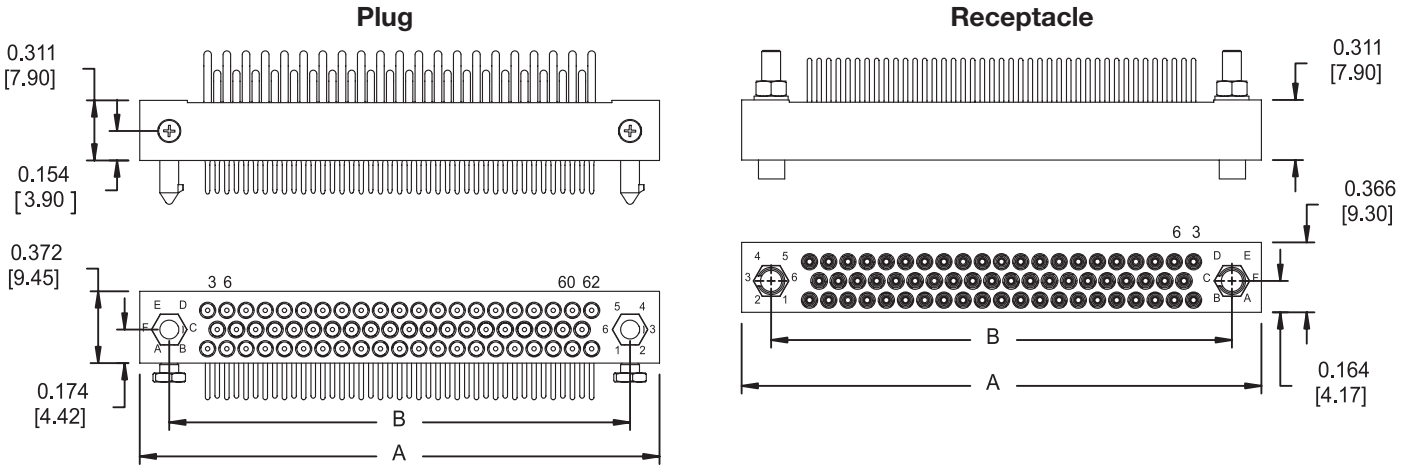
NOTES:
1) Mated length 0.622 [15.80] unless otherwise specified.
2) Tolerance ± 0.02 [0.50].
3) Wire Wrap is a trademark of Gardner Denver.

Dimensions are in inches [mm]

Connector Dimensions

62, 80.1 and 98 Contacts

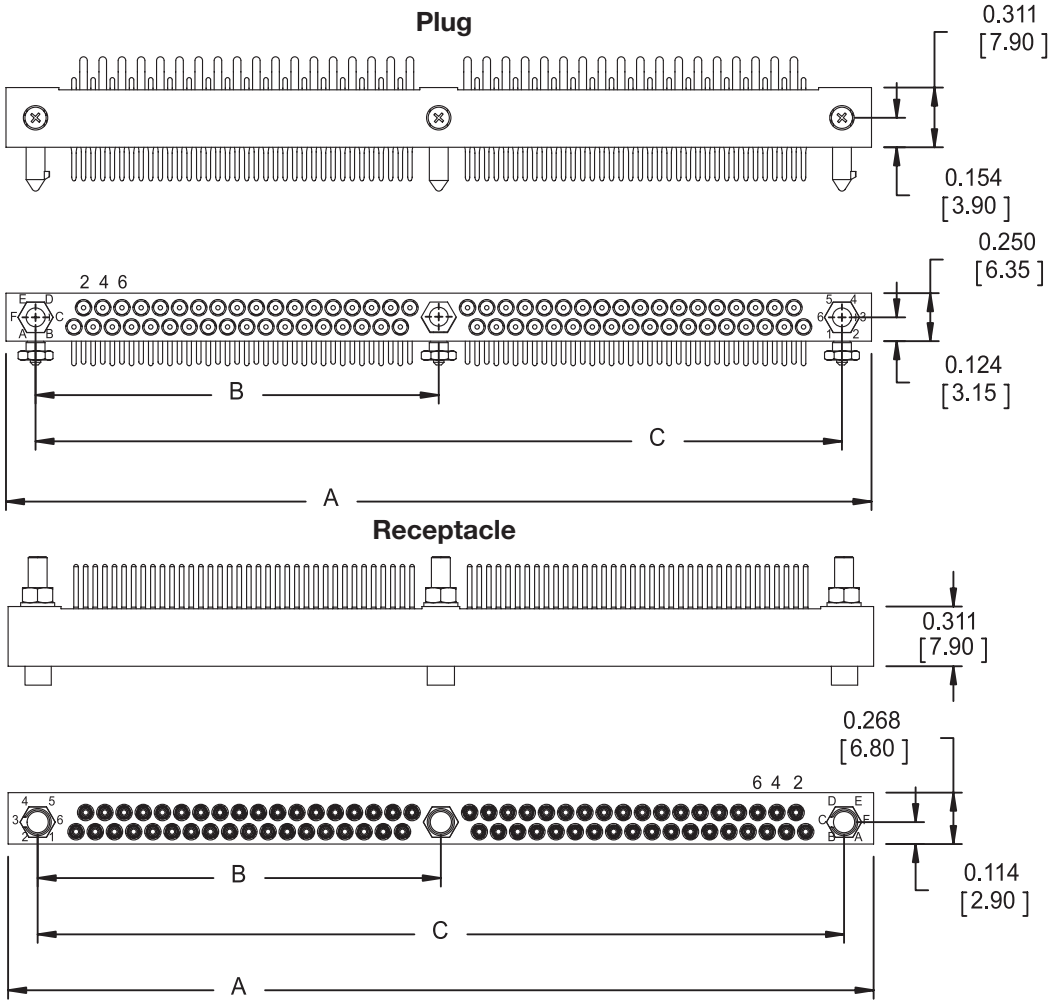
Number of Contacts	62	80.1	98
A ± 0.020 [0.50]	2.707 [68.75]	3.307 [84.00]	3.907 [99.24]
B	2.400 [60.96]	3.000 [76.20]	3.600 [91.44]



Connector Dimensions

72, 84, 96 and 120 Contacts

Number of Contacts	72	84	96	120
A	4.512 [114.60]	5.106 [129.70]	5.709 [145.00]	6.906 [175.40]
B	2.100 [53.34]	2.400 [60.96]	2.700 [68.58]	3.300 [83.82]
C	4.200 [106.68]	4.800 [121.92]	5.400 [137.16]	6.600 [167.64]

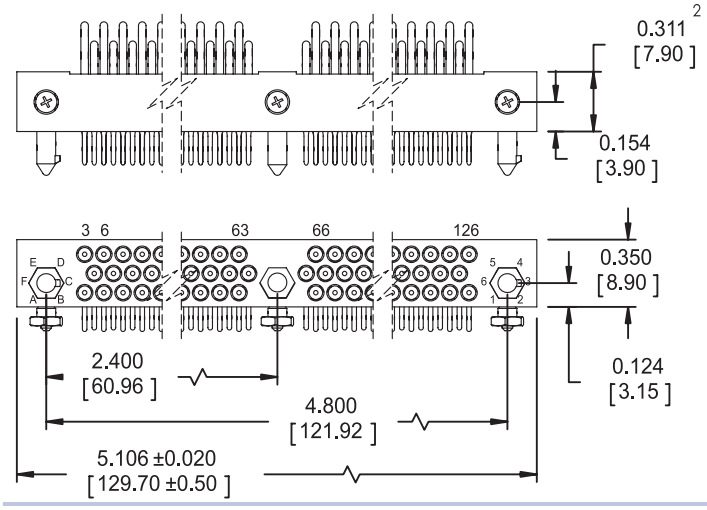


Dimensions are in inches [mm]

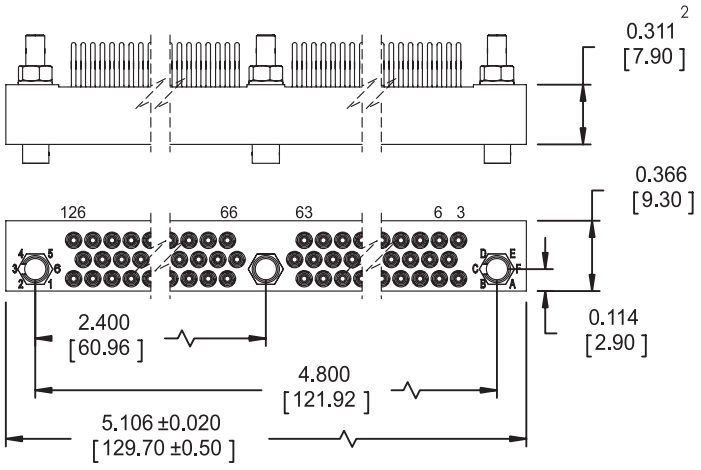
Connector Dimensions

126 Contacts

Plug



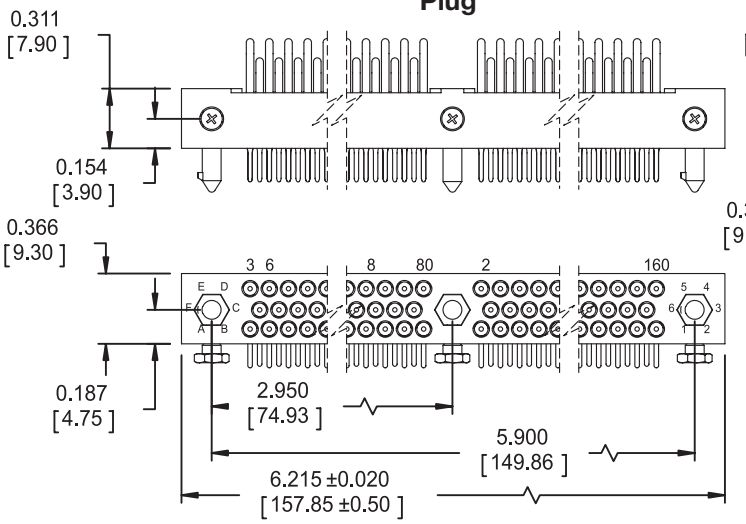
Receptacle



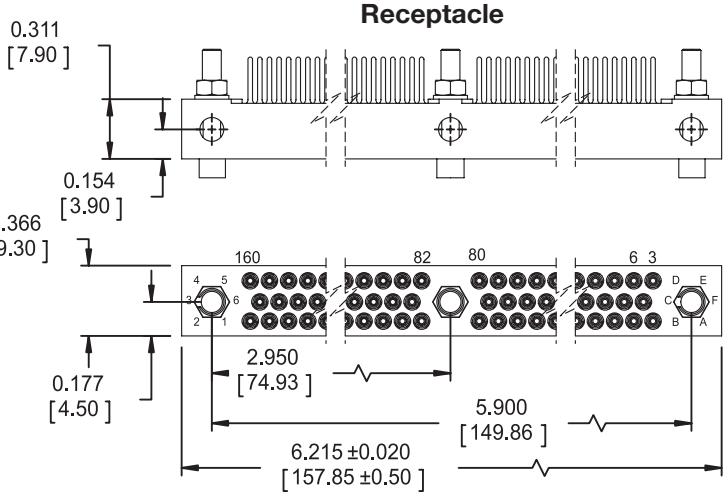
Connector Dimensions

160 Contacts

Plug



Receptacle

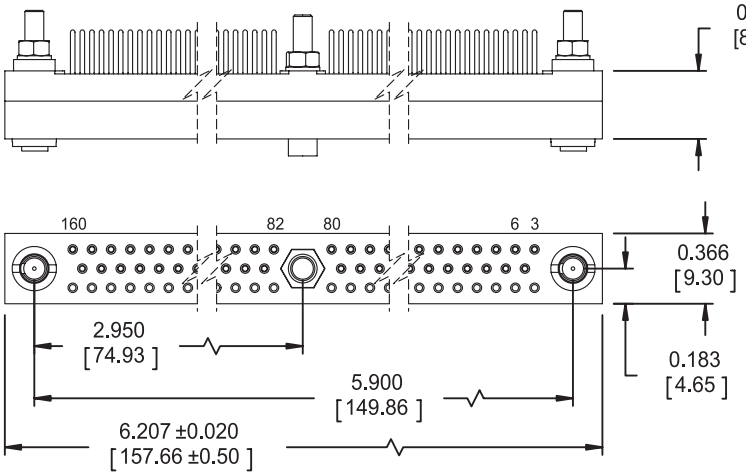


Connector Dimensions

160.4 Contacts[1,2]

(Front Removable)

Receptacle



NOTES:

1) Only available with straight dip solder (style "D") and Wire Wrap (style "Y") tails.
2) Mates with standard plug. Mated length 0.655 [16.90].

Dimensions are in inches [mm]

Terminal Styles

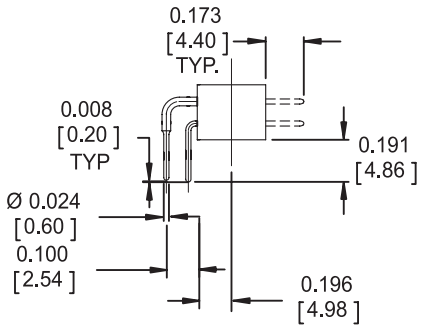
Ref.

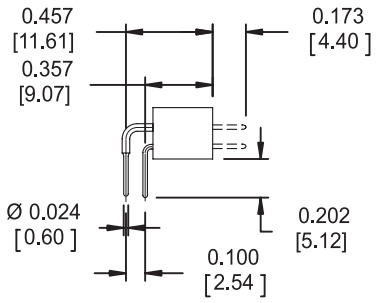
Plugs
Female/Male

Receptacles
Female/Male

B

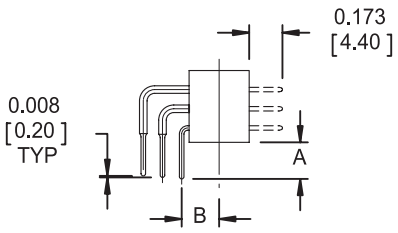
For 1/8" PC Board 2 Row and KA126 3 Row

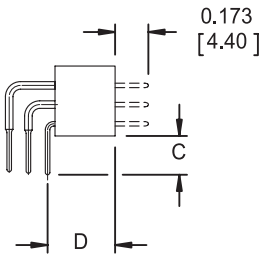




B

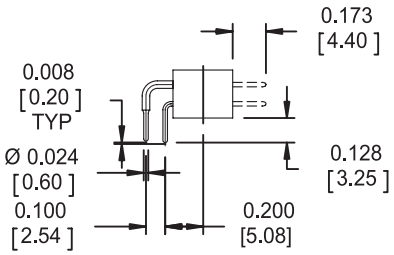
For 1/8" PC Board 3 Row

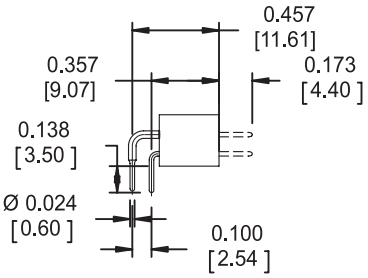




C

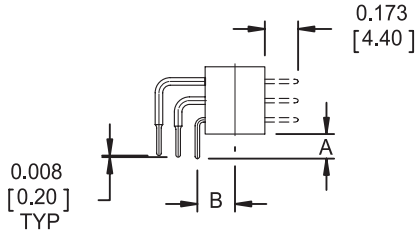
For 1/16" PC Board 2 Row and KA126 3 Row

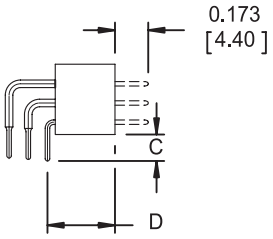




C

For 1/16" PC Board 3 Row



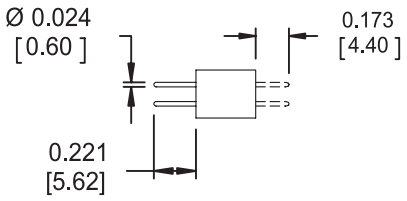
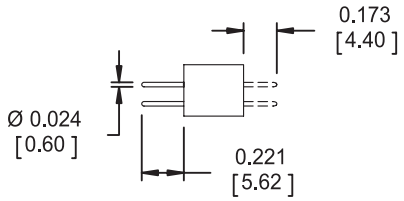
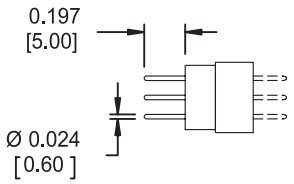
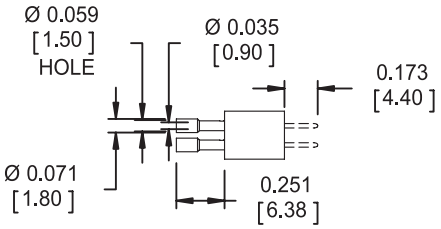
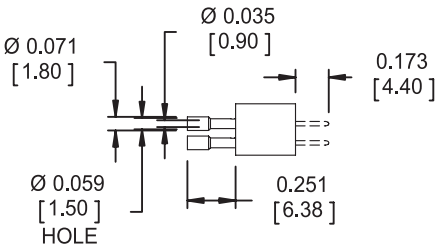
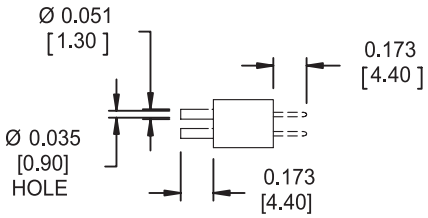
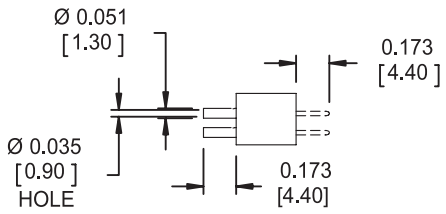
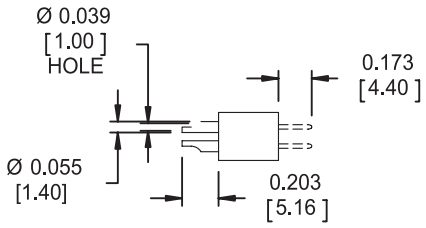
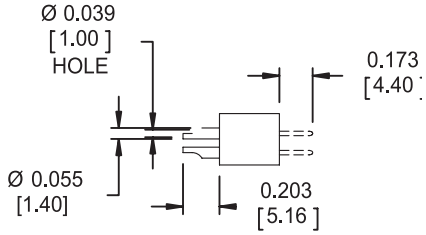


3 Row Connectors				
Number of Contacts	62, 80.1 and 98		160	
Dimension	Style B	Style C	Style B	Style C
A	0.191 [4.86]	0.128 [3.25]	0.178 [4.53]	0.115 [2.92]
B	0.200 [5.08]	0.200 [5.08]	0.188 [4.78]	0.188 [4.78]
C	0.201 [5.11]	0.138 [3.50]	0.188 [4.78]	0.125 [3.17]
D	0.354 [8.98]	0.354 [8.98]	0.342 [8.68]	0.342 [8.68]

NOTE:
1) All tail lengths are ± 0.015 [0.40] long.

Dimensions are in inches [mm]

Terminal Styles

Ref.	Plugs Female/Male	Receptacles Female/Male
D		
D For 0.4 front removable version	Not available in Plug	
H2 Accepts 22, 24 and 26 AWG Wire Stripped Back 0.146 [3.70]		
R Accepts 22, 24 and 26 AWG Wire Stripped Back 0.173 [4.40]		
S Accepts 22 AWG Wire Stripped Back 0.126 [3.20]		

Solder cup orientation staggered for commercial parts. All the same direction for MIL-DTL-55302 parts.

NOTES:
1) Crimp contacts will be shipped unmounted. When inserting contacts into the blocks/insulators be sure that the flats on the rear of the contact body are aligned with the flats in the insulator.
2) All tails are ± 0.015 [0.40] long.

Dimensions are in inches [mm]

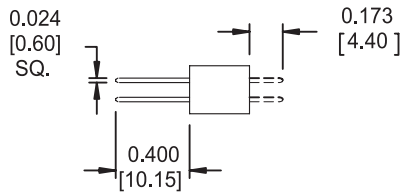
Terminal Styles

Ref.

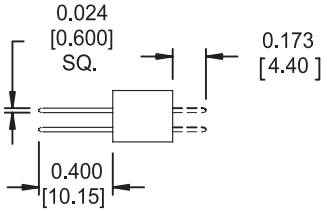
W**

2 Wraps 28 and 30 AWG

Plugs
Female/Male

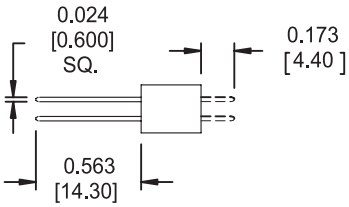


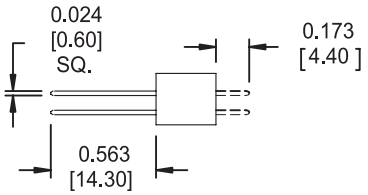
Receptacles
Female/Male



Y

3 Wraps
28 and 30 AWG
2 Wraps
24 and 26 AWG





Plating Reference	
Male Pins:	G = 10µin gold (min) over nickel H = 50µin gold (min) over nickel
Female Sockets:	AH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination ANH = 50µin gold (min) over nickel on mating surface, nickel over copper flash on socket body components, gold flash over nickel on termination

KA Series Replacement Contacts

Ref.	Standard Sockets	Standard Pins	Beryllium Copper Pins
B (row 1)	YSK006-028AH	YPN006-034	YPN006-072H
B (row 2)	YSK006-029AH	YPN006-035	YPN006-075H
B (row 3)	YSK006-030AH	YPN006-036	YPN006-073H
C (row 1)	YSK006-013AH	YPN006-023	YPN006-048H
C (row 2)	YSK006-006AH	YPN006-016	YPN006-050H
C (row 3)	YSK006-014AH	YPN006-024	YPN006-077H
D	YSK006-005ANH	YPN006-015	YPN006-107H
D[3]	YSK006-027AH	—	—
FD[4]	YSK006-274AH	YPN006-470	YPN006-487H
H2	YSK006-009AH	YPN006-019	—
R	YSK006-011ANH	YPN006-021	—
S	YSK006-010ANH	YPN006-020	—
W	YSK006-020AH	YPN006-039	—
Y	YSK006-012AH	YPN006-022	—

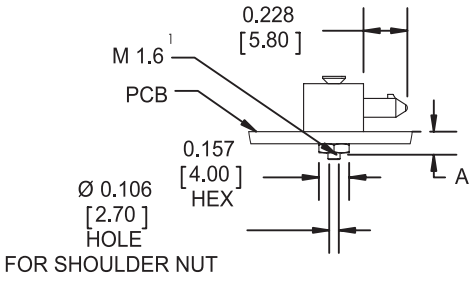
** Consult factory for availability

NOTES:
1) All tail lengths are ± 0.015 [0.40] long.
2) Contact for front removable version [0.40].
3) Front removable contact for standard housing.

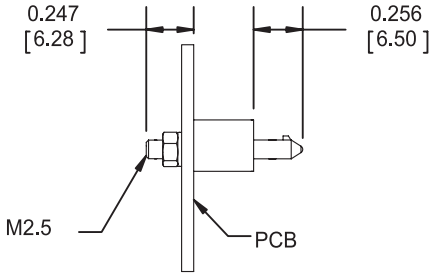
Dimensions are in inches [mm]

Standard Mounting Styles

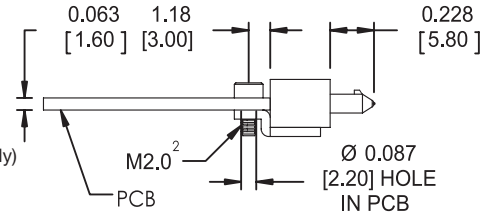
10 Plug Only



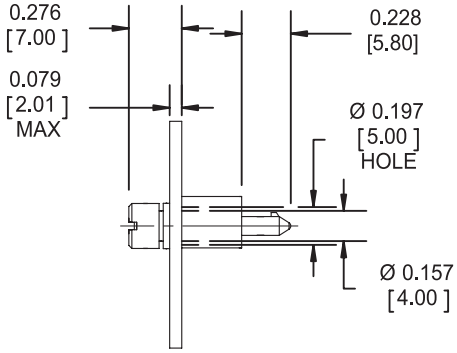
11 Plug/Receptacle



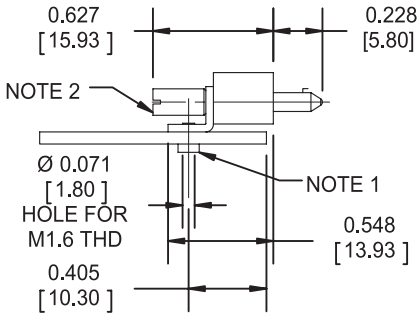
12 Plug Only
(2 rows only)



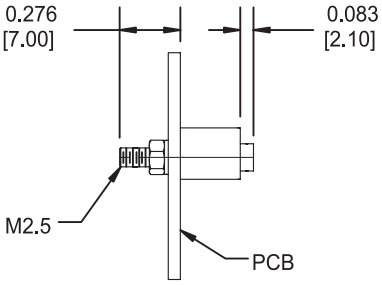
13 Float Mounting — Plug/Receptacle



14[1] Receptacle Only



21 Plug/Receptacle



	Dimension A			Dimension B			Dimension C		Dimension D	
Terminal (Right Angle)	2 row	3 row (KA160)	3 row (Others)	2 row	3 row (KA160)	3 row (Others)	2 row	3 row	2 row	3 row
B	0.191 [4.85]	0.207 [5.25]	0.220 [5.59]	0.204 [5.18]	0.205 [5.20]	0.218 [5.53]	0.343 [8.71]	0.447 [11.36]	0.507 [12.89]	0.626 [15.89]
C	0.124 [3.15]	0.128 [3.25]	0.141 [3.58]	0.165 [4.18]	0.126 [3.20]	0.139 [3.53]	0.343 [8.71]	0.447 [11.36]	0.468 [11.89]	0.586 [14.89]

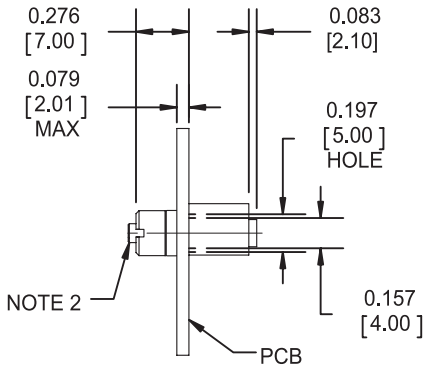
NOTES:
1) 15.00 oz. in torque.
2) 35.20 oz. in torque.
3) 52.30 oz. in torque.

Dimensions are in inches [mm]

Standard Mounting Styles

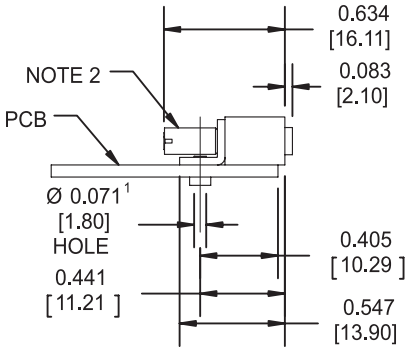
23 Float Mounting

Plug/Receptacle



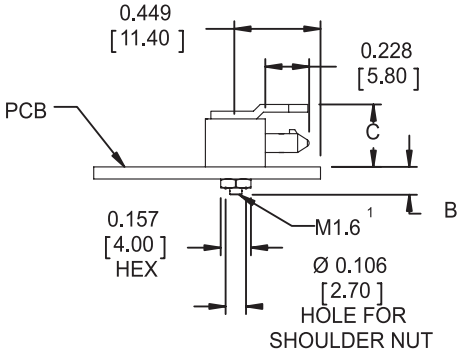
24

Plug/Receptacle



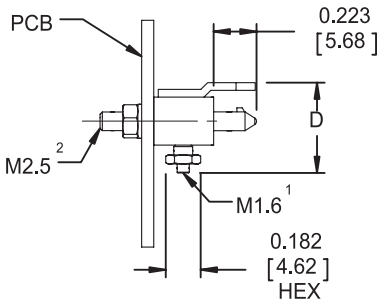
101

Plug Only



111

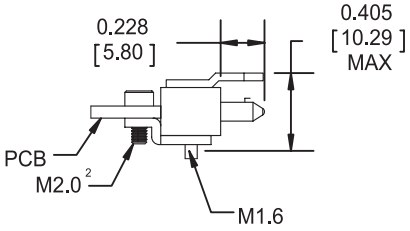
Plug Only



121

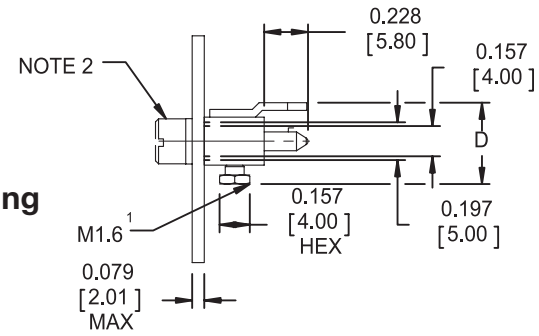
(2 rows only)

Plug Only



131 Float Mounting

Plug Only



	Dimension A			Dimension B			Dimension C		Dimension D	
Terminal (Right Angle)	**2 row**	**3 row** (KA160)	**3 row** (Others)	**2 row**	**3 row** (KA160)	**3 row** (Others)	**2 row**	**3 row**	**2 row**	**3 row**
B	0.191 [4.85]	0.207 [5.25]	0.220 [5.59]	0.204 [5.18]	0.205 [5.20]	0.218 [5.53]	0.343 [8.71]	0.447 [11.36]	0.507 [12.89]	0.626 [15.89]
C	0.124 [3.15]	0.128 [3.25]	0.141 [3.58]	0.165 [4.18]	0.126 [3.20]	0.139 [3.53]	0.343 [8.71]	0.447 [11.36]	0.468 [11.89]	0.586 [14.89]

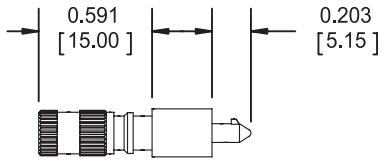
NOTES:
1) 15.00 oz. in torque.
2) 35.20 oz. in torque.
3) 52.30 oz. in torque.

Dimensions are in inches [mm]

Locking Mounting Styles

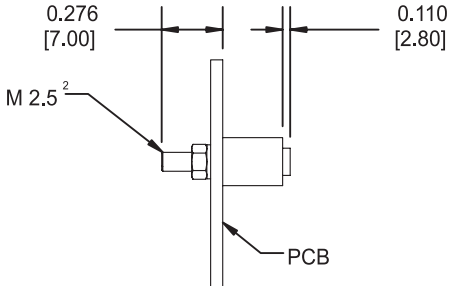
V1

Plug/Receptacle



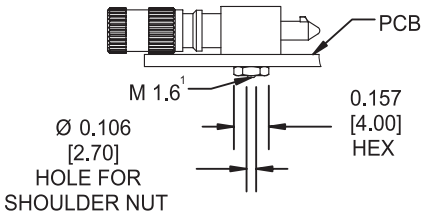
V2

Plug/Receptacle



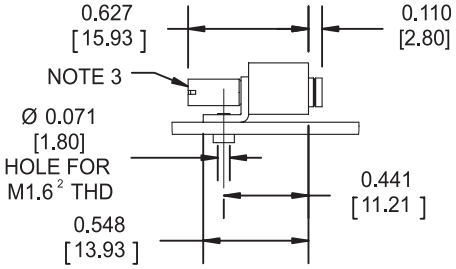
V3

Plug Only



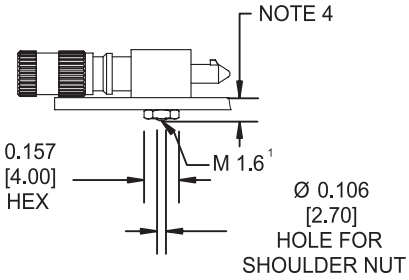
V4[1]

Receptacle Only



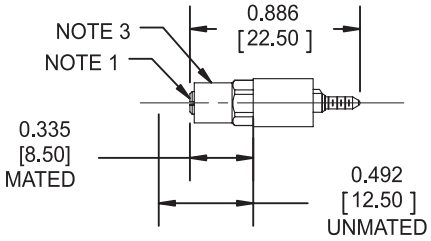
V6*

Plug Only



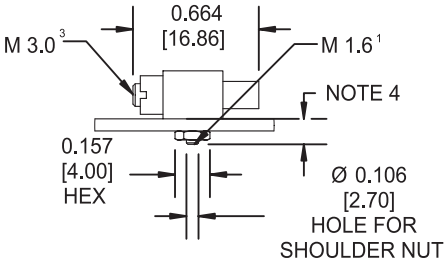
V7

Plug/Receptacle



V8

Plug Only



Style	Will Only Mate With	Locking Method
V1	V2, V4	Push, 1/4 Turn
V2	V1, V3, V6	Push, 1/4 Turn
V3 & V6*	V2, V4	Push, 1/4 Turn
V4	V1, V3, V6	Push, 1/4 Turn
V7	V8, V15	Screw
V8 & V9*	V7	Screw
V15	V7	Screw
V30	V33	Screw
V31	V32	Screw
V32	V31, V33	Screw
V33	V30, V32	Screw

NOTES:
1) 15.00 oz. in torque.
2) 35.20 oz. in torque.
3) 52.30 oz. in torque.
4) Right angle mounting screw length is determined by contact terminal length.

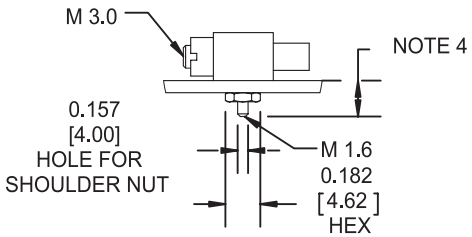
* For contact counts: 62, 80.1, 98 and 160 plugs

Dimensions are in inches [mm]

Locking Mounting Styles

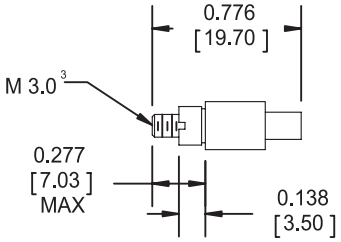
V9*

Plug Only



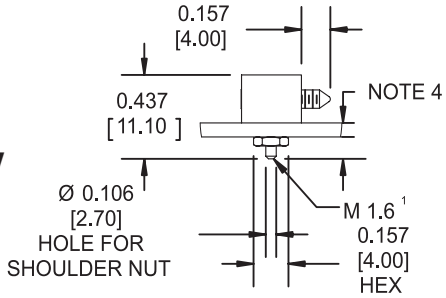
V15

Plug/Receptacle



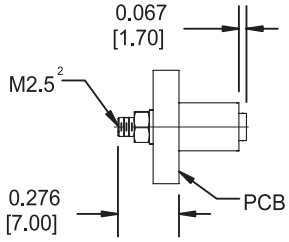
V30 Stationary Jackscrew

Plug Only



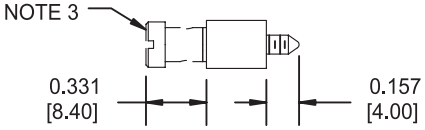
V31 Stationary Jack Socket

Plug/Receptacle



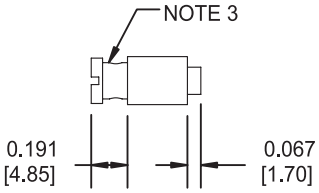
V32 Rotating Jackscrew

Plug/Receptacle



V33 Rotating Jack Socket

Plug/Receptacle



Style	Will Only Mate With	Locking Method
V1	V2, V4	Push, 1/4 Turn
V2	V1, V3, V6	Push, 1/4 Turn
V3 & V6*	V2, V4	Push, 1/4 Turn
V4	V1, V3, V6	Push, 1/4 Turn
V7	V8, V15	Screw
V8 & V9*	V7	Screw
V15	V7	Screw
V30	V33	Screw
V31	V32	Screw
V32	V31, V33	Screw
V33	V30, V32	Screw

* For contact counts: 62, 80.1, 98 and 160 plugs

NOTES:
1) 15.00 oz. in torque.
2) 35.20 oz. in torque.
3) 52.30 oz. in torque.
4) Right angle mounting screw length is determined by contact terminal length.

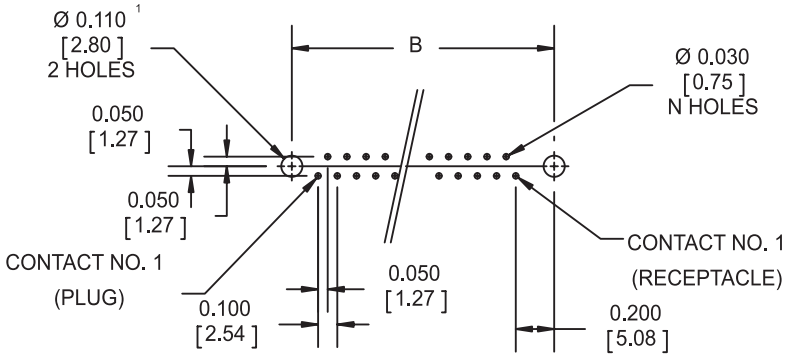
Dimensions are in inches [mm]

Mounting Dimensions

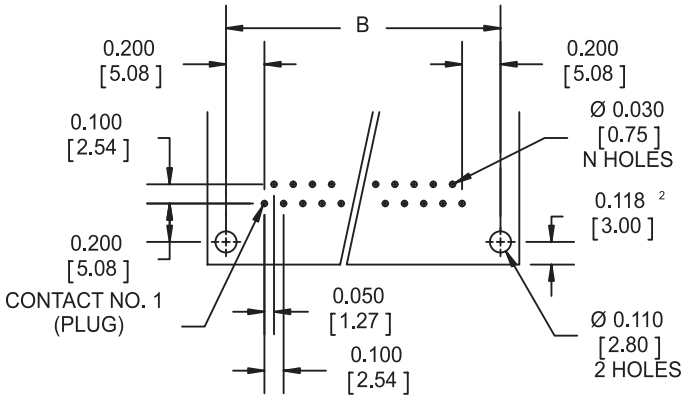
17, 29, 33, 41, 53 and 65 Contacts

PC Board Shown From Component Side of Board

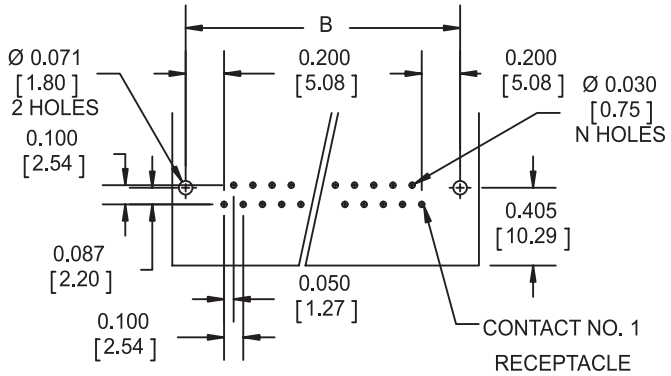
Mother Board Application
Style 11, 21, V2, V15 and V31



Daughter Board Application
Style 10, 30, V3, V8 and V30



Daughter Board Application
Style 24 and V4



Number of Contacts	Dimension B
17	1.200 [30.48]
29	1.800 [45.72]
33	2.000 [50.8]
41	2.400 [60.96]
53	3.000 [76.20]
65	3.600 [91.44]

NOTES:
1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 ± 0.10] diameter.
2) PC board may be extended to 0.453 [11.50] max for use as a pin protector.

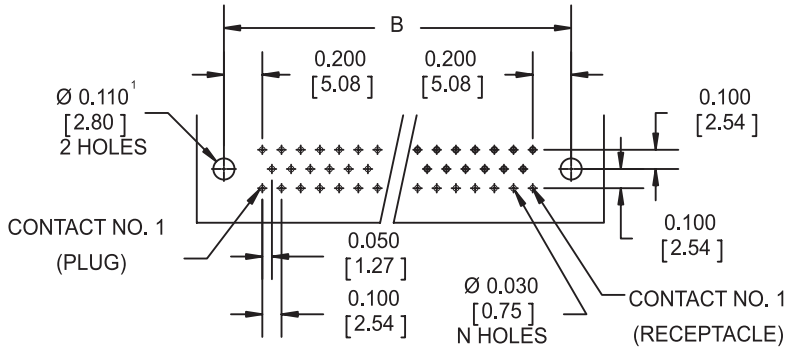
Dimensions are in inches [mm]

Mounting Dimensions

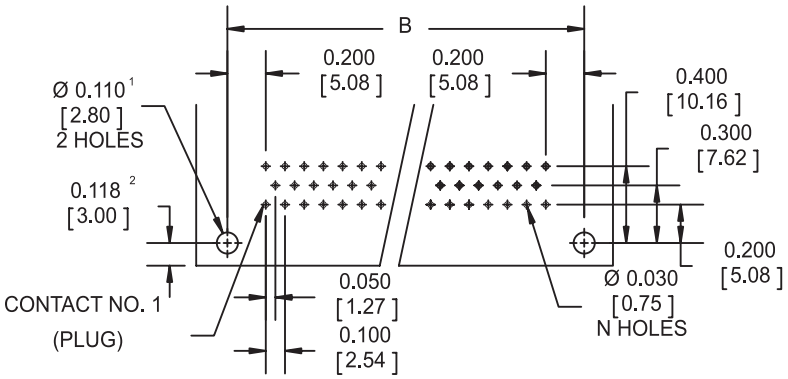
62, 80.1 and 98 Contacts

PC Board Shown From Component Side of Board

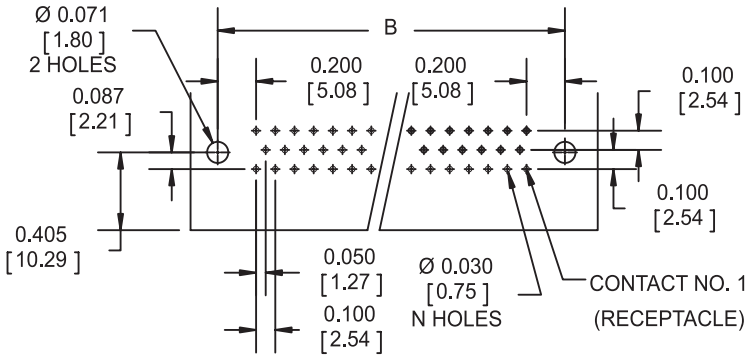
Mother Board Application
Style 11, 21, V2, V15 and V31



Daughter Board Application
Style 10, 30, V3, V8 and V30



Daughter Board Application
Style 24 and V4



Number of Contacts	Dimension B
62	2.400 [60.96]
80.1	3.000 [76.20]
98	3.600 [91.44]

NOTES:
1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 ± 0.10] diameter.
2) PC board may be extended to 0.453 [11.50] max for use as a pin protector.

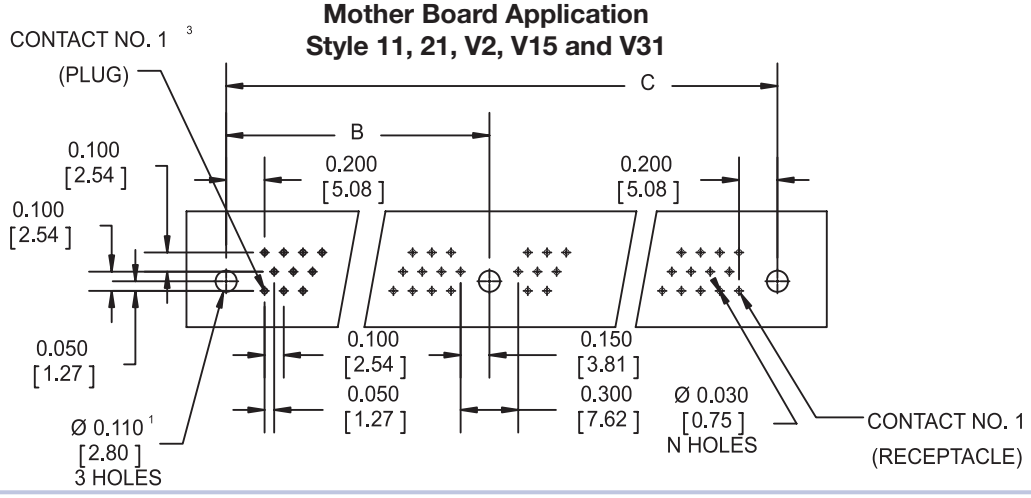
Dimensions are in inches [mm]

Mounting Dimensions

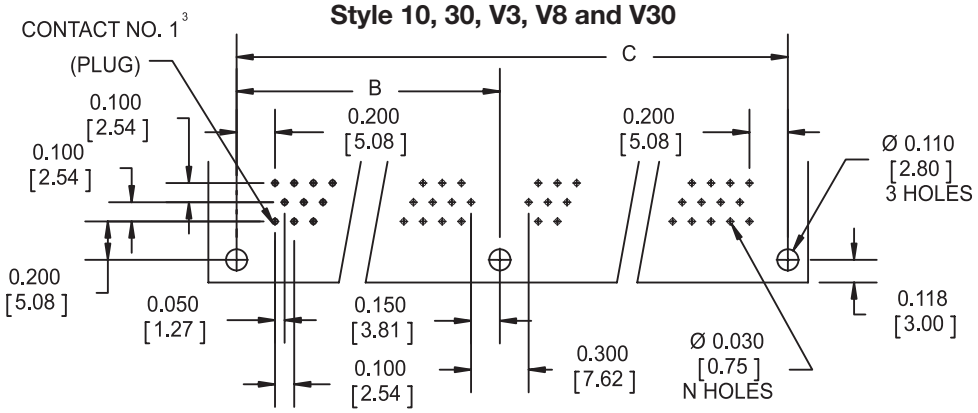
72, 84, 120 and 126 Contacts

PC Board Shown From Component Side of Board

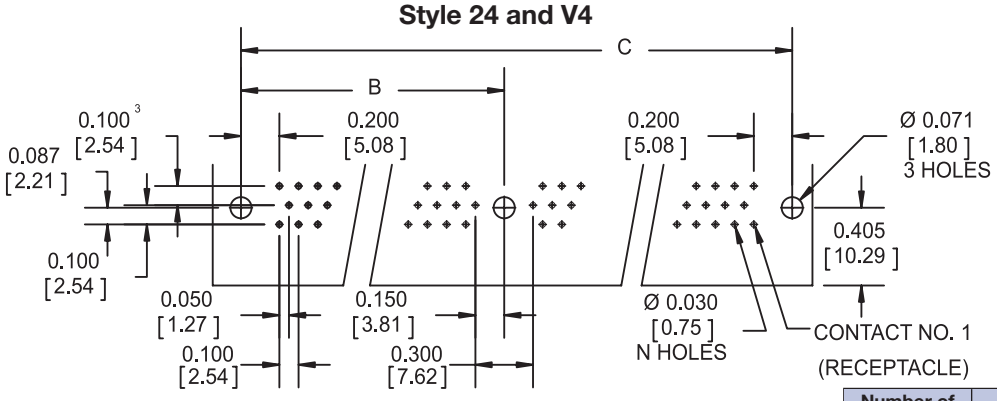
Mother Board Application
Style 11, 21, V2, V15 and V31



Daughter Board Application
Style 10, 30, V3, V8 and V30



Daughter Board Application
Style 24 and V4



Number of Contacts	B	C
72	2.100 [53.34]	4.200 [106.68]
84	2.400 [60.96]	4.800 [121.92]
96	2.700 [68.58]	5.400 [137.16]
120	3.300 [83.82]	6.600 [167.64]
126	2.400 [60.96]	4.800 [121.92]

NOTES:
1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 ± 0.10] diameter.
2) PC board may be extended to 0.453 [11.50] max for use as a pin protector.
3) Third row is for 126 pin version only.

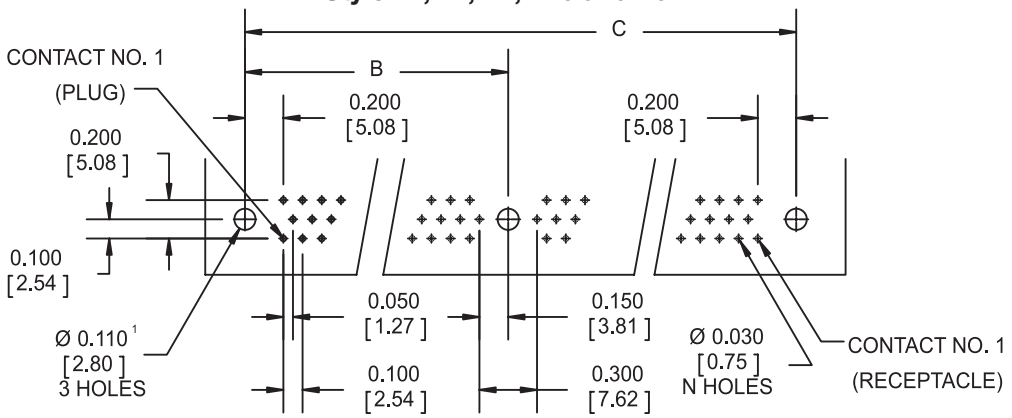
Dimensions are in inches [mm]

Mounting Dimensions

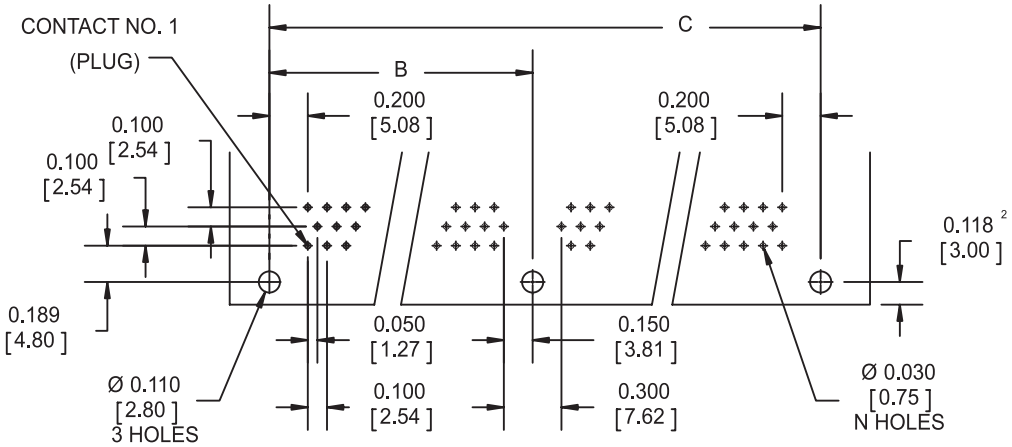
160 and 160.4 Contacts

PC Board Shown From Component Side of Board

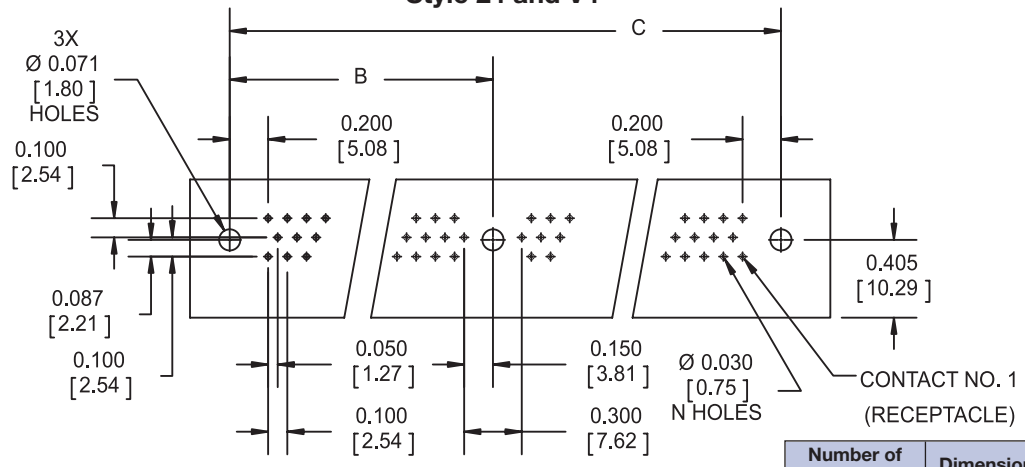
Mother Board Application
Style 11, 21, V2, V15 and V31



Daughter Board Application
Style 10, 30, V3, V9 and V30



Daughter Board Application
Style 24 and V4



Number of Contacts	Dimension B	Dimension C
160	2.950 [74.93]	5.900 [149.86]
160.4	2.950 [74.93]	5.900 [149.86]

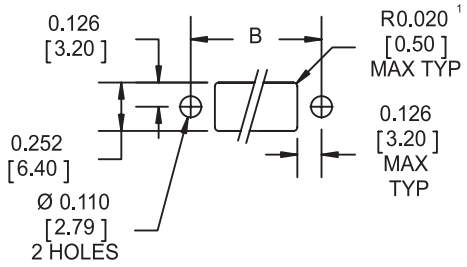
NOTES:
1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 ± 0.10] diameter.
2) PC board may be extended to 0.453 [11.50] max for use as a pin protector.

Dimensions are in inches [mm]

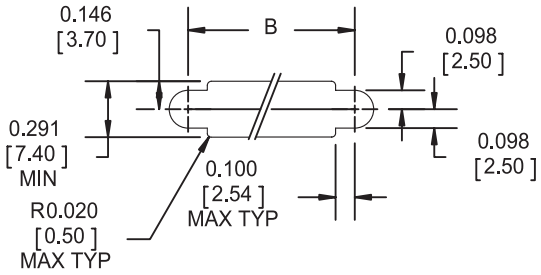
Cutout for Panel Application

17, 29, 33, 41, 53 and 65 Contacts

Fixed Mounting Styles 11, 21, V2, V15 and V31



Float Mounting Styles 13 and 23

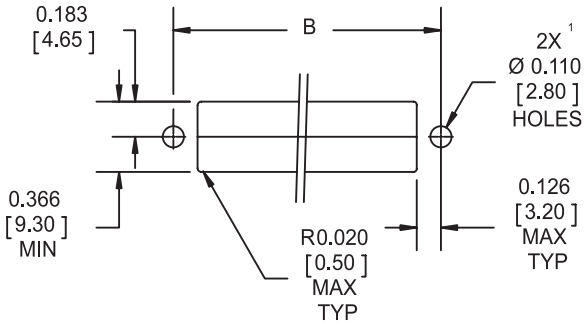


Number of Contacts	Dimension B
17	1.200 [30.48]
29	1.800 [45.72]
33	2.000 [50.8]
41	2.400 [60.96]
53	3.000 [76.20]
65	3.600 [91.44]

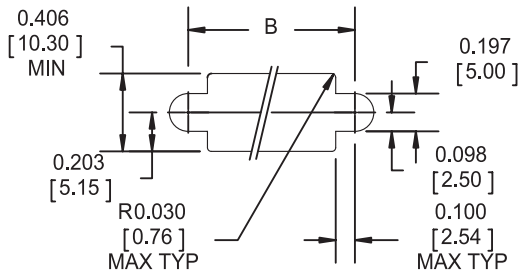
Cutout for Panel Application

62, 80.1 and 98 Contacts

Fixed Mounting Styles 11, 21, V2, V15 and V31



Float Mounting Styles 13 and 23



Number of Contacts	Dimension B
62	2.40 [60.96]
80.1	3.00 [76.20]
98	3.60 [91.44]

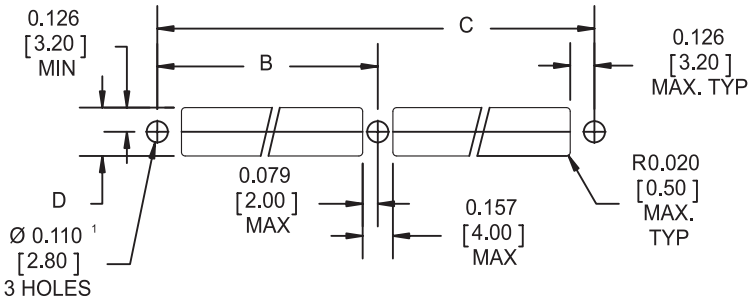
NOTE:
1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 ± 0.10] dia.

Dimensions are in inches [mm]

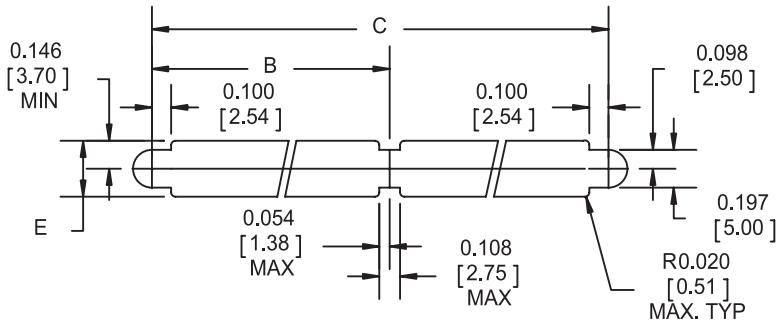
Cutout for Panel Application

72, 84, 120 and 126 Contacts

Fixed Mounting Styles 11, 21, V2, V15 and V31



Float Mounting Styles 13 and 23

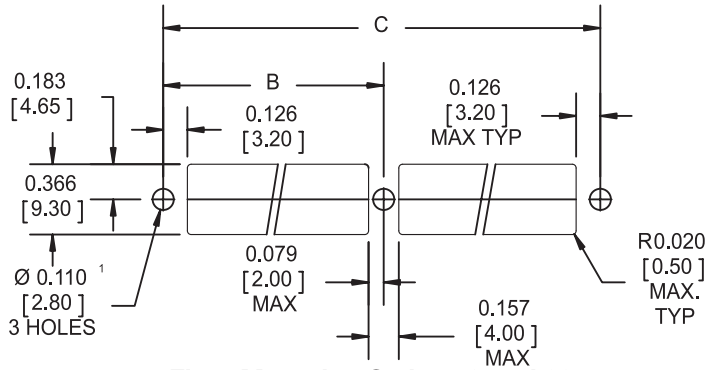


Number of Contacts	B	C	D_{Min}	E_{Min}
72	2.100 [53.34]	4.200 [106.68]	0.252 [6.40]	0.291 [7.50]
84	2.400 [60.96]	4.800 [121.92]	0.252 [6.40]	0.291 [7.50]
96	2.700 [68.58]	5.400 [137.16]	0.252 [6.40]	0.291 [7.50]
120	3.300 [83.82]	6.600 [167.64]	0.252 [6.40]	0.291 [7.50]
126	2.400 [60.96]	4.800 [121.92]	0.366 [9.30]	0.406 [10.30]

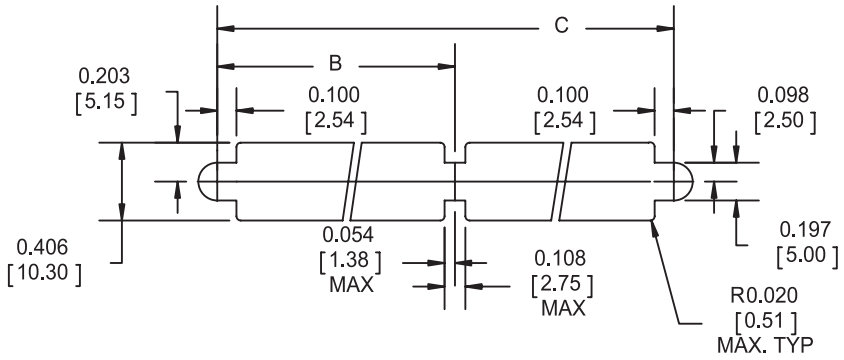
Cutout for Panel Application

160 and 160.4 Contacts

Fixed Mounting Styles 11, 21, V2, V15 and V31



Float Mounting Styles 13 and 23

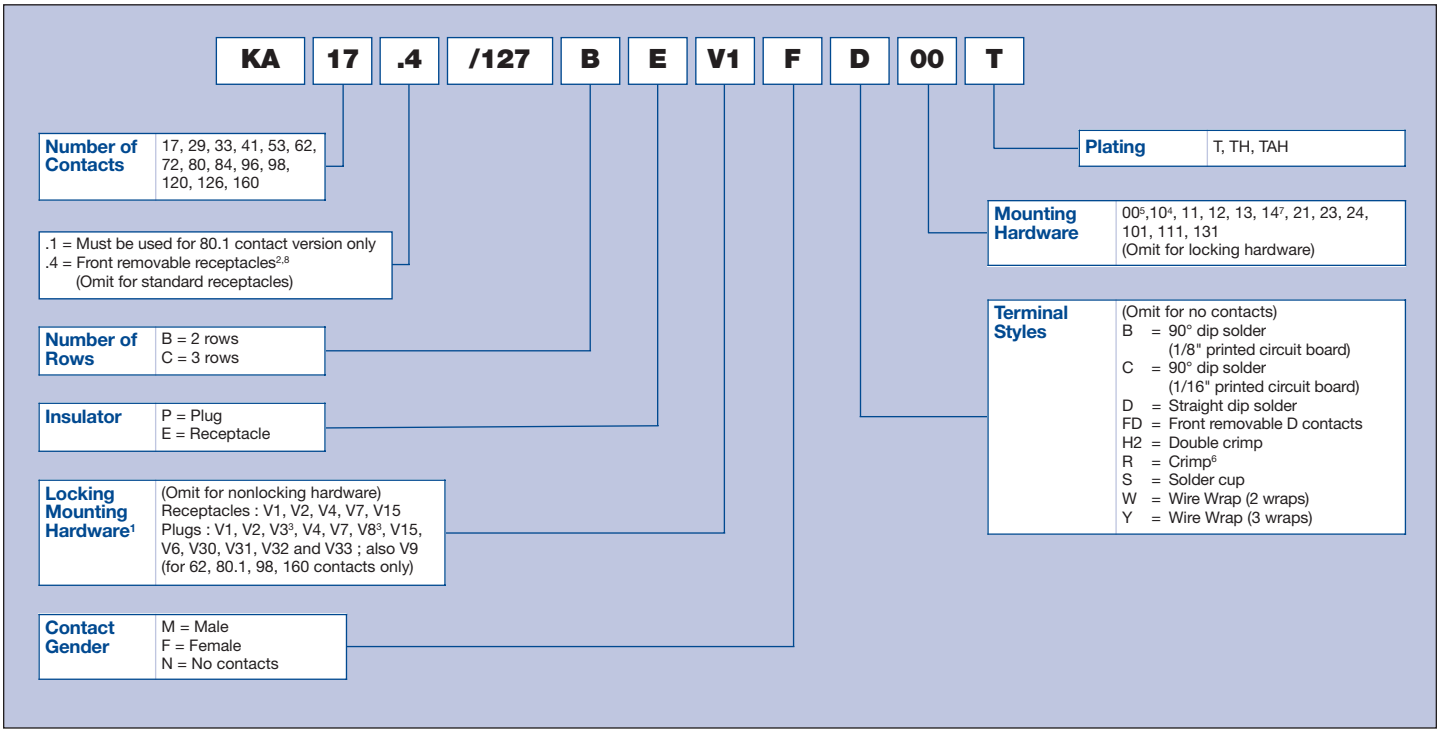


Number of Contacts	Dimension B	Dimension C
160	2.950 [74.93]	5.900 [149.86]
160.4	2.950 [74.93]	5.900 [149.86]

Dimensions are in inches [mm]

Ordering Information

For 2 and 3 Row Connectors



Accessories

Extraction Tools:

For standard contacts ..... S/DEM 1.0060

Crimp Tools:

Ref. R and H2 contacts – 1 crimp

Manual crimp tool ..... MS3198.1 or M22520/2-01 or AFM8
Positioner for contacts K547

Ref. H2 contacts
2 crimps in two operations

Manual crimp tool ..... MS3198.1 or M22520/2-01 or AFM8
Positioner for contacts (wire) K547
Positioner for contacts (insulation) K640

2 crimps in operation

This requires a special tool. Please submit wire samples and consult factory for further information. Crimping instructions doc number S50063

Other Accessories:

Insertion tool ..... S/MONT 1.0060
Spanner wrench for receptacle with front removable contacts T136
Spanner wrench for V8, V9, V10, and V15 ..... T249

Replacement Contacts: see page 3/54

Comb:

For positioning right angle dip solder contact tails.

YCM0 17 -001

Number of contacts

NOTES:

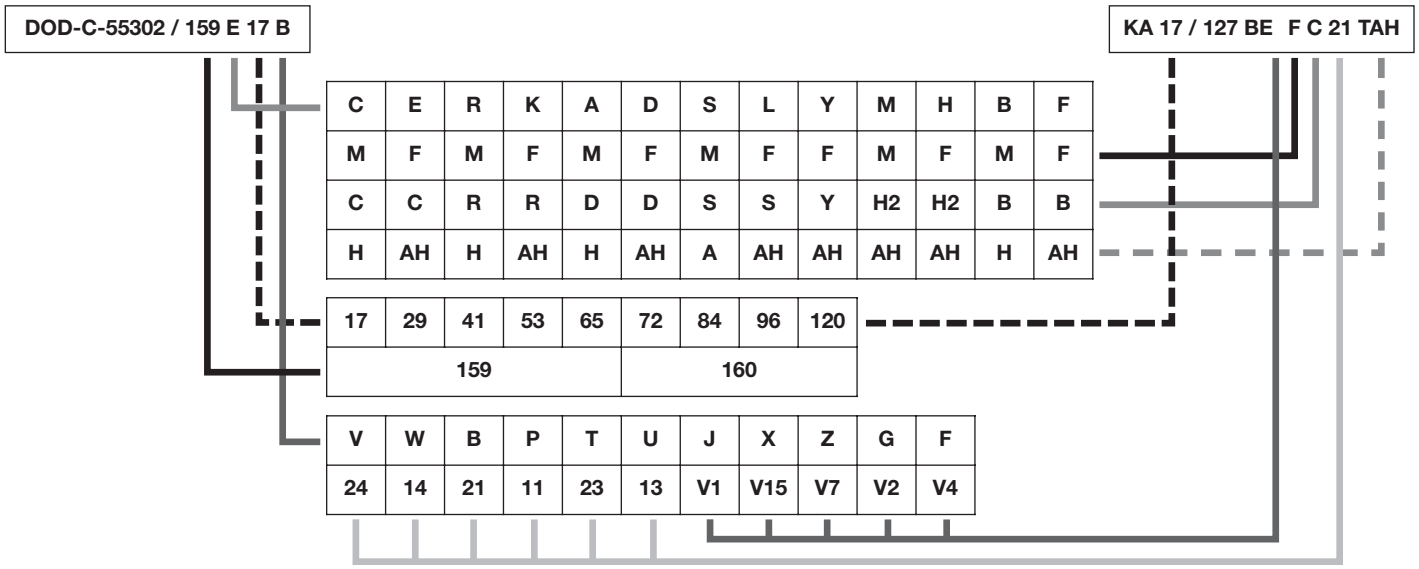
1) Important! See Mating Combination Chart for Intermatability.
2) Available with Ref. D (Straight Dip Solder) and Ref. Y (Wire Wrap) terminal styles only.
3) Not available in three row versions.
4) Available with plugs only.
5) In order to keep mating forces as low as possible, it is recommended that the connectors are fixtured during soldering, contact engineering for details.
6) Connectors with no hardware.
7) Crimp contacts will be shipped unmounted. When inserting contacts into the blocks/insultators be sure that the two flats at the rear of the contact body are aligned with the flats in the insulator.
8) Receptacles only.
9) Available in 160 contact version only.

Dimensions are in inches [mm]

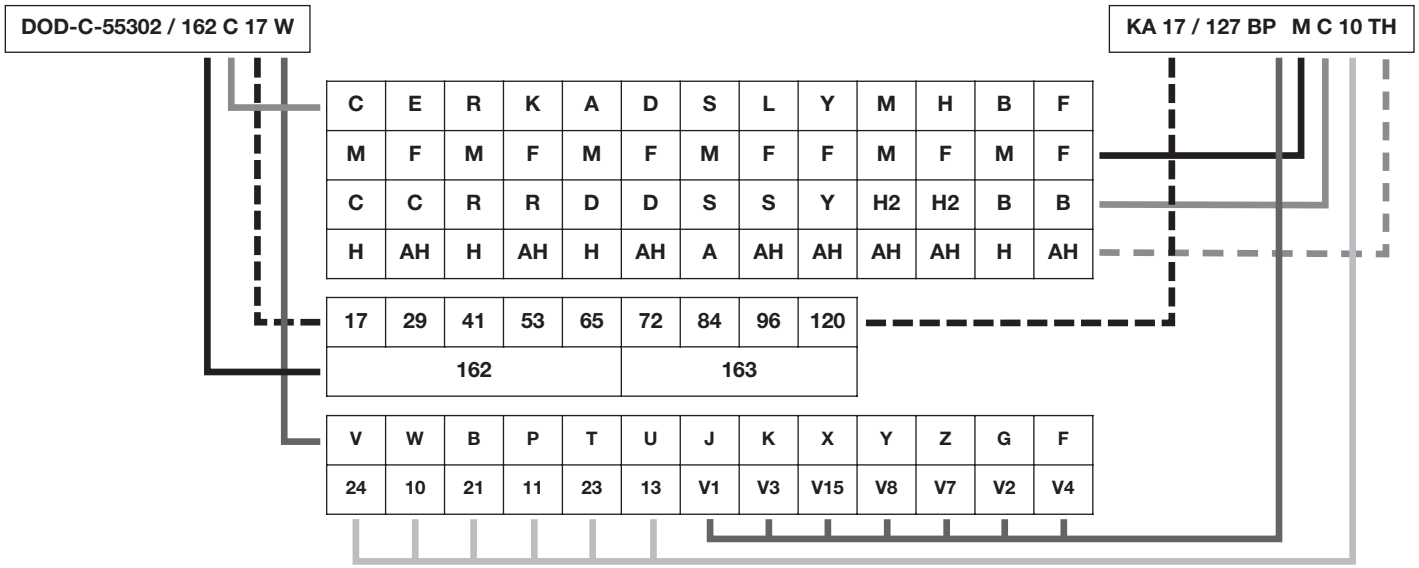
Military Part Number – Hypertronics Part Number Cross Reference

Numbers Are DOD Instead of MIL Due to Metric Design

Slash Sheets 159 and 160
Receptacle 2 Row Insulator Styles
For 17 – 120 Contact Positions



Slash Sheets 162 and 163
Receptacle 2 Row Insulator Styles
For 17 – 120 Contact Positions



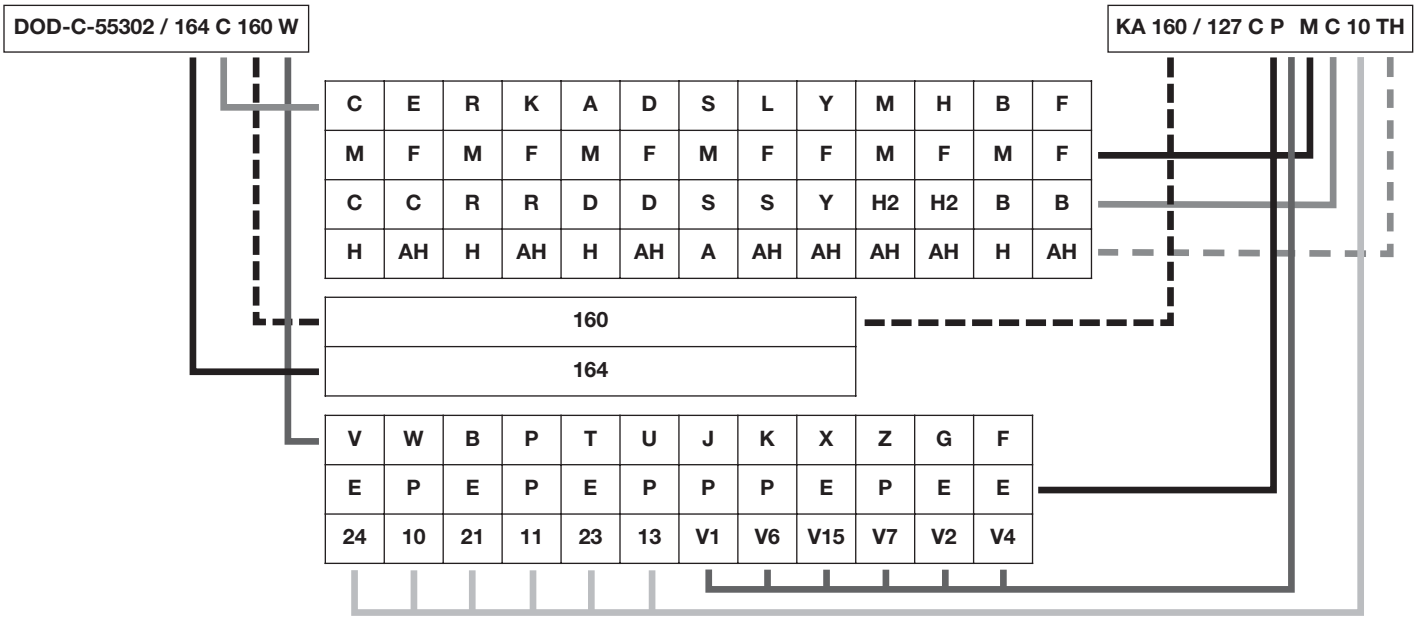
Military Part Number – Hypertronics Part Number Cross Reference

Numbers Are DOD Instead of MIL Due to Metric Design

Slash Sheet 161
160 Position Split Shell Receptacles
The Following Models Are Approved

D55302/161 J 160 G	KA 160.4/127CEFD21TAH
D55302/161 G 160 G	KA 160.4/127CEFY21TAH
D55302/161 P 160 G	KA 160.4/127CEMD21TAH
D55302/161 Q 160 G	KA 160.4/127CEMY21TAH

Slash Sheet 164
160 Contact Position Plugs and Receptacles



4 and 5 Row Printed Circuit Board Connectors

48, 68, 80, 96, 100, 108, 120, 125, 128, 136, 140, 160, 184, 196, 200, 208, 228, 230, 240, 264, 300, 320, 330, 352, 390, 392, and 490 Contacts

- 4 row and 5 row printed circuit board connectors
- 0.100 x 0.100 [2.54 x 2.54] grid spacing
- Straight dip, right angle solder, crimp, solder cup, and Wire Wrap® terminations
- 0.024 [0.60] diameter pins/sockets rated at 4 Amps
- Average insertion force of 1 ounce per contact
- Contacts removable from wiring side (front release, rear removable)
- Alignment and keying provided by the end guides - 36 combinations (user changeable)

General Specifications	
Number Contacts	48, 68, 80, 96, 100, 108, 120, 125, 128, 136, 140, 160, 184, 196, 200, 208, 228, 230, 240, 264, 300, 320, 330, 352, 390, 392 and 490
Contact Diameter	0.024 [0.60]
Current Rating	4 Amps at 30° C Rise
Contact Resistance	< 5 milliohms
Extraction Force	0.3 to 2.0 oz. per contact
Contact Life Cycles	100,000
Breakdown Voltage Between Contacts	> 1400V RMS
Dielectric Withstanding Voltage	> 1050V RMS
Insulation Resistance	> 10^6 Megohms at 500 VDC
Temperature Rating	-55° C to 125° C
Insulator Material	Diallyl-phthalate
Contact Material Plating	Beryllium copper wires and brass body Gold over nickel
Guides Hardware Material Plating	Nickel plated Brass and passivated stainless steel

Plating Reference	
Male Pins:	T = 10µin gold (min) over nickel TH = 50µin gold (min) over nickel
Female Sockets:	TAH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

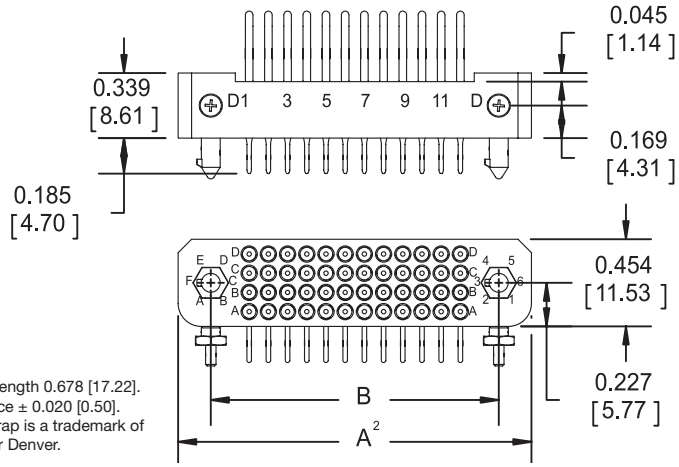
Number of Contacts	A	B
48	1.840 [46.74]	1.500 [38.10]
68	2.340 [59.44]	2.000 [50.80]
80	2.640 [67.06]	2.300 [58.42]
96	3.040 [77.22]	2.700 [68.58]
100	3.140 [79.76]	2.80 [71.12]
108	3.340 [84.84]	3.000 [76.20]
120	3.640 [92.46]	3.300 [83.82]

Number of Contacts	A	B
128	3.840 [97.54]	3.500 [88.90]
136	4.040 [102.62]	3.700 [93.98]
160	4.640 [117.86]	4.300 [109.22]
184	5.240 [133.10]	4.900 [124.46]
196	5.540 [140.72]	5.200 [132.08]
228	6.340 [161.04]	6.000 [152.40]

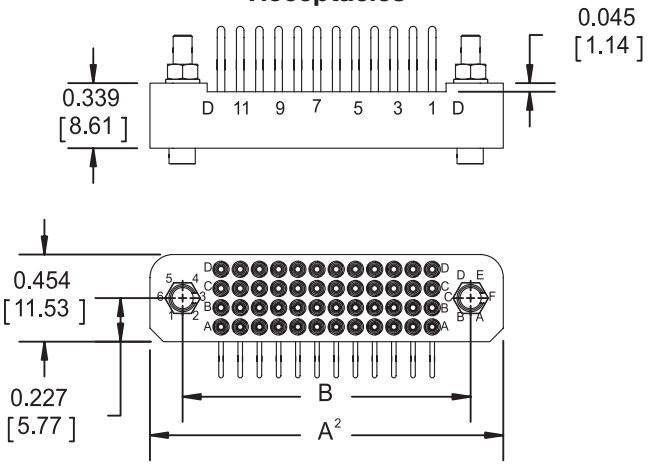
Connector Dimensions

48 to 228 Contacts

Plugs



Receptacles



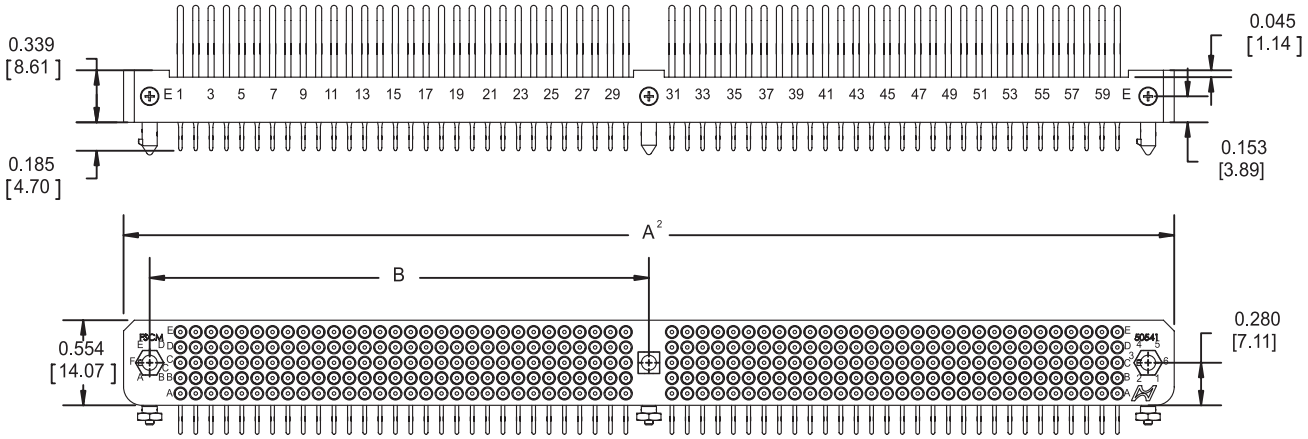
NOTES:
1) Mated length 0.678 [17.22].
2) Tolerance ± 0.020 [0.50].
3) Wire Wrap is a trademark of Gardner Denver.

Dimensions are in inches [mm]

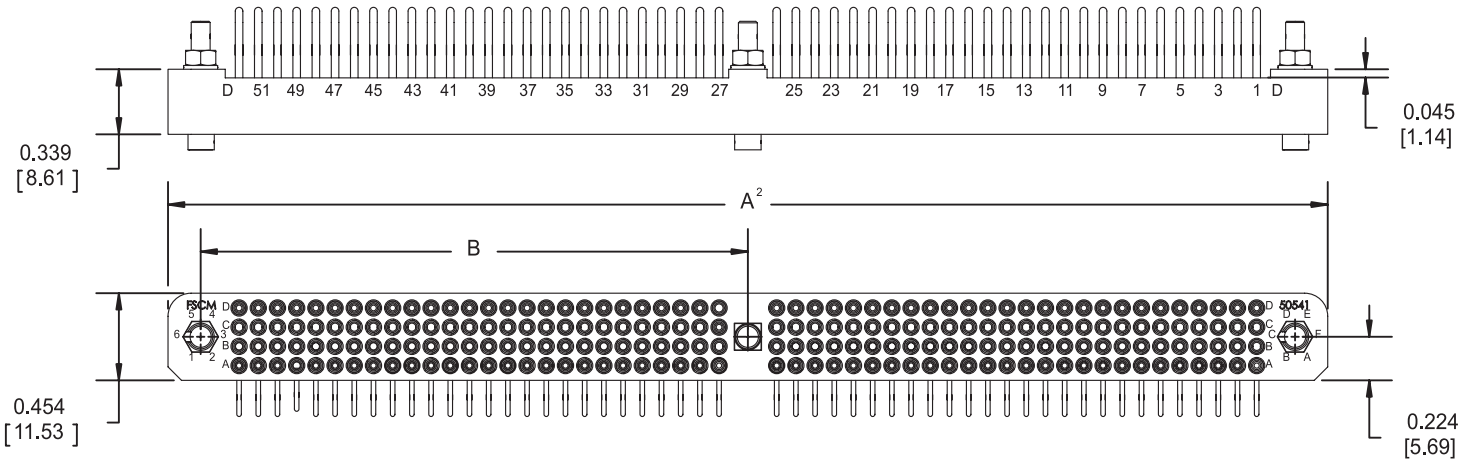
4 Row Connectors

208, 240, 264, 352 and 392 Contacts

Plugs



Receptacles



Number of Contacts	A	B
208	6.040 [153.42]	2.850 [72.39]
240	6.840 [173.74]	3.250 [82.55]
264	7.438 [188.92]	3.550 [90.17]
352	9.640 [244.86]	4.650 [118.11]
392	10.640 [270.26]	5.150 [130.81]

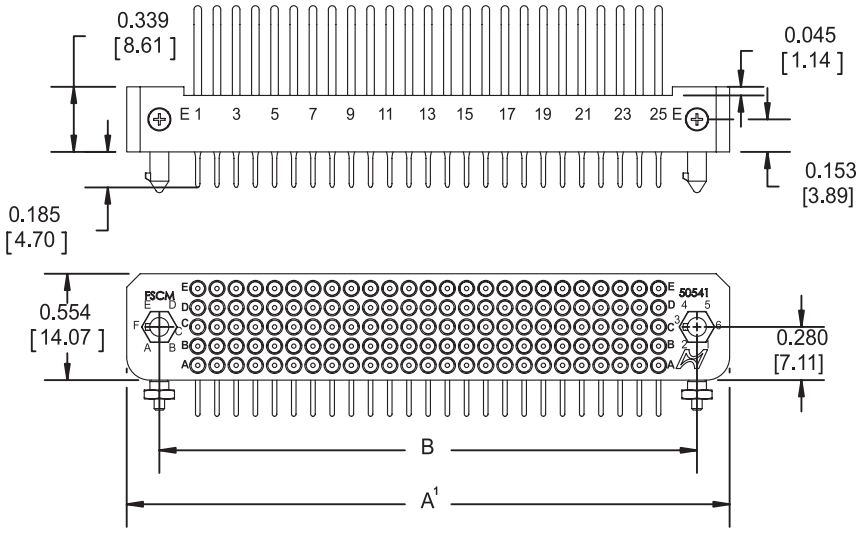
NOTES:
1) For insulators longer than 7.00 [178.00], a mother board-daughter board configuration is required.
2) Tolerance ± 0.020 [0.50].
3) Mated length 0.678 [17.22].

Dimensions are in inches [mm]

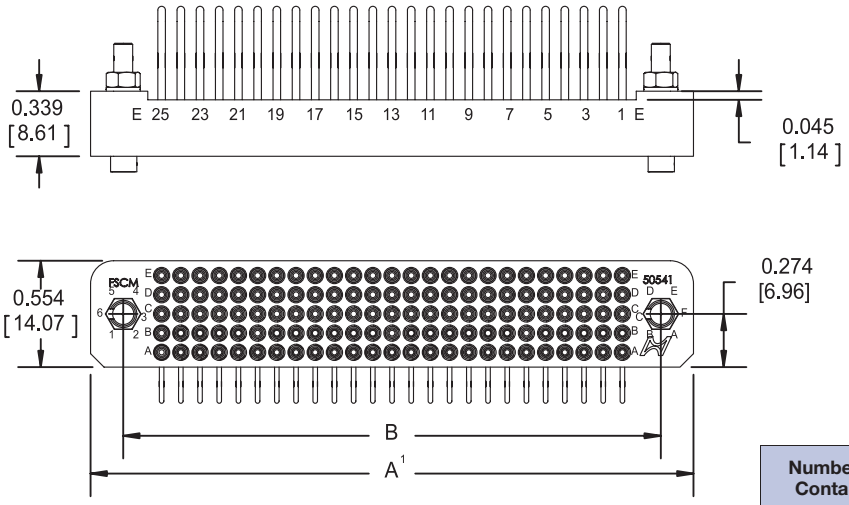
5 Row Connectors

125, 140, 160, 200, 230 and 240 Contacts

Plugs



Receptacles



Number of Contacts	A	B
125	3.140 [79.76]	2.800 [71.12]
140	3.440 [87.38]	3.100 [78.74]
160	3.840 [97.54]	3.500 [88.92]
200	4.640 [117.86]	4.300 [109.22]
230	5.240 [133.10]	4.900 [124.46]
240	5.440 [138.10]	5.100 [129.54]

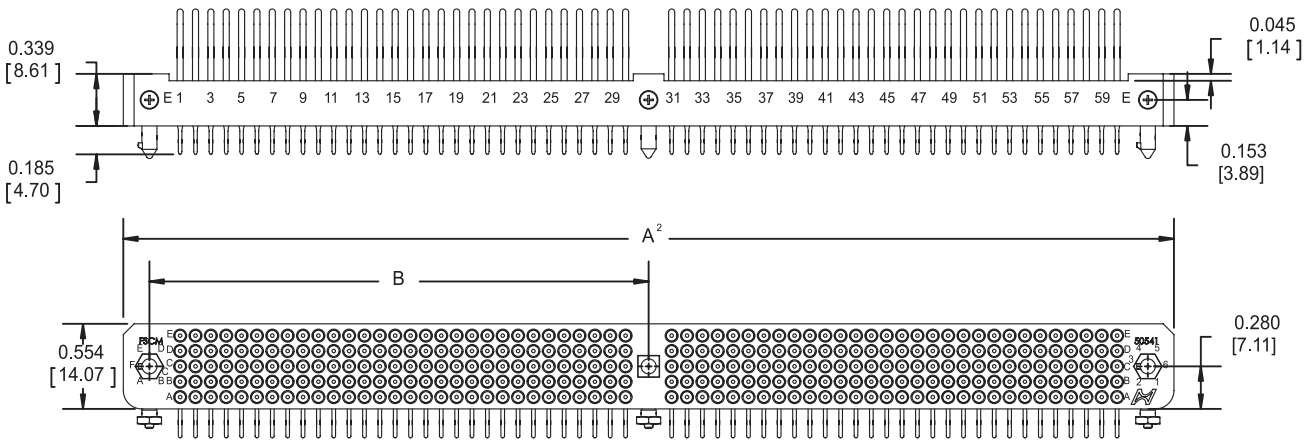
NOTES:
1) Tolerance ± 0.020 [0.50].
2) Mated length 0.678 [17.22].

Dimensions are in inches [mm]

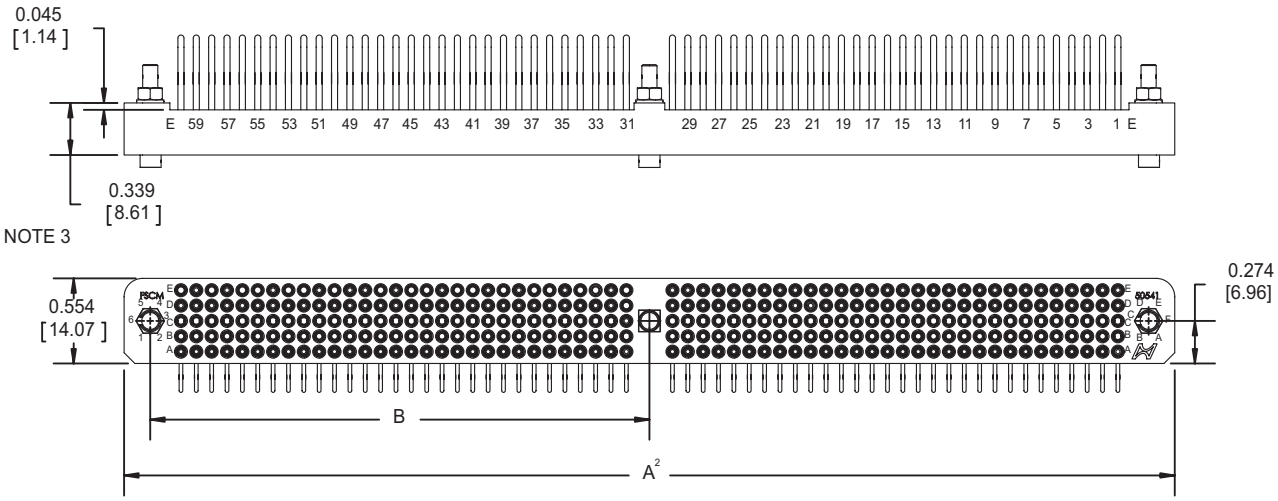
5 Row Connectors

300, 320, 330, 390 and 490 Contacts

Plugs



Receptacles



Number of Contacts	A	B
300	6.840 [173.74]	3.250 [82.55]
320	7.240 [183.90]	3.450 [87.63]
330	7.440 [188.98]	3.550 [90.17]
390	8.640 [219.46]	4.150 [105.41]
490	10.640 [270.26]	5.150 [130.81]

NOTES:

1) For insulators longer than 7.00 [178.00], a mother board-daughter board configuration is required.
2) Tolerance ± 0.020 [0.50].
3) Mated length 0.678 [17.22].

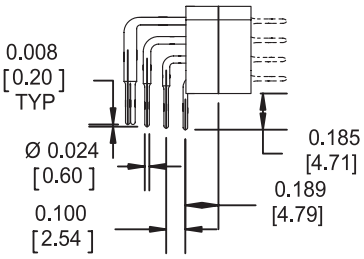
Dimensions are in inches [mm]

Terminal Styles

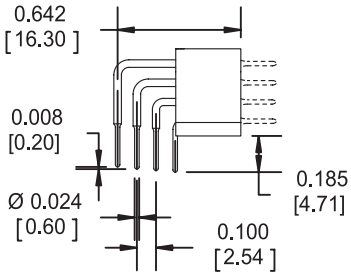
Ref. B

• For 1/8" PC Board

Plugs
Female/Male

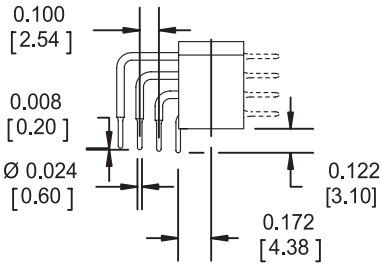


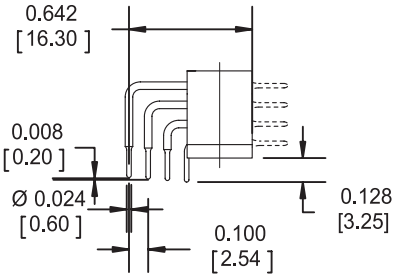
Receptacles
Female/Male



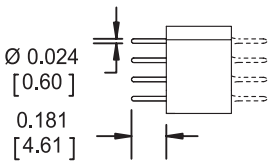
Ref. C

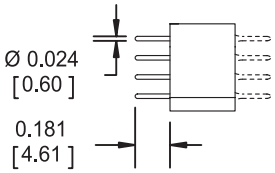
• For 1/16" PC Board



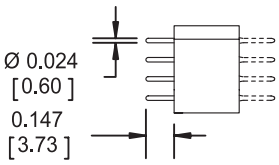


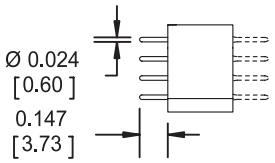
Ref. D





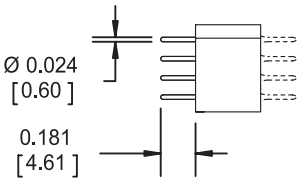
Ref. DD*

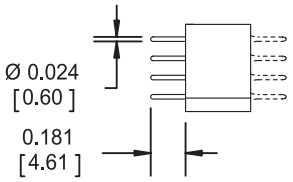




Ref. FD*

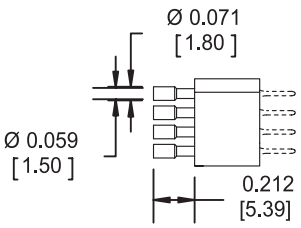
Front Removable Straight Dip Solder Contacts

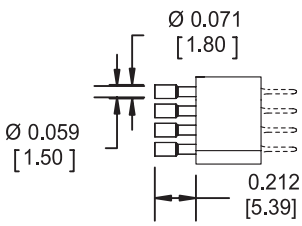




Ref. H2

• Accepts 22 and 26 AWG Wire
• Stripped Back 0.146 [3.70]





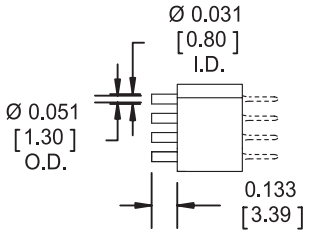
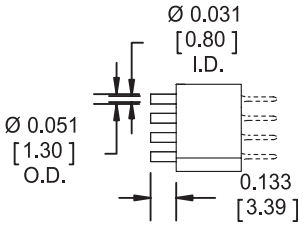
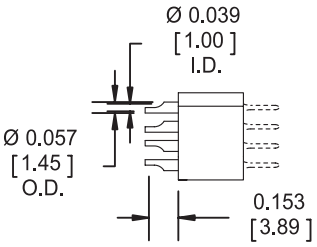
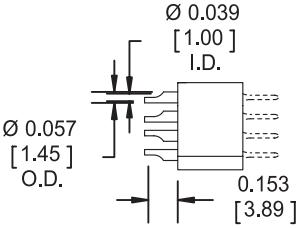
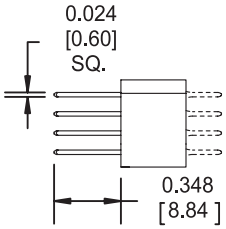
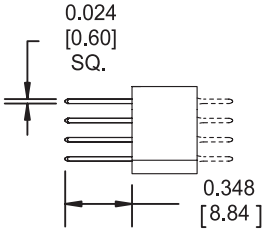
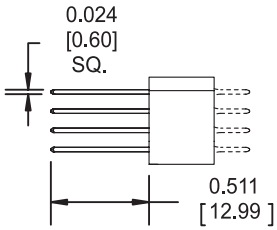
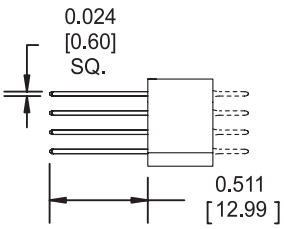
NOTES:
1) Crimp contacts will be shipped unmounted. When inserting contacts in the blocks/insulators be sure that the rear of the contact body is aligned with the flats in the insulator.
2) All tails are ± 0.015 [0.40] long.

* Consult factory for availability.

Ref.	Terminal Style
B	Right angle dip solder (1/8" board)
C	Right angle dip solder (1/16" board)
D/DD/FD	Straight dip solder
H2[1]	Double crimp (for insulation)

Dimensions are in inches [mm]

Terminal Styles

Ref.	Plugs Female/Male	Receptacles Female/Male
R • Accepts 22, 24, and 26 AWG Wire • Stripped Back 0.173 [4.40]		
S • Accepts up to 22 AWG Wire • Stripped Back 0.126 [3.20]		
W** • 2 Wraps 30 and 28 AWG		
Y • 3 Wraps 28 and 30 AWG • 2 Wraps 24 and 26 AWG		

Ref.	Terminal Style
R[2]	Crimp
S	Solder cup
W	Wire Wrap®[4] (2 wraps)
Y	Wire Wrap®[4] (3 wraps)

Plating Reference	
Male Pins:	G = 10µin gold (min) over nickel H = 50µin gold (min) over nickel
Female Sockets:	AH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination ANH = 50µin gold (min) over nickel on mating surface, nickel over copper flash on socket body | components, gold flash over nickel on termination

NOTES:
1) All tails are ± 0.015 [0.40] long.
2) Crimp contacts will be shipped unmounted. When inserting contacts into blocks/insulators be sure that the rear of the contact is aligned with the flats in the insulator.
3) Front removable contacts.

** Consult factory

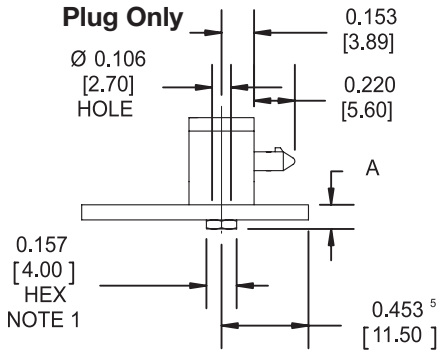
KA Series Replacement Contact Part Numbers			
Ref.	Standard Sockets	Standard Pins	Beryllium Copper Pins
B (row 1)	YSK006-028AH	YPN006-034	YPN006-072H
B (row 2)	YSK006-029AH	YPN006-035	YPN006-075H
B (row 3)	YSK006-030AH	YPN006-036	YPN006-073H
B (row 4)	YSK006-074AH	YPN006-148	—
B (row 5)	YSK006-094AH	YPN006-172	—
C (row 1)	YSK006-013AH	YPN006-023	YPN006-048H
C (row 2)	YSK006-006AH	YPN006-016	YPN006-050H
C (row 3)	YSK006-014AH	YPN006-024	YPN006-077H
C (row 4)	YSK006-090AH	YPN006-159	—
C (row 5)	YSK006-092AH	YPN006-171	—
D	YSK006-005AH	YPN006-015	YPN006-049H
DD	YSK006-096AH	YPN006-106	—
FD[3]	YSK006-274AH	YPN006-470	YPN006-487H
H2	YSK006-009AH	YPN006-019	—
R	YSK006-011AH	YPN006-021	—
S	YSK006-010AH	YPN006-020	—
W	YSK006-020AH	YPN006-039	—
Y	YSK006-012AH	YPN006-022	—

Dimensions are in inches [mm]

Standard Mounting Styles

10

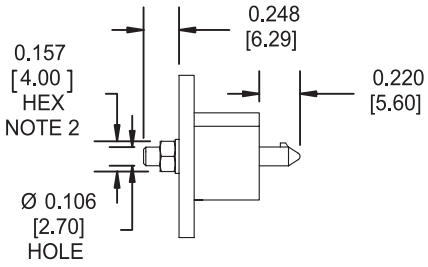
Plug Only



	Dimension A	
Terminal	4 row	5 row
B	0.203 [5.16]	0.232 [5.89]
C	0.164 [4.16]	0.153 [3.89]

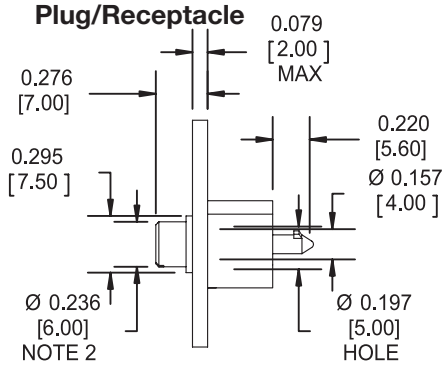
11

Plug/Receptacle



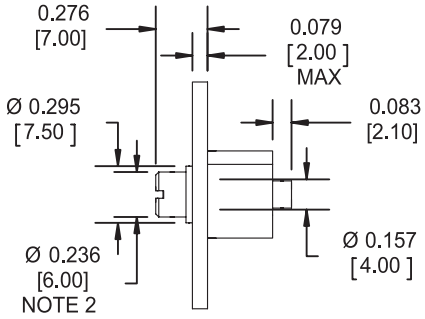
13 Float Mounting

Plug/Receptacle



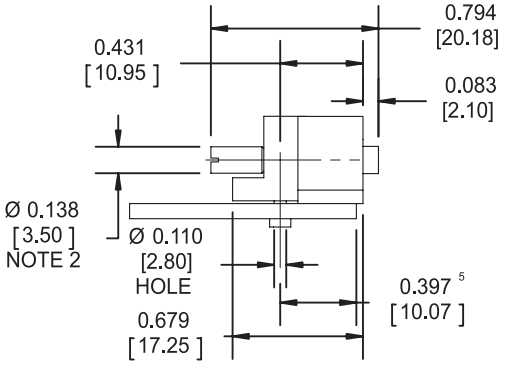
23 Float Mounting

Plug/Receptacle



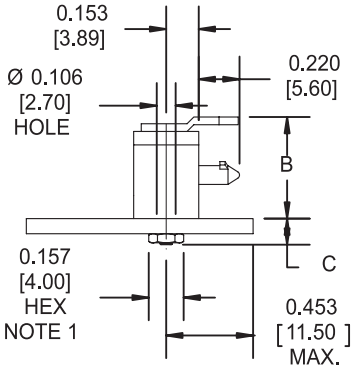
24

Plug/Receptacle



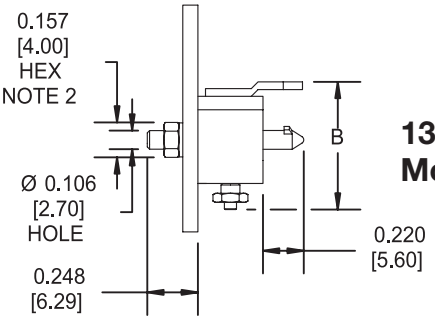
101

Plug with Pin Protector



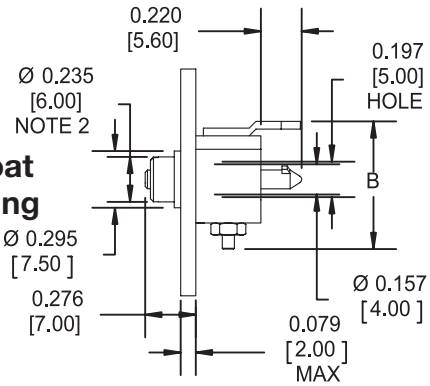
111

Plug with Pin Protector



131 Float Mounting

Plug with Pin Protector



	Dimension B (Max)		Dimension C (Max)	
Style	4 row	5 row	4 row	5 row
101	0.541 [13.74]	0.661 [16.78]	0.168 [4.26]	0.236 [5.91]
111	0.781 [19.84]	0.900 [22.86]	—	—
131	0.781 [19.84]	0.900 [22.86]	—	—

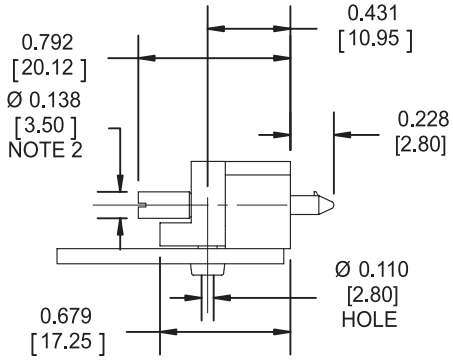
NOTES:
1) 15.00 oz. in torque.
2) 35.20 oz. in torque.
3) The dimensions between the mounting holes are the same as between the guides.
4) Mounting bracket is 0.25 [6.35] wide.
5) PC board may be extended to 0.453 [11.50] max. for use as a pin protector.

Dimensions are in inches [mm]

Standard Mounting Styles

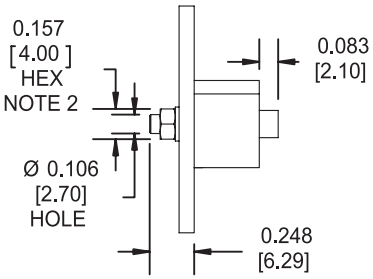
Receptacle Only

14



Plug/Receptacle

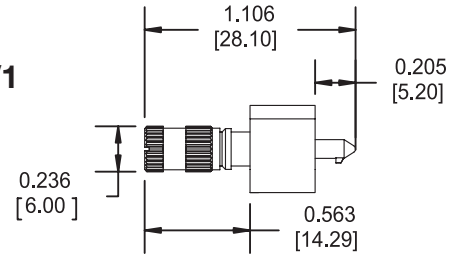
21



Locking Mounting Styles

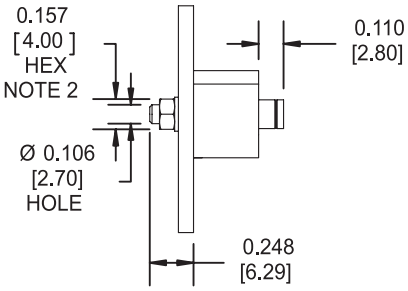
Plug/Receptacle

V1



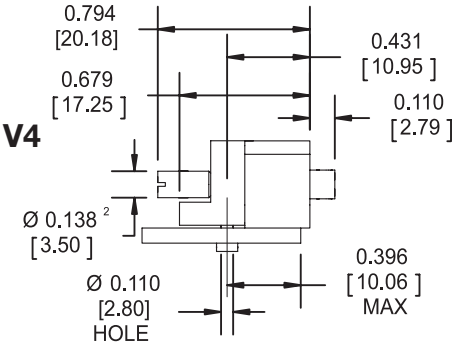
Plug/Receptacle

V2



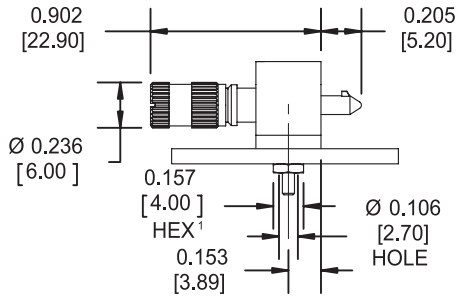
Plug/Receptacle

V4



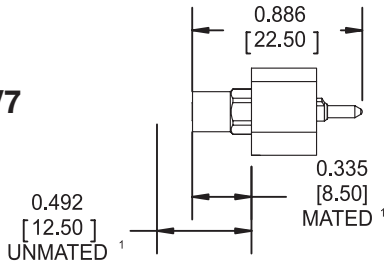
Plug Only

V6



Plug/Receptacle

V7



Style	Will Only Mate With	Locking Method
V1	V2, V4	Push, 1/4 Turn
V2	V1, V6	Push, 1/4 Turn
V4	V1, V6	Push, 1/4 Turn
V6	V2, V4	Push, 1/4 Turn
V7	V9, V15	Screw
V30	V33	Screw
V31	V32	Screw
V32	V31, V33	Screw
V33	V30, V32	Screw

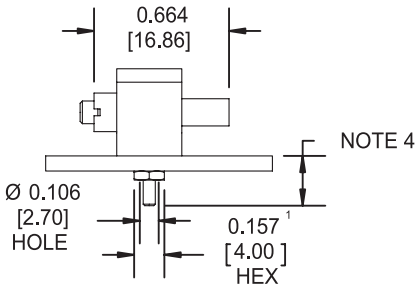
NOTES:
1) 15.00 oz. in torque.
2) 35.20 oz. in torque.
3) The dimensions between the mounting holes are the same as between the guides.
4) Mounting bracket is 0.25 [6.35] wide.

Dimensions are in inches [mm]

Locking Mounting Styles

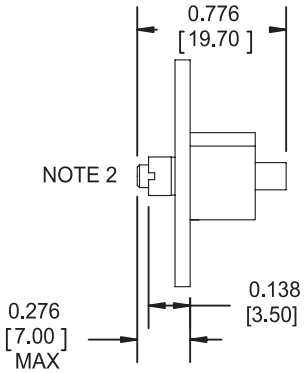
Plug Only

V9



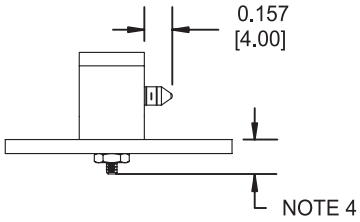
Plug/Receptacle

V15



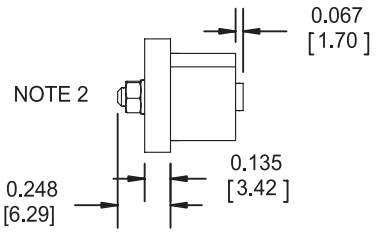
Plug Only

V30
Stationary
Jackscrew



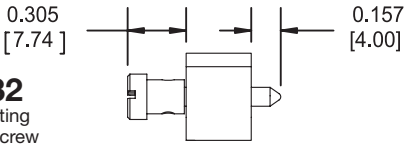
Plug/Receptacle

V31
Stationary
Jackscrew



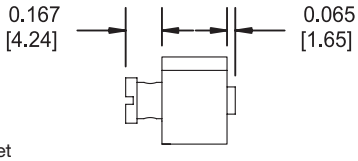
Plug Only

V32
Rotating
Jackscrew



Plug Only

V33
Rotating
Jack Socket



Style	Will Only Mate With	Locking Method
V1	V2, V4	Push, 1/4 Turn
V2	V1, V6	Push, 1/4 Turn
V4	V1, V6	Push, 1/4 Turn
V7	V9, V15	Screw
V9	V7	Screw
V15	V7	Screw
V30	V33	Screw
V31	V32	Screw
V32	V31, V33	Screw
V33	V32	Screw

NOTES:
1) 15.00 oz. in torque.
2) 35.20 oz. in torque.
3) 52.30 oz. in torque.
4) Right angle mounting screw length is determined by contact terminal length.

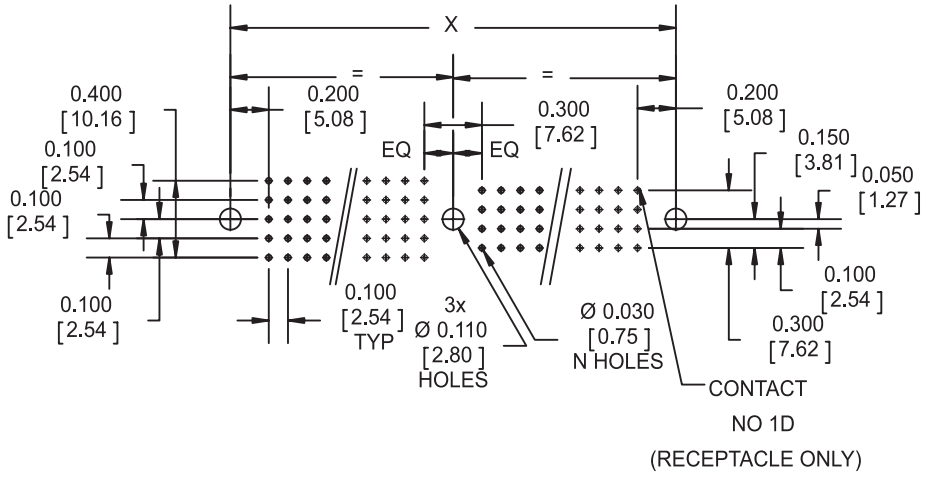
Dimensions are in inches [mm]

Mounting Dimensions

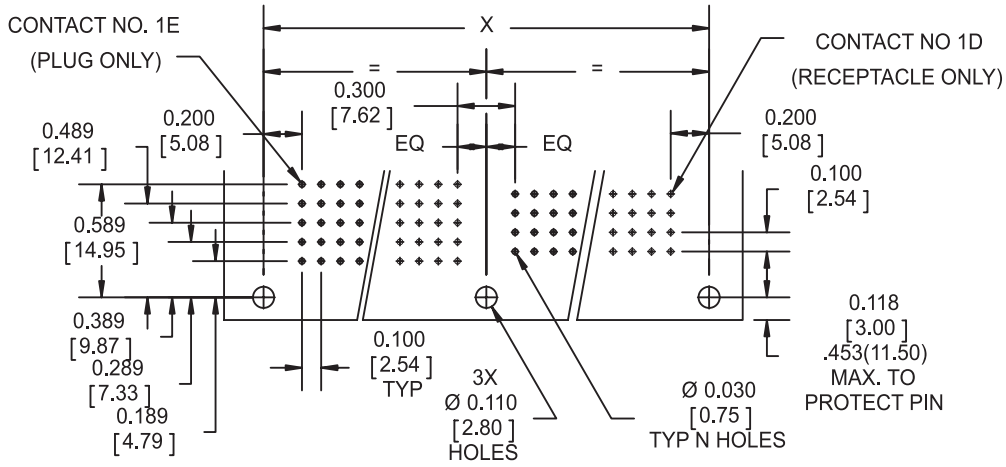
Cutout For Panel Application

(Center hole is not required for 48 through 184 positions)

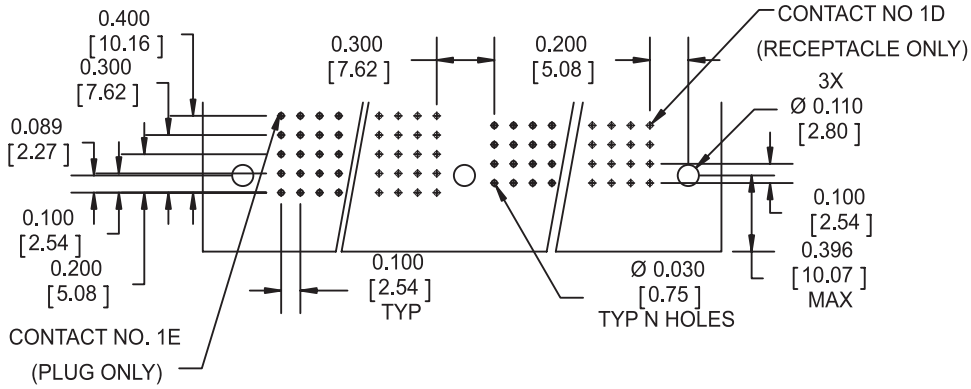
Mother Board Application
Style 11, 21, V2 and V31



Daughter Board Application
Style 10, 30, V3, V9 and V30



Daughter Board Application
Style 24 and V4



Number of Contacts	X
48	1.500 [38.10]
68	2.000 [50.80]
80	2.300 [58.42]
96	2.700 [68.58]
100	2.800 [71.12]
108	3.000 [76.20]
120	3.300 [83.82]
125	2.800 [71.12]
128	3.500 [88.90]
136	3.700 [93.98]
140	3.100 [78.74]
160 (5 row)	3.500 [88.92]
160 (4 row)	4.300 [109.22]
184	4.900 [124.46]
196	5.200 [132.08]
200	4.300 [109.22]
208	5.700 [144.78]
228	6.000 [152.40]
230	4.900 [124.46]
240 (5 row)	5.100 [129.54]
240 (4 row)	6.500 [165.10]
264	7.100 [180.34]
300	6.500 [165.10]
320	6.900 [175.26]
330	7.100 [180.34]
352	9.300 [236.22]
390	8.300 [210.82]
392	10.300 [261.62]
490	10.300 [261.62]

NOTE:
For connectors with center guide float mounts, rows adjacent to center guide will not be loaded. Example: a KA490 will actually have 480 contacts; a KA392 will actually have 384 contacts.

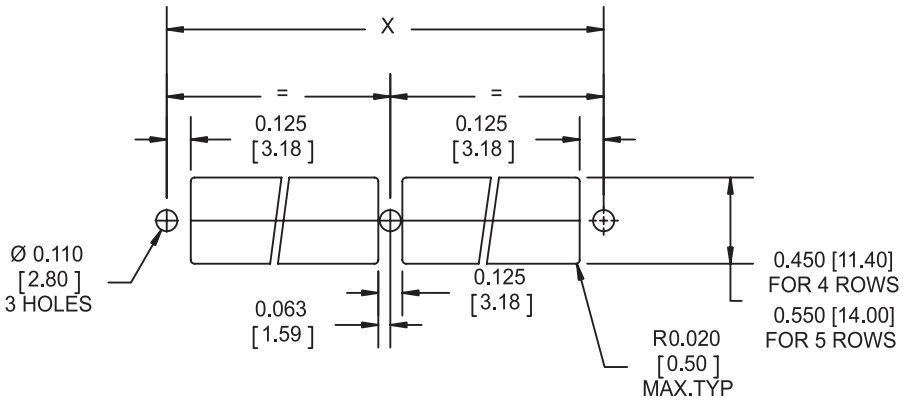
Dimensions are in inches [mm]

Mounting Dimensions

Cutout For Panel Application

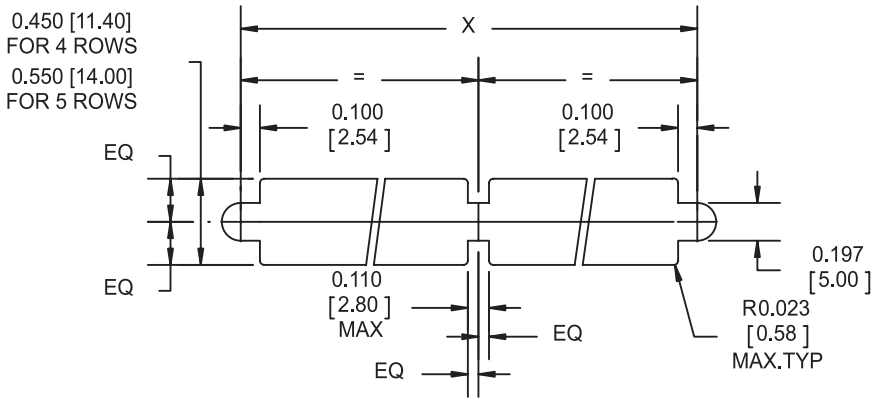
(Center hole is not required for 48 through 184 positions)

Fixed Mounting Style
11, 21, V2 and V31



Number of Contacts	X
48	1.500 [38.10]
68	2.000 [50.80]
80	2.300 [58.42]
96	2.700 [68.58]
100	2.800 [71.12]
108	3.000 [76.20]
120	3.300 [83.82]
125	2.800 [71.12]
128	3.500 [88.90]
136	3.700 [93.98]
140	3.100 [78.74]
160 (5 row)	3.500 [88.92]
160 (4 row)	4.300 [109.22]
184	4.900 [124.46]
196	5.200 [132.08]
200	4.300 [109.22]
208	5.700 [144.78]
228	6.000 [152.40]
230	4.900 [124.46]
240 (5 row)	5.100 [129.54]
240 (4 row)	6.500 [165.10]
264	7.100 [180.34]
300	6.500 [165.10]
320	6.900 [175.26]
330	7.100 [180.34]
352	9.300 [236.22]
390	8.300 [210.82]
392	10.300 [261.62]
490	10.300 [261.62]

Float Mounting Style
13 and 23

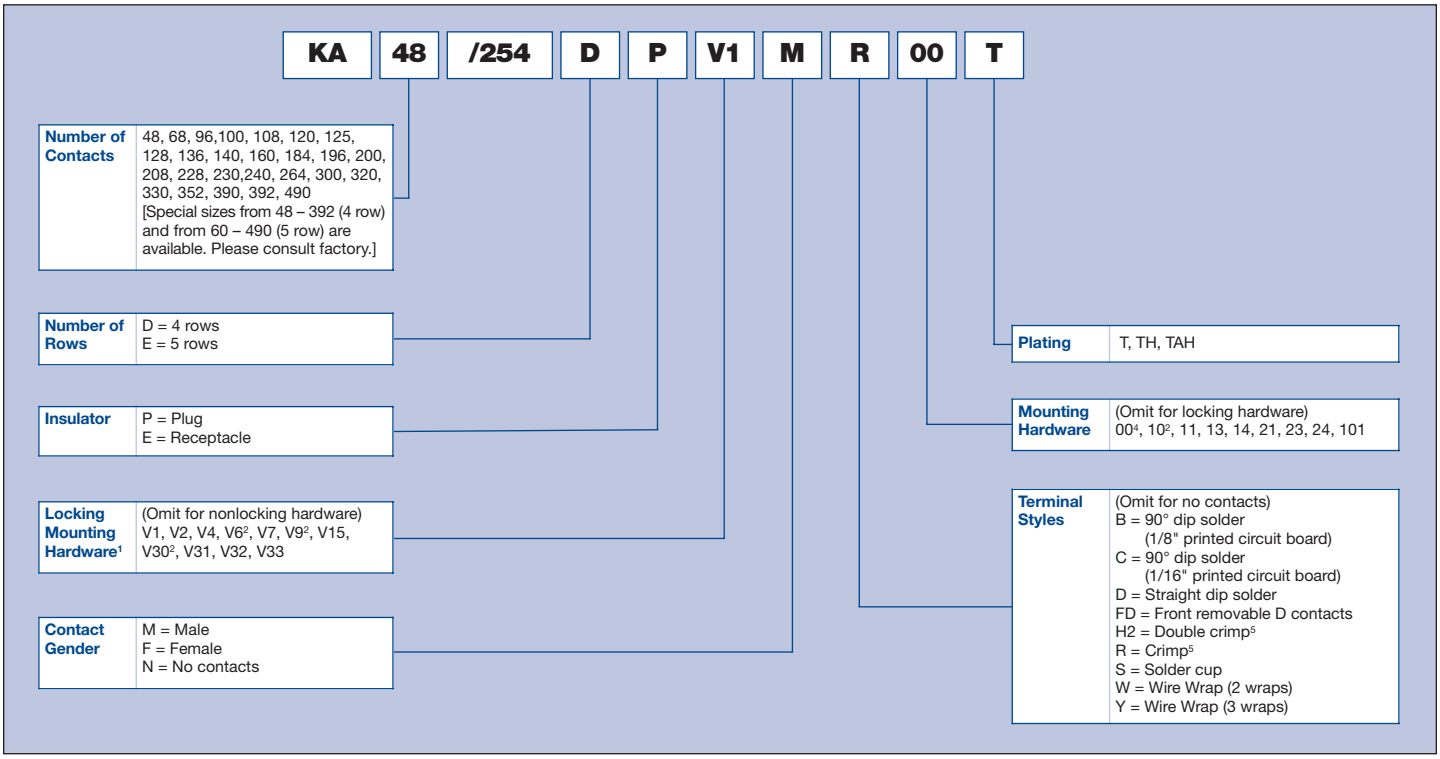


NOTE:
For connectors with center guide float mounts, rows adjacent to center guide will not be loaded. Example: a KA490 will actually have 480 contacts; a KA392 will actually have 384 contacts.

Dimensions are in inches [mm]

Ordering Information

For 4 and 5 Row Connectors



Accessories

Extraction Tool:

For standard contacts.....S/DEM 1.0060

Crimp Tools:

Ref. R and H2 contacts – 1 crimp

Manual crimp tool.....MS3198.1 or M22520/2-01 or AFM8
Positioner for contacts.....K547

Ref. H2 contacts
2 crimps in two operations

Manual crimp tool.....MS3198.1 or M22520/2-01 or AFM8
Positioner for contacts (wire).....K547
Positioner for contacts (insulation).....K640

2 crimps in operation

This requires a special tool. Please submit wire samples and consult factory for further information.
Crimping instructions doc number S50063

Other Accessories:

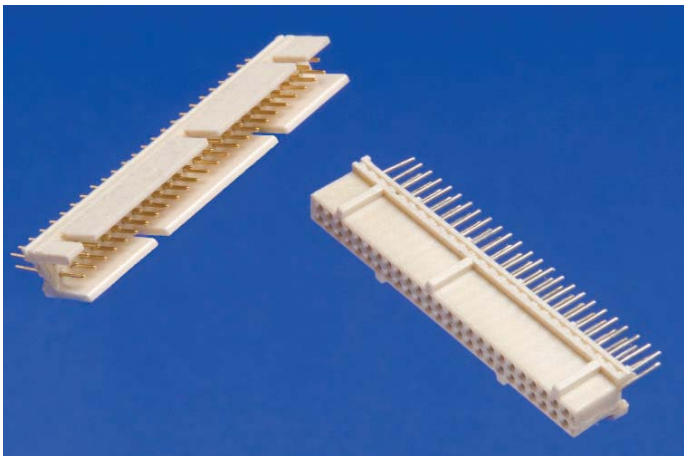
Insertion tool.....S/MONT 1.0060
Spanner wrench for receptacle with front removable contacts.....T136

Replacement Contacts: see page 3/74

NOTES:

1) Important! See mating Combination Chart for Intermatability.
2) Available in plugs only.
3) In order the keep mating forces as low as possible, it is recommended that the connectors are fixtured during soldering.
4) Connectors with no hardware.
5) Crimp contacts will be shipped unmounted. When inserting contacts into the blocks/insulators, be sure that the two flats at the rear of the contact body are aligned with the flats in the insulator.

Dimensions are in inches [mm]

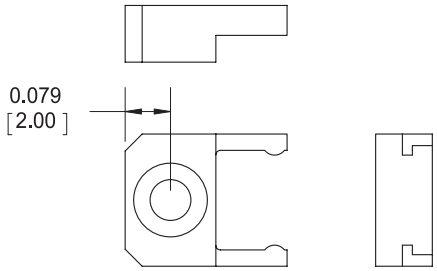


High Density, Low Profile Mezzanine Connectors

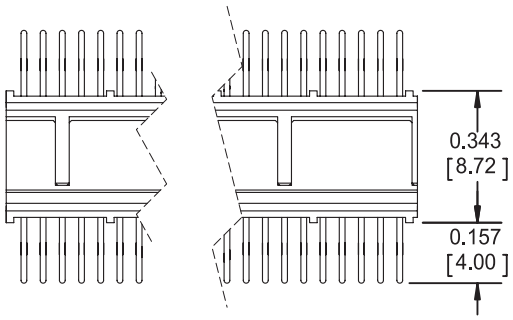
- 50, 100, and 140 contact versions
- 0.050 [1.27] pitch high density connector
- 0.343 [8.71] stacking height
- Low profile and light weight
- Optional snap-on mounting brackets
- 0.40mm diameter hyperboloid sockets
- Long life, high reliability contact system
- Inherent keying offsets
- Glass filled LCP insulators
- Gold and solder tail options available
- For through-hole printed circuit board up to 0.125 [3.18]

General Specifications	
Number Contacts	50, 100, 140
Pitch	0.050 [1.27]
Current Rating	1 Amp per contact
Contact Resistance	< 8 milliohms
Extraction Force	0.3 to 1.6 oz.
Contact Life Cycles	Up to 100,000
Insulation Resistance	10 megohms at 500 VDC
Dielectric Withstanding Voltage	500V RMS
Temperature Rating	-55° to 125° C
Insulator Material	LCP (liquid crystal polymer)
Contact Plating Pin Socket	 50µin gold over nickel 50µin gold over nickel
Printed Circuit Board Plated Through-Hole Diameter	0.021 [0.53]
Termination Length	0.157 [4.00]
Flammability Rating	UL94-V0

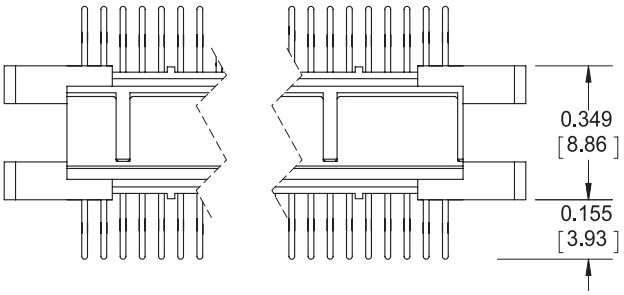
Optional Mounting Brackets



Stacking Height Between Boards Without Mounting Brackets

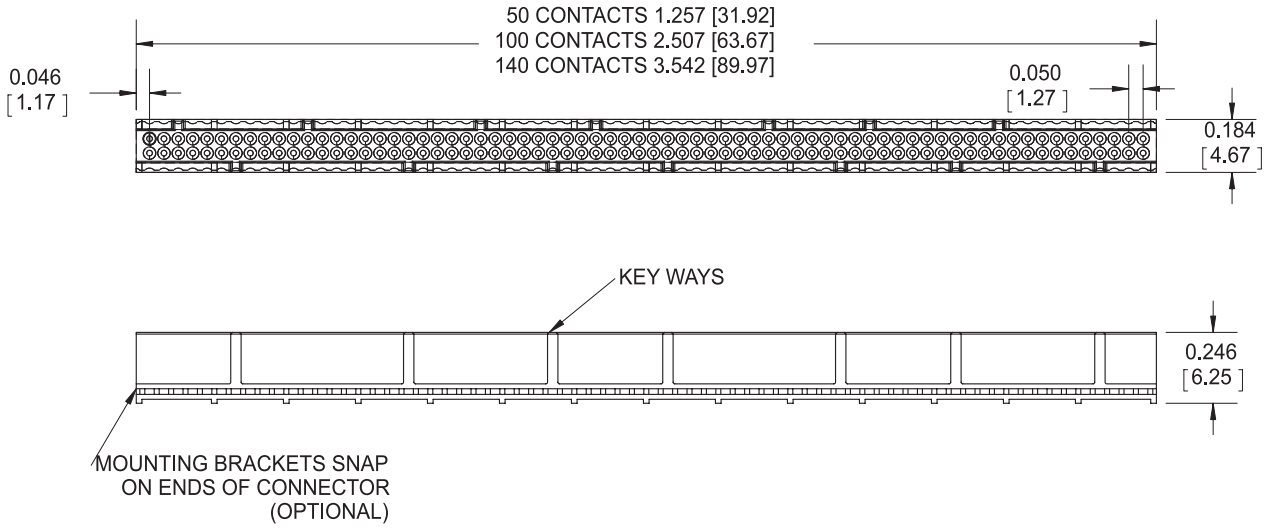


Stacking Height Between Boards With Mounting Brackets

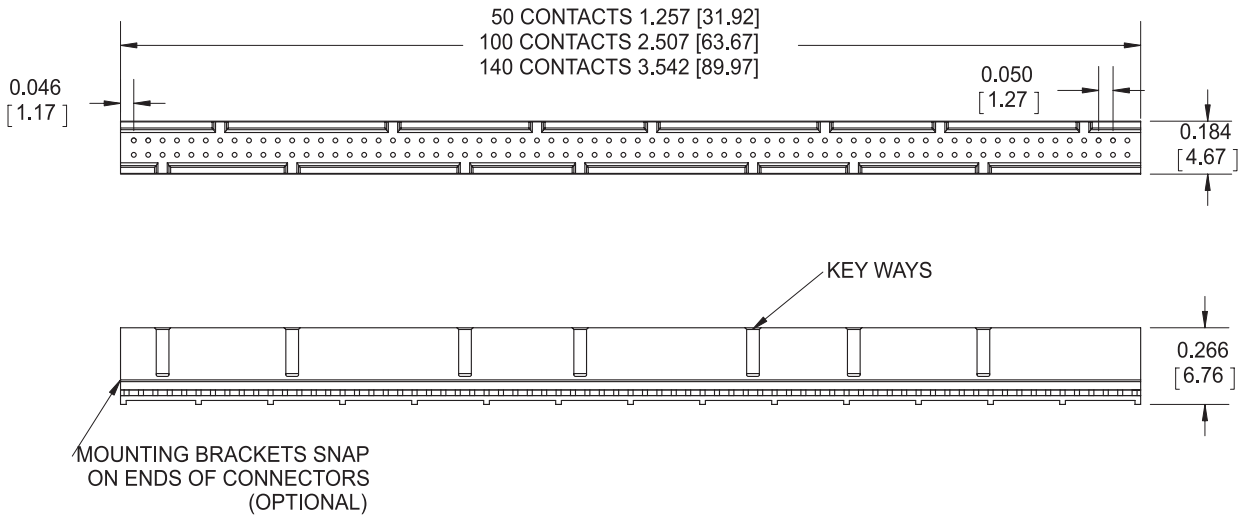


Dimensions are in inches [mm]

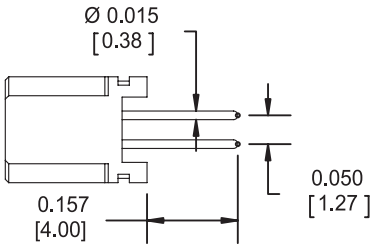
Receptacle



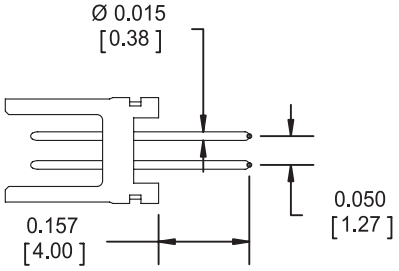
Plug



Receptacle Termination

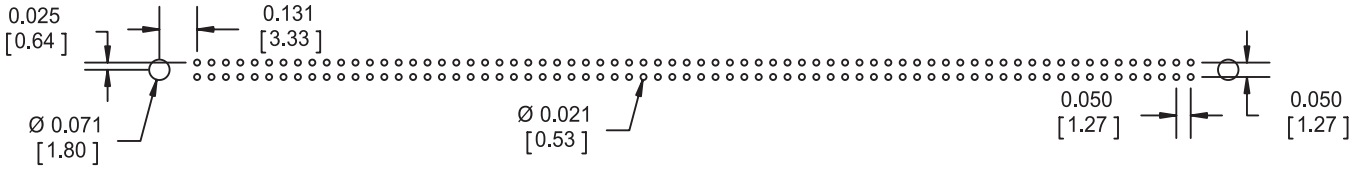


Plug Termination



Dimensions are in inches [mm]

Straight Solder Printed Circuit Board Hole Layout

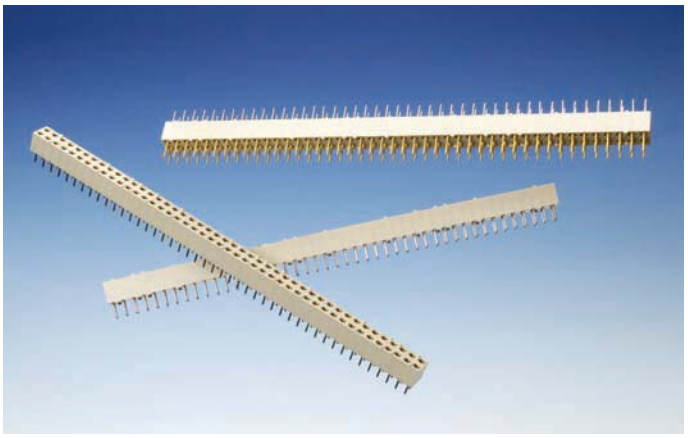


Ordering Information

KFT	100	B	E	D	00	TABH

Connector Family	KFT Series		
Number of Contacts	50, 100, 140		
Number of Rows	B = 2 rows		
Insulator	P = Plug E = Receptacle		
Plating	Mating Surface		50µin gold over nickel
	Terminations	Male Pin Plugs	TH = Flash gold over nickel TABH = 63/37 tin lead over nickel
		Female Socket Receptacles	TBH = Flash gold over nickel TAH = 63/37 tin lead over nickel
Mounting Hardware	00 = Without mounting brackets 11 = With mounting brackets		
Termination Style	D = Straight solder tail (up to 0.125 [3.18] printed circuit board)		

Dimensions are in inches [mm]



High Density Pin and Socket Printed Circuit Board Connectors

- Two styles
  - Plug (with pins) to receptacle (with sockets)
  - Pins (bed of nails) to receptacle (with sockets)
- Alignment pins and keying optional[2]
- Plugs and carriers have male contacts
- Receptacles have female contacts
- 0.018 [0.45] diameter pins
- Two rows on 0.100 x 0.100 [2.54 x 2.54] centers
- Parallel board connectors
- As little as 0.240 [6.10] or 0.480 [12.20] between boards

General Specifications

Number Contacts	4 – 90 (even numbers only)
Contact Diameter	0.018 [0.45]
Current Rating	2.5 Amps
Contact Resistance	< 8 milliohms
Insertion / Extraction Force	0.30 – 2.0 oz. per contact
Contact Life Cycles	100,000 per contact
Breakdown Voltage Between Contacts	> 1200V RMS
Dielectric Withstanding Voltage	900V RMS
Insulation Resistance	> 105 Megohms
Temperature Rating	-55° C to 125° C
Insulator Material	LCP material, Vectra E130i 30% glass Color: Natural
Temperature Rating	-55° C to 160° C
Contact	
Material	Beryllium copper (pin)
Plating	Beryllium copper wires and brass body (socket)
Guide Hardware	Stainless steel or brass, nickel plated

Plating Reference

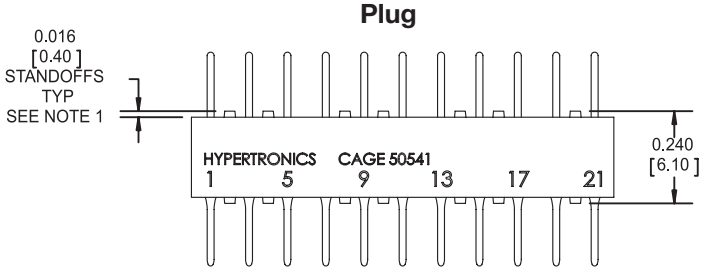
Male Pins:	TH = 50µin gold (min) over nickel TBH = Hot solder dip over 50µin gold (min) over nickel (straight D Style only)
Female Sockets:	TAH = 50µin gold (min over nickel on mating surface, gold flashover nickel on termination TABH = 50µin gold (min over nickel on mating surface, tin/lead over nickel on termination (straight D style only)

Standard Sizes

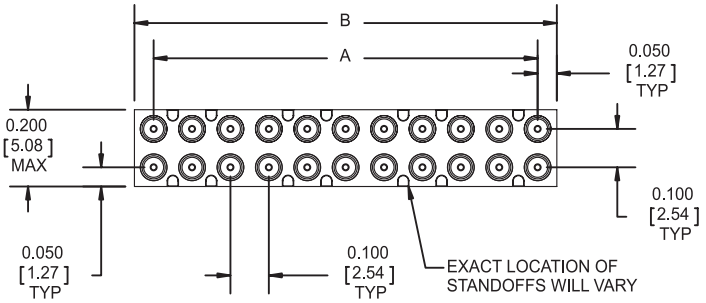
Number of Contacts	22	24	44	46	66	68	90
Dimension A	1.00 [25.40]	1.10 [27.94]	2.10 [53.34]	2.20 [55.88]	3.20 [81.28]	3.30 [83.82]	4.40 [111.76]
Dimension B ± 0.020 [0.50]	1.100 [27.94]	1.200 [30.48]	2.200 [55.88]	2.300 [58.42]	3.300 [83.82]	3.400 [86.36]	4.500 [114.30]

Connector Dimensions

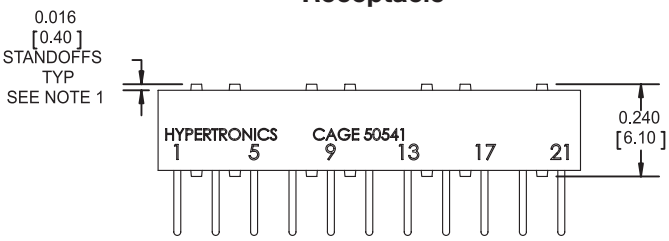
Plug



Mating half of plug and receptacle



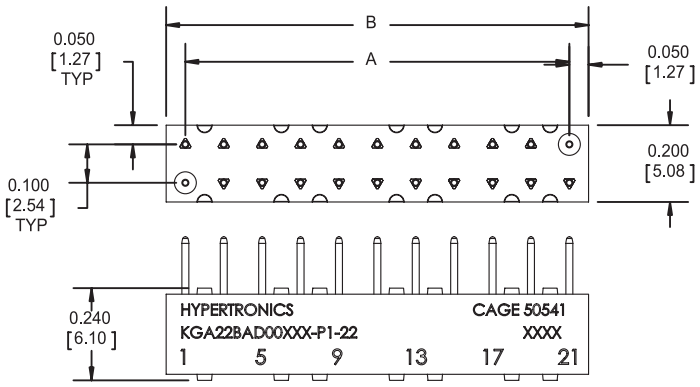
Receptacle



NOTES:
1) Standoffs location will vary depending on the number of contact positions.
2) Keying is accomplished by locating guide pins in different positions.

Dimensions are in inches [mm]

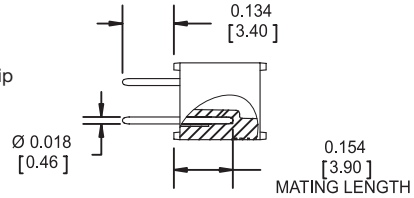
Pin Carrier Dimensions



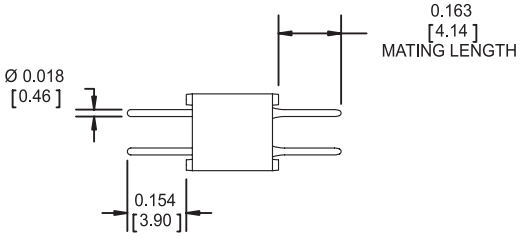
Terminal Styles

Ref. D — Straight dip solder

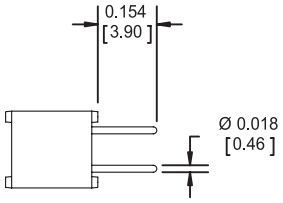
Pin Carrier



Plug

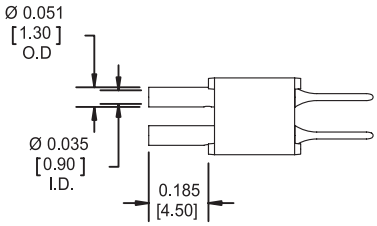


Receptacle

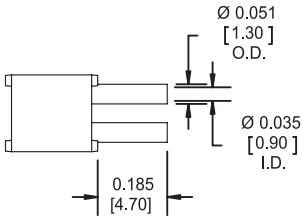


R — Crimp accepts 22, 24 and 26 AWG Wire Stripped Back 0.173 [4.40]

Plug

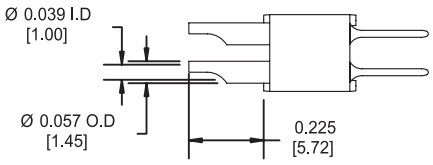


Receptacle

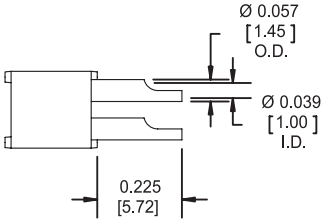


S — Solder cup accepts up to 22 AWG Wire Stripped Back 0.125 [3.20]

Plug



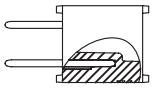
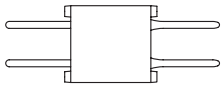
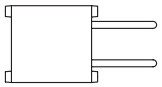
Receptacle



NOTES:
1) All tails are ± 0.015 [0.04] long.
2) Crimp contacts will be shipped unmounted.

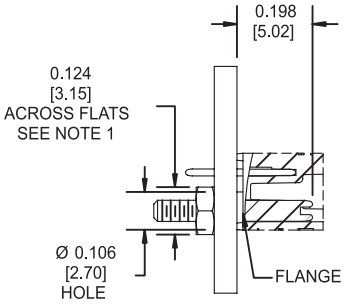
Dimensions are in inches [mm]

Mounting Styles

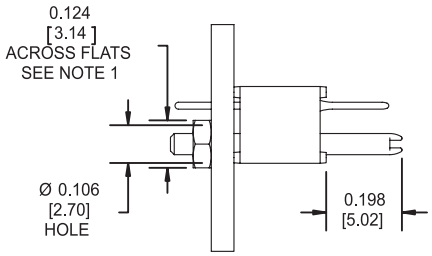
Ref.	Pin Carrier	Plug	Receptacle
00 No mounting hardware			

Pin Carrier

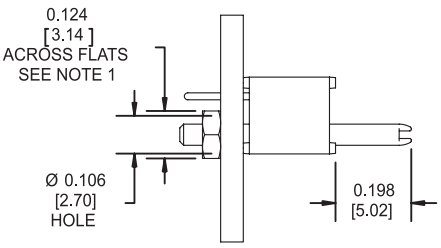
11



Plug



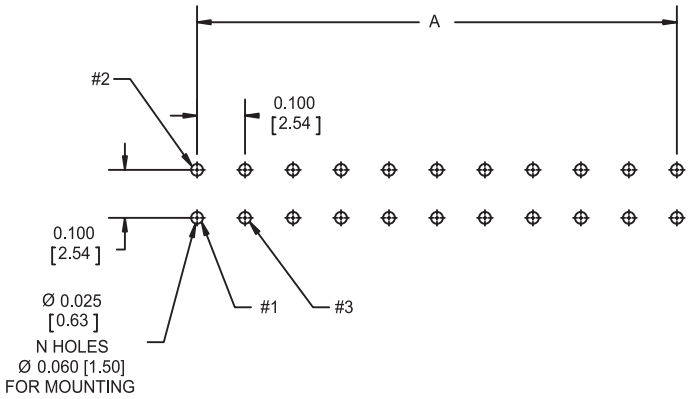
Receptacle



Mounting Dimensions

(Top of Board)

Mother Board Application
Style 00 and 11 (Receptacle)



Number of Contacts (N)	22	24	44	46	66	68	90
Dimension A	1.000 [25.40]	1.100 [27.94]	2.100 [53.34]	2.200 [55.88]	3.200 [81.28]	3.300 [83.82]	4.400 [111.76]

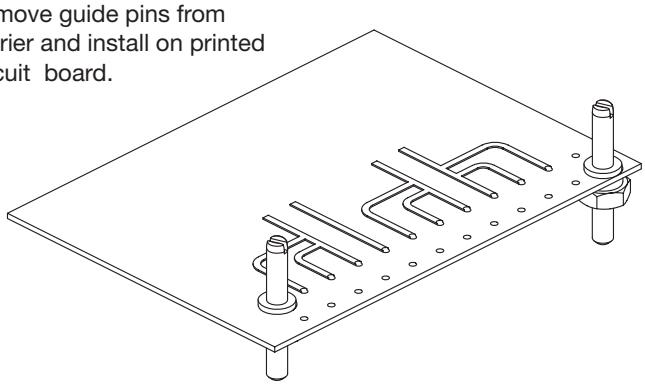
NOTE:
1) 9.5 oz. in torque.

Dimensions are in inches [mm]

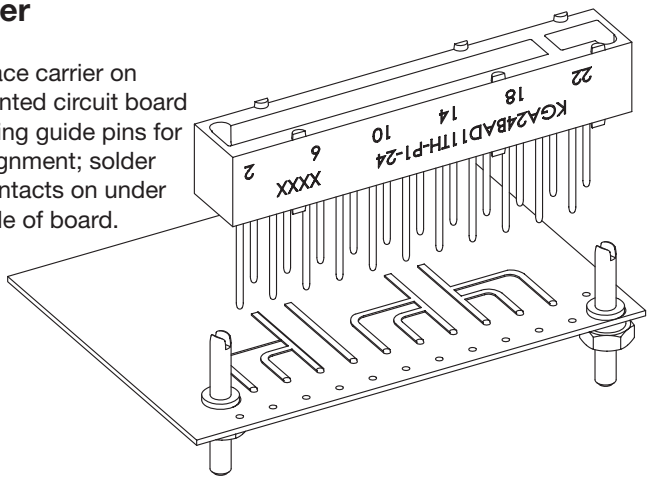
Assembly Method

with Pin Carrier

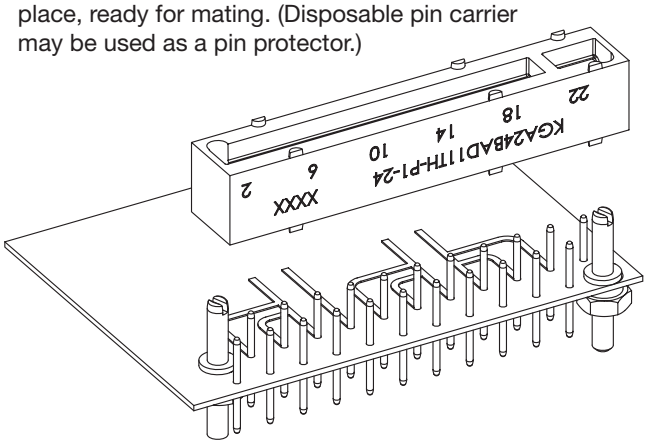
1. Remove guide pins from carrier and install on printed circuit board.



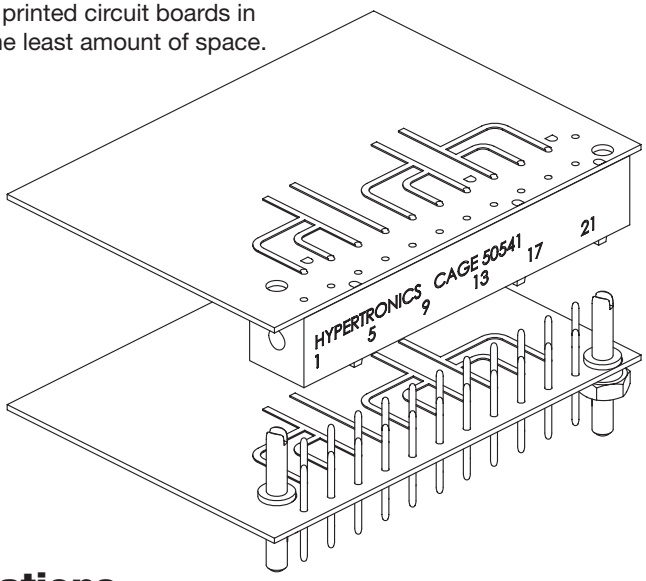
2. Place carrier on printed circuit board using guide pins for alignment; solder contacts on under side of board.



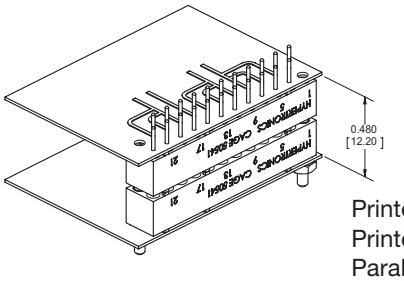
3. Lift carrier straight up off of printed circuit board. This will leave contacts permanently in place, ready for mating. (Disposable pin carrier may be used as a pin protector.)



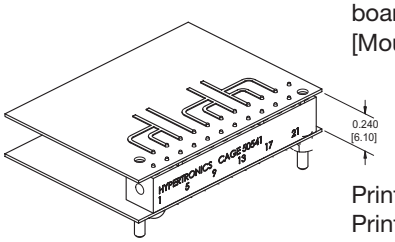
4. Assembly permits mating of 2 printed circuit boards in the least amount of space.



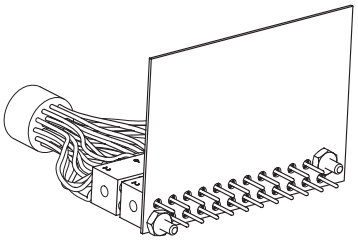
Typical Applications



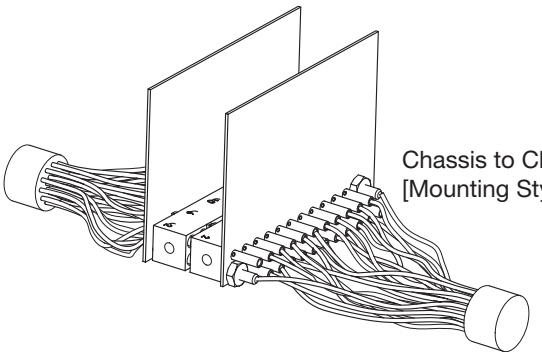
Printed Circuit Board to Printed Circuit Board – Thick Parallel Sandwich for tall board components [Mounting Style 00 to 00]



Printed Circuit Board to Printed Circuit Board – Thin Parallel Sandwich for maximum density [Mounting Style 00 to 00 (Carrier)]



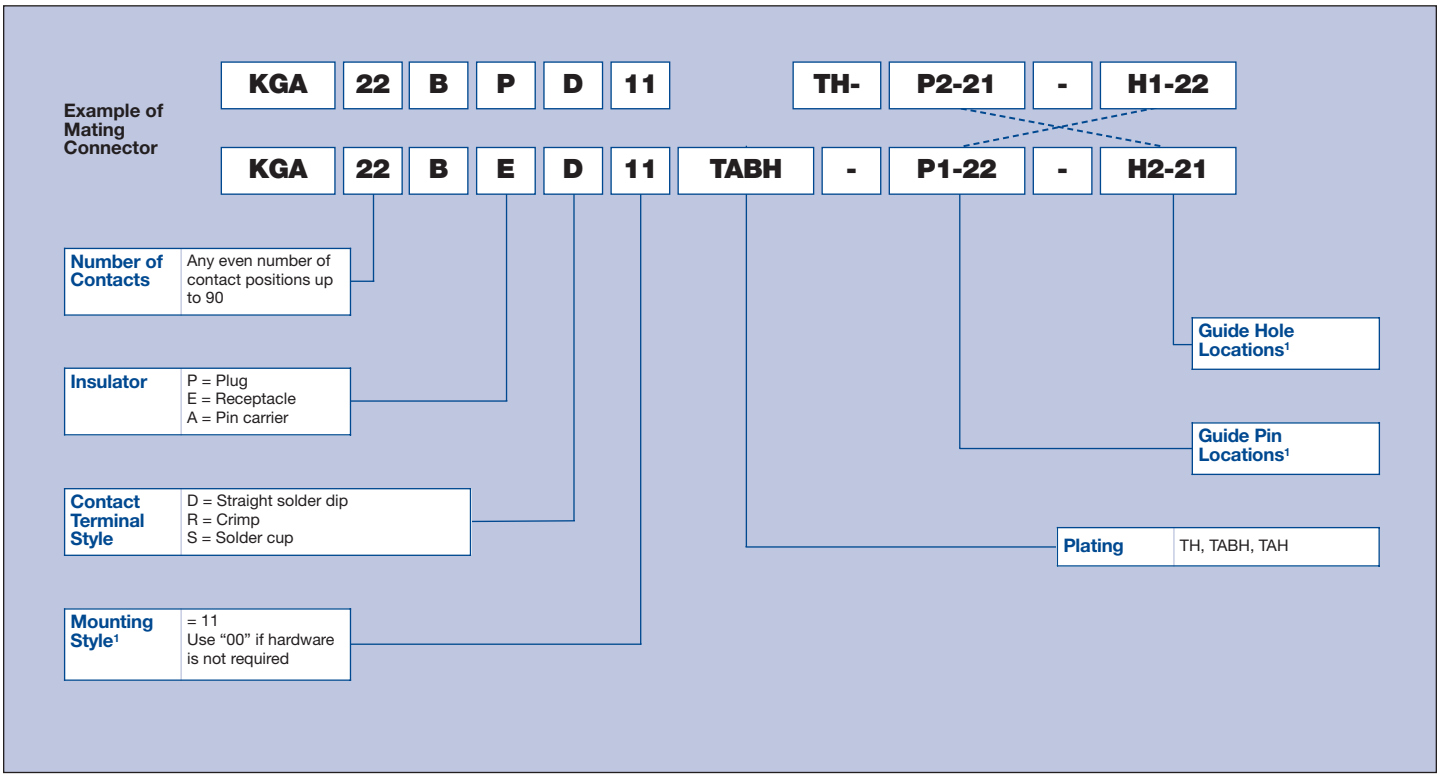
Cable to Printed Circuit Board [Mounting Style 00 to 00]



Chassis to Chassis [Mounting Style 11 to 11]

Dimensions are in inches [mm]

Ordering Information



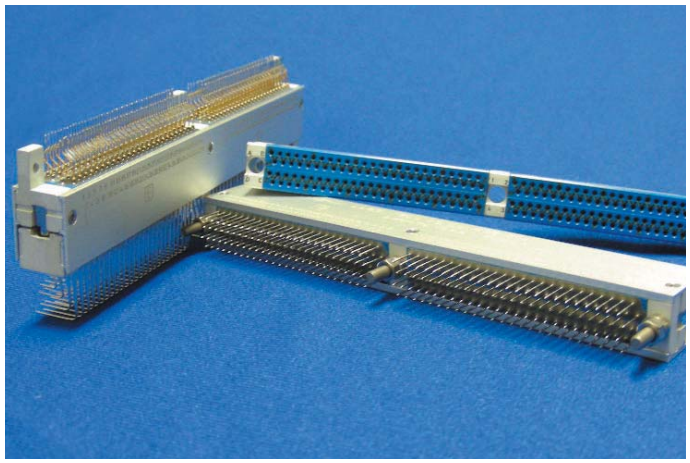
KGA Series Replacement Contact Part Numbers		
Ref.	Standard Pins	Standard Sockets
R	YPN005-012H	YSK005-005AH
S	YPN005-005H	YSK005-006AH
D	YPN005-004H	YSK005-001AH
D (Pin carrier)	YPN005-001	N/A

Accessories

Crimp Tool .....AFM8 or (M22520/2-01)
Positioner SS1.0045
Insertion Tool.....S/MONT1.0045

NOTE:
1) Style 11 uses 2 contact position for guide pin. For a mated pair, holes and guides must be complementary (e.g., if position 1 in the plug has a guide pin then, position 1 in the receptacle must have a guide hole, etc.). If omitted, connectors will be shipped fully loaded without guiding hardware.

Dimensions are in inches [mm]



High Density Modular Printed Circuit Board Connectors

- For military, aerospace and space applications
- Ruggedized metal shell printed circuit board connector with shrouded plug for pin protection
- 200 signal contacts
- Male plug: Straight, 90° and surface mount terminations
- Female receptacle: Straight and 90° terminations
- Pitch:

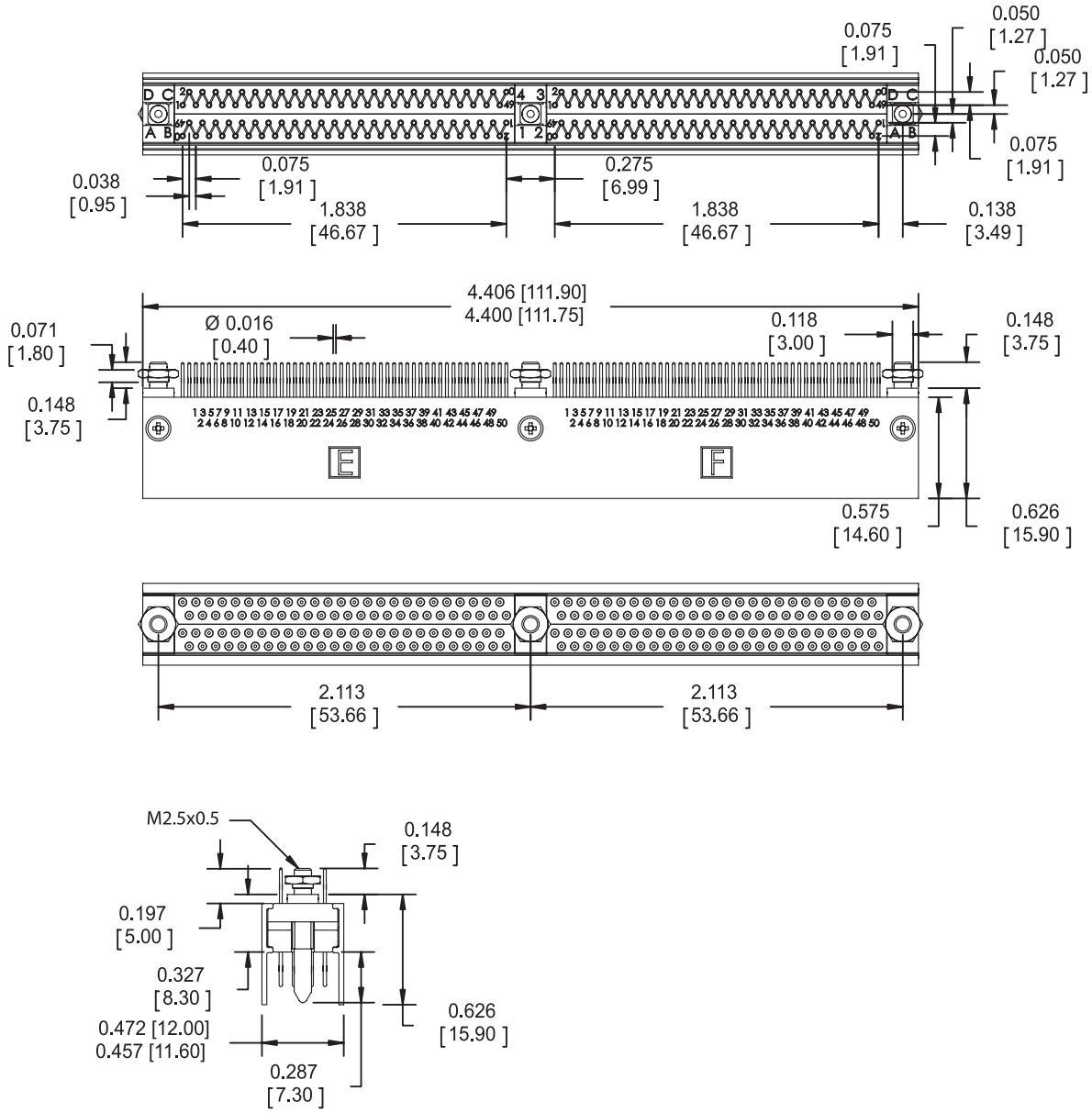
  On mating side
  - Receptacle and plug: 0.075 [1.91] between contacts and rows

  On termination side
  - Receptacle: 0.075 [1.91] between contacts and rows; 0.100 [2.54] between the two central rows
  - Plug: 0.038 [0.95] between contacts; 0.075 [1.91] between rows; 0.100 [2.54] between the two central rows
- Mixed layout for signal and special contacts
- Modular construction

General Specifications	
Insulator Material	Diallyl-phthalate UL94V0
Frame Material	Aluminum alloy
Contact Material Plating	 Copper alloy Gold over nickel
Guide Material	Stainless steel
Contact Resistance	< 8 milliohms
Temperature Rating	-55 to 125° C
Current Rating	3 Amps per contact
Insulation Resistance	> 10^6 megohms
Contact Life Cycles	100,000
Extraction Forces	1.8 oz.
Voltage Rating	200V
Contact Diameter	0.50mm
Impedance	50Ω

Dimensions are in inches [mm]

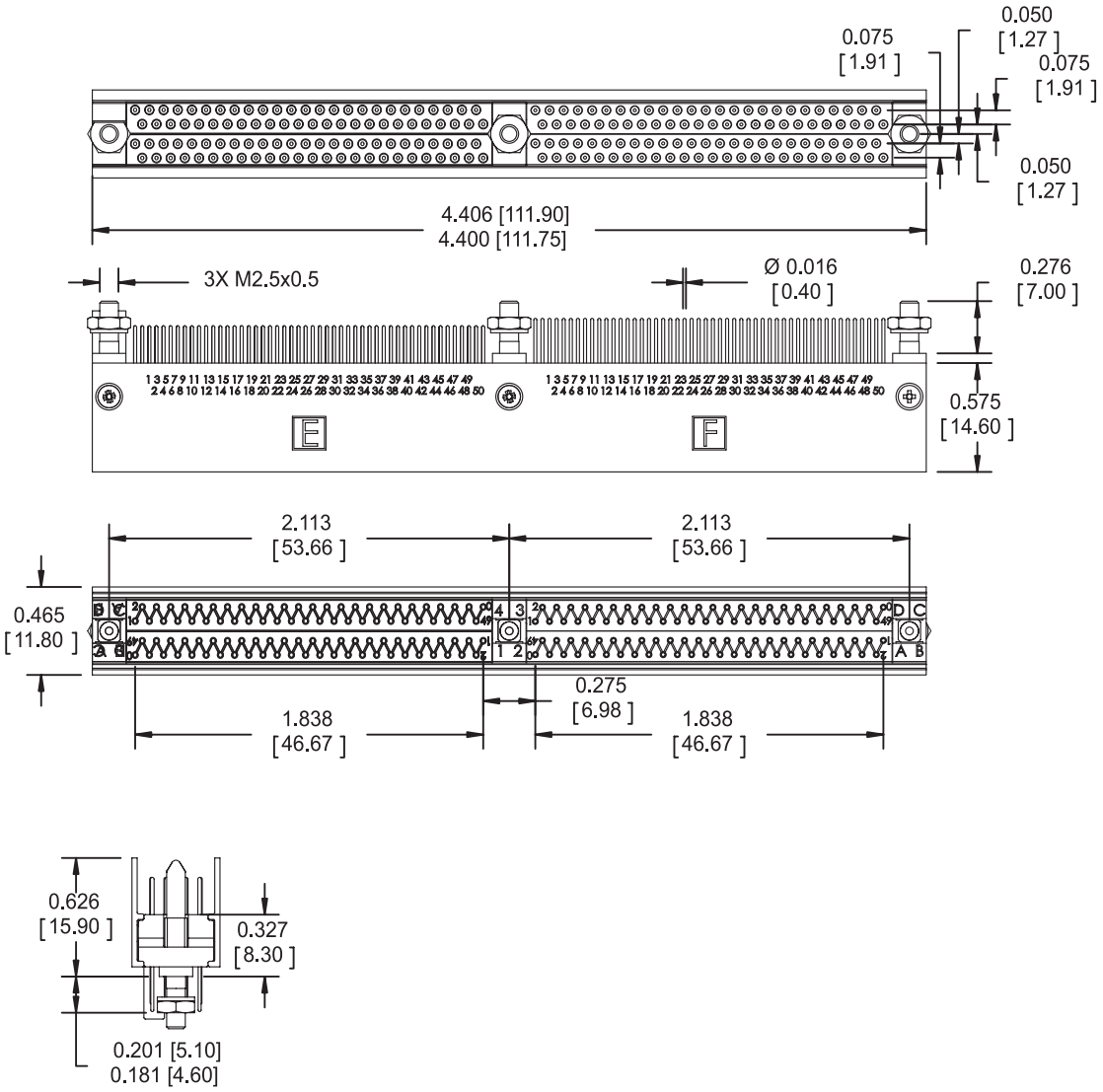
200 Contact Plug
Straight, Through Board Solder
0.138 [3.50] to 0.157 [4.00] Pin



Dimensions are in inches [mm]

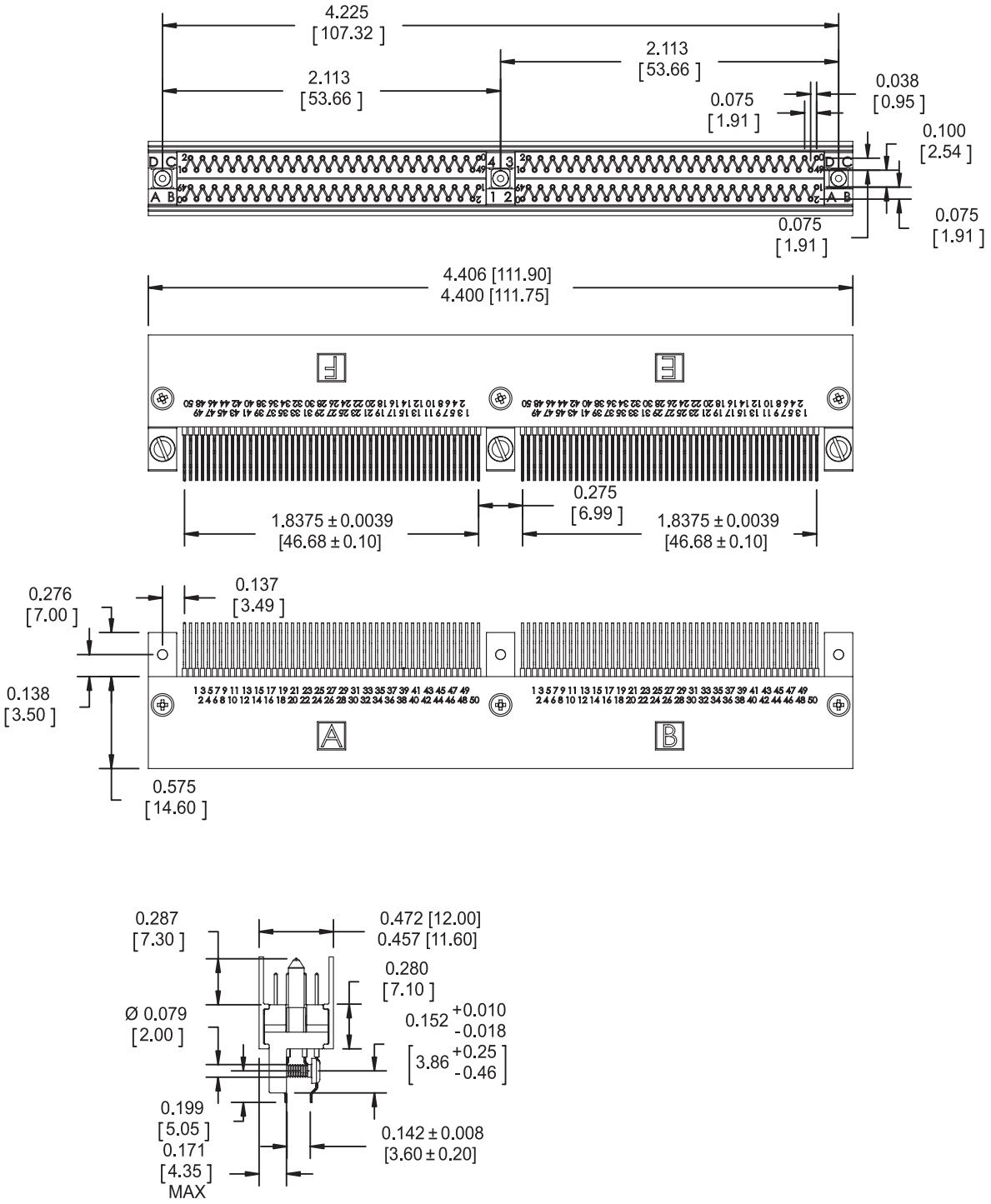
200 Contact Plug
Straight, Through Board Solder

0.181 [4.60] to 0.201 [5.10] Pin



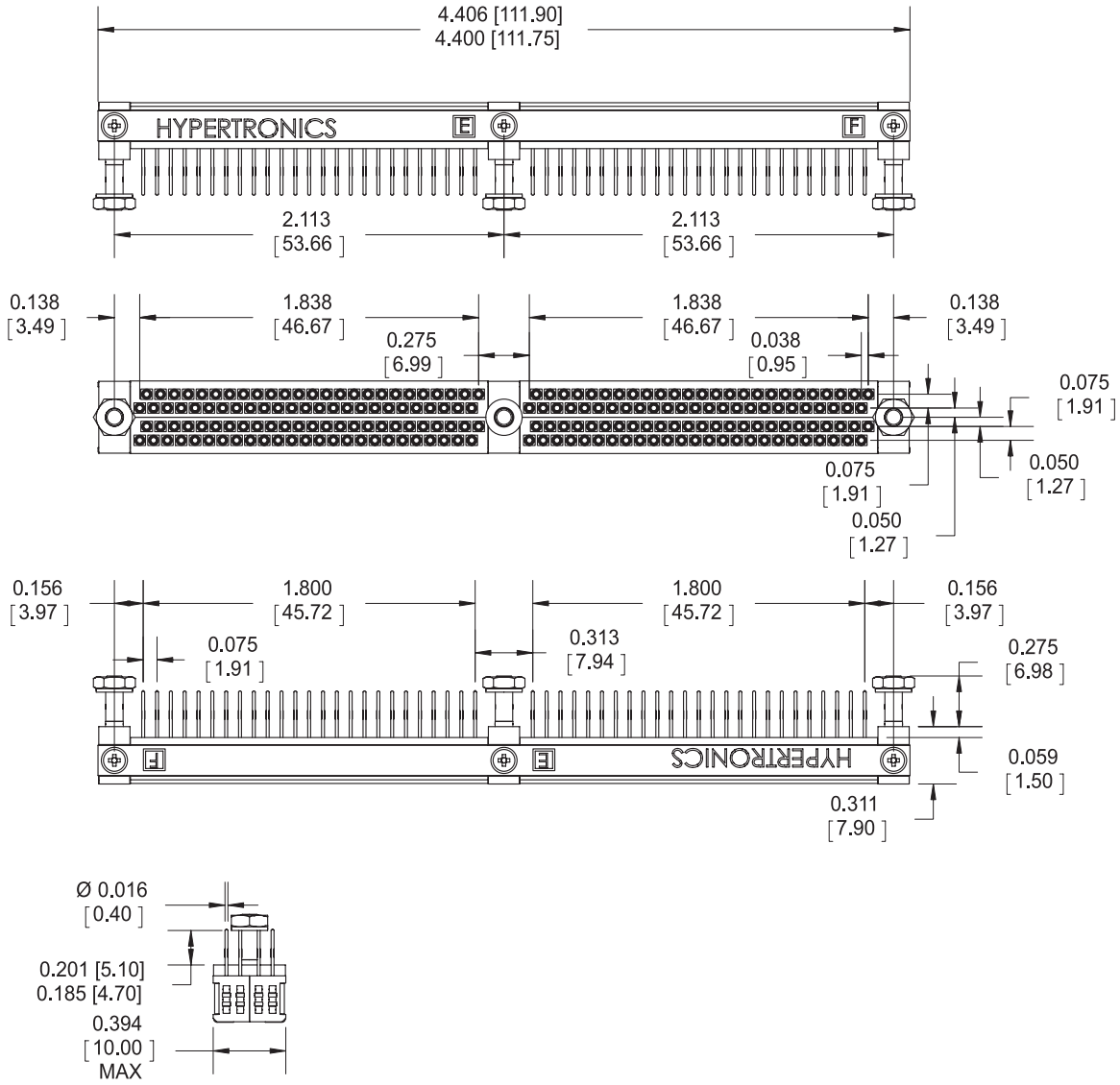
Dimensions are in inches [mm]

200 Contact Plug
Surface Mount (Centered Printed Circuit Board)



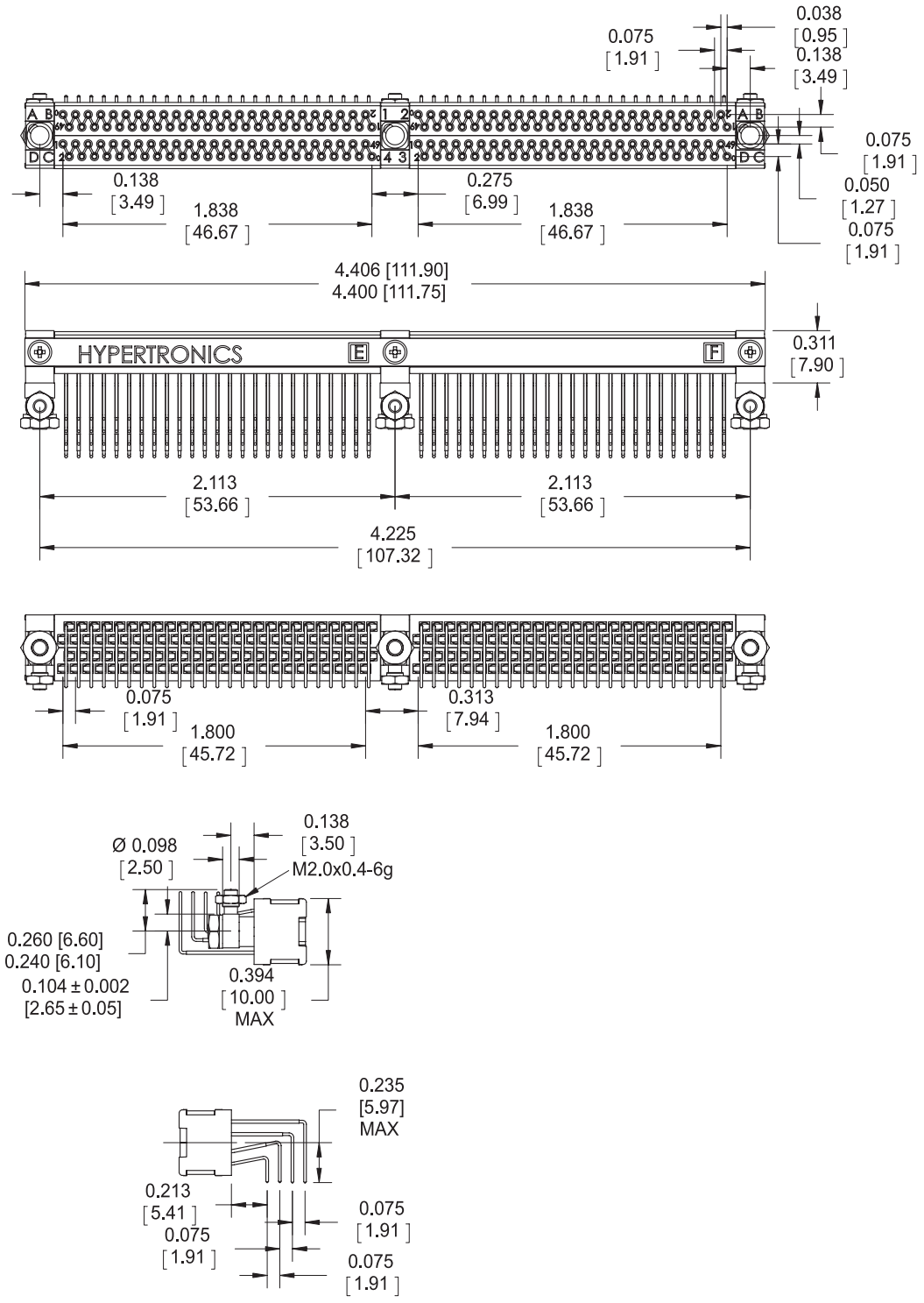
Dimensions are in inches [mm]

200 Contact Receptacle
Straight, Through Board Solder



Dimensions are in inches [mm]

200 Contact Receptacle
90° Through Board Solder



Dimensions are in inches [mm]

Ordering Information

Plugs	Part Number
200 Contacts Straight, Through Board Solder 0.138 [3.50] to 0.157 [4.00] Pin	KMR-200-19-30-116
200 Contacts Straight, Through Board Solder 0.181 [4.60] to 0.201 [5.10] Pin	KMR-200-19-31-114
200 Contacts Surface Mount	KMR-200-19-44-125

Receptacles	Part Number
200 Contacts Straight Through Board Solder	KMR-200-28-10-134
200 Contacts 90° Through Board Solder	KMR-200-28-96-122

Dimensions are in inches [mm]

Single Row Docking Station Connectors

- 10 contacts
- 2.5 Amps per contact
- 0.083 [2.10] spacing
- 0.018 [0.45] diameter pins
- Pins recessed for protection

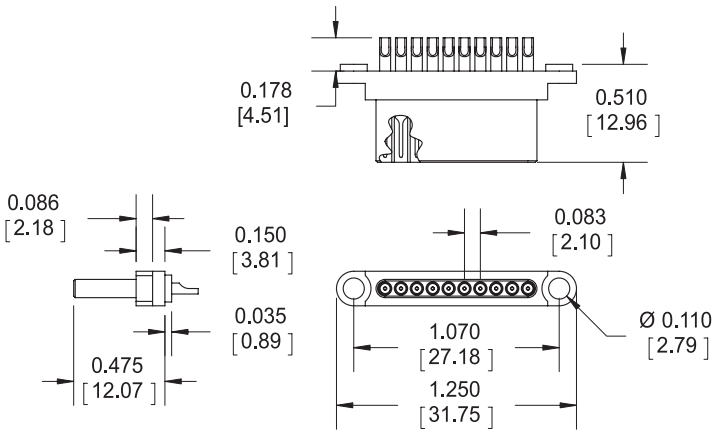
General Specifications	
Number of Contacts	10
Contact Diameter	0.018 [0.45]
Current Rating	2.5 Amps per contact
Contact Resistance	< 8 milliohms per contact
Extraction Force	0.3 – 2.0 oz. per contact
Contact Life Cycles	100,000
Breakdown Voltage Between Contacts	> 1200V RMS
Dielectric Withstanding Voltage	1000V RMS
Temperature Rating	-55° C to 85° C
Insulation Resistance	> 10^3 Megohms at 500 VDC
Insulator Material	Nylon
Pins	
Material	Phosphor bronze
Plating	Gold over nickel
Sockets	
Material	Brass bodies/beryllium copper contact wires
Plating	Gold over nickel

Plating Reference	
Male Pins (T):	10µin gold (min) over nickel
Female Sockets (TABH):	50µin gold (min) over nickel on mating surface, tin lead over nickel on termination

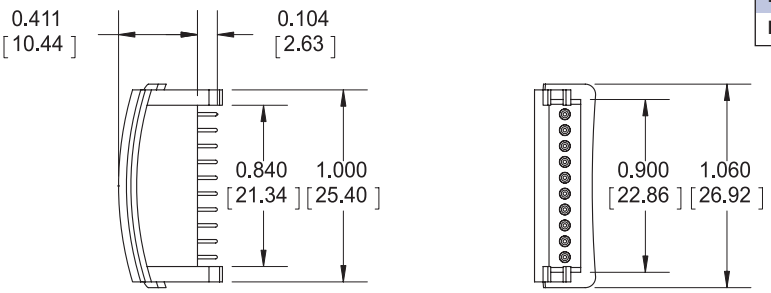
Ordering Information	
	Part Number
Plug (Solder Cups)	KS10/210APMST
Receptacle (Surface Mount)	KS10/210AEFDTABH

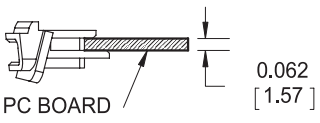
Connector Dimensions

Single Row
Solder Cup Male Plug



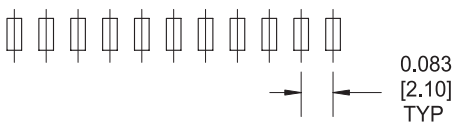
Single Row
Surface Mount Female Receptacle





Mounting Dimensions

Single Row Receptacle



Dimensions are in inches [mm]

Dual Row Portable Device Connectors

- 10 contacts
- 2.5 Amps per contact
- 0.083 [2.10] staggered spacing
- 0.018 [0.45] diameter pins
- Positive lock
- Pins recessed for protection

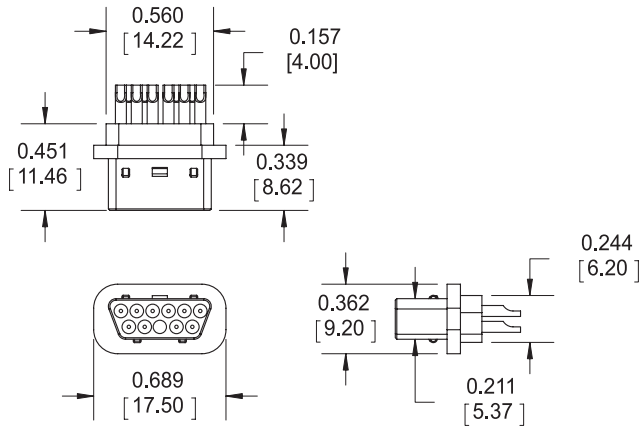
General Specifications	
Number of Contacts	10
Contact Diameter	0.018 [0.45]
Current Rating	2.5 Amps per contact
Contact Resistance	< 8 milliohms per contact
Extraction Force	0.3 – 2.0 oz. per contact
Contact Life Cycles	100,000
Breakdown Voltage Between Contacts	> 1200V RMS
Dielectric Withstanding Voltage	1000V RMS
Temperature Rating	-55° C to 85° C
Insulation Resistance	> 10^3 Megohms at 500 VDC
Insulator Material	Nylon/polycarbonate
Pins	
Material	Phosphor bronze
Plating	Gold over nickel
Sockets	
Material	Brass bodies/beryllium copper contact wires
Plating	Gold over nickel

Plating Reference	
Male Pins (T):	10µin gold (min) over nickel
Female Sockets (TABH):	50µin gold (min) over nickel on mating surface, tin lead over nickel on termination

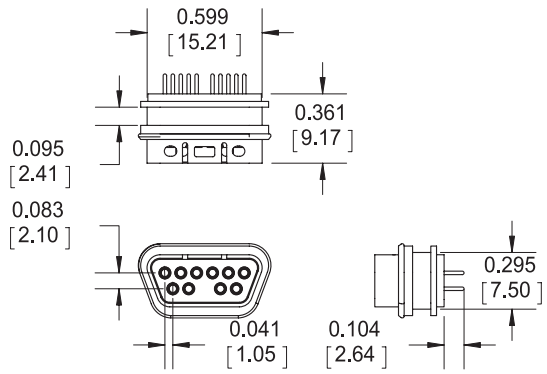
Ordering Information	
	Part Number
Plug (Crimp)	KS10/105BPMRT
Receptacle (Straight Dip)	KS10/105BEFDTABH

Connector Dimensions

Dual Row
Crimp Male Plug for Back Molding

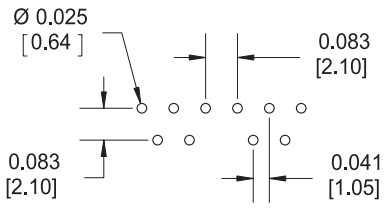


Dual Row
Straight Dip Female Receptacle

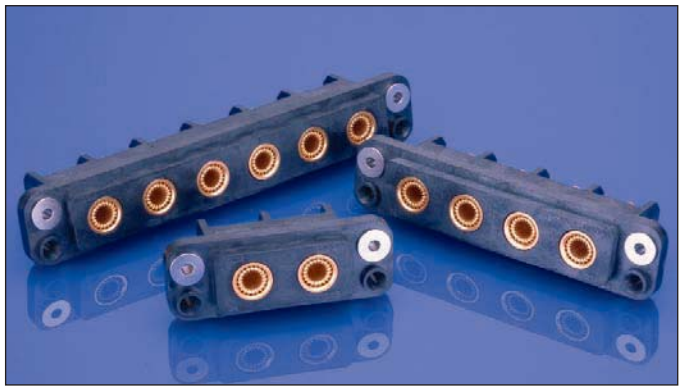


Mounting Dimensions

Dual Row Receptacle



Dimensions are in inches [mm]

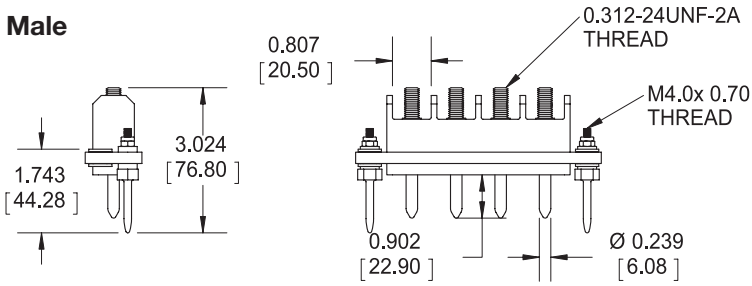


Single Row, Rack and Panel Connectors - 200 Amp Contacts

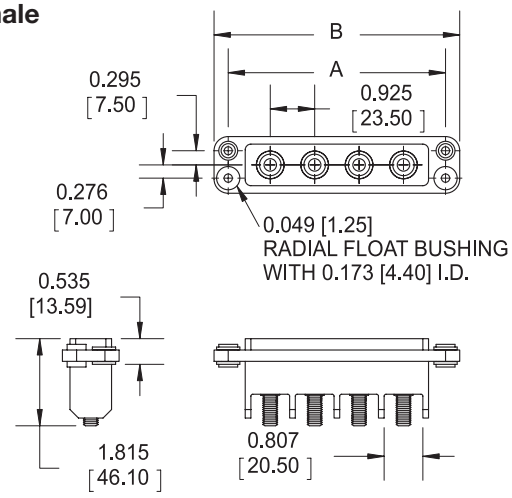
- 200 Amps per contact
- 1 to 6 contacts
- Very low mating forces
- Radial float 0.049 [1.25]
- Threaded terminals
- One row 0.925 [23.50] centers
- 0.241 [6.12] contacts
- Blind mate capability

Connector Dimensions

Male



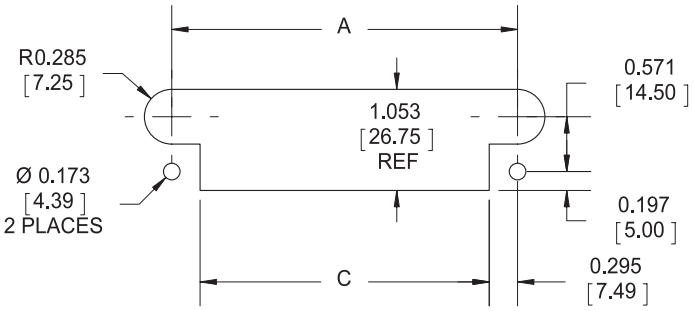
Female



Number of Contacts	A	B	C
1	1.752 [44.50]	2.342 [59.50]	1.161 [29.50]
2	2.677 [68.00]	3.268 [83.00]	2.087 [53.00]
3	3.602 [91.50]	4.193 [106.50]	3.012 [76.50]
4	4.520 [114.80]	5.118 [130.00]	3.937 [100.00]
5	5.453 [138.50]	6.043 [153.50]	4.834 [123.00]
6	6.378 [162.00]	6.969 [177.00]	5.787 [147.00]

Mounting Dimensions

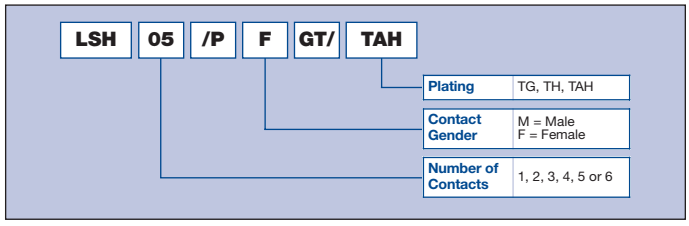
As seen from wiring side of plug and mating side of receptacle



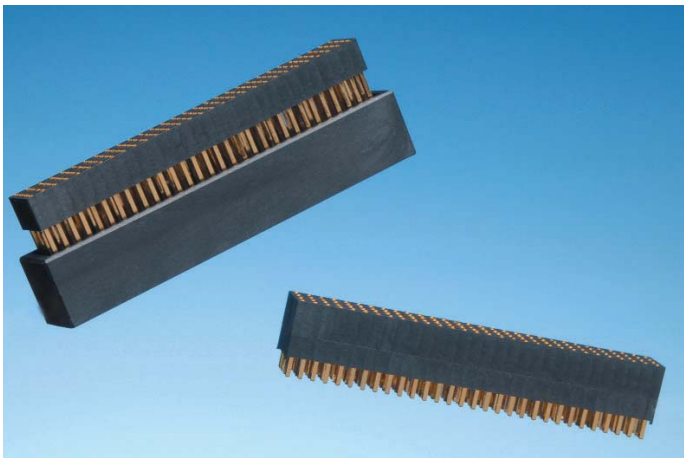
General Specifications

Contact Diameter	0.241 [6.12]
Current Rating	200 Amps per contact
Resistance	< 0.10 milliohms
Extraction Force	80 – 160 oz. max. per contact
Contact Life Cycles	100,000
Breakdown Voltage	4,000V RMS
Dielectric Withstanding Voltage	3,000V RMS
Insultation Resistance	> 10^6 megohms at 500 VDC
Temperature Rating	-55° C to 125° C
Insulator	Polyphenylene sulfide (PPS)
Contact	
Material	Pin: Copper Socket: Beryllium copper wires, brass and copper body
Plating	Gold over nickel
Plating Reference	TG = 10µin gold (min) over nickel TH = 50µin gold (min) over nickel TAH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

Ordering Information



Dimensions are in inches [mm]



PCI-104 Style Architecture, Stackable Connector System

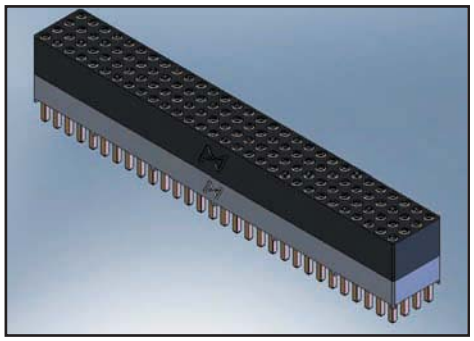
- 2mm centerline, 4 X 30 contact grid (120 total contact positions)
- Up to 1 Amp per contact
- Insulator material meets NASA outgassing specifications
- Connector designed for ruggedized applications
- Contact tails available in square press-fit and round solder termination styles
- System is compatible with industry standard PCI-104 bus as well as proposed NASA SPACE-104 standards
- Accommodates both standard and custom PC board stacking height designs by utilizing multiple pin carriers and contact tail lengths

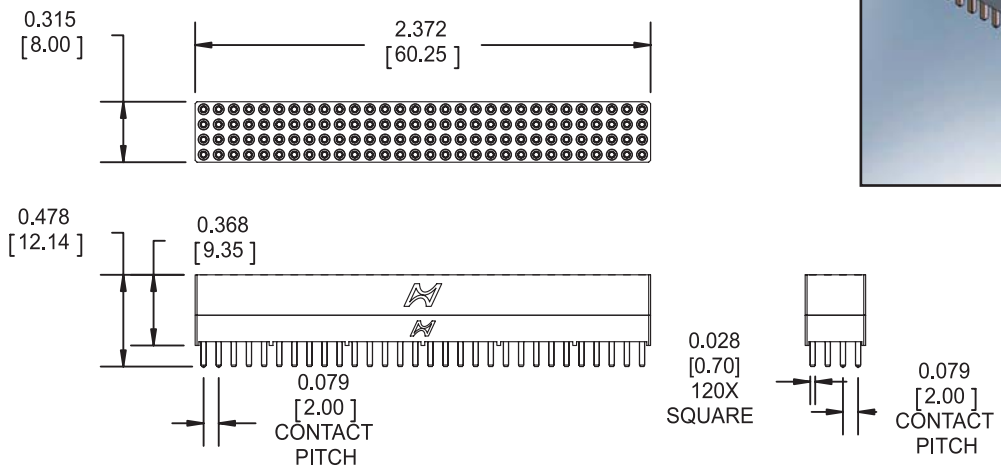
General Specifications	
Part Reference Number	Stackthrough Variations: - KPC120SQ060TAH - KPC120RQ060TAH - KPC120SR104 Non-Stackthrough Variations - KPC120NQ060TAH - KPC120NR060TAH - KPC120NR104TAH
Design Criteria Basis	PC/104-Plus Specification Version 2.0, November 2003
Contact Mating Diameter	0.016 [0.40]
Current Rating	1 Amp Continuous
Contact Resistance	< 8 milliohoms
Contact Insertion/Extraction Forces	Insertion: 1.28 oz. max.; Extraction: 1 oz. max. per contact
Contact Life Cycle	100,000
Breakdown Voltage Between Contacts	1950 V max.
Operating Voltage	1463 V max
Material and Plating (contacts only)	Socket End: Beryllium copper wires and brass body components; 50µin gold over nickel on wires, gold flash over nickel on all other socket components Tail (Mating) End: Phosphor bronze; 50µin gold over 50µin nickel
Shock and Vibration (contacts only)	Vibration testing to MIL-DTL-55302 para. 4.5.10 Shock testing to MIL-DTL-55302 para. 4.5.14
Insulation Resistance	> 5000 megohms at 500 VDC
Insulator Material	30% Glass-filled LCP (meets NASA outgassing specification)
Flammability Rating	UL94-V0
Operating Temperature	-55° C to 125° C
Suggested Printed Circuit Board Mounting Hole Diameter	0.35 ± 0.003 [0.88 ± 0.08]

Dimensions are in inches [mm]

Standard Short Pin, Square Tail Non-Stackthrough

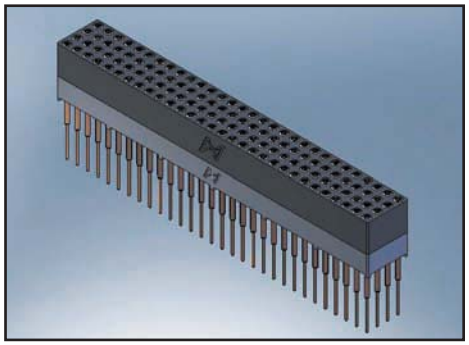
(KPC120NQ060TAH)

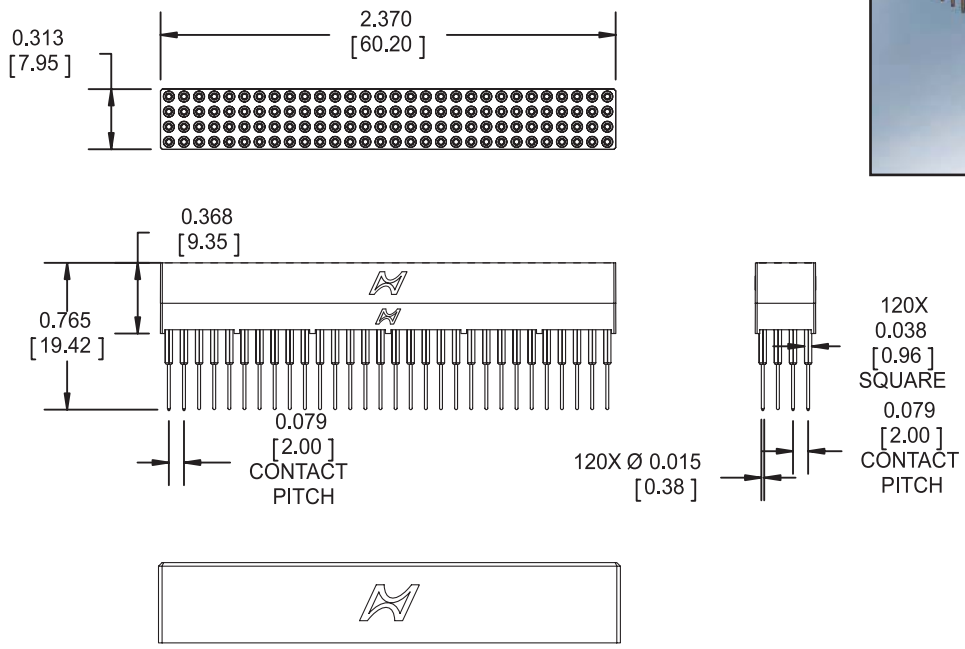




Standard Long Pin, Square Tail Stackthrough

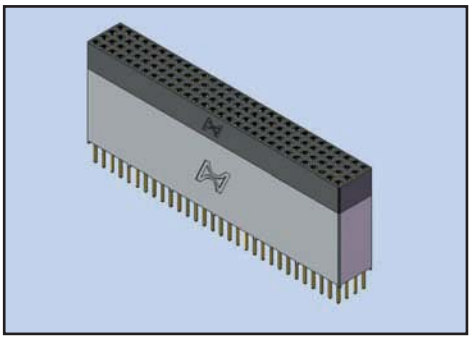
(KPC120SQ060TAH)

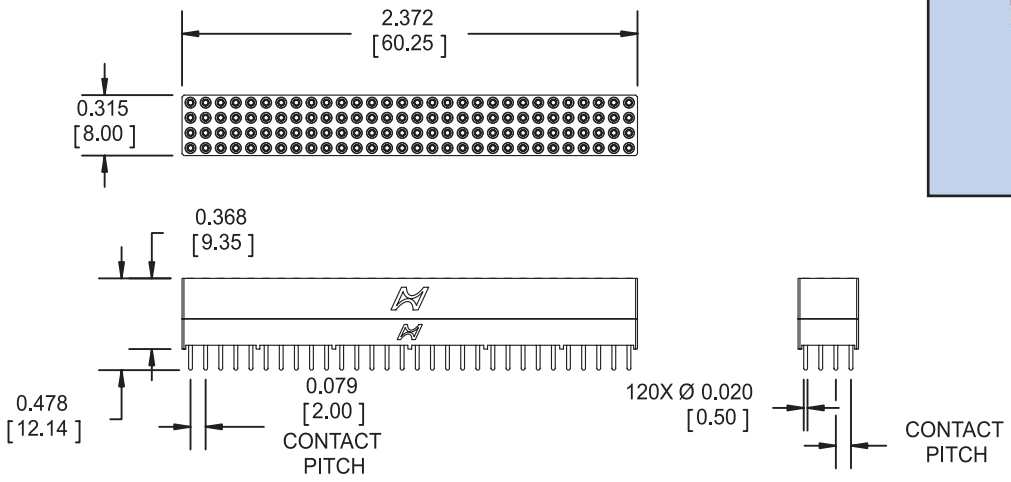




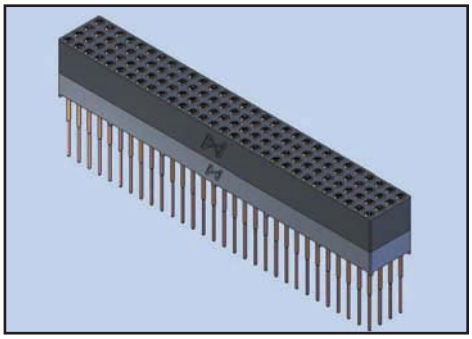
Dimensions are in inches [mm]

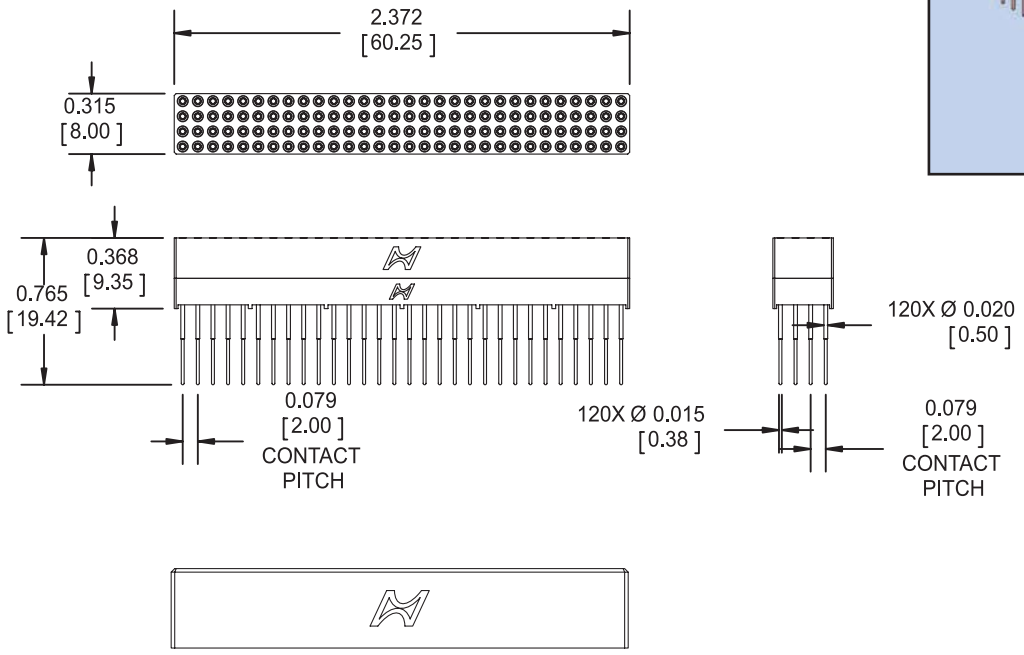
Standard Short Pin, Round Tail
Non-Stackthrough
(KPC120NR060TAH)





Standard Long Pin, Round Tail
Stackthrough
(KPC120SR060TAH)

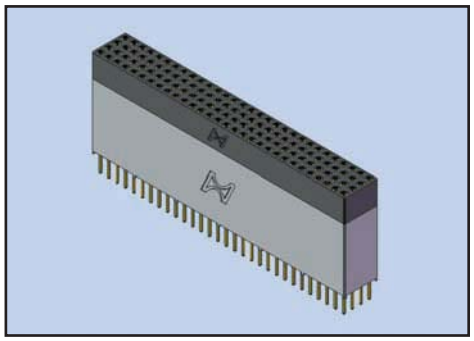


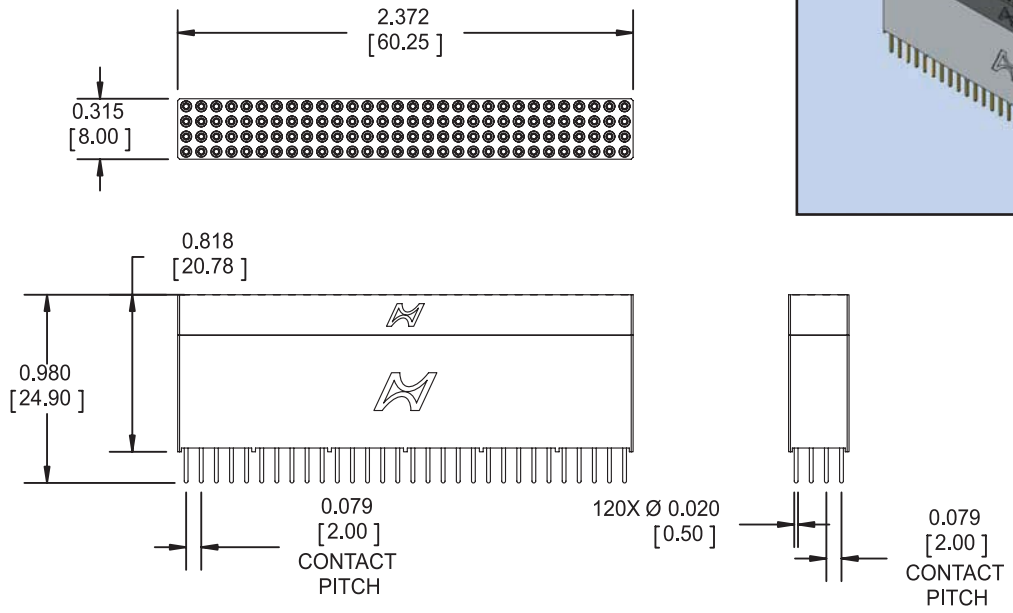


Dimensions are in inches [mm]

Standard Short Pin, Round Tail Non-Stackthrough with 104.00 [2641.60] Stacking Height

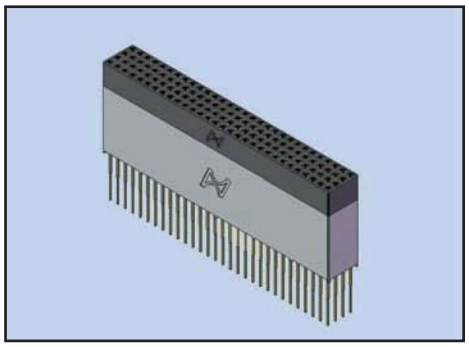
(KPC120NR104TAH)

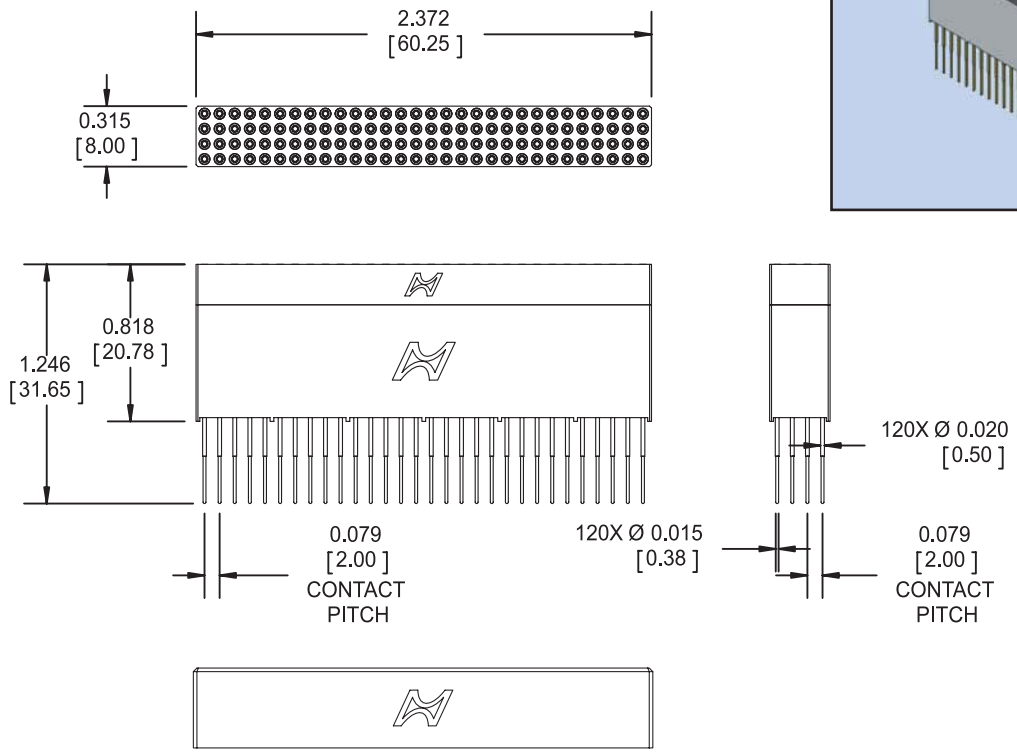




Standard Long Pin, Round Tail Stackthrough with 104.00 [2641.60] Stacking Height

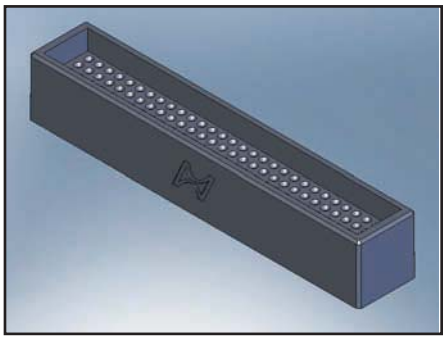
(KPC120SR104TAH)

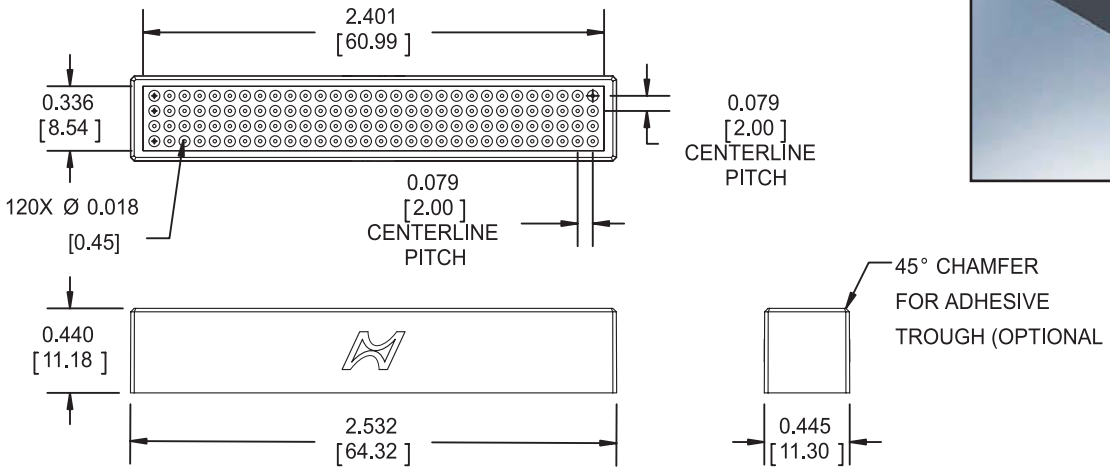




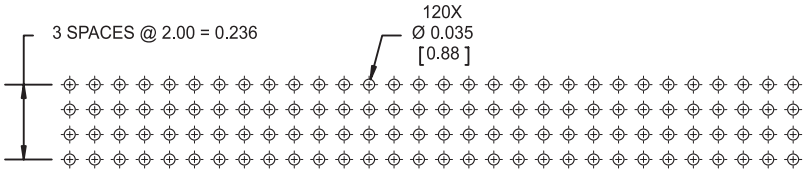
Dimensions are in inches [mm]

Shroud



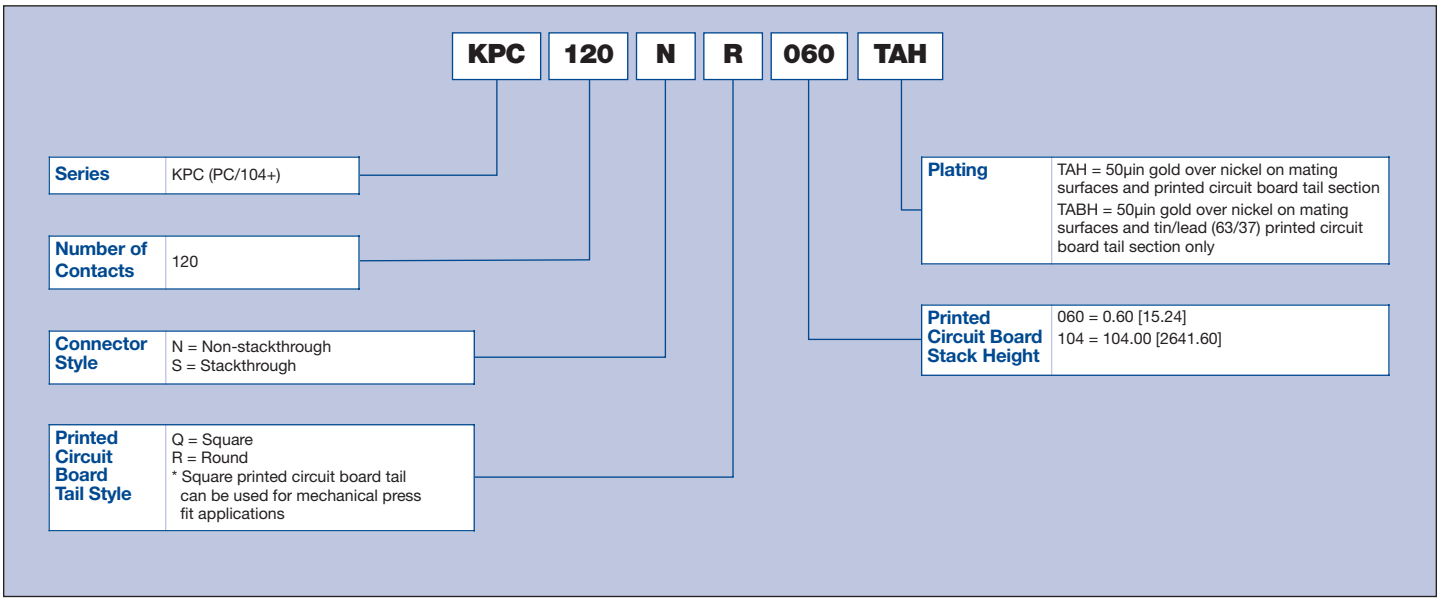


Recommended Printed Circuit Board Mounting Footprint (plated holes)



Dimensions are in inches [mm]

Ordering Information



Dimensions are in inches [mm]

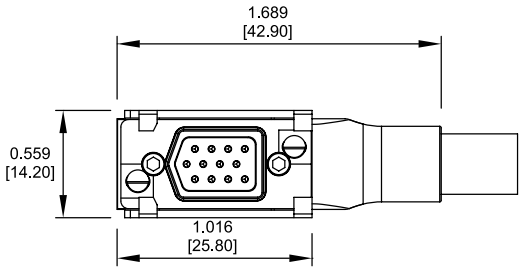
Miniature Rectangular Connectors

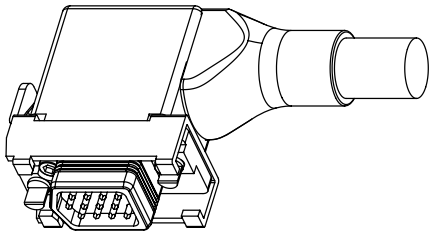
- HyperSpring® spring loaded contacts, self-cleaning wiping action
- 12 or 21 contact configurations
- Combine robust environmental performance with compact size and light weight
- Easy and fast push-pull locking mechanism
- Full line EMI shielding
- IP67 sealing when mated and unmated
- D-shape hardware coding to avoid mismatching
- 4 position key coding available on request
- Overmolding solutions
- Upgrade commercial high speed Fast Ethernet, USB, IEEE 1394 interconnect to Mil Spec performances

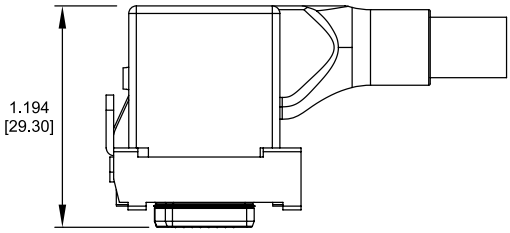
General Specifications	
General	
Number of Contacts	12, 21
Receptacle Terminations	Solder Cup, Dip Solder
Plug Termination	Solder Cup
Cable Diameter Range	0.315 [8.00] max.
AWG Contact	26 - 30
HyperSpring Force	5.5 oz. max. per contact
Connector Mating Force	12 Contacts: 180.0 oz., 21 Contacts: 215.0 oz.
Connector Unmating Force	36.0 oz. (after locking system release)
Electrical and Mechanical Characteristics	
EMI Shielding	Yes
Current Rating	3 Amps at 25° C
Breakdown Voltage	625V
Dielectric Withstanding Voltage (between contacts)	500V
Contact Resistance (low level)	< 15 milliohms
Insulation Resistance	5000 Megohms at 500VDC - EIA364.21
Vibration	EIA364.28 Condition III
Shock	EIA364.27 Condition G
Weight (Plug and Receptacle – with contacts – without cabling)	12 Contacts: 0.8 oz., 21 Contacts: 1.0 oz.
Materials and Plating	
Housing Material Plating	 Aluminium alloy Zinc cobalt conductive – RoHS compliant
Plug Overmolding	Thermoplastic hotmelt
Contact Material Plating	 Brass, beryllium copper Gold
Environmental Characteristics	
Temperature Range	-65° C to 80° C
Salt Spray	EIA364.26 Condition A (mated connectors)
Humidity	EIA364.31 Method IV
IP Level	67 mated and unmated

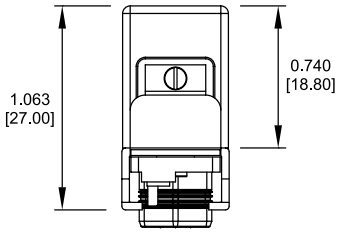
Dimensions are in inches [mm]

12 Contact Plug With Overmolding and Cabling

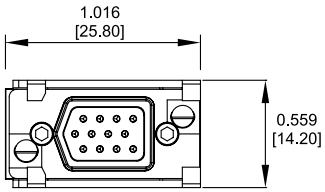


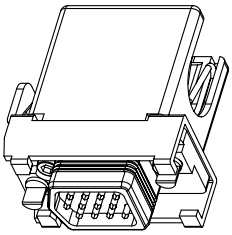


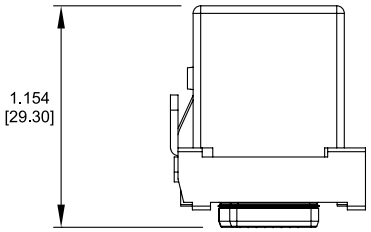


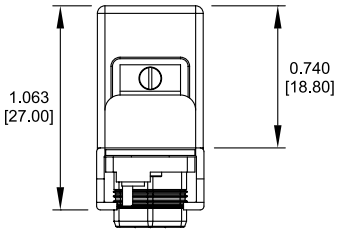


12 Contact Plug - Solder Cup Termination



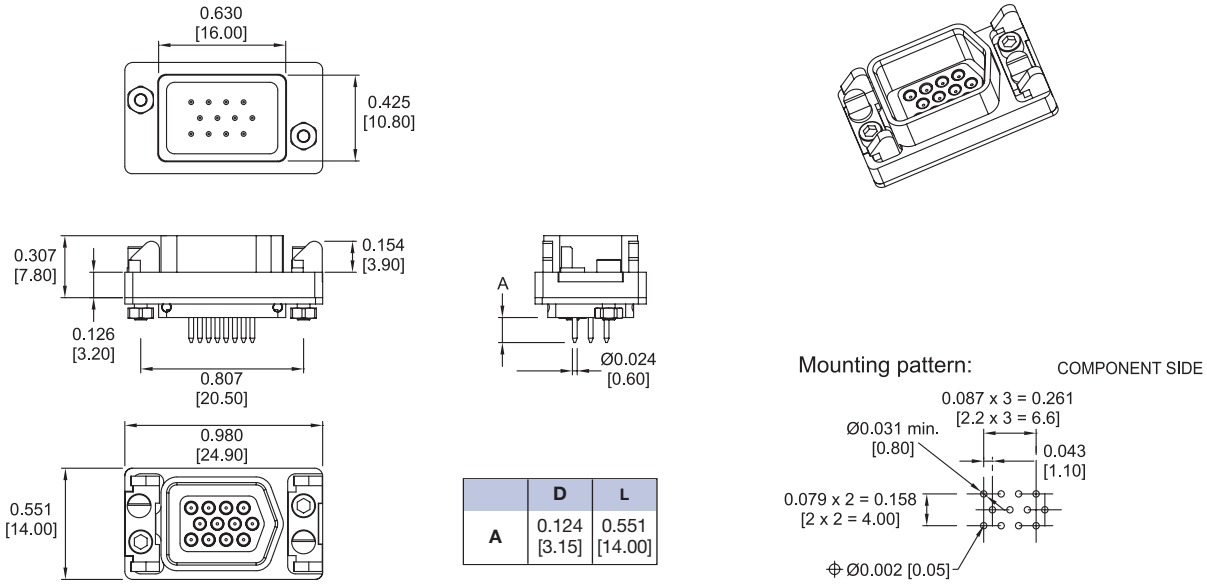






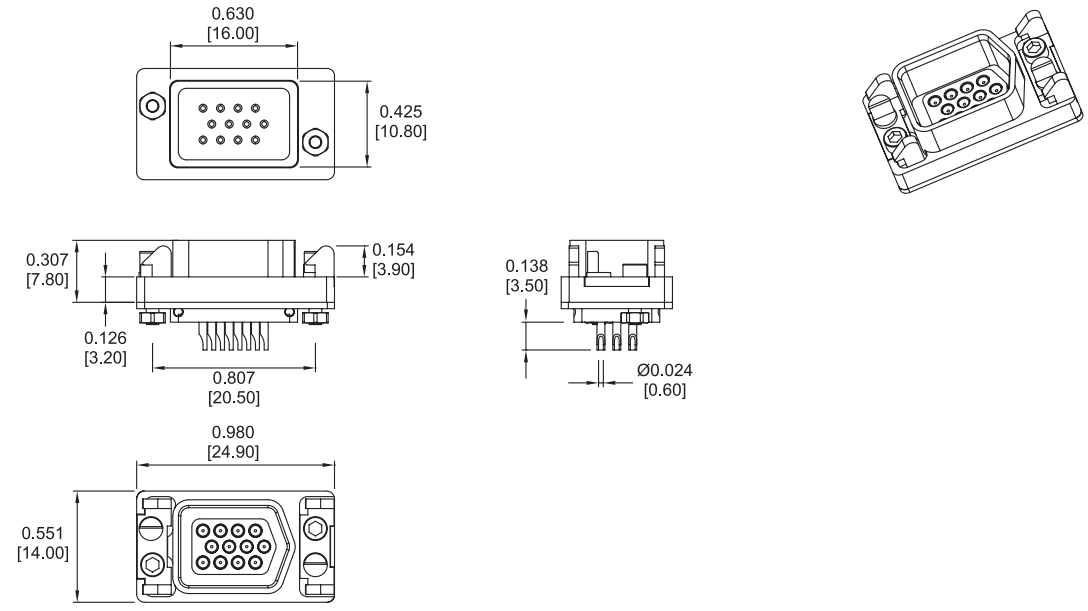
Dimensions are in inches [mm]

12 Position Receptacle - Dip Solder Termination

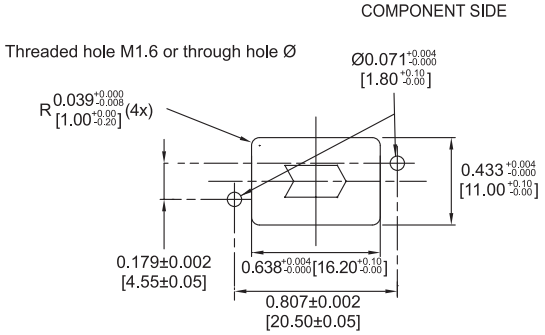


	D	L
A	0.124 [3.15]	0.551 [14.00]

12 Contact Receptacle - Solder Cup Termination

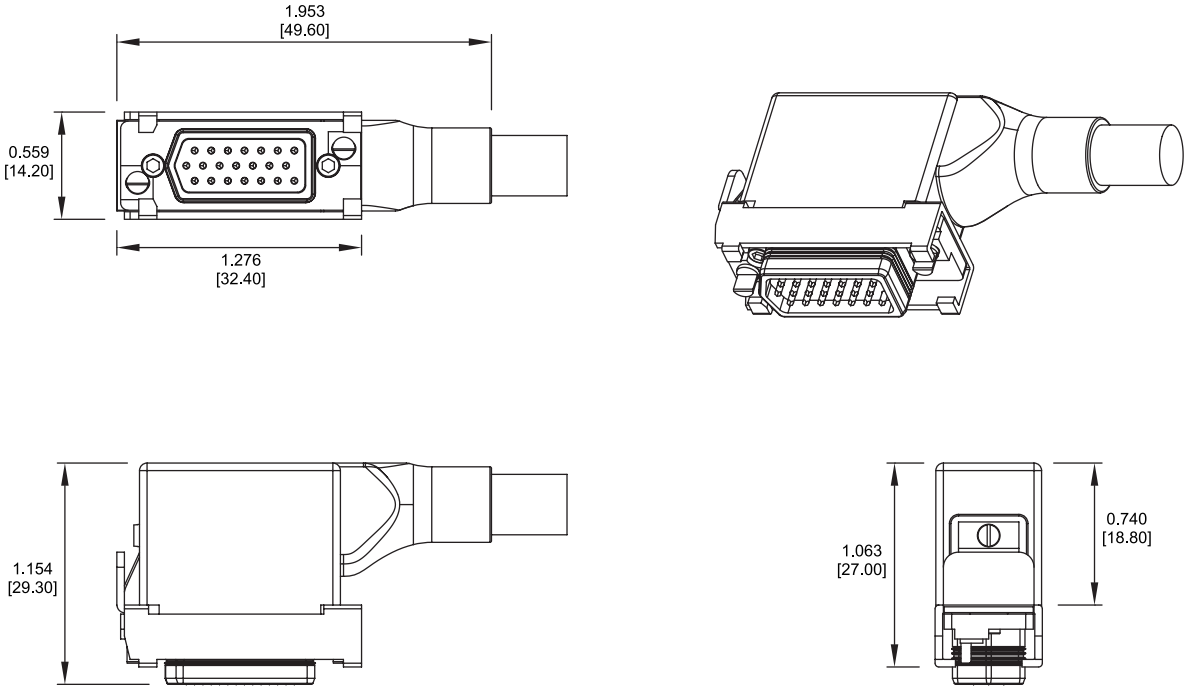


Panel Cut-out

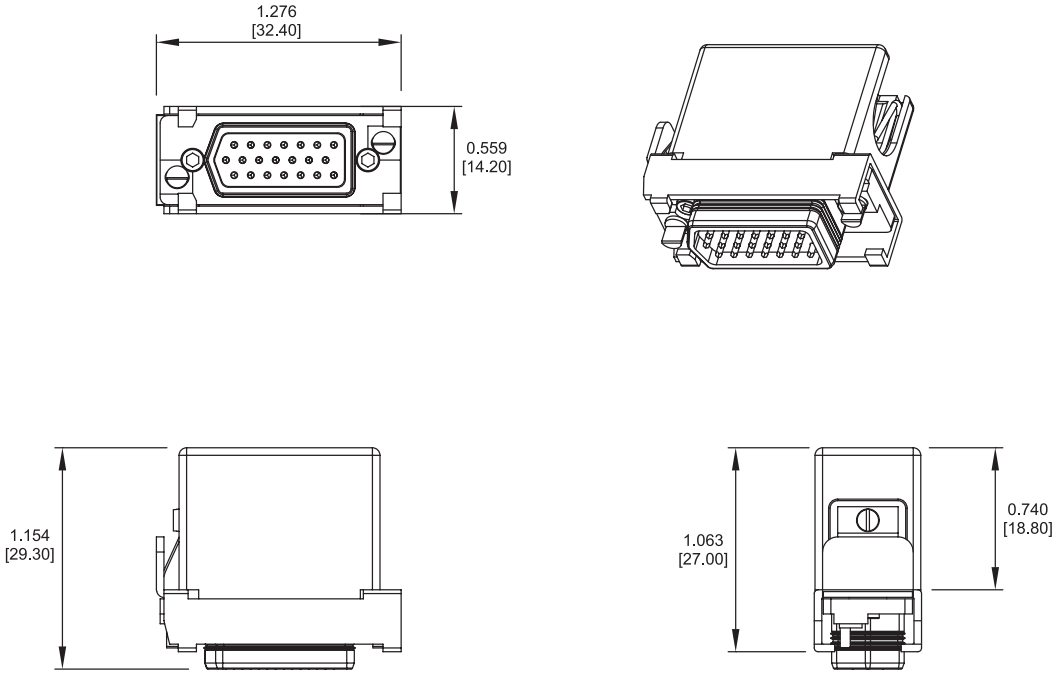


Dimensions are in inches [mm]

21 Contact Plug - With Overmolding and Cabling

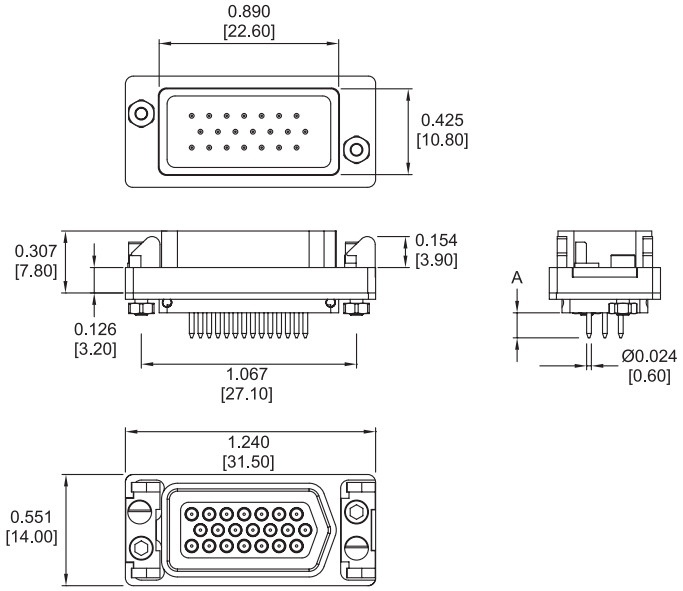


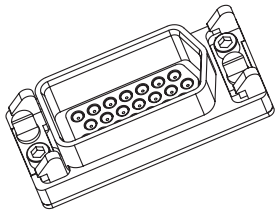
21 Contact Plug - Dip Solder Termination



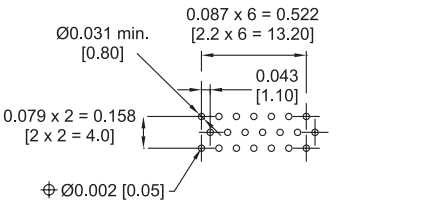
Dimensions are in inches [mm]

21 Contact Receptacle - Dip Solder Termination

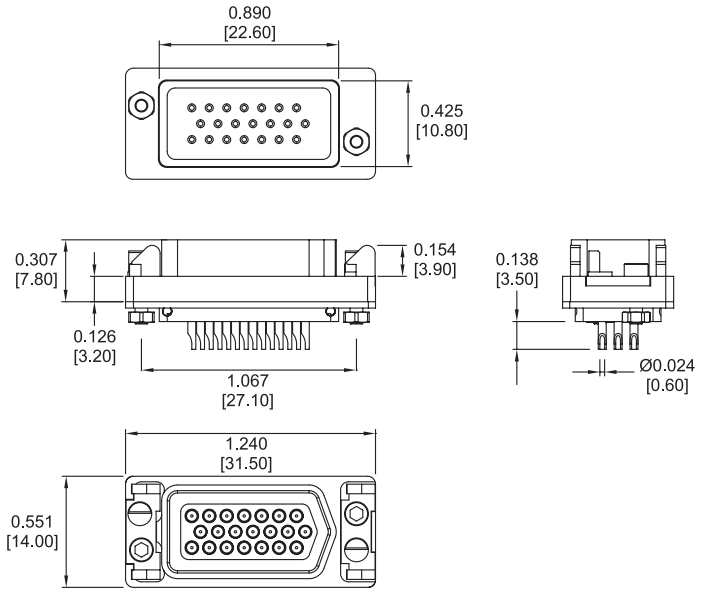


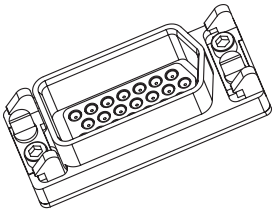


Mounting pattern:

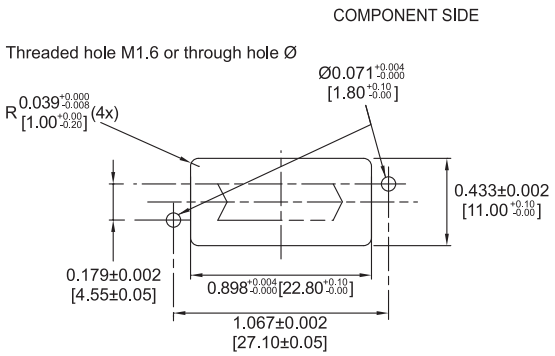


21 Contact Receptacle - Solder Cup Termination





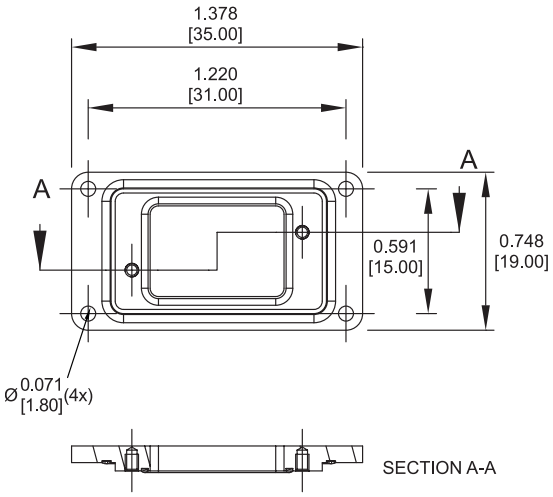
Panel Cut-out

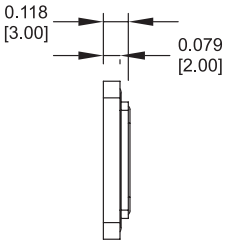


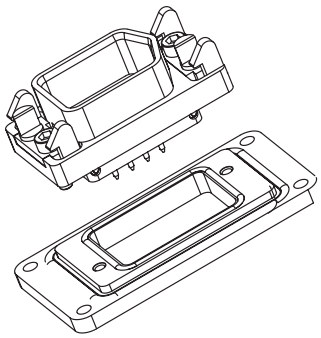
Dimensions are in inches [mm]

12 Contact Flange

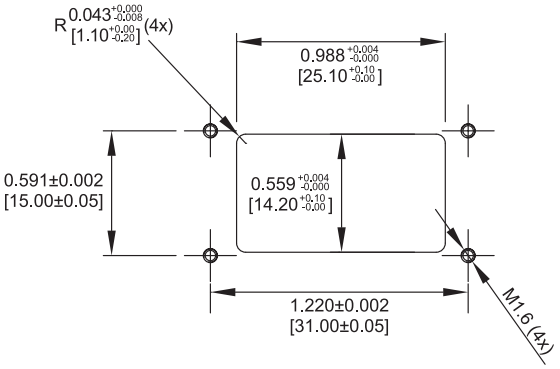
Optional for Rear Panel Mounting





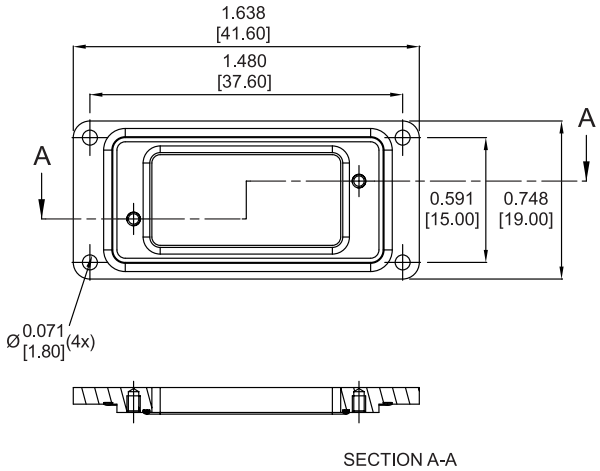


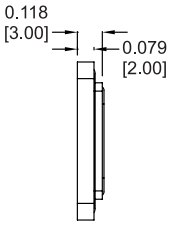
Panel cut-out:

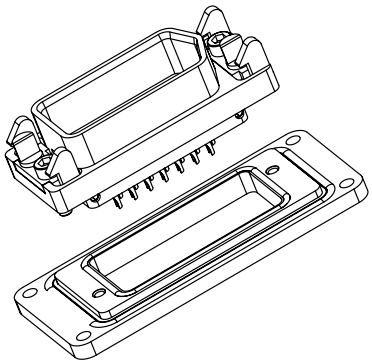


21 Contact Flange

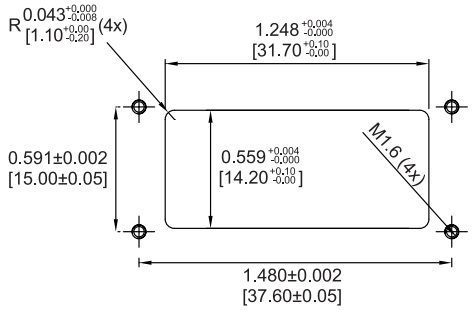
Optional for Rear Panel Mounting





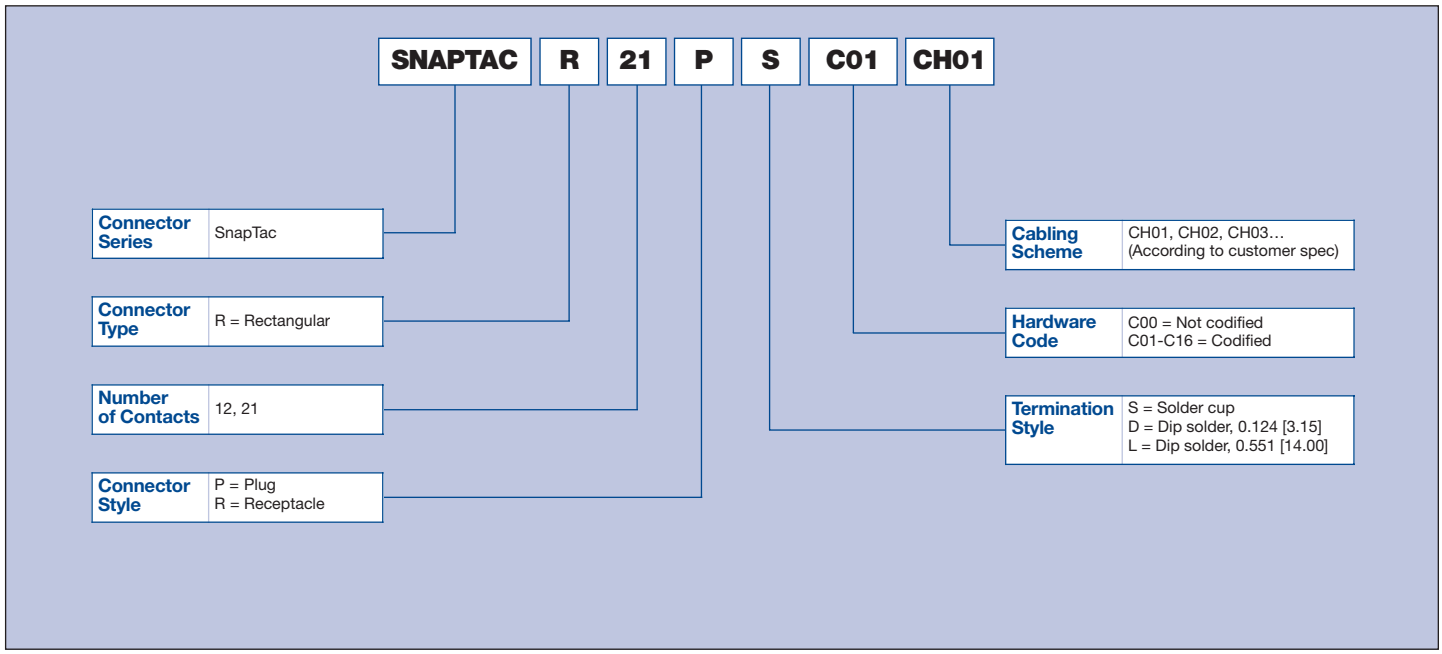


Panel cut-out:

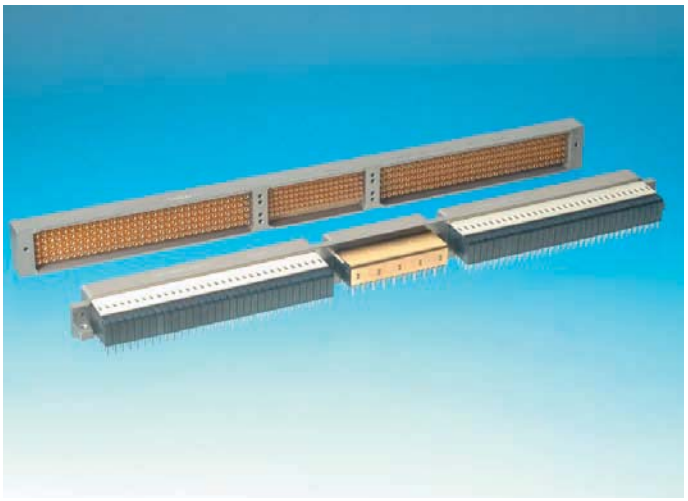


Dimensions are in inches [mm]

Ordering Information



Dimensions are in inches [mm]



VME64X Ruggedized Connectors

- COTS and custom applications
- Designed for severe environments with high levels of shock and vibration
- Compatible with IEEE-1101.2 -1992*
- Complies with ANSI/VITA 1.7 high current standard for VME64X
- Modular design of high speed modules feature round pins to mate with Hypertac® contacts
- Optimized lead traces within modules provide superior performance in high speed applications
- Rugged aluminum frames provide physical protection, conduction cooling, and act as a faraday cage
- Keying feature assures proper mating
- Press-in/compliant termination is also available for backplane assembly, consult factory

General Specifications

	KVME434M		KVME434F	
	P1 / P2	P0	J1 / J2	J0
Design Criteria	IEEE-1101.2 1992			
Contact Gender	Male pin		Hypertac 0.50mm socket	Hypertac 0.40mm socket
Contact Termination Style	Solder tail		Solder or press-fit	
Contact Spacing	2.54mm (5 row)	2.00mm (6 row; 5 rows + 1 shield row)	2.54mm (5 row)	2.00mm (6 row)
Contact Current Rating	2.5 Amps	1 Amp	2.5 Amps	1 Amp
Temperature Range	-55° C to 125° C			
Insulation Resistance	> 5000 megohm			
Insulator Material	30% Glass filled LCP			
Flammability Rating	94 V-O			
Pin Contact Material	Beryllium copper		—	
Socket Contact Material	—		Beryllium copper wires and brass body	
Plating Mating Contacts	50µin gold / 50µin nickel			
Plating Contact Termination	Tin/lead (63/37) / 50µin nickel (MIL-P-81728)			
Suggested Printed Circuit Board Hole Diameter Solder Tail	1.00mm +/- 0.05mm after plating	0.75mm +/- 0.05mm after plating	1.00mm +/- 0.05mm after plating	0.60mm +/- 0.05mm after plating
Suggested Printed Circuit Board Hole Press Fit Compliant Tail	—		1.00mm +/- 0.05mm after plating	0.70mm +/- 0.05mm after plating

* Contact factory for detail

Dimensions are in inches [mm]

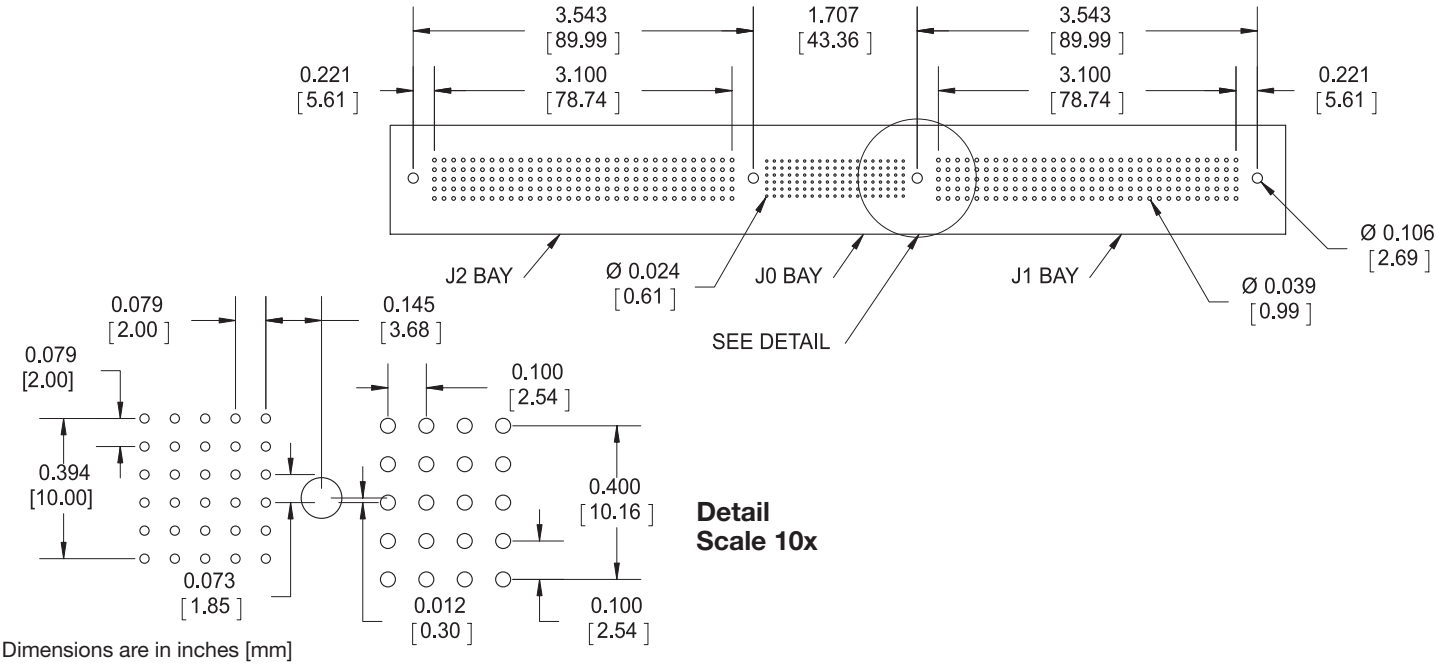
Performance Specifications				
	P1 / P2	P0	J1 / J2	J0
CRD (Contact Resistance at Rated Current)		4.85 milliohm average		4.85 milliohm average
LLCR (Low Level Contact Resistance)		7.20 milliohm average		7.25 milliohm average
DWV		1000V RMS		1000V RMS
Contact Life (Mate / Unmate)		> 4000 cycles		
Mating Force		27.3 LBf average		27.3 LBf average
Demating Force		22.4 LBf average		22.4 LBf average
Vibration				
Frequency		10 to 2000 to 10 HZ		10 to 2000 to 10 HZ
Amplitude		0.05 da 15 G		0.05 da 15 G
Duration		4.0 hours, 3 axis, 12 hour total		4.0 hours, 3 axis, 12 hour total
Test Current		100 ma		100 ma
Sweep Time		20 minutes		20 minutes
No Circuit Interruptions Occurred		At 10 Nano second resolution		At 10 Nano second resolution
Mechanical Shock				
Peak Value		100 G		100 G
Duration		6 Millisecond		6 Millisecond
Number of Shocks		3 shock / 3 axis (18 total)		3 shock / 3 axis (18 total)
No Circuit Interruptions Occurred		At 10 Nano second resolution		At 10 Nano second resolution

Recommended Alignment Fixturing and Tooling

Alignment Tool	Description	Work Instructions
T2079	Standard VME Daughtercard	S50477
T2074	Standard VME Backplane J1/J2 press tool	S50478
T2073	Standard VME Backplane J0 press tool	S50478
T2058	Standard VME Polarizing pin press tool	S50478

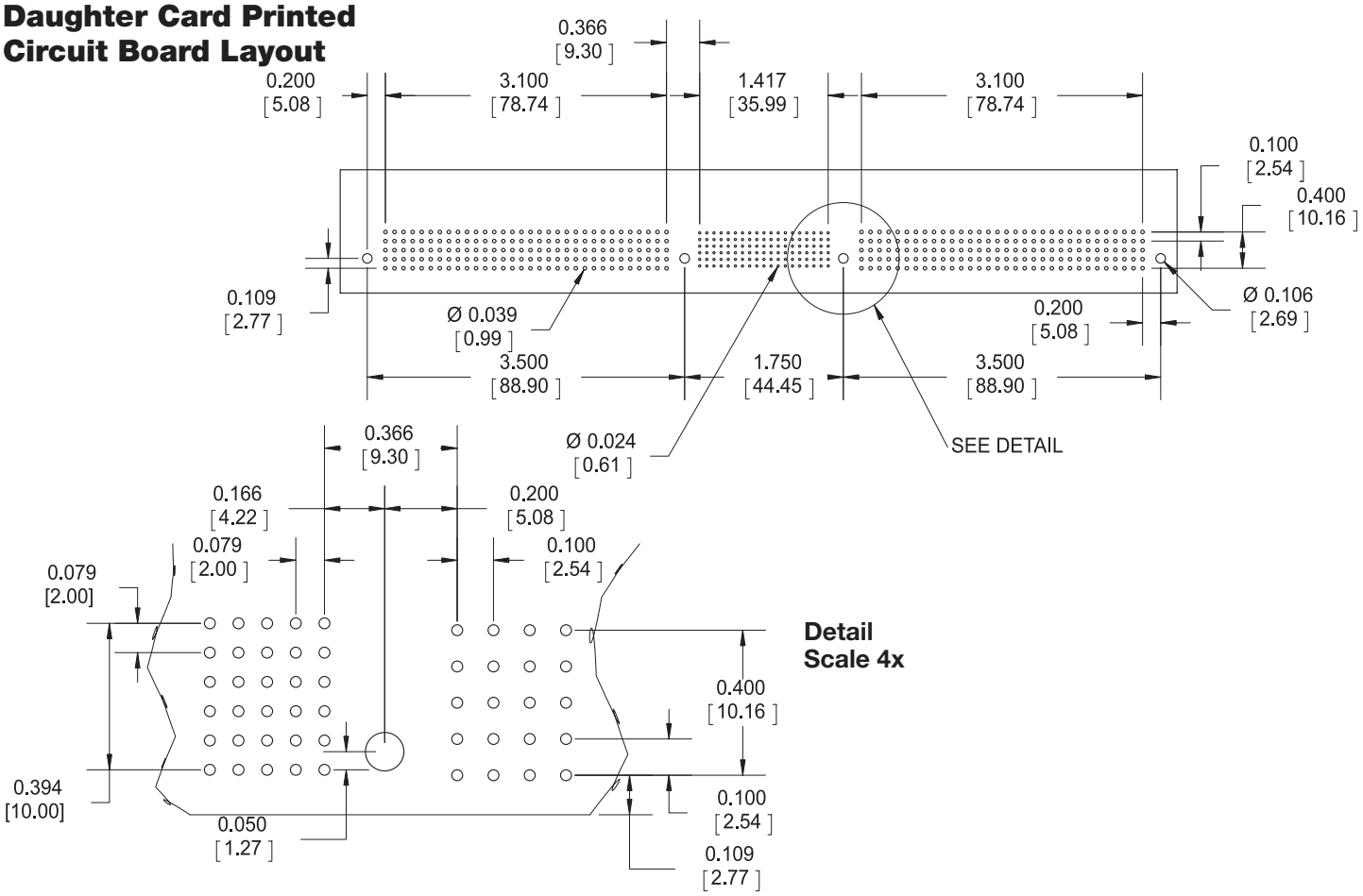
Consult factory for alignment tool and work instructions information

Backplane Printed Circuit Board Layout

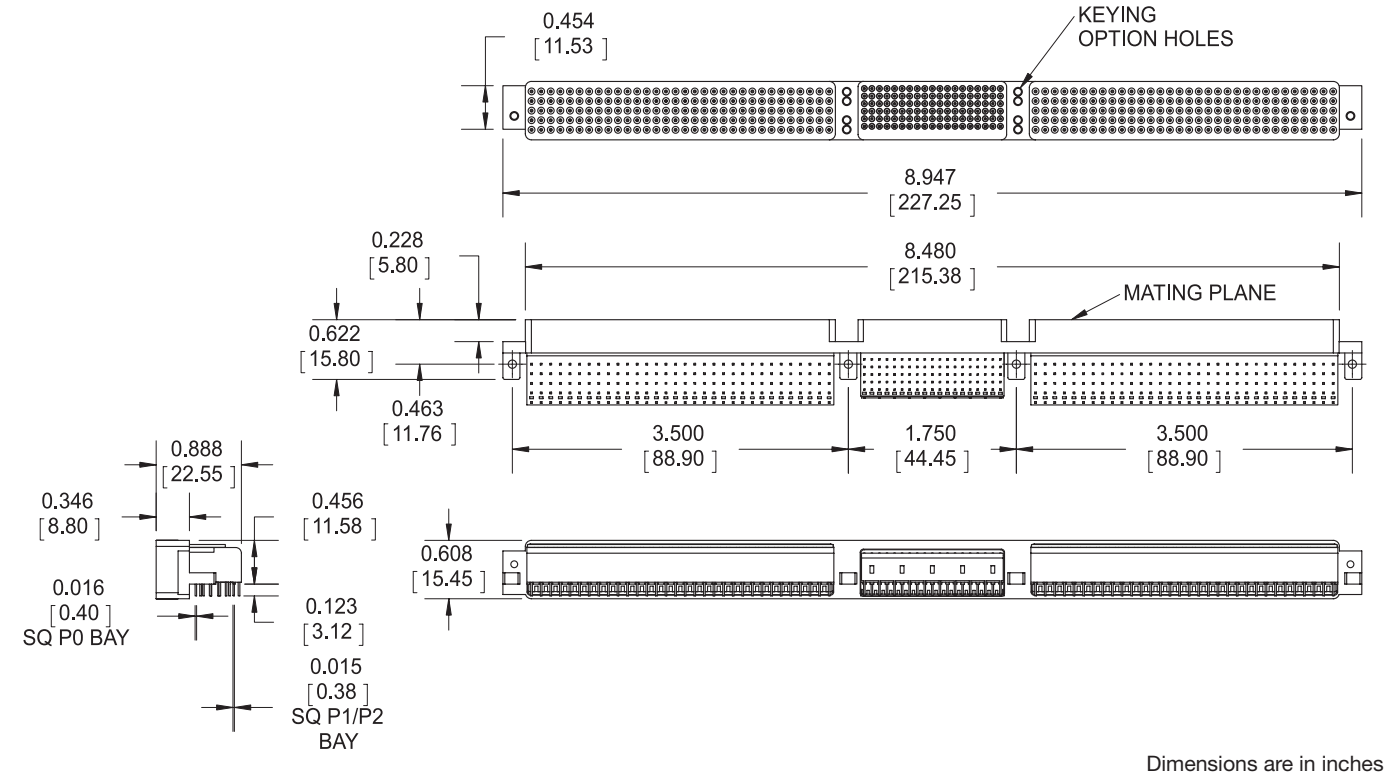


Dimensions are in inches [mm]

Daughter Card Printed Circuit Board Layout

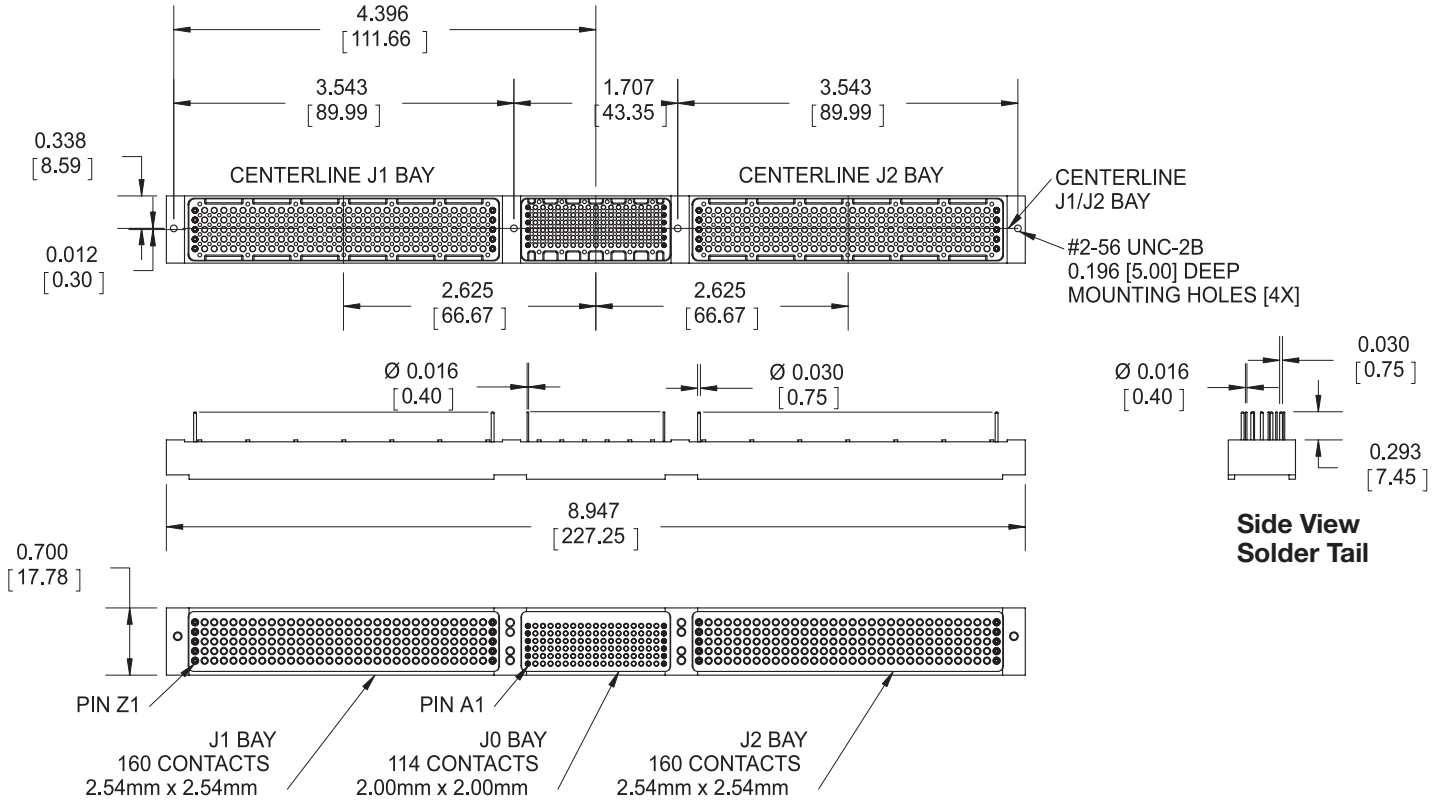


Male Assembly - KVME434MR00BH

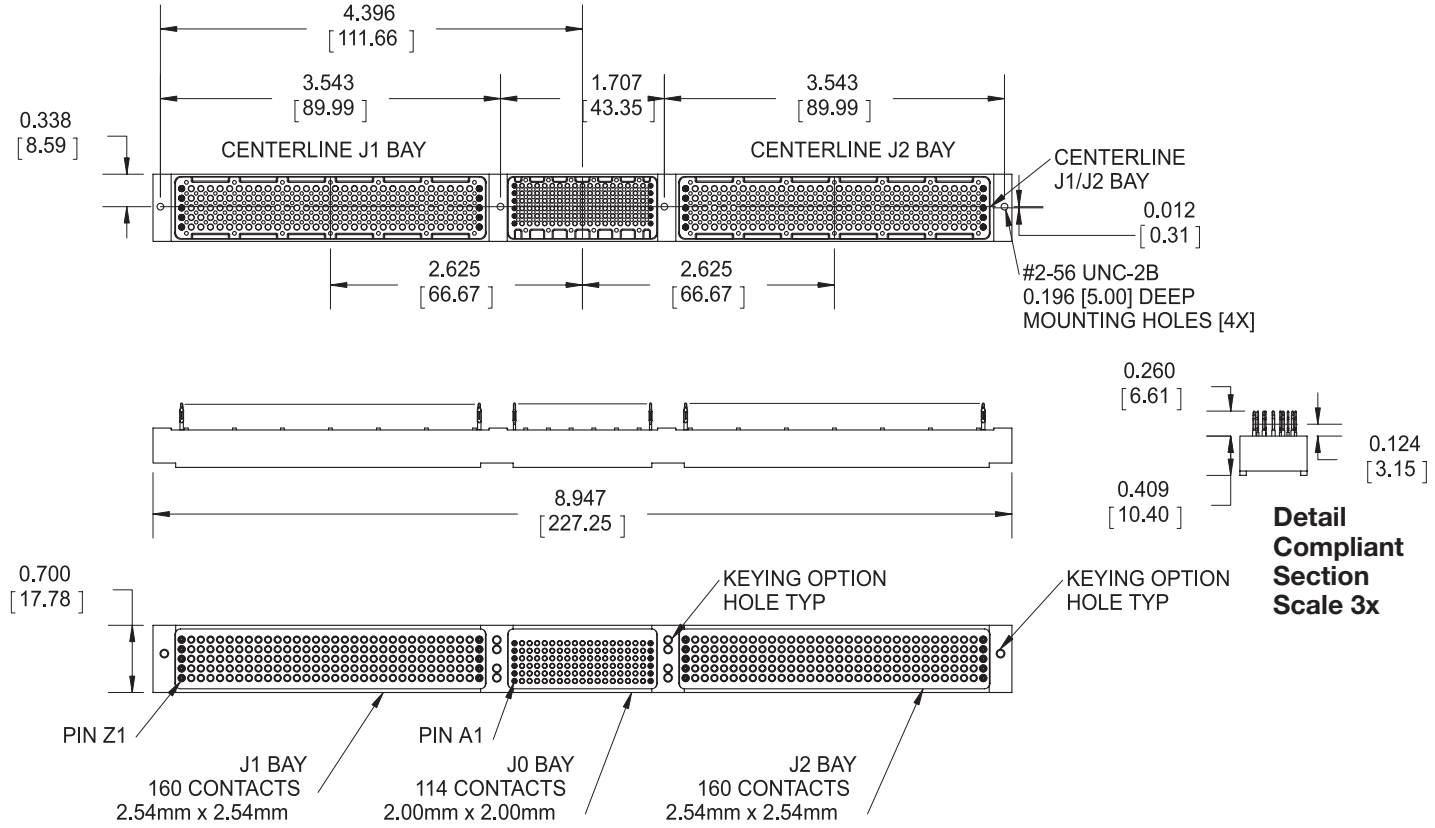


Dimensions are in inches [mm]

Receptacle Assembly - Solder Tails - KVME434FD00AH



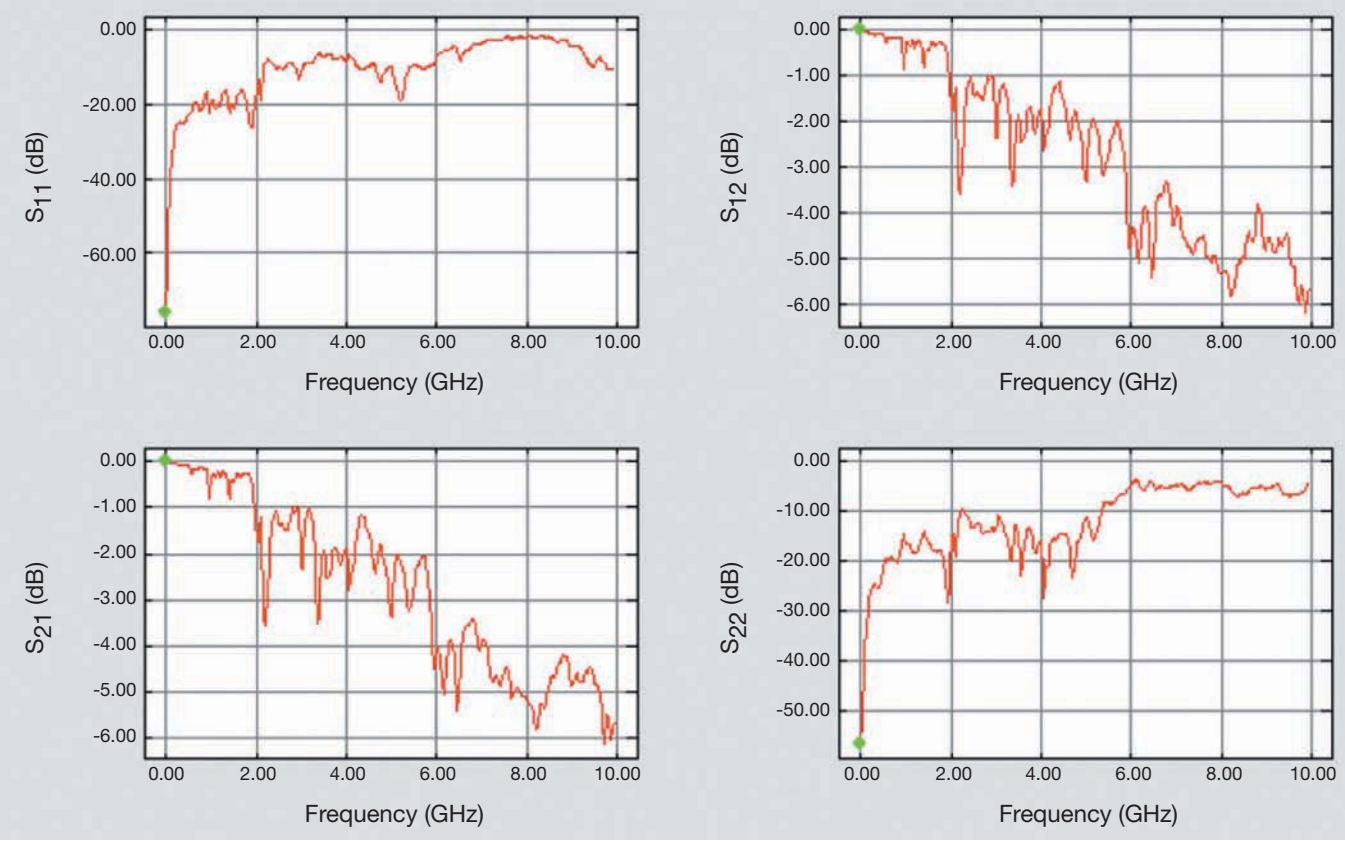
Receptacle Assembly - Compliant Tails - KVME434FC00AH



Dimensions are in inches [mm]

J0/P0 High Speed Electrical Performance

1. Differential S-parameter[1, 2]



2. Propagation Delay and Skew

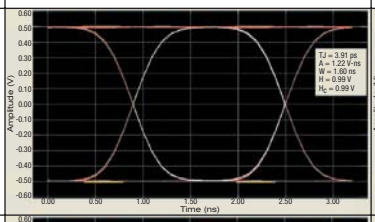
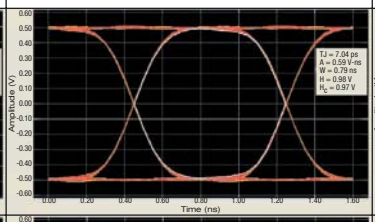
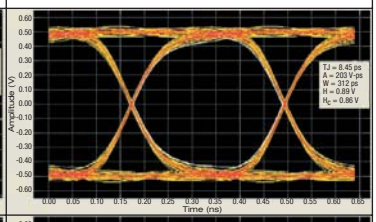
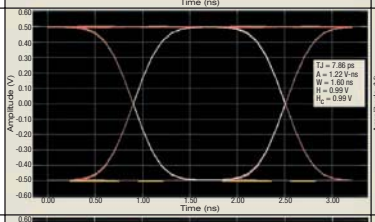
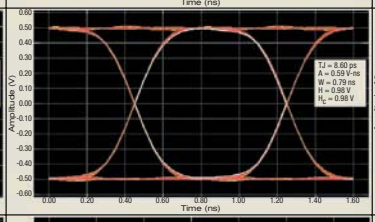
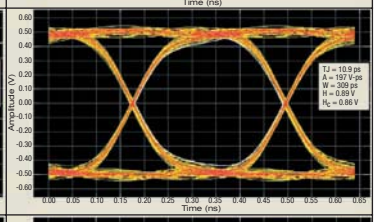
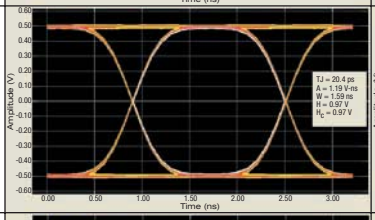
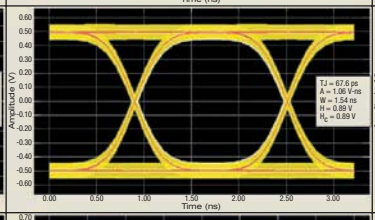
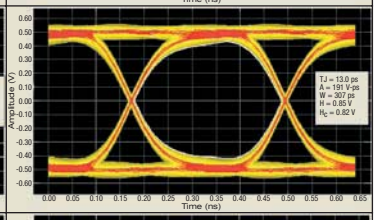
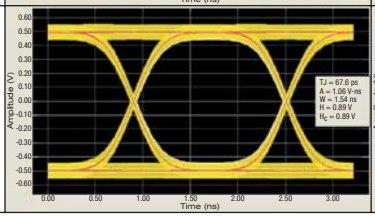
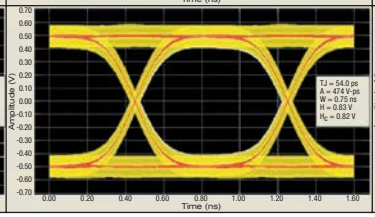
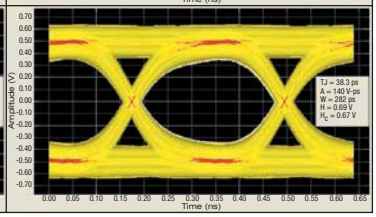
Propagation delay through the intrinsic connector assembly is estimated by making a measurement on the reflected signal received on the same broadband fixture that is used to obtain the full vector scattering parameters. In these measurements, there is no inclusion of any other pin lengths other than what is within the intrinsic connector.

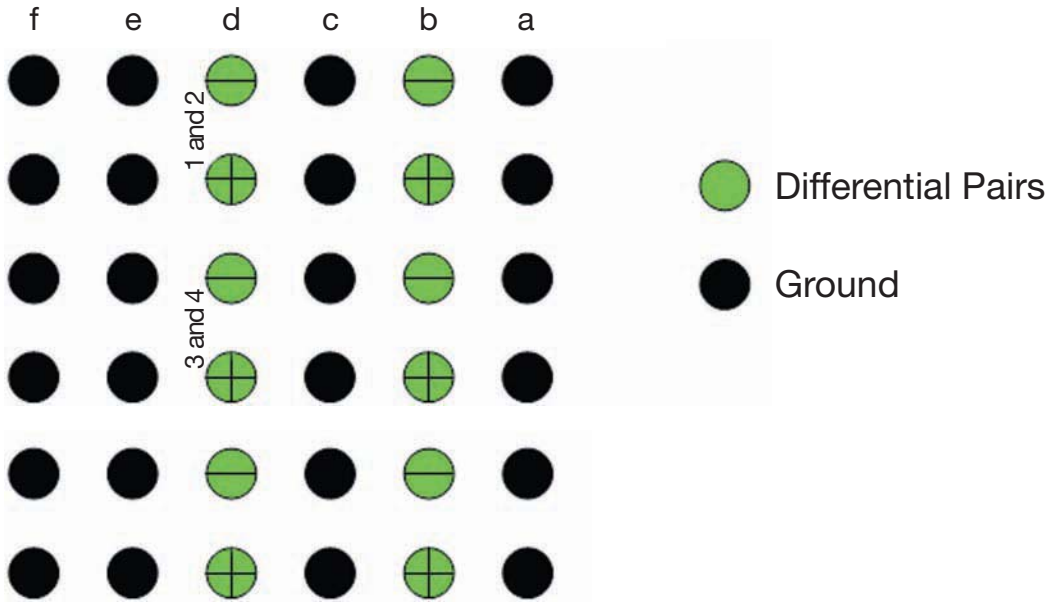
Parameters	Connector Row				
	A	B	C	D	E
Propagation Delay (ps)	68	90	112	134	156
Skew (ps)	22	22	22	22	
Maximum Data Rate[2]	3.125 Gb/s				

NOTES:
1) Pattern illustrated in the figure on next page was used in the S-parameter and cross talk measurements.
2) Please refer to the full characterization test report for details.

Dimensions are in inches [mm]

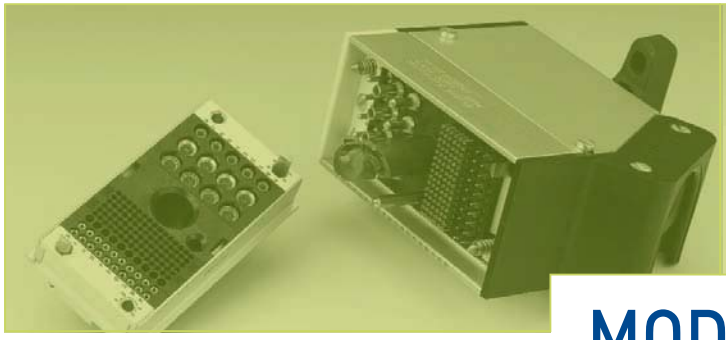
3. Connector Eye-Pattern-Diagram[1, 2]

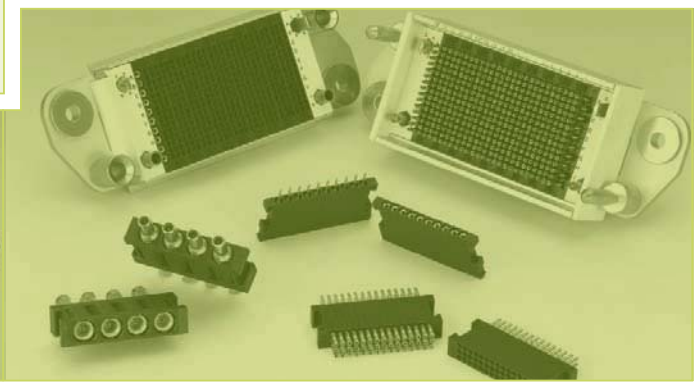
	622 Mb/s	1.25 Gb/s	3.125 Gb/s
Intrinsic			
With Inclusion of Printed Circuit Board VIAs			
With Inclusion of Near End Cross Talk (Aggressor / Victim = 30%)			
With Inclusion of Near End Cross Talk (Aggressor / Victim = 120%)			



NOTES:
1) Pattern illustrated in the figure above was used in the S-parameter and cross talk measurements.
2) Please refer to the full characterization test report for details.

Dimensions are in inches [mm]

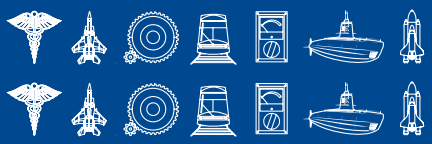




MODULAR

L Series

N Series



All products are available on 3D Config

L Series modular connectors employ a do-it-yourself system based on the building block principle. They offer a wide variety of combinations available in a single connector frame. Thus, the user is capable of selecting the connector that fulfills exact requirements with off-the-shelf components.

In this application, the low insertion and extraction forces of the Hypertac contact technology enable the user to assemble large numbers of contacts in a single connector that mates and unmates smoothly and easily.

L Series can be built for the following:

- Rack and panel applications
  - Standard
  - With Jackscrews (standard and quick disconnect)
  - With floating mounting
- Cable applications
  - Hooded with rounded or flat cable clamps
  - With Jackscrews (standard and quick disconnect)
- Programming applications

L Series systems are composed of two elements: modules and frames.

Modules are the connector elements of the system. Various types of contacts are available such as signal, power and coaxial. The contacts are mounted in small plastic blocks. Crimp contacts are also available in plastic blocks that can be mounted individually or together into the frame.

The width of each module block is designated in units.

Modules available with fixed contacts:

- 2 contacts at 200 Amps (Type P)
- 2 contacts at 50 Amps (Type M)
- 2 contacts at 25 Amps (Type C)
- 4 contacts at 16 Amps (Type N)
- 3 contacts at 15 Amps (Type B)
- 5 contacts at 8 Amps (Type A)
- 17 contacts at 8 Amps (Type D)
- 2 contacts at 5 Amps (Type E)
- 2 contacts high voltage (Type H)

Modules available with “Snap In” crimp contacts:

- 1 contact at 200 Amps (Type G)
- 1 contact at 100 Amps (Type K)
- 2 contacts at 25 and 50 Amps (Type U)
- 3 contacts at 25 Amps (Type V)
- 3 contacts at 15 Amps (Type S)
- 5 contacts at 8 Amps (Type R)
- 30 contacts at 4 Amps (Type W)
- 3 contacts coaxial (Type V)

The frames hold the modules in position. They range from a basic frame consisting of 2 side rails and 2 end caps to more complex versions with Jackscrews, hoods and cable clamps. All frames are available in numerous lengths to conform to almost any combination of modules.

With the L Series, specially designed connectors can be purchased quickly and inexpensively, eliminating the extra cost and delay of custom tooling.

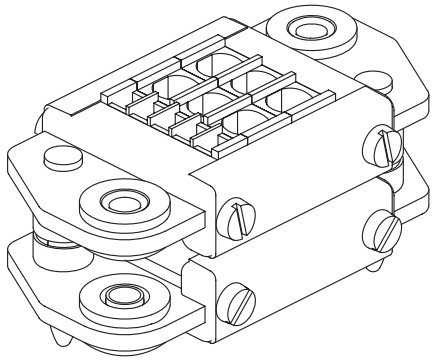
Dimensions are in inches [mm]

Frame H

File No.: UL E102195

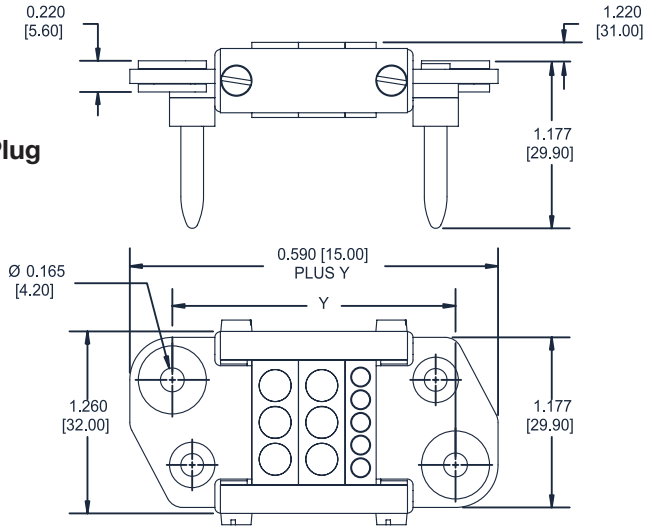
LPH

LEH



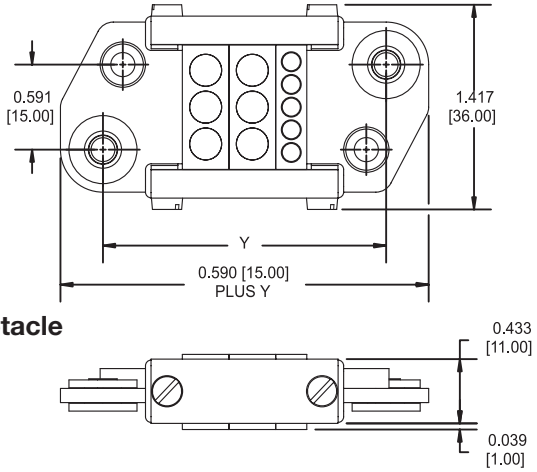
- Rack and panel with guides
- Float mounting 0.049 [1.25][2] max. from center

Plug



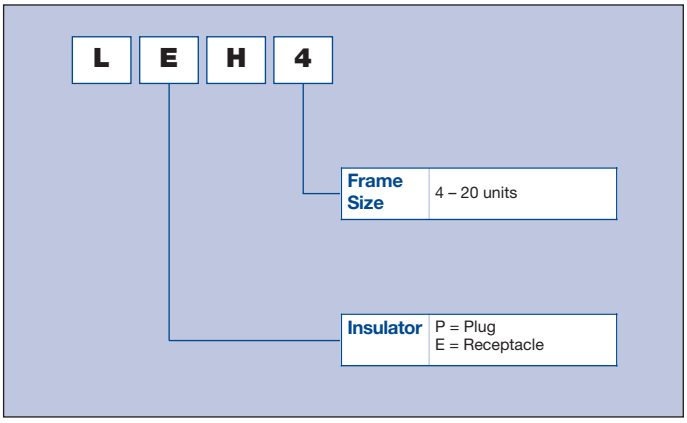
SEQUENCE OF MODULES

Receptacle



Weight, Excluding Modules	
Plug	1.9 oz. at 4 units 2.8 oz. at 20 units
Receptacle	1.6 oz. at 4 units 2.5 oz. at 20 units

Ordering Information



Mounting Dimensions

Units	4	5	6	7	8	9
Y	1.969 [50.00]	2.185 [55.50]	2.402 [61.00]	2.618 [66.50]	2.835 [72.00]	3.051 [77.50]

Units	10	11	12	13	14	15
Y	3.268 [83.00]	3.484 [88.50]	3.701 [94.00]	3.917 [99.50]	4.134 [105.00]	4.350 [110.50]

Units	16	17	18	19	20	21	22
Y	4.567 [116.00]	4.784 [121.50]	5.00 [127.00]	5.217 [132.50]	5.433 [138.00]	5.650 (143.50)	5.866 (149.00)

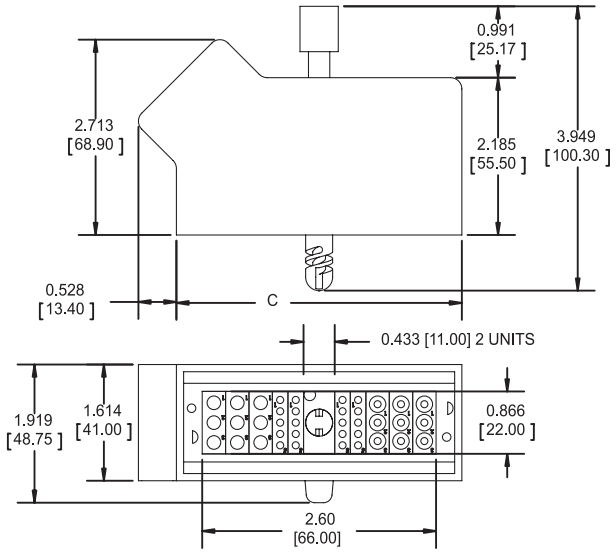
NOTES:
1) See mounting dimensions.
2) Available option: 0.125 inch float (use modification 398).

Dimensions are in inches [mm]

Frame MY (Plastic Backshells)

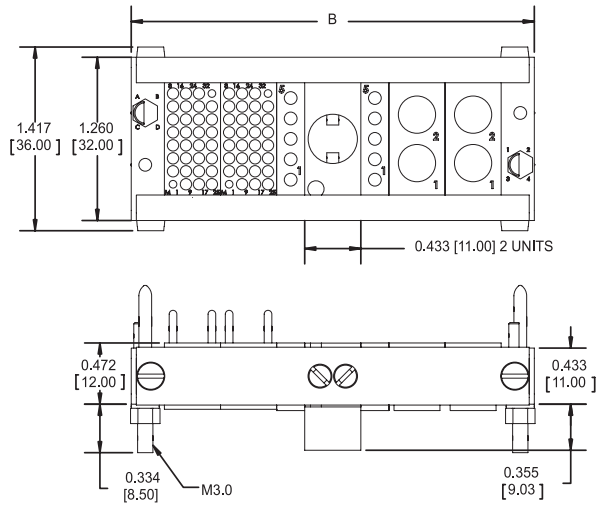
- 180° quick turn
- Up to 300 signal contacts
- Adjustable cable clamp: 0.425 to 1.26 [11.50 to 32.00]
- > 5,000 mating cycles
- 36 keying combinations
- Rugged black polycarbonate backshell
- Built-in pin protection
- 12, 15, 20 and 22 unit lengths

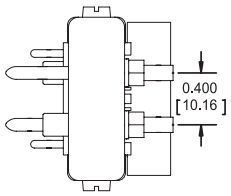
LPMY (Half Turn Plug)



SEQUENCE OF MODULES

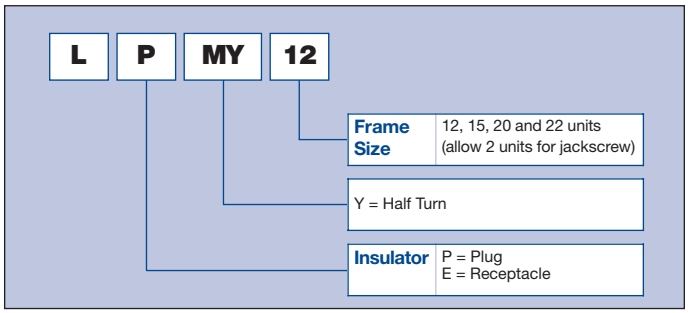
LEMY (Half Turn Receptacle)





Number of Units	Dimensions	
	B	C
12	3.11 [79.00]	3.315 [84.20]
15	3.76 [95.50]	3.965 [100.70]
20	4.843 [123.00]	5.047 [128.20]
22	5.276 [134.00]	5.480 [139.20]

Ordering Information



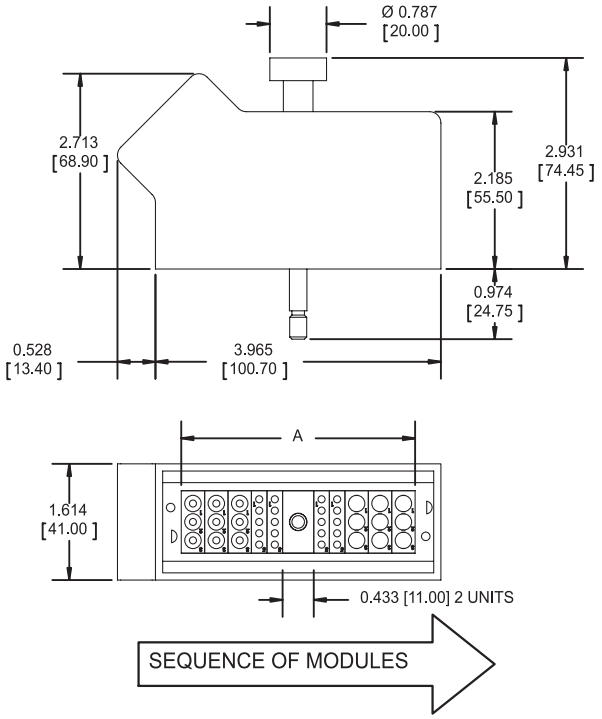
NOTES:
1) See mounting dimensions.
2) Half turn plug frame without hood available as LPMMY.

Dimensions are in inches [mm]

Frame MV (Plastic Backshells)

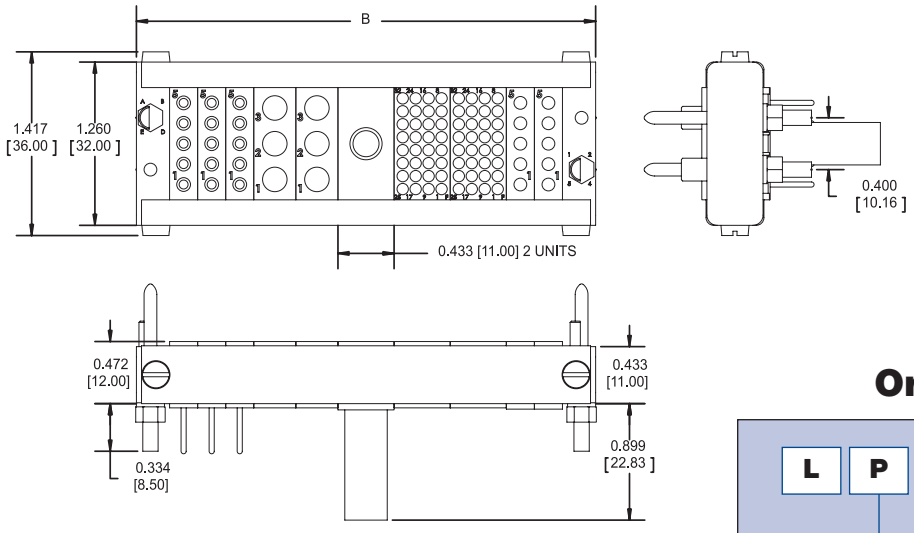
- 180° standard multi-turn
- Up to 300 signal contacts
- Adjustable cable clamp: 0.425 to 1.26 [11.50 to 32.00]
- > 5,000 mating cycles
- 36 keying combinations
- Rugged black polycarbonate backshell
- Built-in pin protection
- 12, 15, 20 and 22 unit lengths

LPMV (Multi-Turn Plug)

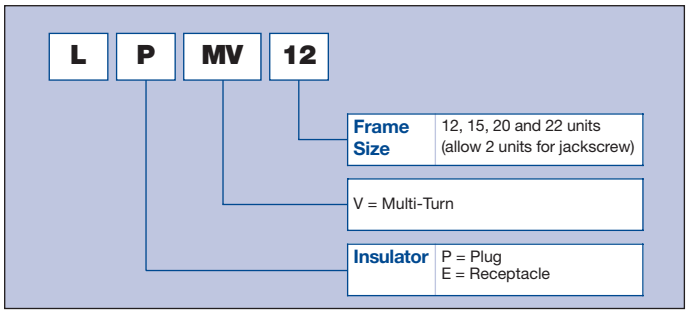


Number of Units	Dimensions		
	A	B	C
12	2.598 [66.00]	3.11 [79.00]	3.315 [84.20]
15	3.248 [82.50]	3.76 [95.50]	3.965 [100.70]
20	4.331 [110.00]	4.843 [123.00]	5.047 [128.20]
22	4.764 [121.00]	5.276 [134.00]	5.480 [139.20]

LEMV (Multi-Turn Receptacle)



Ordering Information

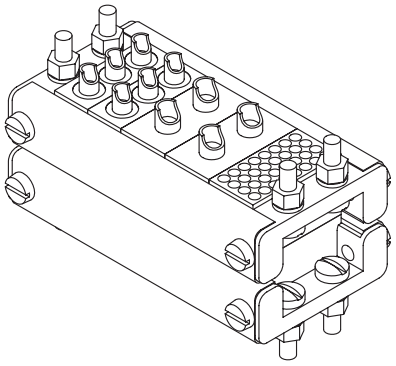


NOTE:
1) See mounting dimensions.

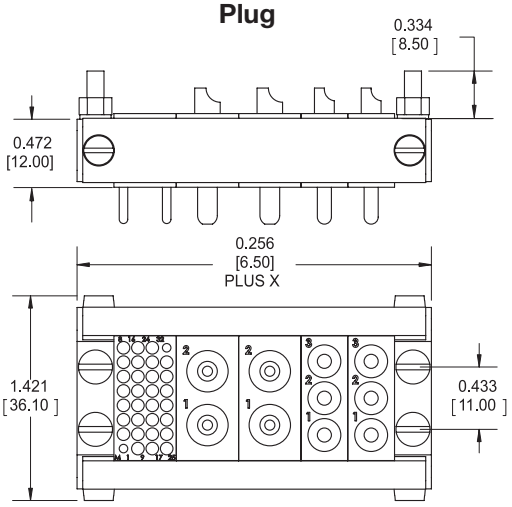
Dimensions are in inches [mm]

Frame A

• Simple Rack and Panel

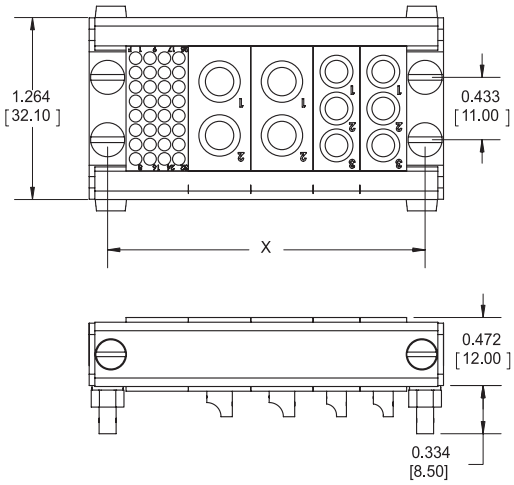


Plug



SEQUENCE OF MODULES

Receptacle



Weight, Excluding Modules	
A Plug	1.0 oz. at 4 units 1.9 oz. at 20 units
A Receptacle	1.0 oz. at 4 units 1.9 oz. at 20 units

Ordering Information

L	E	A	4

Frame Size	4 – 20 units
Frame	A
Insulator	P = Plug E = Receptacle

Mounting Dimensions

Units	4	5	6	7	8	9	10	11	12
X	1.122 [28.50]	1.338 [34.00]	1.555 [39.50]	1.771 [45.00]	1.988 [50.50]	2.205 [56.00]	2.421 [61.50]	2.638 [67.00]	2.854 [72.50]

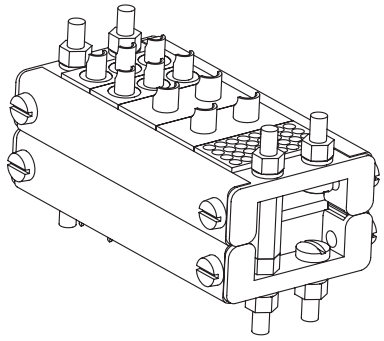
Units	13	14	15	16	17	18	19	20
X	3.070 [78.00]	3.287 [83.50]	3.504 [89.00]	3.720 [94.50]	3.936 [100.00]	4.153 [105.50]	4.370 [111.00]	4.586 [116.50]

NOTE:
See mounting dimensions.

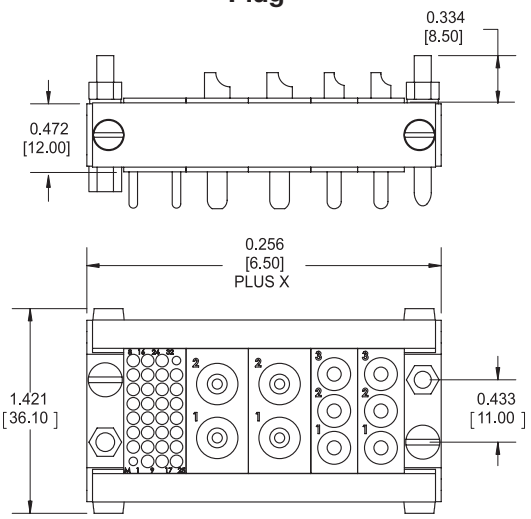
Dimensions are in inches [mm]

Frame B

• Simple Rack and Panel with guides

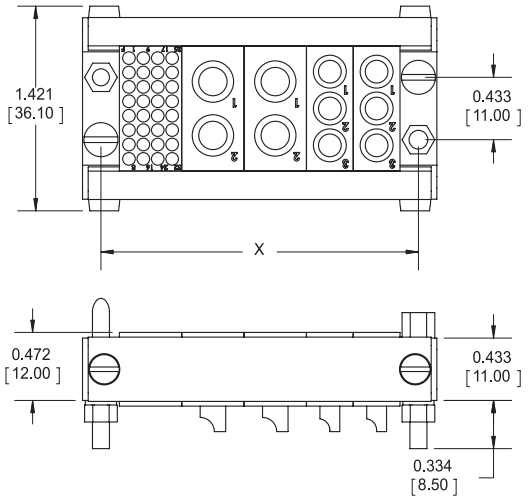


Plug



SEQUENCE OF MODULES

Receptacle



Weight, Excluding Modules	
B Plug	1.0 oz. at 4 units 1.9 oz. at 20 units
B Receptacle	1.0 oz. at 4 units 1.9 oz. at 20 units

Ordering Information

L	E	B	4

Frame Size	4 – 20 units
Frame	B
Insulator	P = Plug E = Receptacle

Mounting Dimensions

Units	4	5	6	7	8	9	10	11	12
X	1.122 [28.50]	1.338 [34.00]	1.555 [39.50]	1.771 [45.00]	1.988 [50.50]	2.205 [56.00]	2.421 [61.50]	2.638 [67.00]	2.854 [72.50]

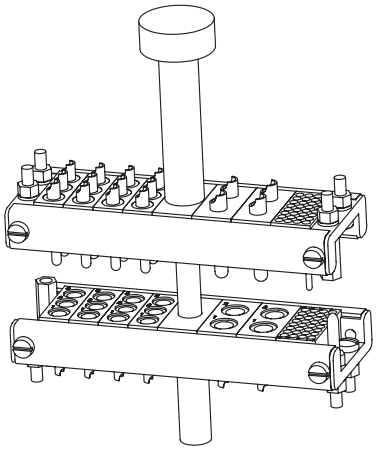
Units	13	14	15	16	17	18	19	20
X	3.070 [78.00]	3.287 [83.50]	3.504 [89.00]	3.720 [94.50]	3.936 [100.00]	4.153 [105.50]	4.370 [111.00]	4.586 [116.50]

NOTE:
See mounting dimensions.

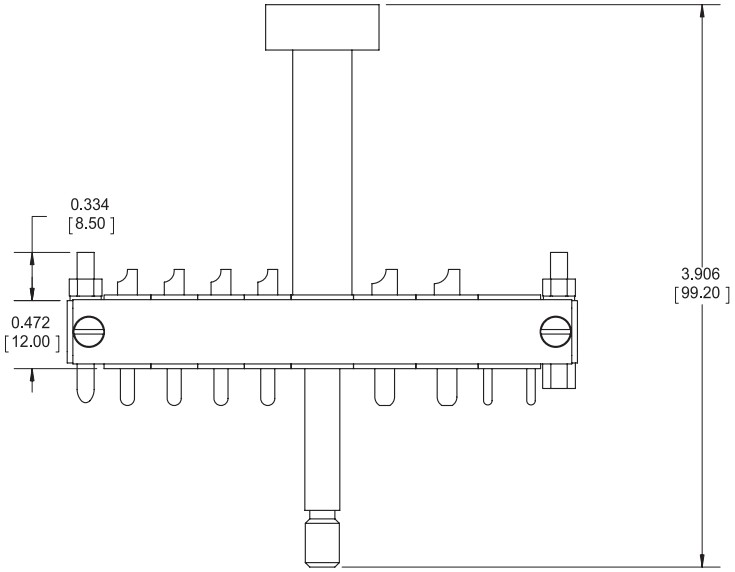
Dimensions are in inches [mm]

Frame BV

- Rack and panel with guides and Jackscrew



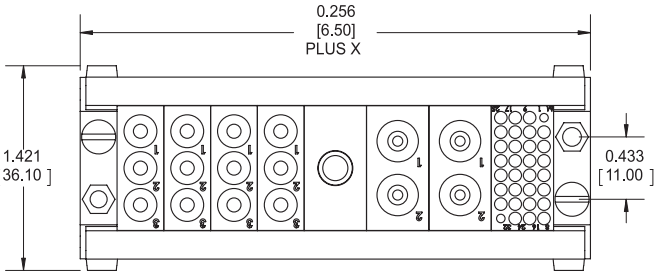
Plug

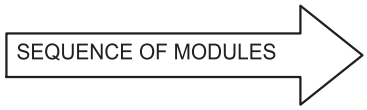


Mounting Dimensions

Units	4	5	6	7	8	9	10	11	12
X	1.122 [28.50]	1.338 [34.00]	1.555 [39.50]	1.771 [45.00]	1.988 [50.50]	2.205 [56.00]	2.421 [61.50]	2.638 [67.00]	2.854 [72.50]

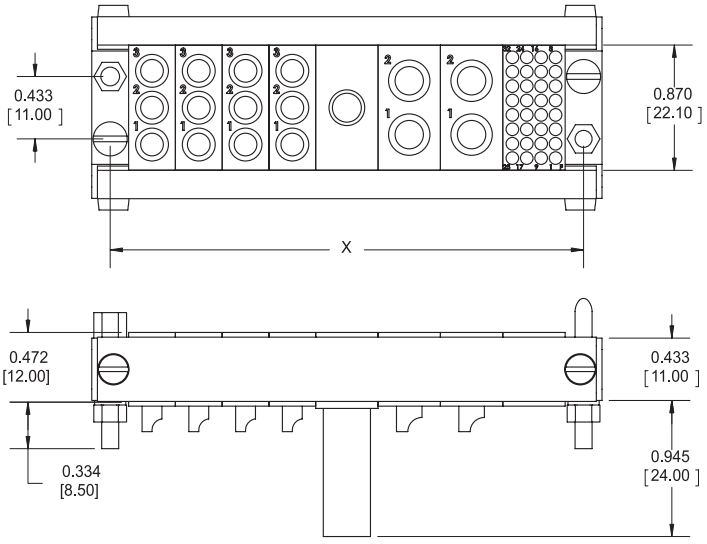
Units	13	14	15	16	17	18	19	20
X	3.070 [78.00]	3.287 [83.50]	3.504 [89.00]	3.720 [94.50]	3.936 [100.00]	4.153 [105.50]	4.370 [111.00]	4.586 [116.50]



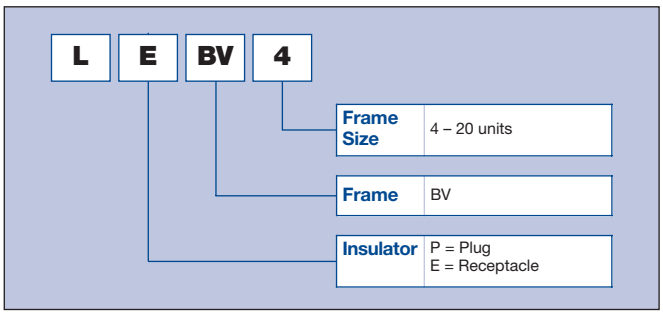


Weight, Excluding Modules	
BV Plug	4.7 oz. at 4 units 5.6 oz. at 20 units
BV Receptacle	2.5 oz. at 4 units 3.4 oz. at 20 units

Receptacle



Ordering Information

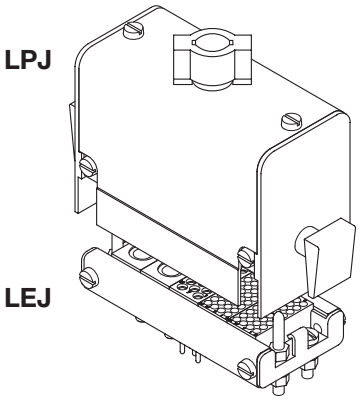


NOTE:
See mounting dimensions.

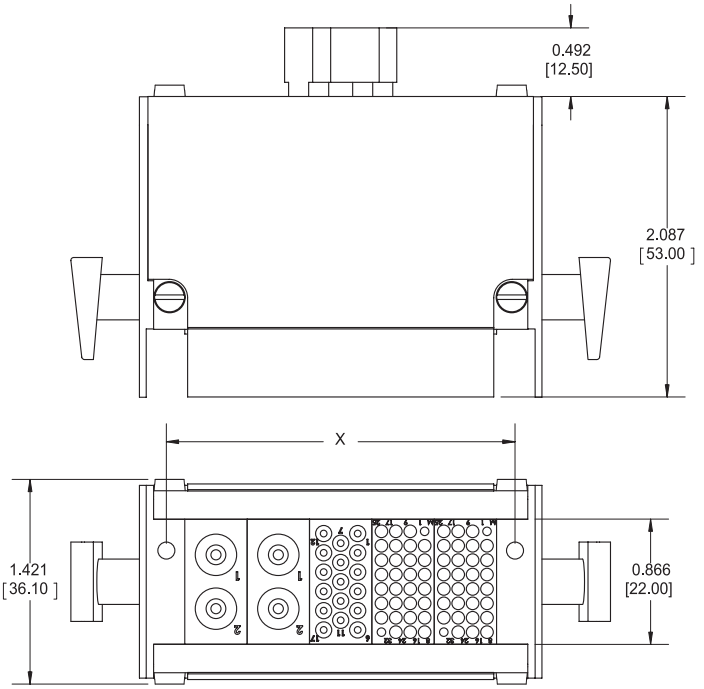
Dimensions are in inches [mm]

Frame J (Metal Backshell)

- Hooded connector with round cable clamp
- Alternate cable clamp locations available



Plug



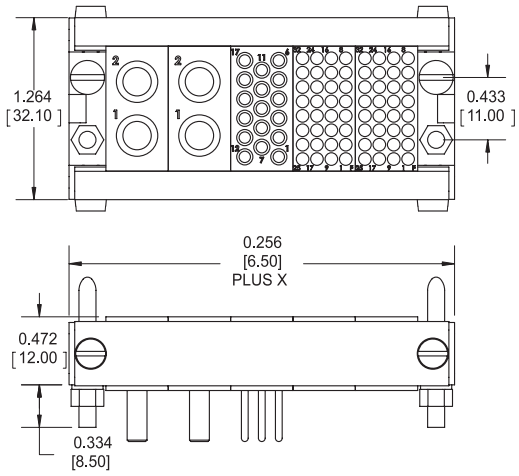
Mounting Dimensions

Units	4	5	6	7	8	9	10	11	12
X	1.122 [28.50]	1.338 [34.00]	1.555 [39.50]	1.771 [45.00]	1.988 [50.50]	2.205 [56.00]	2.421 [61.50]	2.638 [67.00]	2.854 [72.50]

Units	13	14	15	16	17	18	19	20
X	3.070 [78.00]	3.287 [83.50]	3.504 [89.00]	3.720 [94.50]	3.936 [100.00]	4.153 [105.50]	4.370 [111.00]	4.586 [116.50]

SEQUENCE OF MODULES

Receptacle



Weight, Excluding Modules	
Plug	3.5 oz. at 4 units
	5.5 oz. at 20 units
Receptacle	1.2 oz. at 4 units
	2.1 oz. at 20 units

Ordering Information

L	P	J	14	SC10

Cable Clamp	SC10, SC15, SC20, SC24 Not applicable on receptacle
Frame Size	4 – 20 units
Insulator	P = Plug E = Receptacle

NOTES:

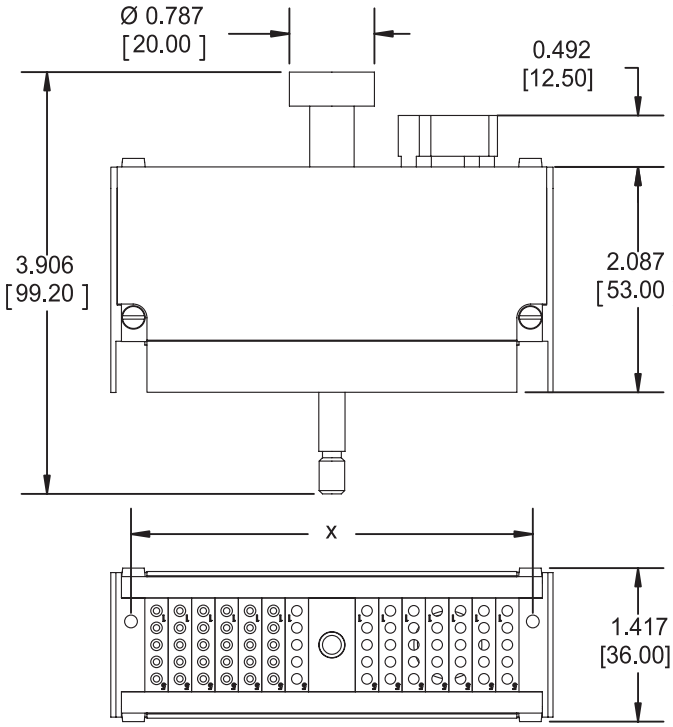
1) Plugs with flat cable clamp available. Replace J in part number with K and cable clamp callout to SC33 [33mm] or SC50 [50mm].
2) Plugs without cable clamp available. Replace J in part number with R and remove SC cable clamp callout.

Dimensions are in inches [mm]

Frame JV (Metal Backshell)

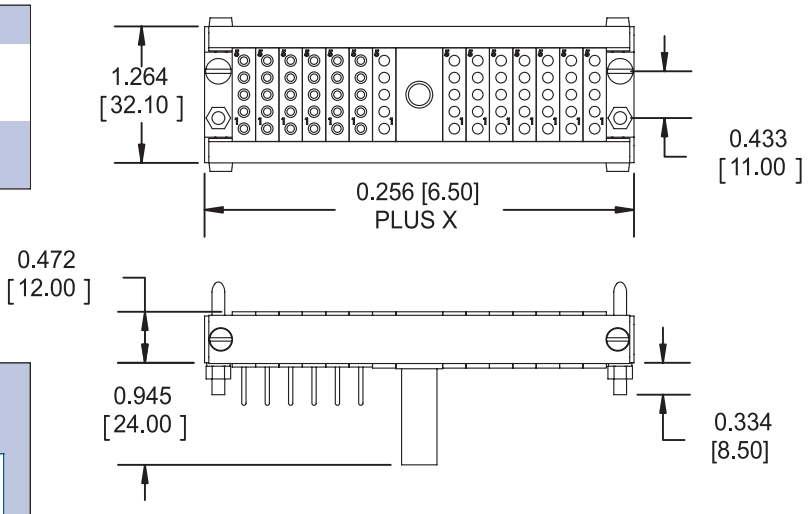
- Hooded connector with round cable clamp
- Side and double openings also available by special order
- Jackscrew extraction

Plug



SEQUENCE OF MODULES

Receptacle



Mounting Dimensions

Units	4	5	6	7	8	9	10	11	12
X	1.122 [28.50]	1.338 [34.00]	1.555 [39.50]	1.771 [45.00]	1.988 [50.50]	2.205 [56.00]	2.421 [61.50]	2.638 [67.00]	2.854 [72.50]

Units	13	14	15	16	17	18	19	20
X	3.070 [78.00]	3.287 [83.50]	3.504 [89.00]	3.720 [94.50]	3.936 [100.00]	4.153 [105.50]	4.370 [111.00]	4.586 [116.50]

Weight, Excluding Modules	
Plug	1.9 oz. at 4 units 2.8 oz. at 20 units
Receptacle	1.6 oz. at 4 units 2.5 oz. at 20 units

Ordering Information

L	P	JV	16	SC10

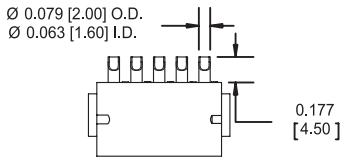
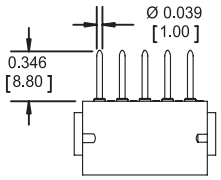
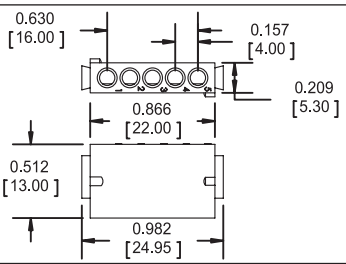
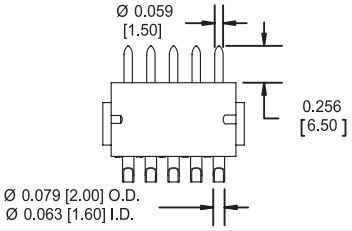
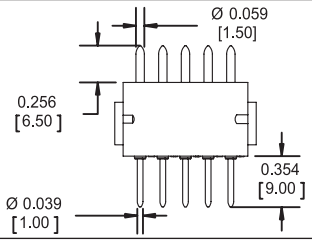
Cable Clamp	SC10, SC15, SC20, SC24 Not applicable on receptacle
Frame Size	4 – 20 units
Insulator	P = Plug E = Receptacle

NOTES:

1) Plugs with flat cable clamp available. Replace J in part number with K and cable clamp callout to SC33 [33mm] or SC50 [50mm].
2) Plugs without cable clamp available. Replace J in part number with R and remove SC cable clamp callout.

Dimensions are in inches [mm]

Ordering Information

Module A 8 Amp Contact Rating	Width: 1 Unit • Contacts: 5 Hypertac® Fixed Contacts • Ø 0.059 [1.50]			
	Gender	Termination	Plating	Part Number
	Female	Solder Cup up to 16 AWG	50µin gold	LAFSTAH
	Female	Straight Dip Solder	50µin gold	LAFDTAH
	Empty Block	—	—	ZLM005-001 (LAHT)
	Male	Solder Cup up to 16 AWG	10µin gold	LAMST
			50µin gold	LAMSTH
	Male	Straight Dip Solder	10µin gold	LAMDT
			50µin gold	LAMDTH

File No.: UL E102195

Crimp Termination: Crimp “R” modules intermate with “A” modules.

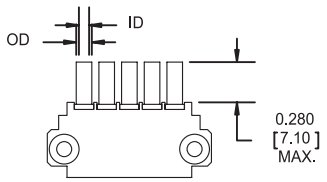
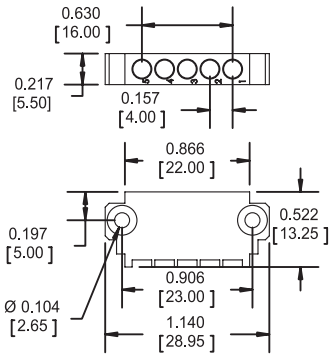
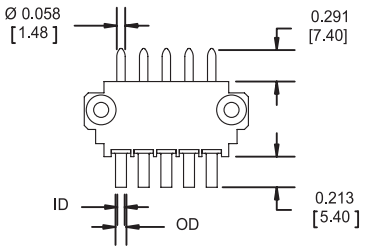
Plating Reference	
Male Pins:	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Sockets:	50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

General Specifications	
Current Rating	8 Amps
Contact Resistance	< 2.5 milliohms
Extraction Force (Per Contact)	1.0 – 5.0 oz.
Contact Life Cycles	> 100,000
Breakdown Voltage	> 2000V RMS
Dielectric Withstanding Voltage	1500V RMS
Insulation Resistance	> 10^6 megohms at 500 VDC
Temperature Rating	-55° C to 125° C
Insulator Material	Diallyl-phthalate
Contact	
Material (Pin)	Brass
(Socket)	Beryllium copper wires and brass body
Approximate Weight	M: 0.2 oz., F: 0.15 oz.

NOTE:
If assembling the modules into a frame, two YHD0027 clips are required per module.

Dimensions are in inches [mm]

Ordering Information

Module R 8 Amp Contact Rating	Width: 1 Unit • Contacts: 5 Hypertac® "Snap In" Crimp Contacts • Ø 0.059 [1.50] Can be mounted by itself or in a frame						
	Gender	Wire Gauge	Dimensions		Plating	Part Number	Replacement Contacts
			ID	OD			
	Female	18-22	0.057 [1.45]	0.104 [2.65]	50µin gold	LRF1	YSK015-013AH
		24-26	0.022 [0.56]	0.076 [1.93]	50µin gold	LRF2	YSK015-009AH
		16	0.071 [1.80]	0.108 [2.75]	50µin gold	LRF3	YSK015-014AH
		14	0.079 [2.00]	0.122 [3.10]	50µin gold	LRF4	YSK015-045AH
	Empty Block	—	—	—	—	ZLR005-001 (LRH)	—
	Male	18-22	0.057 [1.45]	0.104 [2.65]	10µin gold	LRM1	YPN015-009RG
					50µin gold	LRM1H	YPN015-009RH
		24-26	0.022 [0.56]	0.076 [1.93]	10µin gold	LRM2	YPN015-004RG
					50µin gold	LRM2H	YPN015-004RH
		16	0.071 [1.80]	0.108 [2.75]	10µin gold	LRM3	YPN015-010G
					50µin gold	LRM3H	YPN015-010H
		14	0.079 [2.00]	0.122 [3.10]	10µin gold	LRM4	YPN015-033RG
					50µin gold	LRM4H	YPN015-033RH

File No.: UL E102195

Solder Cup and Straight Dip Termination:
"A" modules intermate with "R" modules.

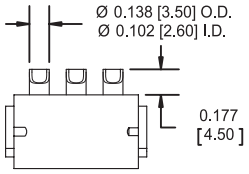
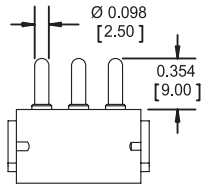
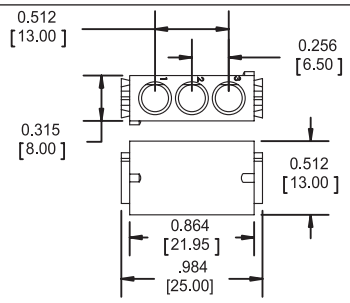
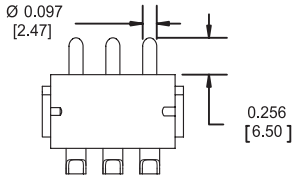
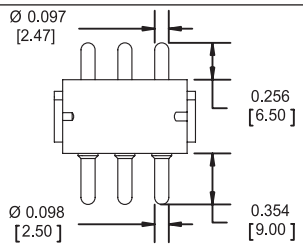
Accessories	
Crimp Tool	AF8
Crimp Positioner:	
Style 1 and 3	TP592
Style 2	TP655
Style 4	TP1128
Insertion/Extraction Tool	S0150.01

Plating Reference	
Male Pins:	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Sockets:	50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

General Specifications	
Current Rating	8 Amps
Contact Resistance	< 2.5 milliohms
Extraction Force (Per Contact)	1.0 – 5.0 oz.
Contact Life Cycles	> 100,000
Breakdown Voltage	> 1600V RMS
Dielectric Withstanding Voltage	1200V RMS
Insulation Resistance	> 10^4 megohms at 500 VDC
Temperature Rating	-55° C to 105° C
Insulator Material	Nylon
Contact	
Material (Pin)	Brass
(Socket)	Beryllium copper wires and brass body
Approximate Weight	M: 0.22 oz., F: 0.16 oz.

Dimensions are in inches [mm]

Ordering Information

Module B 15 Amp Contact Rating	Width: 1.5 Units • Contacts: 3 Hypertac® Fixed Contacts • Ø 0.098 [2.50]			
	Gender	Termination	Plating	Part Number
	Female	Solder Cup up to 12 AWG	50µin gold	LBFSTAH
	Female	Straight Dip Solder	50µin gold	LBFDTAH
	Empty Block	—	—	ZLM003-001 (LBHT)
	Male	Solder Cup up to 12 AWG	10µin gold	LBMST
			50µin gold	LBMSTH
	Male	Straight Dip Solder	10µin gold	LBMDT
			50µin gold	LBMDTH

File No.: UL E102195

Crimp Termination: “S” modules intermate with “B” modules.

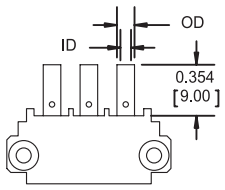
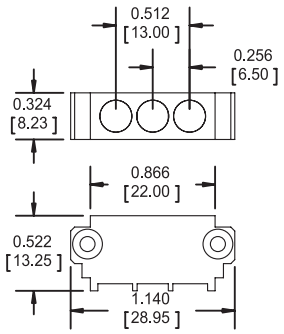
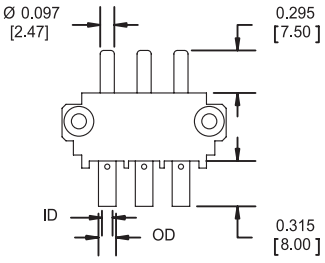
Plating Reference	
Male Pins:	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Sockets:	50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

NOTE:
If assembling the modules into a frame, two YHD0027 clips are required per module.

Dimensions are in inches [mm]

General Specifications	
Current Rating	15 Amps
Contact Resistance	< 1 milliohms
Extraction Force (Per Contact)	3.0 – 25.0 oz.
Contact Life Cycles	> 100,000
Breakdown Voltage	> 1600V RMS
Dielectric Withstanding Voltage	1200V RMS
Insulation Resistance	> 10^6 megohms at 500 VDC
Temperature Rating	-55° C to 125° C
Insulator Material	Diallyl-phthalate
Contact Material (Pin) (Socket)	 Brass Beryllium copper wires and brass body
Approximate Weight	M: 0.35 oz., F: 0.25 oz.

Ordering Information

Module S 15 Amp Contact Rating	Width: 1.5 Units • Contacts: 3 Hypertac® "Snap In" Crimp Contacts • Ø 0.098 [2.50] Can be mounted by itself or in a frame						
	Gender	Wire Gauge	Dimensions		Plating	Part Number	Replacement Contacts
			ID	OD			
	Female	18-22	0.059 [1.50]	0.122 [3.10]	50µin gold	LSF1	YSK025-003AH
		13-14	0.077 [1.95]	0.122 [3.10]	50µin gold	LSF2	YSK025-004AH
		12	0.100 [2.54]	0.150 [3.81]	50µin gold	LSF4	YSK025-013AH
	Empty Block	—	—	—	—	ZLS003-002 (LSH)	—
	Male	18-22	0.059 [1.50]	0.122 [3.10]	10µin gold	LSM1	YPN025-002G
		18-22			50µin gold	LSM1H	YPN025-002H
		13-14	0.077 [1.95]	0.122 [3.10]	10µin gold	LSM2	YPN025-003G
		13-14			50µin gold	LSM2H	YPN025-003H
		12	0.100 [2.54]	0.150 [3.81]	10µin gold	LSM4	YPN025-011RG
		12			50µin gold	LSM4H	YPN0255-011RH

File No.: UL E102195

Solder Cup and Straight Dip Termination:
"B" modules intermate with "S" modules.

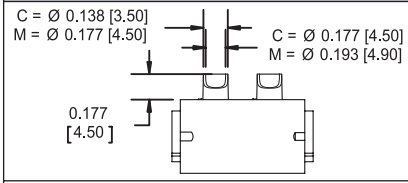
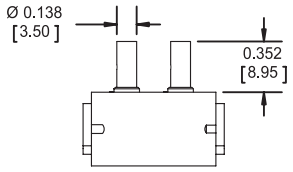
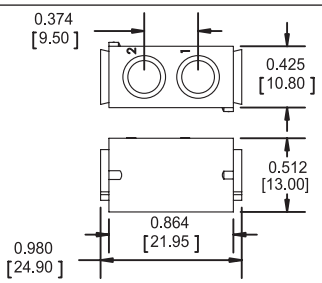
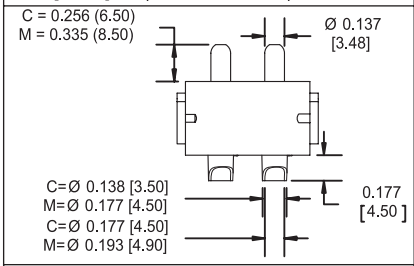
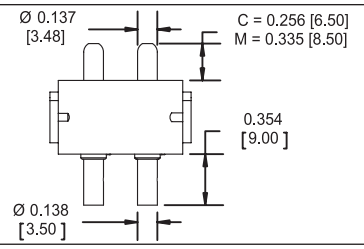
Accessories	
Crimp Tool	M309
Crimp Positioner	TP1179
Insertion/Extraction Tool	S0250.01

Plating Reference	
Male Pins:	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Sockets:	50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

General Specifications	
Current Rating	15 Amps
Contact Resistance	< 1.5 milliohms
Extraction Force (Per Contact)	3.0 – 28.3 oz.
Contact Life Cycles	> 100,000
Breakdown Voltage	> 2000V RMS
Dielectric Withstanding Voltage	1500V RMS
Insulation Resistance	> 10^4 megohms at 500 VDC
Temperature Rating	-55° C to 105° C
Insulator Material	Nylon
Contact Material (Pin) (Socket)	 Brass Beryllium copper wires and brass body
Approximate Weight	M: 0.23 oz., F: 0.35 oz.

Dimensions are in inches [mm]

Ordering Information

Module C&M 25 or 50 Amp Contact Rating	Width: 2 Units • Contacts: 2 Hypertac® Fixed Contacts • Ø 0.138 [3.50]				
	Gender	Termination	Plating	Rating Amps	Part Number
	Female	Solder Cup up to 10 AWG	50µin gold	25	LCFSTAH
		Solder Cup up to 8 AWG		50	LMFSTAH
	Female	Straight Dip Solder	50µin gold	25	LCFDTAH
				50	LMFDTAH
	Empty Block	—	—	—	ZLM002-001 (LCHT)
	Male	Solder Cup up to 10 AWG	10µin gold	25	LCMST
			50µin gold		LCMSTH
		Solder Cup up to 8 AWG	10µin gold	50	LMMST
			50µin gold		LMMSTH
	Male	Straight Dip Solder	10µin gold	25	LCMDT
			50µin gold		LCMDTH
			10µin gold	50	LMMDT
			50µin gold		LMMDTH

File No.: UL E102195

Crimp Termination: “U” modules intermate with “C” and “M” modules.

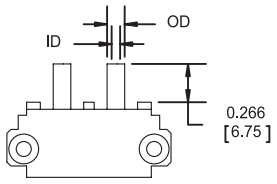
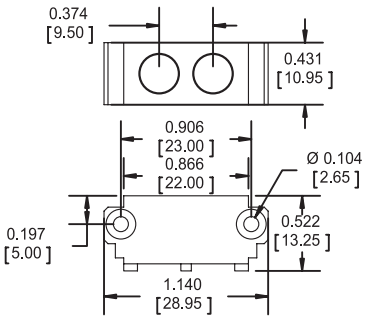
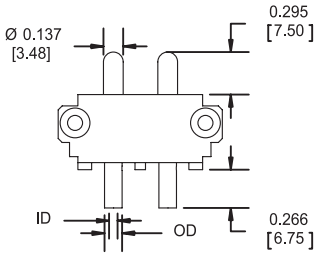
Plating Reference	
Male Pins:	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Sockets:	50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

NOTE:
If assembling the modules into a frame, two YHD0027 clips are required per module.

Dimensions are in inches [mm]

General Specifications	
Current Rating	C: 25 Amps M: 50 Amps
Contact Resistance	C: < 0.8 mΩ M: 0.40 mΩ
Extraction Force (Per Contact)	C: 4.0 – 32.0 oz. M: 4.0 – 40.0 oz.
Contact Life Cycles	> 100,000
Breakdown Voltage	> 3000V RMS
Dielectric Withstanding Voltage	2250V RMS
Insulation Resistance	> 10^6 megohms at 500 VDC
Temperature Rating	-55° C to 125° C
Insulator Material	Diallyl-phthalate
Contact	
Material (Pin)	Brass
(Socket)	Beryllium copper wires and brass body
Approximate Weight	M: 0.44 oz., F: 0.31 oz.

Ordering Information

Module U 25 or 50 Amp Contact Rating	Width: 2 Units • Contacts: 2 Hypertac® "Snap In" Crimp Contacts • Ø 0.138 [3.50] Can be mounted by itself or in a frame							
	Gender	Wire Gauge	Dimensions ID	Dimensions OD	Plating	Rating Amps	Part Number	Replacement Contacts
	Female	20-22	0.059 [1.50]	0.122 [3.10]	50µin gold	25	LUF1	YSK035-009AH
		16-18	0.077 [1.95]	0.122 [3.10]	50µin gold	25	LUF2	YSK035-010AH
		12-14	0.112 [2.85]	0.161 [4.10]	50µin gold	25	LUF3	YSK035-011AH
		6	0.217 [5.50]	0.285 [7.25]	50µin gold	50	LUF4	YSK035-030AH
		8-10	0.177 [4.50]	0.217 [5.50]	50µin gold	50	LUF5	YSK035-028AH
	Empty Block	–	–	–	–	–	ZLS002-001 (LUH)	–
	Male	20-22	0.059 [1.50]	0.122 [3.10]	10µin gold	25	LUM1	YPN035-005G
					50µin gold		LUM1H	YPN035-005H
		16-18	0.059 [1.50]	0.122 [3.10]	10µin gold	25	LUM2	YPN035-006G
					50µin gold		LUM2H	YPN035-006H
		12-14	0.112 [2.85]	0.161 [4.10]	10µin gold	25	LUM3	YPN035-007G
					50µin gold		LUM3H	YPN035-007H
		6	0.217 [5.50]	0.285 [7.25]	10µin gold	50	LUM4	YPN035-025RG
					50µin gold		LUM4H	YPN035-025RH
		8-10	0.177 [4.50]	0.217 [5.50]	10µin gold	50	LUM5	YPN035-023RG
					50µin gold		LRM5H	YPN035-023RH

File No.: UL E102195

Solder Cup and Straight Dip Termination:
"C" and "M" modules intermate with "U" modules.

Accessories

Crimp Tool
- Style 1, 2, 3, 5 ..... T1264
- Style 4 ..... T712

Crimp Positioner:
- Style 1, 2, 3 ..... SP612
- Style 4 ..... T758
- Style 5 ..... T1559

Insertion/Extraction Tool S0350.01

Plating Reference

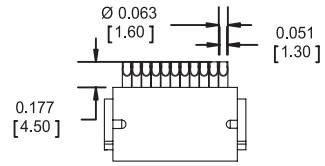
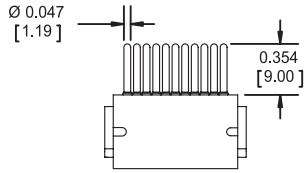
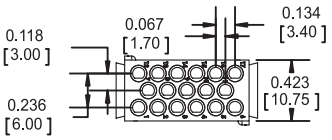
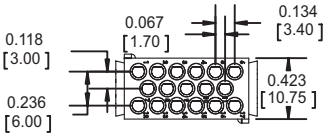
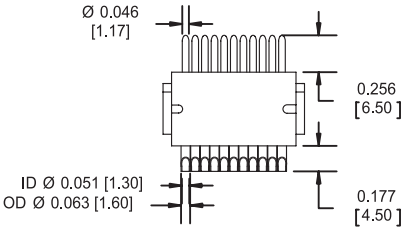
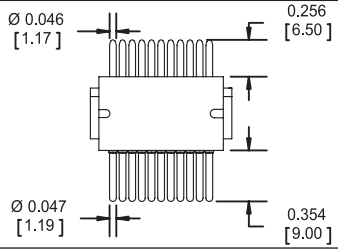
Male Pins:	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Sockets:	50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

General Specifications

Current Rating	25 or 50 Amps
Contact Resistance	< 0.8 milliohms
Extraction Force (Per Contact)	4.0 – 35.0 oz.
Contact Life Cycles	> 100,000
Breakdown Voltage	> 2800V RMS
Dielectric Withstanding Voltage	2100V RMS
Insulation Resistance	> 10^4 megohms at 500 VDC
Temperature Rating	-55° C to 105° C
Insulator Material	Nylon
Contact	
Material (Pin)	Brass
(Socket)	Beryllium copper wires and brass body
Approximate Weight	M: 0.45 oz., F: 0.29 oz.

Dimensions are in inches [mm]

Ordering Information

Module D 8 Amp Contact Rating	Width: 2 Units • Contacts: 17 Hypertac® Fixed Contacts • Ø 0.047 [1.20]			
	Gender	Termination	Plating	Part Number
	Female	Solder Cup Up to 20 AWG	50µin gold	LDFSTAH
	Female	Straight Dip Solder	50µin gold	LDFDTAH
	Empty Block Male	—	—	ZLM017-001 (LDMHT)
	Empty Block Female	—	—	ZLM017-002 (LDFHT)
	Male	Solder Cup Up to 20 AWG	10µin gold	LDMST
			50µin gold	LDMSTH
	Male	Straight Dip Solder	10µin gold	LDMDT
			50µin gold	LDMDTH

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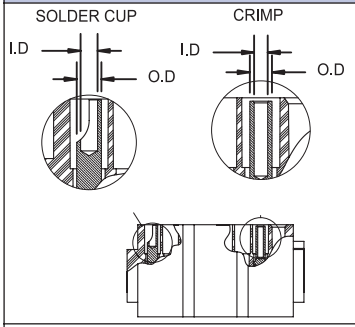
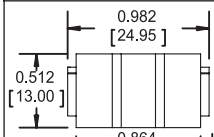
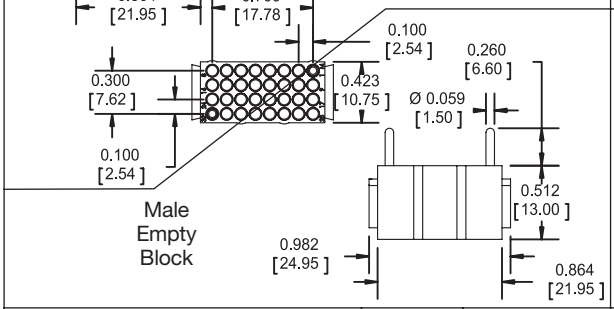
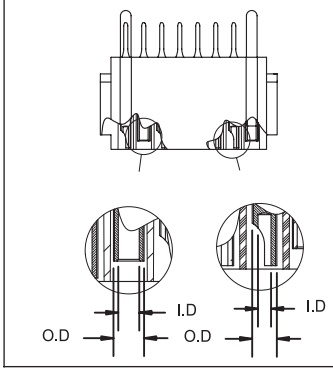
Plating Reference	
Male Pins:	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Sockets:	50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

General Specifications	
Current Rating	8 Amps
Contact Resistance	< 3.0 milliohms
Extraction Force (Per Contact)	1.0 – 4.5 oz.
Contact Life Cycles	> 100,000
Breakdown Voltage	> 1800V RMS
Dielectric Withstanding Voltage	1350V RMS
Insulation Resistance	> 10^6 megohms at 500 VDC
Temperature Rating	-55° C to 125° C
Insulator Material	Diallyl-phthalate
Contact	
Material (Pin)	Brass
(Socket)	Beryllium copper wires and brass body
Approximate Weight	M: 0.31 oz., F: 0.45 oz.

NOTE:
If assembling the modules into a frame, two YHD0027 clips are required per module.

Dimensions are in inches [mm]

Ordering Information

Module W 4 Amp Contact Rating	Width: 2 Units • Contacts: 30 Hypertac® Removable Contacts • Ø 0.024 [0.60] Can be mounted by itself or in a frame						
	Gender	Termination	Dimensions ID	Dimensions OD	Plating	Part Number	Replacement Contacts
	Female	Crimp 18-20 AWG	0.055 [1.39]	0.071 [1.80]	50µin gold	LWFRRTAH	YSK006-089AH
		Crimp 22–26 AWG	0.035 [0.90]	0.051 [1.30]	50µin gold	LWFRTAH	YSK006-011AH
		Solder Cup 26 AWG	0.039 [1.00]	0.057 [1.45]	50µin gold	LWFSTAH	YSK006-010AH
 Female Empty Block			—	—	—	LWFH)	—
 Male Empty Block			—	—	—	ZLM030-001 (LWMHT)	—
	Male	Crimp 18-20 AWG	0.055 [1.39]	0.071 [1.80]	10µin gold	LWMRRT	YPN006-158G
					50µin gold	LWMRRTH	YPN006-158H
		Crimp 22-26 AWG	0.035 [0.90]	0.051 [1.30]	10µin gold	LWMRT	YPN006-021G
					50µin gold	LWMRTH	YPN006-021H
		Solder Cup 26 AWG	0.039 [1.00]	0.057 [1.45]	10µin gold	LWMST	YPN006-020G
					50µin gold	LWMSTH	YPN006-020H

Accessories

Crimp Tool	AFM8
Crimp Positioner	K547
Insertion Tool	S/DEM1.0060
Extraction Tool	T1866

Plating Reference

Male Pins:	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Sockets:	50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

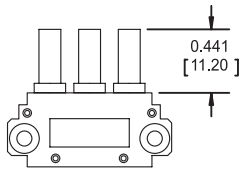
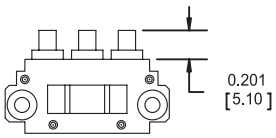
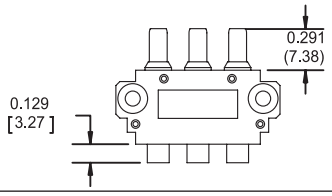
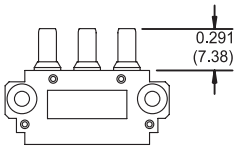
NOTES:
1) Females: Guide holes in position 1 and 32.
2) Males: Guide pins in position 1 and 32.
3) If assembling the modules into a frame, two YHD0027 clips are required per module.

General Specifications

Current Rating	4 Amps
Contact Resistance	< 5 milliohms
Extraction Force (Per Contact)	0.5 – 2.0 oz.
Contact Life Cycles	> 100,000
Breakdown Voltage	> 2200 VAC
Dielectric Withstanding Voltage	1650 VAC
Insulation Resistance	10^9 megohms at 500 VDC
Temperature Rating	-55° C to 125° C
Insulator Material	Polyphelylene sulfide
Contact	
Material (Pin)	Brass
(Socket)	Beryllium copper wires and brass body

Dimensions are in inches [mm]

Ordering Information

Module V Coax	Width: 1.5 Units • Contacts: 3 Hypertac® Contacts (on both signal and ground) Can be both mounted by itself or in a frame			
	Gender	Termination	Part Number	Replacement Contacts
	Female	Crimp Coaxial for RG316	LVFRTAH	YCX0315-002AH
		Crimp Coaxial for RG316DB	LVFR1TAH	YCX0315-019AH
	Female	Solder Coaxial for RG405 or T-Flex 405	LVFSTAH	YCX0315-001AH
	Male	Crimp Coaxial for RG316	LVMRH	YCX0315-004H
		Crimp Coaxial for RG316DB	LVMR1TH	YCX0315-018H
	Male	Solder Coaxial for RG405 or T-Flex 405	LVMSTH	YCX0315-003H

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Accessories

For Inner Conduction Crimping
Crimp Tool: AFM8
Crimp Positioner: T1957
For Outer Conduction Crimping
Crimp Tool: HX3
Die Set: . . . . . T1958 or T2019 for RG316DB
Contact Removal Tool: T1982

Cabling Instructions

Crimp (R) and (R1)		Solder (S)	
Cable	RG315 and RG316DB	RG405	T-Flex 405
Socket	S50302	S50301	S50307
Pin	S50304	S50303	S50308

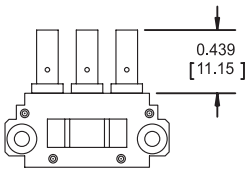
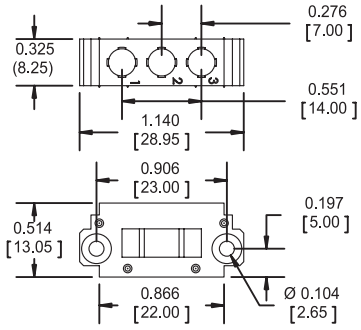
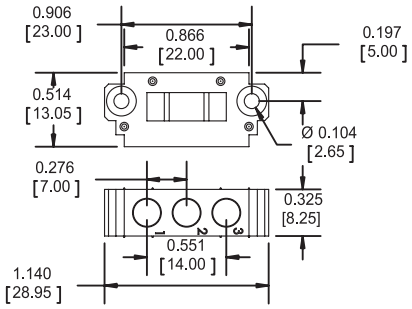
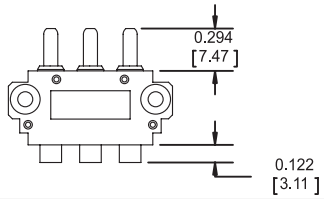
Please request specs from our customer service department.

General Specifications COAXTAC™

Nominal Impedance	50 ohms
Frequency Range	DC 3 GHz with RG316 DC 18 GHz with RG405
Temperature Rating	-55° C to 125° C
Materials	Brass, beryllium copper PTFE Fluorocarbon
Finishes	
Center Contacts and Housings	Gold over nickel over copper
Wire	Gold over nickel
Electrical *(Based on RG405 Semi Rigid Cable)*	
Voltage Standing Wave Ratio	(DC to 3 GHz) 1.20:1 max. (3 GHz to 18 GHz) 1.50:1 max.
RF Transmission Loss	0.50 dB at 18 GHz
Insulation Resistance	5,000 megohms min.
Dielectric Withstanding Voltage	500V RMS
Contact Resistance	
Inner Contact	8 milliohms max.
Outer Contact	2 milliohms max.
Mechanical	
Extraction Force Per Contact	1.5 – 6.0 oz. max., 3.0 oz. average
Connector Life Cycles	> 25,000 cycles

Dimensions are in inches [mm]

Ordering Information

Module V 25 Amp Power	Width: 1.5 Units • Contacts: 3 Hypertac® Contacts Can be mounted by itself or in a frame			
	Gender	Termination	Part Number	Replacement Contacts
	Female	Crimp 25 Amps (Free Air) 17 Amps (Bundled) 12-14 AWG	LVFP1TAH	YSK025-031AH
	Female Empty Block	—	ZLV003-001 (LVFHT)	—
	Male Empty Block	—	ZLV003-002 (LVMHT)	—
	Male	Crimp 25 Amps (Free Air) 17 Amps (Bundled) 12-14 AWG	LVMP1TH	YPN025-024H

File No.: UL E102195

Accessories

Crimp Tool	M309
Crimp Positioner:	T1981
Extraction Tool	T1982

Plating Reference

Male Pins:	10µin gold (min) over nickel 50µin gold (min) over nickel
Female Sockets:	50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

NOTE:
Contact shipped unassembled.

General Specifications

Current Rating	25 Amps (Free Air) 17 Amps (Bundled)
Contact Resistance	< 1.5 milliohms
Extraction Force (Per Contact)	3.0 – 17.0 oz.
Contact Life Cycles	> 100,000
Breakdown Voltage	1600 VAC
Dielectric Withstanding Voltage	1200 VRMS
Insulation Resistance	10^4 megohms at 500 VDC
Temperature Rating	-55° C to 105° C
Insulator Material	Nylon
Contact Material (Pin) (Socket)	 Brass Beryllium copper wires and brass body
Approximate Weight	M: 0.32 oz., F: 0.34 oz.

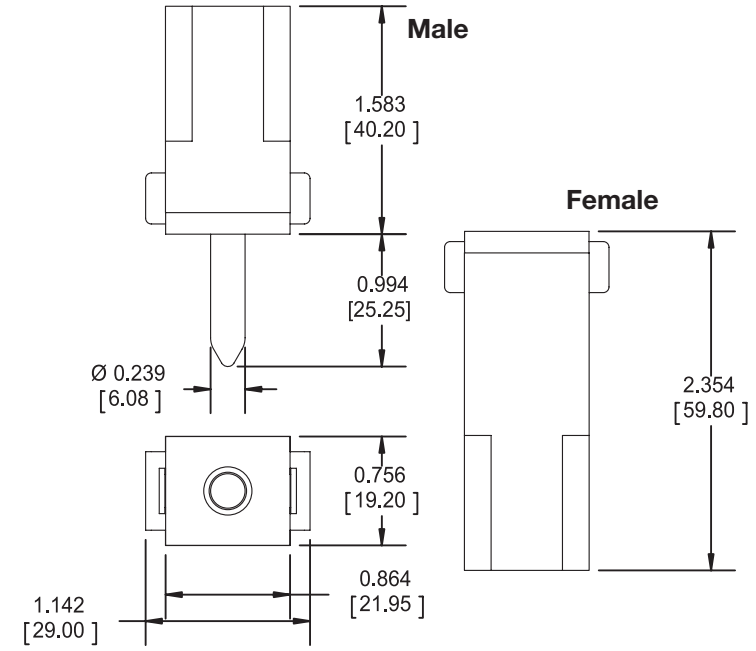
Dimensions are in inches [mm]

Module G

200 Amp Contact Rating

Width: 3.5 Units • Contacts: 1 Hypertac® Removable Crimp Contact • Ø 0.239 [6.08] Contact

File No.: UL E102195

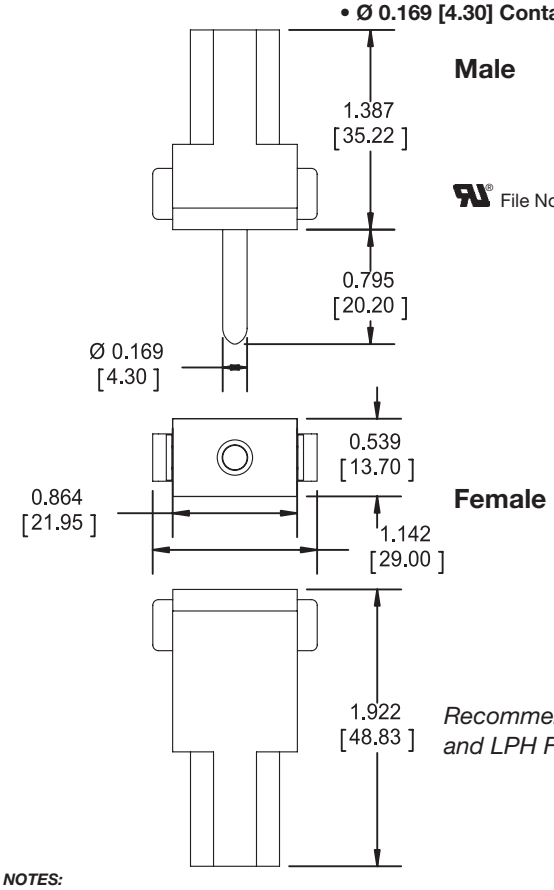


Recommended for LEH and LPH Frames only

Module K

100 Amp Contact Rating

- **Width: 2.5 Units**
- **Contacts: 1 Hypertac® Removable Crimp Contact**
- **Ø 0.169 [4.30] Contact**



File No.: UL E102195

Recommended for LEH and LPH Frames only

NOTES:
1) Contacts shipped unassembled.
2) Approved for 180 Amps by CSA for 30° C temperature rise.

Dimensions are in inches [mm]

General Specifications

Insulators	Module G	Module K
Width	3.5 Units	2.5 Units
Breakdown Voltage	> 1500V RMS	
Dielectric Withstanding Voltage	1100V RMS	
Insulation Resistance	> 10^6 megohms at 500 VDC	
Insulator Material	Polyphthalamide	
Contacts		
Life Cycle	100,000 Cycles	
Diameter	0.239 [6.08]	0.169 [4.30]
Current Rating	200 amperes	100 amperes
Resistance	< 0.20 milliohms	< 0.35 milliohms
Extraction Force (Per Contact)	80.0 – 160.0 oz.	15.0 – 90.0 oz.
Material (Pin) (Socket)	 Copper Beryllium copper wires copper tail; brass body	
Plating Reference	TI = 30µin gold over nickel (pin only) TAH = 50µin gold over nickel on mating surface, gold flash over nickel on termination (sockets only)	
Reference "L" (Strip Length)	0.709 [18.00]	0.591 [15.00]
Barrel I.D.	0.445 [11.30]	0.283 [7.20]
Conductor Size	# 1/0 AWG	# 4 AWG
Replacement Pins	YPN0612-021RI	YPN043-016RI
Replacement Sockets	YSK0612-015AH	YSK043-101AH

Accessories

Crimp Tool	T1501	T1501
Mounting Bracket	T1551	T1551
Crimp Positioner	T1536	T1535
Extraction Tool	T1500	T1507

Ordering Information

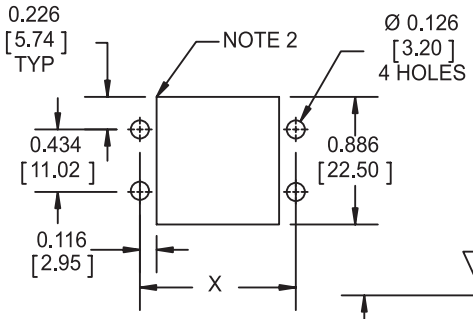
L	K	F	R	TAH

Plating	TI, TAH Omit for empty insulator
Terminal Style	R (Crimp) Omit for empty insulator
Contact Gender	M = Male F = Female
Type of Module	K (100 Amps) G (200 Amps)

Mounting Dimensions

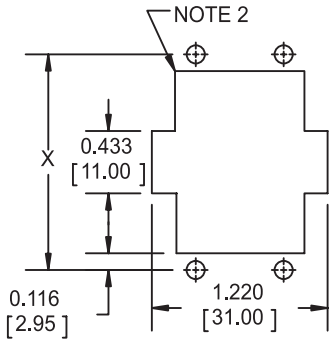
For Frame Types A, B, BV, J, JV, K, KV, R and RV

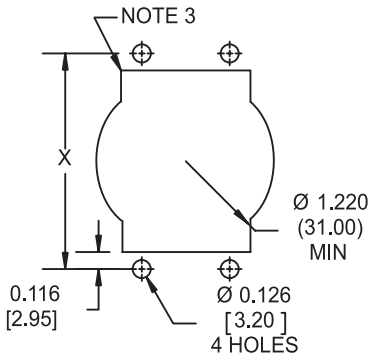
Stationary

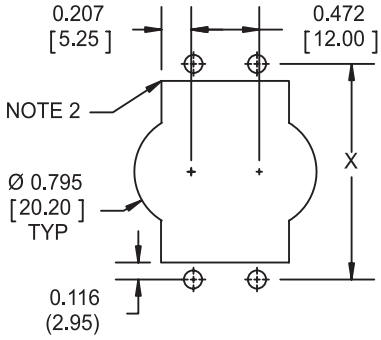


Stationary with Jackscrew Extraction

3 Alternate Mounting Dimensions for Receptacle to Provide Clearance for Jackscrew Base Hold Down Clamps



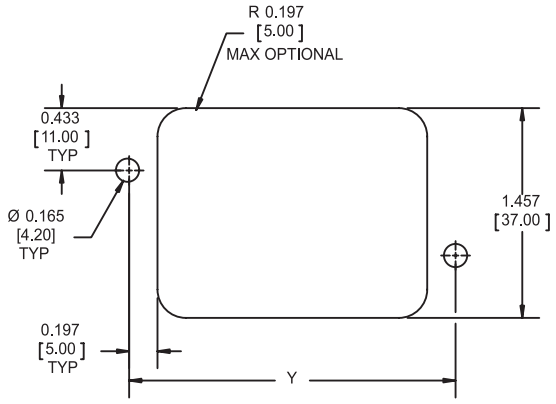




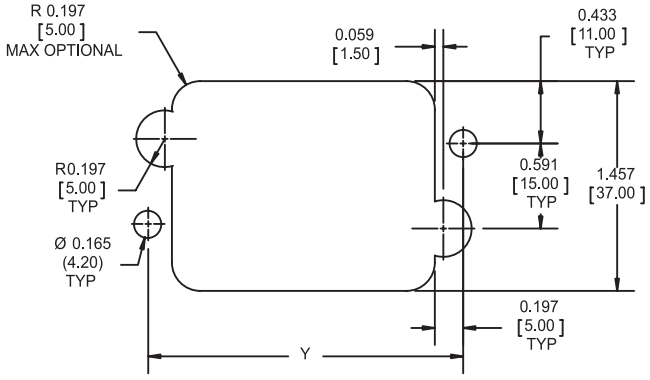
For Frame Type H

(Float Mounting)

Plug



Receptacle



Mounting Dimensions

Units	4	5	6	7	8	9	10	11	12	13
X	1.122 [28.50]	1.338 [34.00]	1.555 [39.50]	1.771 [45.00]	1.988 [50.50]	2.205 [56.00]	2.421 [61.50]	2.638 [67.00]	2.854 [72.50]	3.070 [78.00]
Y	1.969 [50.00]	2.185 [55.50]	2.402 [61.00]	2.618 [66.50]	2.835 [72.00]	3.051 [77.50]	3.268 [83.00]	3.484 [88.50]	3.701 [94.00]	3.917 [99.50]

Units	14	15	16	17	18	19	20	21	22
X	3.287 [83.50]	3.504 [89.00]	3.720 [94.50]	3.936 [100.00]	4.153 [105.50]	4.370 [111.00]	4.586 [116.50]	4.803 [122.00]	5.019 [127.50]
Y	4.134 [105.00]	4.350 [110.50]	4.567 [116.00]	4.784 [121.50]	5.00 [127.00]	5.217 [132.50]	5.433 [138.00]	5.650 (143.50)	5.866 (149.00)

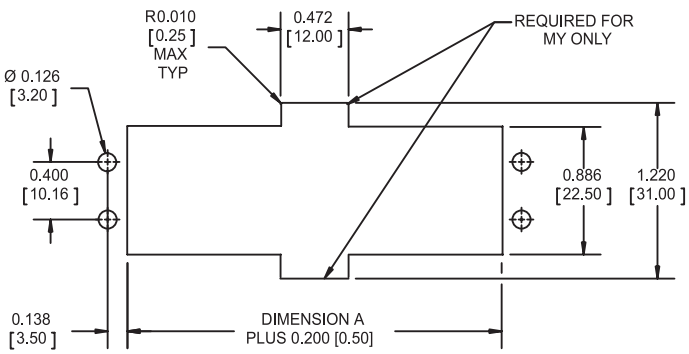
NOTES:
1) 59.0 oz. in torque for mounting.
2) 0.010 [0.25] maximum radius typical.

Dimensions are in inches [mm]

Mounting Dimensions

For Frame Types MV and MY

Receptacle



Number of Units	Dimension A
12	2.598 [66.00]
15	3.248 [82.50]
20	4.331 [110.00]
22	4.764 [121.00]

The L Series connectors are engineered for quick and easy use. Standard frames will be shipped completely assembled with the selected modules mounted.

Ordering Information[1]

The length of the frame is computed by multiplying the module units buy the module quantity and totaling the results. If half unit spacers are required order LFH1 (Delete "L" in assembly part number).

L	P	J	8	/	4	AMST	/	2CHT	/	TG	SC15	L

Insulator
P = Plug
E = Receptacle

Frame Type
A, B, BV, BY, H, J, JV, JY, MV, MY, MMY, K, KV, KY, R, RV and RY

Length of Frames
4 to 20 units[2]. Allow 2 additional units when ordering frames with Jackscrews (BV,JV, KV, MV, MY, RV). Up to 30 units are available – consult factory.

Number of Modules

Module combination by quantity (Refer to product page for type of module and terminal style, etc. using above outline as sample only). Module will be positioned in frame according to sequence listed.

Modules R, S, and U can be combined with other module types using special adaptors – consult factory.

Plating
TG = 10µin gold over nickel
TH = 20µin gold over nickel
TAH = 50µin gold over nickel on mating surface, gold flash over nickel on termination

This represents plating for all the modules in the connector. When mixing platings consult factory.

Cable Clamp Location
L = Left
R = Right
F = Front
B = Back
Omit for default location:
J and JV frames = Top
K and KV frames = Front
MV and MY frames = As shown only

Cable Clamp and Cable Size[3]:

Round cable (J and JV frames)	Max. diameter	Min. diameter
10 = 0.394 [10.00]	0.210 [5.35]	
15 = 0.590 [15.00]	0.385 [9.75]	
20 = 0.787 [20.00]	0.605 [15.25]	
24 = 0.945 [24.00]	0.670 [17.00]	

NOTES:
1) When part number exceeds 24 characters a special abbreviated part number will be assigned at the time of order.
2) Frames MV and MY available in 12, 15, 20 and 22 units only.
3) There may be some limitations on cable clamp sizes in connectors of shorter length. Consult factory.

Dimensions are in inches [mm]

N Series mini-modular connectors employ a do-it-yourself system based on the building block principle. They offer a variety of combinations available in a single connector frame. Thus, the user is capable of selecting the connector that fulfills exact requirements with off-the-shelf components.

In this application, the low insertion and extraction forces of the Hypertac contact technology enable the user to assemble large numbers of contacts in a single connector that mates and unmates smoothly and easily.

N Series connectors can be built for the following:

- Rack and panel applications
  - – Standard
  - – With keying system
  - – With locking system
  - – With floating mounting
- Cable applications
  - – Hooded with rounded or flat cable security clamps
  - – With Jackscrews
- Programming applications

The system is composed of two basic elements: module and frames.

Modules are the connector elements of the system. Two types of contacts are available: signal and power. The contacts are housed in small plastic blocks. All contacts are removable for easy assembly and repair. The width of each module block is designated in units.

The frames hold the modules in position. They range from a basic frame consisting of two side rails and two end caps to more complex versions with Jackscrews, hoods and cable clamps. All frames are available in various lengths to conform to almost any combination of modules. Although any length is possible, Hypertronics suggests ordering one of the standard lengths for optimum delivery and price.

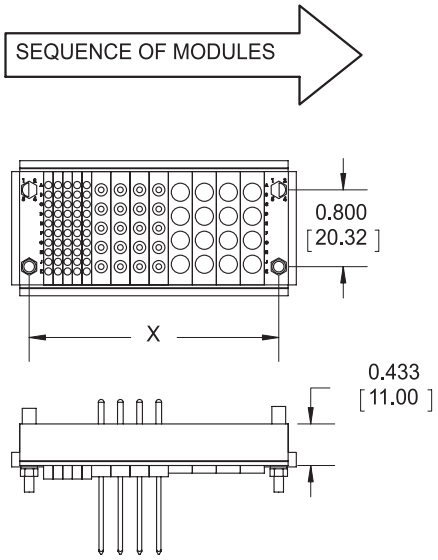
With the N Series, specially designed connectors can be purchased quickly and inexpensively, eliminating the extra cost and delay of custom tooling.

Dimensions are in inches [mm]

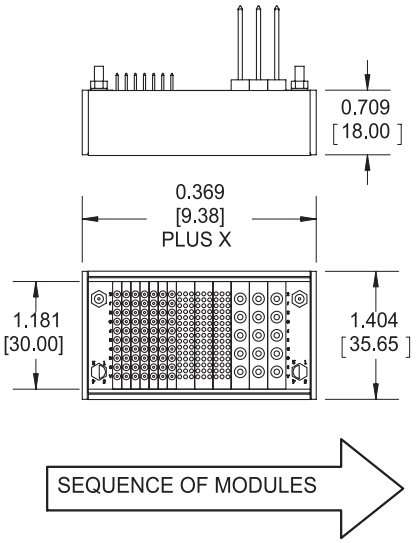
Frame B up to 775 contacts

- Single row, rack and panel with keying
- Built-in pin protection
- 36 possible keying arrangements
- Standard sizes: 7, 11, 15, 19, 23, 27, 31 and 35 unit lengths
- Up to 35 contacts on 0.100 x 0.100 [2.54 x 2.54] centers

Receptacle
NEB



Plug
NPB



Units	7	11	15	19	23	27	31	35
X	1.000 [25.40]	1.400 [35.56]	1.800 [45.72]	2.200 [55.88]	2.600 [66.04]	3.000 [76.20]	3.400 [86.36]	3.800 [96.52]

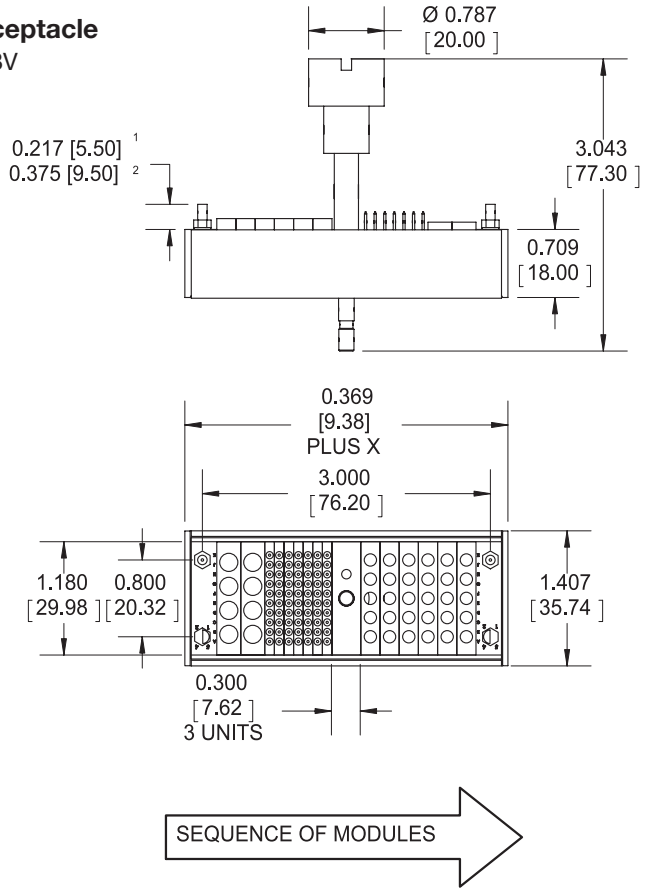
NOTE:
1) Frames shown at 50 percent scale.

Dimensions are in inches [mm]

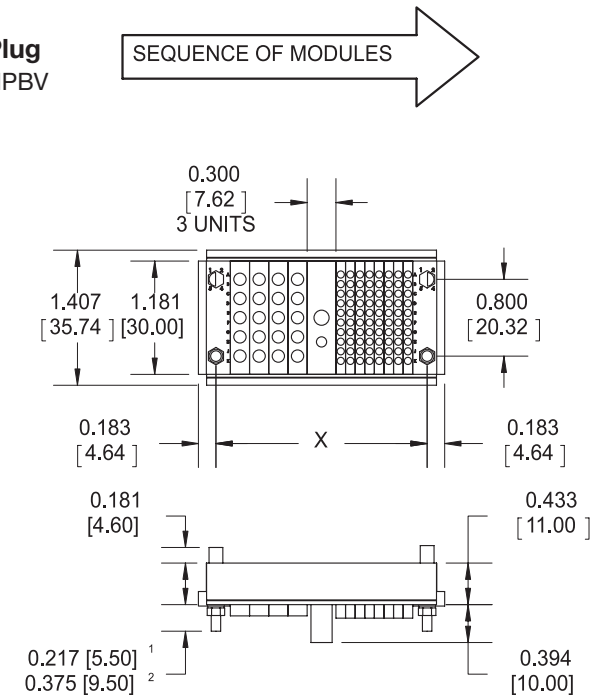
Frame BV up to 720 contacts

- Jackscrew extractor
- 36 possible keying arrangements
- Accepts 22 to 28 AWG wires
- Single row, rack and panel with keys
- Standard sizes: 7, 11, 15, 19, 23, 27, 31 and 35 unit lengths
- Up to 320 contacts on 0.100 x 0.100 [2.54 x 2.54] centers
- Built-in pin protection
- Allow 3 units for Jackscrew

Receptacle
NEBV



Plug
NPBV



Units	7	11	15	19	23	27	31	35
X	1.000 [25.40]	1.400 [35.56]	1.800 [45.72]	2.200 [55.88]	2.600 [66.04]	3.000 [76.20]	3.400 [86.36]	3.800 [96.52]

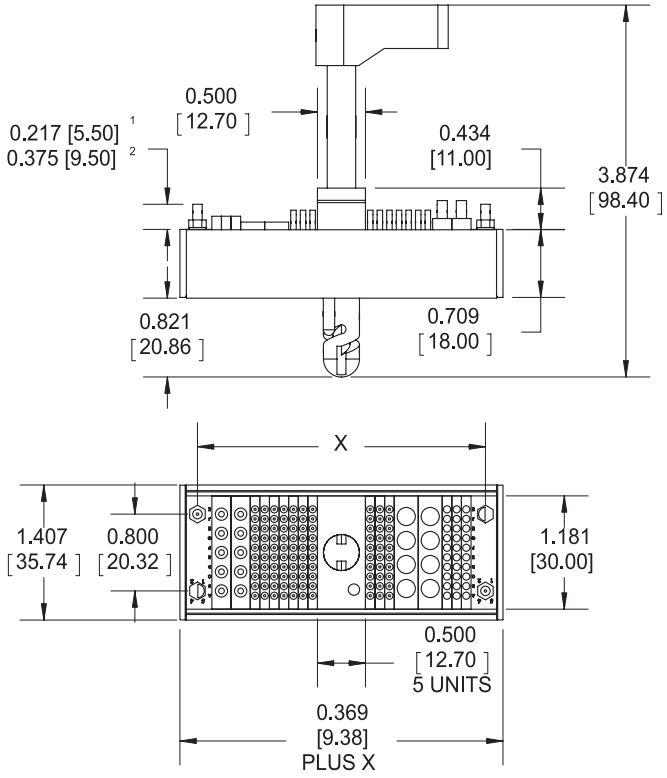
NOTES:
1) Standard length for printed circuit boards.
2) For thicker chassis specify longer studs with modification 470.
3) Frames shown at 50 percent scale.

Dimensions are in inches [mm]

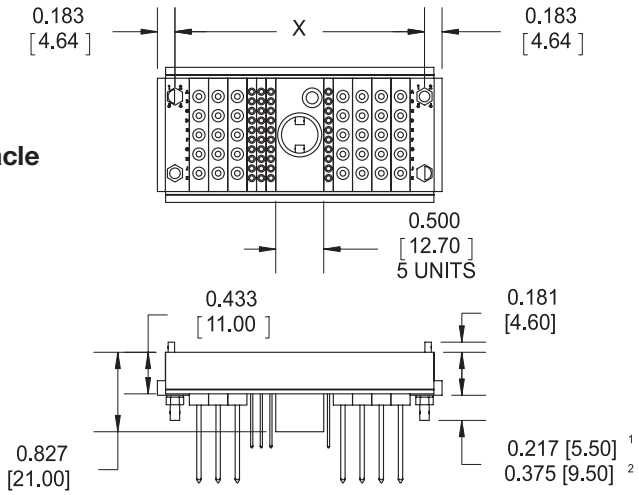
Frame BY up to 900 contacts

- 180° quick turn jack provides greater than 15,000 mating cycles
- Great for test equipment, burn-in stands, security systems, and medical equipment
- Less than 1 second mating/unmating operation
- Crimp, solder cup, dip solder, and Wire Wrap® terminations
- Wiping action pin and sockets
- Provides 20 to 400 contacts in a single mating
- 4 or 9 ampere contacts mixed to your needs
- Built-in pin protection
- Standard frame sizes: 11, 15, 19, 23, 27, 31, 35 and 45 unit lengths

Plug
NPBY



Receptacle
NEBY



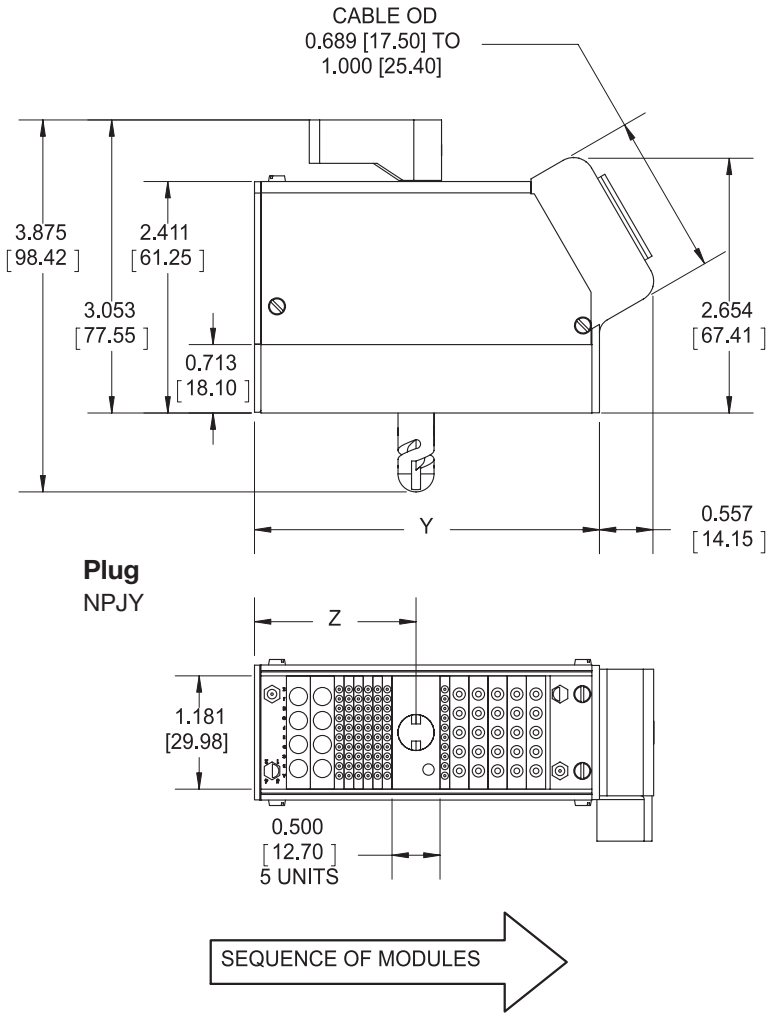
Units	11	15	19	23	27	31	35	45
X	1.400 [35.56]	1.800 [45.72]	2.200 [55.88]	2.600 [66.04]	3.000 [76.20]	3.400 [86.36]	3.800 [96.52]	4.800 [121.92]

NOTES:
1) Standard length for printed circuit boards.
2) For thicker chassis specify longer studs with modification 479.
3) Protective dust cover part number: ZMP0025-XX (XX = number of units).
4) Frames shown at 50 percent scale.

Dimensions are in inches [mm]

Frame JY up to 900 contacts

- 180˚ quick turn jack provides greater than 15,000 mating cycles
- Great for test equipment, burn-in stands, security systems, and medical equipment
- Less than 1 second mating/unmating operation
- Crimp, solder cup, dip solder, and Wire Wrap® terminations
- Wiping action pin and sockets
- Provides 20 to 400 contacts in a single mating
- 4 or 9 ampere contacts mixed to your needs
- Built-in pin protection
- Standard frame sizes: 11, 15, 19, 23, 27, 31, 35 and 45 unit lengths
- Adjustable Cable Clamp: 0.452 [11.50] to 1.260 [32.00]



Units	11	15	19	23	27	31	35	45
Y	1.993 [50.64]	2.393 [60.80]	2.794 [70.96]	3.194 [81.12]	3.594 [91.28]	4.000 [101.44]	4.393 [111.60]	5.400 [137.16]
Z	0.884 [22.47]	1.084 [27.55]	1.284 [32.63]	1.484 [37.71]	1.684 [42.79]	1.884 [47.87]	2.084 [52.95]	2.500 [63.50]

NOTES:
1) Frame JY mates with NEBY.
2) Protective dust cover part number: ZMP0025-XX (XX = number of modules).
3) Frames shown at 50 percent scale.

Dimensions are in inches [mm]

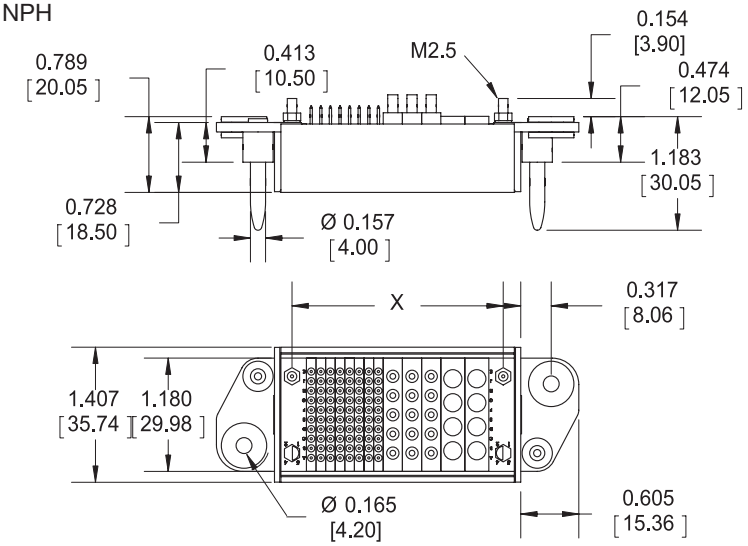
Frame H up to 775 contacts

- Float mounting with heavy duty guides
- Max. radial play 0.049 [1.254] from centers
- Single row, rack and panel with keying
- Built-in pin protection
- 36 possible keying combinations
- Standard sizes: 7, 11, 15, 19, 23, 27, 31 and 35 unit lengths
- Up to 350 contacts on 0.100 x 0.100 [2.54 X 2.54] centers

File No.: E102195

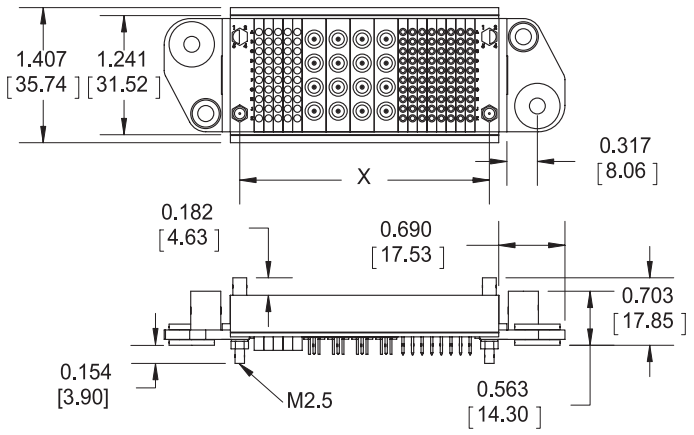
Plug

NPH



Receptacle

NEH



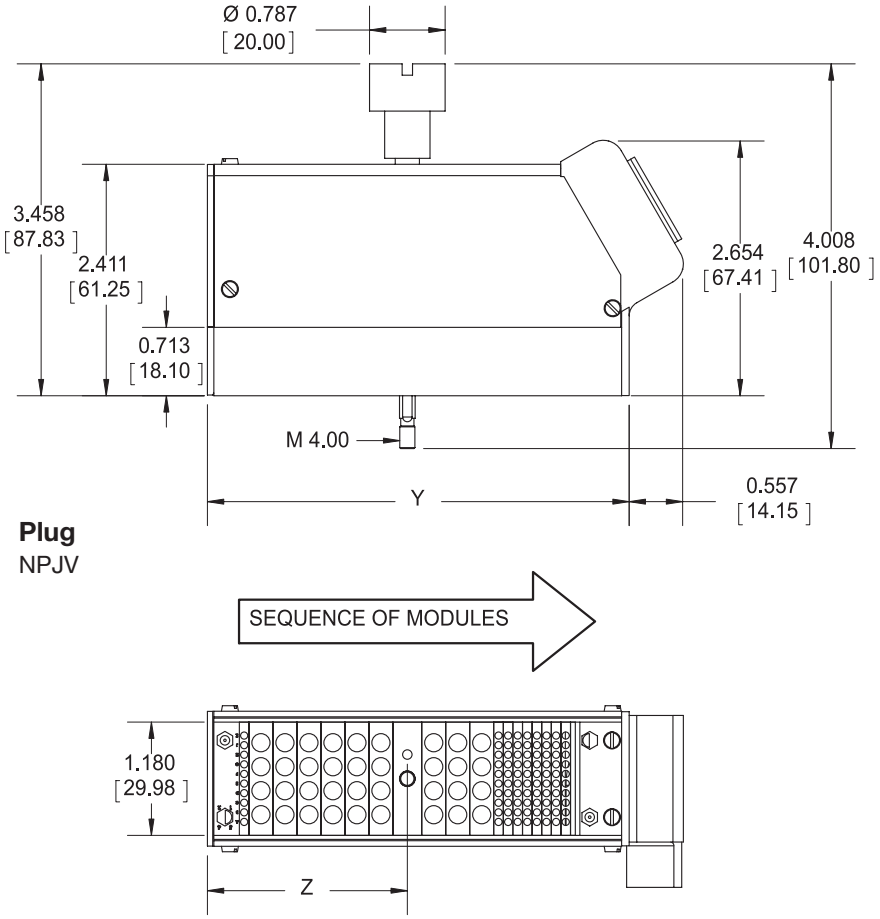
Units	11	15	19	23	27	31	35
X	1.400 [35.56]	1.800 [45.72]	2.200 [55.88]	2.600 [66.04]	3.000 [76.20]	3.400 [86.36]	3.800 [96.52]

NOTE:
Frames shown at 50 percent scale.

Dimensions are in inches [mm]

Frame JV plug up to 775 contacts

- Hooded with cable clamp
- Jackscrew extractor
- Single row, rack and panel with keying
- Built-in pin protection
- 36 possible keying combinations
- Standard sizes: 11, 15, 19, 23, 27, 31 and 35 unit lengths
- Up to 350 contacts on 2.54 x 2.54 centers
- Jackscrew uses 3 units
- Adjustable cable clamp will hold 80 to 320 conductors of 22 to 28 AWG; adjusts 0.452 to 1.260 [11.50 to 32.00] min.
- Up to 320 contacts on 0.100 x 0.100 [2.54 x 2.54] centers



Plug
NPJV

Units	11	15	19	23	27	31	35
Y	1.993 [50.64]	2.393 [60.80]	2.794 [70.96]	3.194 [81.12]	3.594 [91.28]	4.000 [101.44]	4.393 [111.60]
Z	0.884 [22.47]	1.084 [27.55]	1.284 [32.63]	1.484 [37.71]	1.684 [42.79]	1.884 [47.87]	2.084 [52.95]

NOTES:
1) Frame JV mates with NEBV or NEPJY.
2) Protective dust cover part number: YHD0369-XX (XX = number of units).
3) Frames shown at 50 percent scale.

Dimensions are in inches [mm]

Module H

Width: 2 Units • Contacts: 45 Crimp Contacts • Ø 0.016 [0.40] Contact

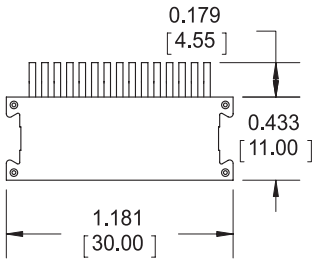
Replacement Contacts:

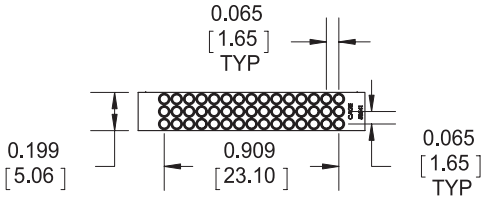
- Crimp 26-28 AWG
- Wire strip length: 0.122 [3.10]
- Male pin: YPN004-010H
- Female socket: YSK004-020AH

Accessories

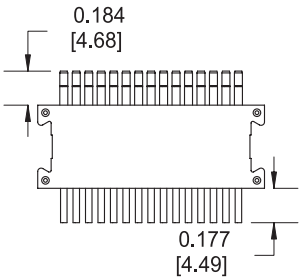
- Crimp tool: AFM8 or M22520/2-01
- Crimp positioner: Socket = T1974
  Pin: = T1973
- Insertion tool: T1970

Male

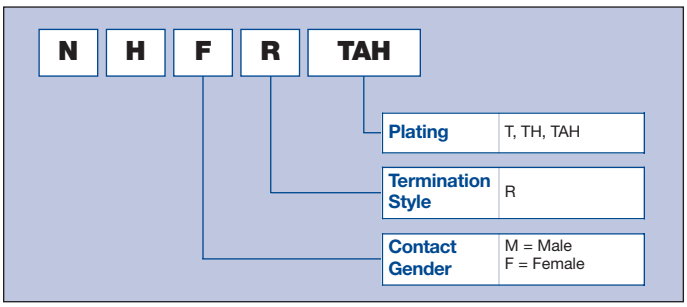




Female



Ordering Information



General Specifications	
Current Rating	1 Amp
Contact Resistance	< 8 milliohms
Extraction Force (Per Contact)	0.3 – 1.6 oz.
Contact Life Cycles	100,000
Breakdown Voltage	> 750V RMS
Dielectric Withstanding Voltage	> 500V RMS
Insulation Resistance	> 10^3 megohms at 500 VDC
Temperature Rating	-55˚ C to 125 ˚C
Insulator	Nylon, 25% glass
Contact Material: (Pin) (Socket)	 Phosphor bronze Beryllium copper wires and brass body
Plating Reference	T = 10µin gold (min) over nickel TH = 50µin gold (min) over nickel TAH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

NOTES:

1) For empty block, order ZNH045-001.
2) Male contacts are shrouded in the insulator, female mounts in the plug frame are suggested.
3) Crimp contacts will be shipped unassembled.

Dimensions are in inches [mm]

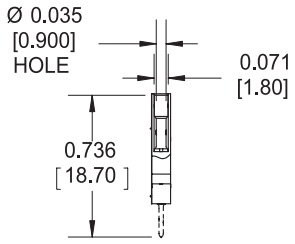
Module K

Width: 1 Unit • Contacts: 10 Hypertac® Removable Signal Contacts • Ø 0.024 [0.60] Contact

Termination Style

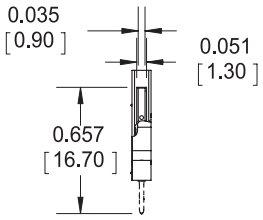
Ref. H2

- Double crimp 22 AWG wire
- Stripped back 0.146 [3.70]
- Male pin: YPN006-019
- Female socket: YSK006-009



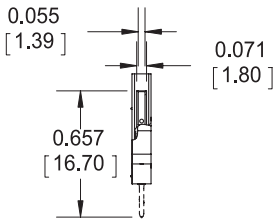
Ref. R

- Crimp 22 AWG wire
- Stripped back 0.173 [4.40]
- Male pin: YPN006-021
- Female socket: YSK006-011ANH
- Dimension A: Ø 0.035 [0.90]
- Dimension B: Ø 0.051 [1.30]



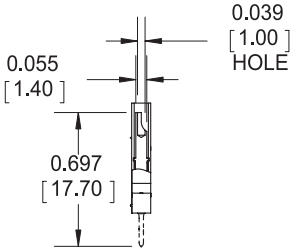
Ref. RR

- Crimp 18-20AWG wire
- Stripped back 0.173 [4.40]
- Male pin: YPN006-158
- Female socket: YSK006-089
- Dimension A: Ø 0.055 [1.39]
- Dimension B: Ø 0.71 [1.80]



Ref. S

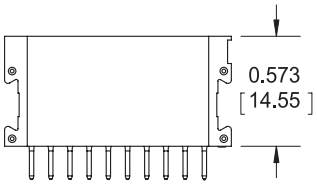
- Solder cup 22 AWG
- Male pin: YPN006-020
- Female socket: YSK006-010

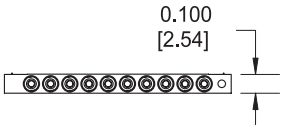


Accessories

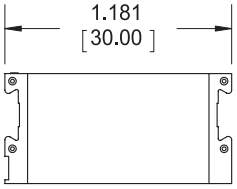
- Crimp tool: AFM8
- Crimp positioner: K547
- Extraction tool: S/DEM1.0060

Male

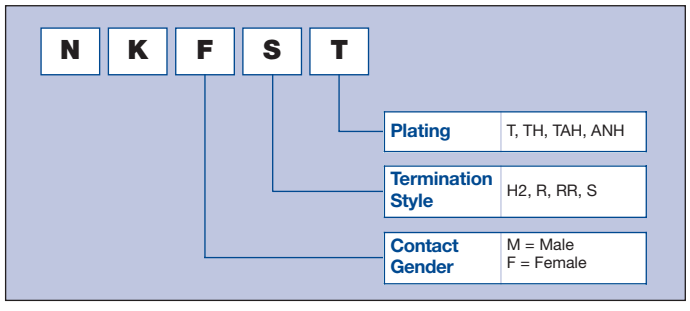




Female



Ordering Information



NOTES:
1) For empty block, order ZNK010-001.
2) Contacts will be shipped unassembled.
3) Crimping instructions: Doc. number 550063.

General Specifications	
Current Rating	4 Amps
Contact Resistance	< 5 milliohms
Extraction Force (Per Contact)	0.5 – 2.0 oz.
Contact Life Cycles	100,000
Breakdown Voltage	> 1400V RMS
Dielectric Withstanding Voltage	> 1050V RMS
Insulation Resistance	> 10^5 megohms at 500 VDC
Temperature Rating	-55˚ C to 105˚ C
Insulator	Glass filled nylon
Contact Material: (Pin) (Socket)	Phosphor bronze Beryllium copper wires and brass body
Plating Reference	Male Pins: T = 10µin gold over nickel TH = 50µin gold over nickel Female Sockets: TAH = 50µin gold over nickel on mating surface, gold flash over nickel on termination ANH = 50µin gold over nickel on mating surface, nickel over copper flash on socket body components, gold flash over nickel on termination

Dimensions are in inches [mm]

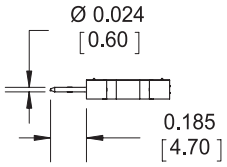
Module P

Width: 1 Unit • Contacts: 10 Hypertac® Removable Signal Contacts • Ø 0.024 [0.60] Contact

Termination Style

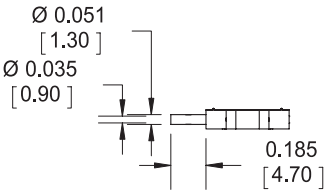
Ref. D

- Straight solder dip
- Male pin: YPN006-047H
- Female socket: YSK006-032ANH



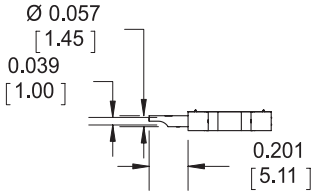
Ref. R

- Crimp 22 to 26 AWG
- Stripped back 0.173 [4.40]
- Male pin: YPN006-025H
- Female socket: YSK006-015ANH



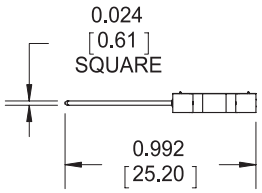
Ref. S

- Solder cup up to 22 AWG
- Stripped back 0.118 [3.00]
- Male pin: YPN006-026H
- Female socket: YSK006-016ANH

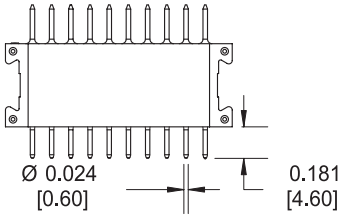


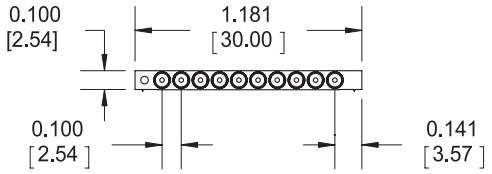
Ref. Y

- Wire Wrap®
- Male pin: YPN006-046H
- Female socket: YSK006-031AH

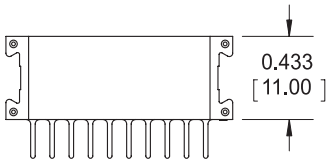


Male





Female

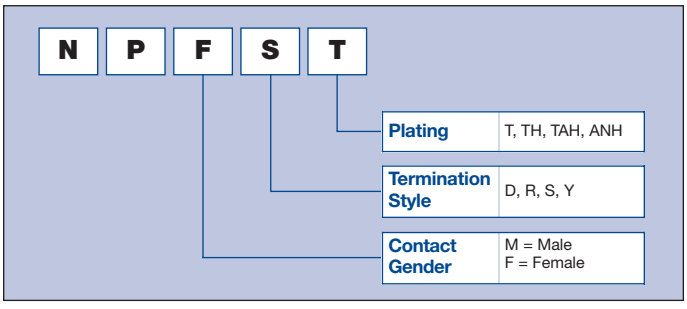


Accessories

- Crimp tool: AFM8
- Crimp positioner: K623
- Extraction tool: S/DEM1.0060

File No.: UL E102195

Ordering Information



NOTES:
1) For empty block, order ZNP010-001.
2) Contacts will be shipped unassembled.
3) Crimping instructions: Doc. number 550063.

Dimensions are in inches [mm]

General Specifications

Current Rating	4 Amps
Contact Resistance	< 5 milliohms
Extraction Force (Per Contact)	0.5 – 2.0 oz.
Contact Life Cycles	100,000
Breakdown Voltage	> 1400V RMS
Dielectric Withstanding Voltage	> 1050V RMS
Insulation Resistance	> 10^3 megohms at 500 VDC
Temperature Rating	-55˚ C to 105˚ C
Insulator	Glass filled nylon
Contact Material: (Pin) (Socket)	Brass Beryllium copper wires and brass body
Plating Reference	Male Pins: T = 10µin gold over nickel TH = 50µin gold over nickel Female Sockets: TAH = 50µin gold over nickel on mating surface, gold flash over nickel on termination ANH = 50µin gold over nickel on mating surface, nickel over copper flash on socket body components, gold flash over nickel on termination

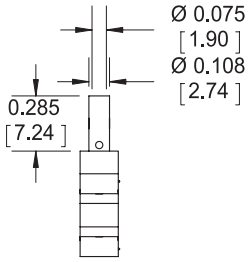
Module T

Width: 2 Units • Contacts: 5 Hypertac® Removable Signal Contacts • Ø 0.059 [1.50] Contact

Termination Style

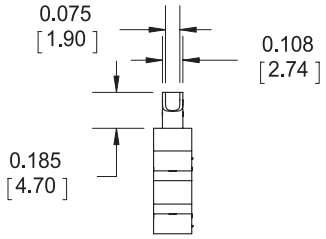
Ref. R

- Crimp 14, 16, 18 and 20 AWG
- Wire stripped back 0.285 [7.20]
- Male pin: YPN015-016H
- Female socket: YSK015-025AH



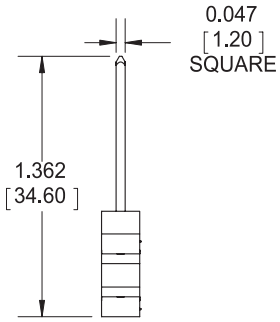
Ref. S

- Solder cup up to 13 AWG
- Male pin: YPN015-017H
- Female socket: YSK015-026AH



Ref. V

- Wire Wrap®
- Male pin: YPN015-018H
- Female socket: YSK015-027AH

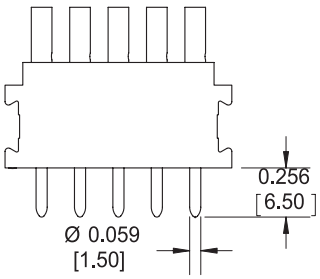


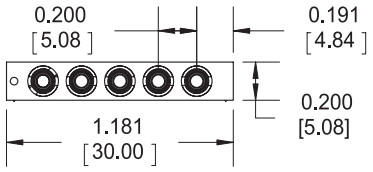
Accessories

- Crimp tool: AFM8
- Crimp positioner: TP687
- Extraction tool: S/DEM5.0150

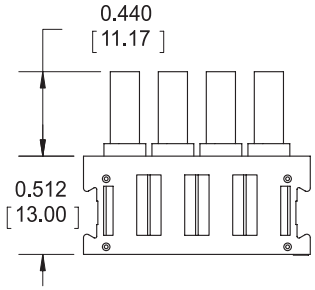
File No.: UL E102195

Male

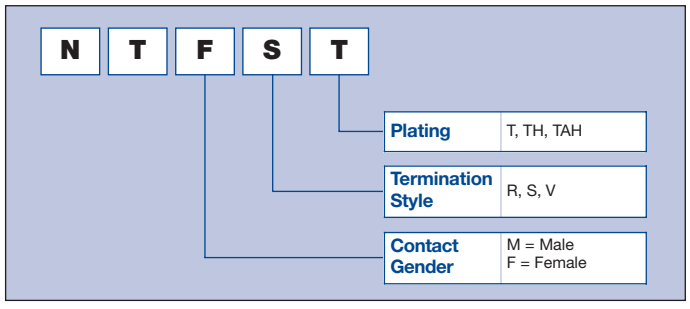




Female



Ordering Information

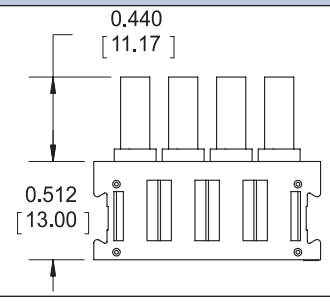
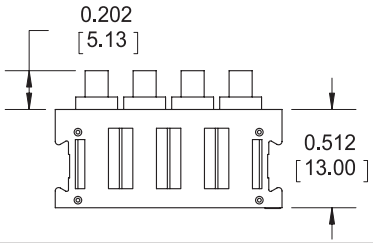
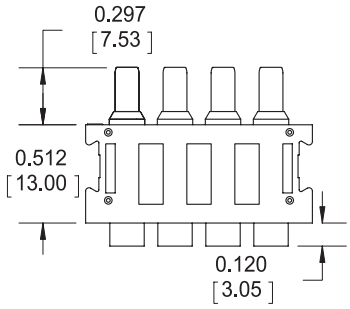
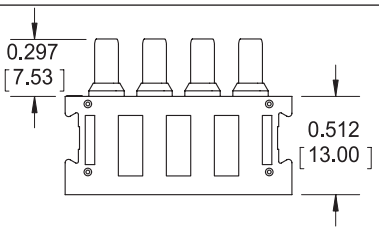
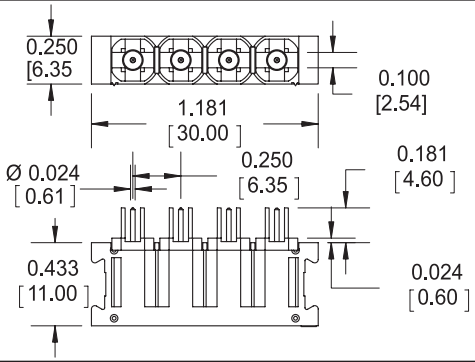


NOTES:
1) For empty block, order ZNT005-001.
2) Crimp contacts will be shipped unassembled.
3) Wire Wrap is a trademark of Gardner Denver.

General Specifications	
Current Rating	9 Amps
Contact Resistance	< 2.5 milliohms
Extraction Force (Per Contact)	0.7 – 5.0 oz.
Contact Life Cycles	100,000
Breakdown Voltage	> 2000V RMS
Dielectric Withstanding Voltage	> 1500V RMS
Insulation Resistance	> 10^5 megohms at 500 VDC
Temperature Rating	-55˚ C to 105˚ C
Insulator	Glass filled nylon
Contact Material: (Pin) (Socket)	Brass Beryllium copper wires and brass body
Plating Reference	T = 10µin gold (min) over nickel TH = 50µin gold (min) over nickel TAH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

Dimensions are in inches [mm]

Ordering Information

Module V Coax	Width: 2.5 Units • Contacts: 4 Hypertac® Contacts (on both signal and ground)			
	Gender	Termination	Part Number	Replacement Contacts
	Female	Crimp Coaxial for RG316	NVFRTAH	YCX0315-002AH
		Crimp Coaxial for RG316DB	NVFR1TAH	YCX0315-019AH
	Female	Solder Coaxial for RG405 or T-Flex 405	NVFSTAH	YCX0315-001AH
	Male	Crimp Coaxial for RG316	NVMRTH	YCX0315-004H
		Crimp Coaxial for RG316DB	NVMR1TH	YCX0315-018H
	Male	Solder Coaxial for RG405 or T-Flex 405	NVMSTH	YCX0315-003H
	Female	Straight Dip Coax	NVFDTAH	Fixed Contacts cannot be removed

File No.: E102195

Plating Reference	
Male Pins:	H = 50µin gold (min) over nickel
Female Sockets:	AH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

Dimensions are in inches [mm]

Accessories

For Inner Conduction Crimping
Crimp Tool:. AFM8
Crimp Positioner:. T1957
For Outer Conduction Crimping
Crimp Tool: HX3
Die Set:. . . . . T1958 for RG316 or T2019 for RG316DB
Contact Removal Tool: T1982

Cabling Instructions

Crimp (R) and (R1)		Solder (S)	
Cable	RG316 and RG316DB	RG405	T-Flex 405
Socket	S50302	S50301	S50307
Pin	S50304	S50303	S50308

Please request specs from our customer service department.

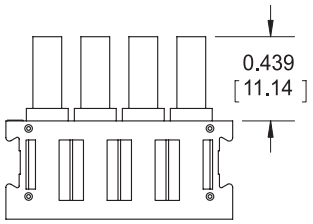
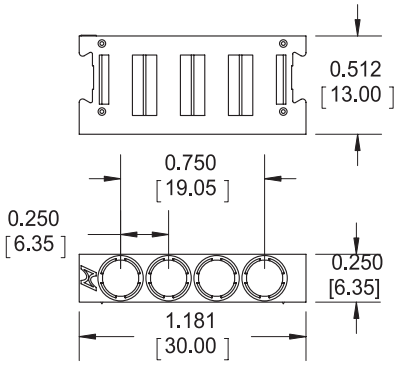
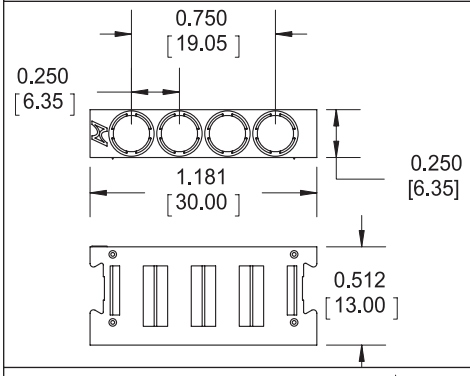
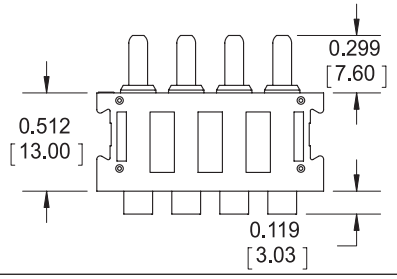
File No.: E102195

General Specifications - COAXTAC™

Nominal Impedance	50 ohms
Frequency Range	DC 3 GHz with RG316 DC 18 GHz with RG405
Temperature Rating	-55° C to 125° C
Materials	Brass, beryllium copper PTFE Fluorocarbon
Finishes	
Center Contacts and Housings	Gold over nickel over copper
Wire	Gold over nickel
Electrical (based on RG405 Semi Rigid Cable)	
Voltage Standing Wave Ratio	(DC to 3GHz) 1.20:1 max. (3GHz to 18GHz) 1.50:1 max.
RF Transmission Loss	0.50 dB at 18 GHz
Insulation Resistance	5,000 megohms min.
Dielectric Withstanding Voltage	500V RMS
Contact Resistance	
Inner Contact	8 milliohms max.
Outer Contact	2 milliohms max.
Mechanical	
Extraction Force (Per Contact)	1.5 – 6.0 oz. max., 3.0 oz. average
Connector Durability	> 25,000 cycles

Dimensions are in inches [mm]

Ordering Information

Module V 25 Amp Power	Width: 2.5 Units • Contacts: 4 Hypertac® Contacts • Can be mounted by itself or in a frame.			
	Gender	Termination	Part Number	Replacement Contacts
	Female	Crimp 25 Amps (Free Air) 17 Amps (Bundled) 12-14 AWG	NVFP1TAH*	YSK025-031AH
	Female Empty Block	—	NVFH	—
	Male Empty Block	—	NVMH	—
	Male	Crimp 25 Amps (Free Air) 17 Amps (Bundled) 12-14 AWG	NVMP1TH*	YPN025-024H

File No.: E102195

* Plating Reference	
Male Pins:	H = 50µin gold (min) over nickel
Female Sockets:	AH = 50µin gold (min) over nickel on mating surface, gold flash over nickel on termination

Accessories	
Crimp Tool	M309
Crimp Positioner	T1981
Extraction Tool	T1982

NOTE:
Contacts shipped unassembled.

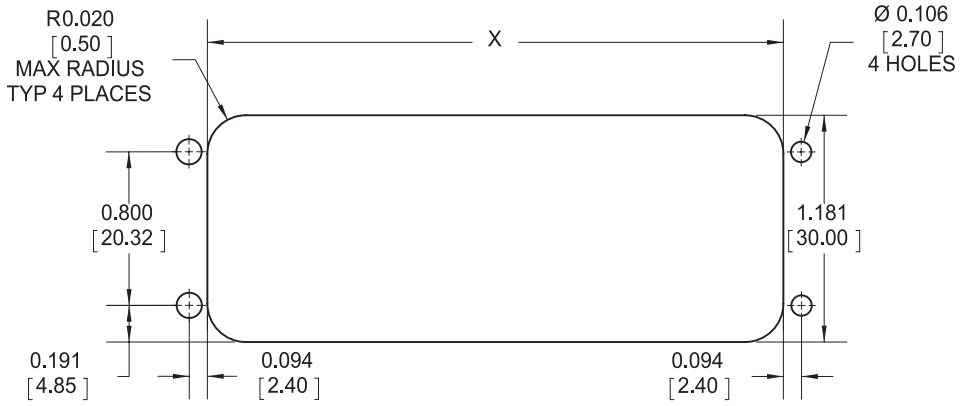
Dimensions are in inches [mm]

General Specifications	
Current Rating (Bundled)	25 Amps (Free Air) 17 Amps (Bundled)
Contact Resistance (milliohms)	< 1.5 milliohms
Extraction Force	3.0 – 17.0 oz.
Contact Life Cycles	100,000
Breakdown Voltage	> 1600V RMS
Dielectric Withstanding Voltage	1200V RMS
Insulation Resistance	> 10^4 megohms at 500 VDC
Temperature Rating	-55° C to 105° C
Insulator Material	Nylon
Contact Material	Beryllium copper wires and brass
Approximate Weight	M: 0.32 oz., F: 0.34 oz.

Mounting Dimensions

For Single Row Frame

Frames: B, BV, BY, JV and JY

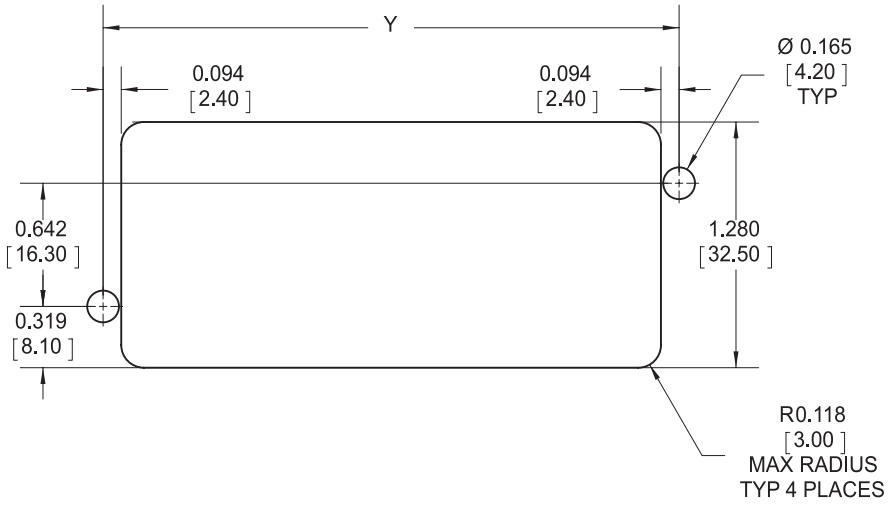


Mounting Dimensions		
Frame Units	X	Y
9	1.000 [25.40]	5.800 [147.32]
11	1.400 [35.65]	5.800 [147.32]
15	1.800 [45.72]	5.800 [147.32]
19	2.200 [55.88]	5.800 [147.32]
23	2.600 [66.04]	5.800 [147.32]
27	3.000 [76.20]	5.800 [147.32]
31	3.400 [86.36]	5.800 [147.32]
35	3.800 [96.52]	5.800 [147.32]
45	4.800 [121.92]	5.800 [147.32]

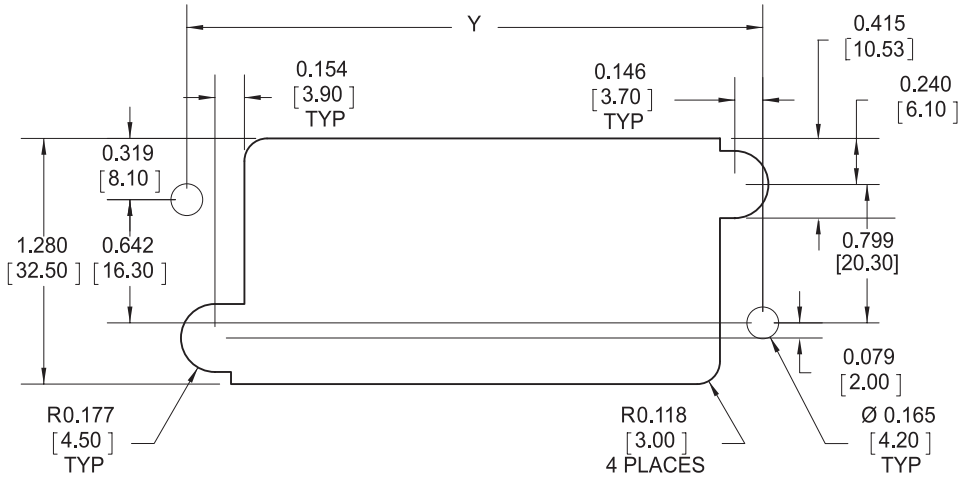
Frame H

Float Mounting

Plug



Receptacle



NOTES:

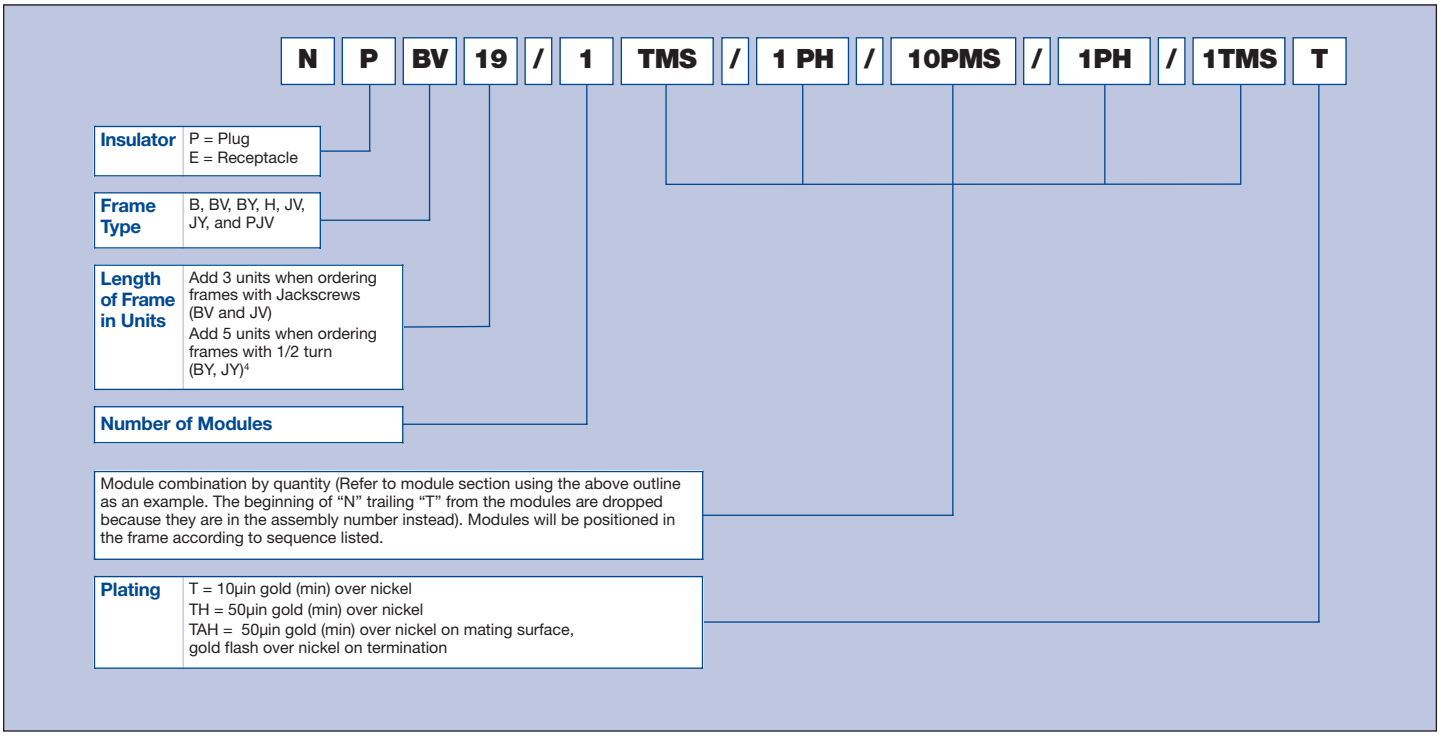
1) 59.0 oz. in. torque for mounting.
2) Refer to individual frame type for standard length.

Dimensions are in inches [mm]

N Series connectors are engineered for quick and easy use. Standard housings will be shipped completely assembled with the modules you select mounted.

Ordering Information

The length of the frame is computed by multiplying the number of module units by the module quantity and totaling the results. If a half spacer is required, LFH1 can be used. Assign “FH1” in part number scheme below.



NOTES:

1) When part number exceeds 24 characters, please consult factory for special (abbreviated) part number.
2) The plug frame has a built in pin shroud (sockets may be used in plug frames, but not recommended).
3) See receptacle for sequence of modules.
4) Consult factory when ordering straight dip solder tails with jacking version. Special cut out and modification - 872 is required.

Dimensions are in inches [mm]

MISCELLANEOUS

Hypertronics Crimp Contact Information

Contact P/N	Contact Description	Std. Crimp Tool	Std. Positioner	Die Set	Wire Strip Length	Insertion Tool	Removal Tool
YCX0315-002AH	Coaxtac Socket, RG-316	AFM8 (Inner), HX3 (Outer)	T1957 (Inner)	T1958	Per S50302		T1982
YCX0315-004H	Coaxtac Pin, RG-316	AFM8 (Inner), HX3 (Outer)	T1957 (Inner)	T1958	Per S50304		T1982
YCX0315-018H	Coaxtac Pin, RG-316DB	AFM8 (Inner), HX3 (Outer)	T1957 (Inner)	T2019	Per S50302		T1982
YCX0315-019AH	Coaxtac Socket, RG-316DB	AFM8 (Inner), HX3 (Outer)	T1957 (Inner)	T2019	Per S50304		T1982
YPN004-001H or G	Crimp Pin 26-28 AWG	AFM8 or M22520/2-01	T1914		.122" (3.10mm)	T1916	
YPN004-010H	Crimp Pin 26-28 AWG	AFM8 or M22520/2-01	T1973		.122" (3.10mm)	T1970	
YPN005-012H or G	Crimp Pin 22-26 AWG	AFM8	K787		.173" (4.40mm)		
YPN005-049H or G	Crimp Pin 22-26 AWG	AFM8 or M22520/2-01	T870		.173" (4.40mm)	T1271	
*YPN006-019H or G	Double Crimp Pin	AFM8 or M22520/2-01 or MS3198.1	K547 (Wire) K640 (Insul)		.146" (3.70mm)	S/MONT1.0060	S/DEM1.0060
*YPN006-021H or G	Crimp Pin 22-26 AWG	AFM8 or M22520/2-01	K547		.173" (4.40mm)	T1866 (D0), S/MONT1.0060 (KA)	S/DEM1.0060
*YPN006-025H or G	Crimp Pin 22-26 AWG	AFM8 or M22520/2-01	K623		.173" (4.40mm)	T1866 (D0), S/MONT1.0060 (KA)	S/DEM1.0060
*YPN006-158H	Crimp Pin 18-20 AWG	AFM8	K547		.73" (4.40mm)	T1866 (I), S/MONT1.0060 (KA)	S/DEM1.0060
YPN0102-031Y	Signal Pin 20 AWG	AFM8	K13-1		.165" (4.20mm)		T1978
YPN015-004RH or RG	Crimp 24-26 AWG	AF8	TP655		.146" (3.70)	S0150.01	S0150.01
YPN015-005H or G	Crimp Pin 18 & 20 AWG	AF8	TP688		.283" (7.20mm)	T1888	S/DEM5.0150
YPN015-009RH or RG	Crimp Pin 18-22 AWG	AF8	TP592		.236" (6.00mm)	S0150.01	S0150.01
YPN015-010H or G	Crimp Pin 16 AWG	AF8	TP592		.283" (7.20mm)	S0150.01	S0150.01
YPN015-016H	Crimp Pin 14, 16, 18 & 20 AWG	AF8	TP687		.283" (7.20mm)		S/DEM5.0150
YPN015-033RH or RG	Crimp Pin 14 AWG	AF8	TP1128		.315" (8.00mm)	S0150.01	S0150.01
YPN015-038H or G	Crimp Pin 16-20 AWG	AF8	T1165		.283" (7.20mm)		T1124
YPN025-002H or G	Crimp Pin 22-18 AWG	M309	TP1179		.315" (8.00mm)	S0250.01	S0250.01
YPN025-003H or G	Crimp Pin 14-13 AWG	M309	TP1179		.315" (8.00mm)	S0250.01	S0250.01
YPN025-011RH or RG	Crimp Pin 12 AWG	M309	TP1179		.315" (8.00mm)	S0250.01	S0250.01
YPN025-024H	Power Crimp Pin 12-14 AWG	M309	T1961		.315" (8.00mm)		T1982
YPN035-005H or G	Crimp Pin 22-20 AWG	T1264	SP612		.317" (8.05mm)	S0350.01	S0350.01
YPN035-006H or G	Crimp Pin 18-16 AWG	T1264	SP612		.317" (8.05mm)	S0350.01	S0350.01
YPN035-007H	Crimp Pin 14-12 AWG	T1264	Sp612		.317" (8.05mm)	S0350.01	S0350.01
YPN035-023RH or RG	Crimp Pin 8-10 AWG	T1264	T1559		.317" (8.05mm)	S0350.01	S0350.01
YPN035-025RH or RG	Crimp Pin 6 AWG	T712	T758		.315" (8.00mm)	S0350.01	S0350.01
YPN043-016RI	Crimp Pin 4 AWG	T1501 (Mounting Bracket T1551)	T1535		.591" (15.00mm)		T1507
YPN0612-021RI	Crimp Pin #1/0 AWG	T1501 (Mounting Bracket T1551)	T1536		.689" (17.50mm)		T1500
YSK004-002AH	Crimp Socket 26-28 AWG	AFM8 or M22520/2-01	T1914		.122" (3.10mm)	T1916	
YSK004-020AH	Crimp Socket 26-24 AWG	AFM8 or M22520/2-01	T1974		.122" (3.10mm)	T1970	
YSK005-005AH	Crimp Socket 22-26 AWG	AFM8 or M22520/2-01 or MS3198.1	K787		.173" (4.40mm)		
YSK005-036AH	Crimp Socket 22-26 AWG	AFM8 or M22520/2-01	T870		.146" (3.70mm)	T1271	
*YSK006-009AH	Double Crimp Socket	AFM8 or M22520/2-01 or MS3198.1	K547 (Wire) K640 (Insul)		.146" (3.70mm)	S/MONT1.0060	S/DEM1.0060
*YSK006-011AH	Crimp Socket 22-26 AWG	AFM8 or M22520/2-01	K547		.173" (4.40mm)	T1866	S/DEM1.0060
*YSK006-015AH	Crimp Socket 22-26 AWG	AFM8 or M22520/2-01	K623		.173" (4.40mm)	T1866	S/DEM1.0060
*YSK006-089AH	Crimp Socket 18-20 AWG	AFM8	K547		.173" (4.40mm)	T1866	S/DEM1.0060
YSK0102-071AH	Signal Socket 20 AWG	AFM8	K13-1		.165" (4.20mm)		T1978
YSK015-009AH	Crimp Socket 24-26 AWG	AF8	TP655		.197" (5.00mm)	S0150.01	S0150.01
YSK015-011AH	Crimp Socket 18 & 20 AWG	AF8	TP688		.283" (7.20mm)	T1888	S/DEM5.0150
YSK015-013AH	Crimp Socket 18-22 AWG	AF8	TP592		.236" (6.00mm)	S0150.01	S0150.01
YSK015-014AH	Crimp Socket 16 AWG	AF8	TP592		.281" (7.15mm)	S0150.01	S0150.01
YSK015-025AH	Crimp Socket 14, 16, 18, 20 AWG	AF8	TP687		.283" (7.20mm)		S/DEM5.0150
YSK015-045AH	Crimp Socket 14 AWG	AF8	TP1128		.315" (8.00mm)	S0150.01	S0150.01
YSK015-053AH	Power Socket	AF8	TP688		.283" (7.20mm)		T1124
YSK025-003AH	Crimp Socket 22-18 AWG	M309	TP1179		.315" (8.00mm)	S0250.01	S0250.01
YSK025-004AH	Crimp Socket 14-13 AWG	M309	TP1179		.315" (8.00mm)	S0250.01	S0250.01
YSK025-013AH	Crimp Socket 12 AWG	M309	TP1179		.315" (8.00mm)	S0250.01	S0250.01
YSK025-031AH	Power Crimp Socket 12-14 AWG	M309	T1981		.315" (8.00mm)		T1982
YSK035-009AH	Crimp Socket 22-20 AWG	T1264	SP612		.315" (8.00mm)	S0350.01	S0350.01
YSK035-010AH	Crimp Socket 18-16 AWG	T1264	SP612		.315" (8.00mm)	S0350.01	S0350.01
YSK035-011AH	Crimp Socket 14-12 AWG	T1264	SP612		.315" (8.00mm)	S0350.01	S0350.01
YSK035-028AH	Crimp Socket 8-10 AWG	T1264	T1559		.315" (8.00mm)	S0350.01	S0350.01
YSK035-030AH	Crimp Socket 6 AWG	T712	T758		.315" (8.00mm)	S0350.01	S0350.01
YSK043-010AH	Crimp Socket 4 AWG	T1501 (Mounting Bracket T1551)	T1535		.591" (15.00mm)		T1507
YSK0612-015AH	Crimp Socket #1/0 AWG	T1501 (Mounting Bracket T1551)	T1536		.689" (17.50mm)		T1500
YPN0076-145H	Size 22D Crimp Pin 22 Thru 28 AWG	M22520/7-01			.160" - .190"		M81969/14-01
YPN0102-037H	Size 20 Crimp Pin 20 Thru 24 AWG	M22520/1-01			.230" - .260"		M81969/14-10
YPN0158-012H	Size 16 Crimp Pin 20 Thru 16 AWG	M22520/1-01			.230" - .260"		M81969/14-03
YPN0239-001H	Size 12 Crimp Pin 12 Thru 14 AWG	M22520/1-01			.230" - .260"		M81969/14-04
YSK0076-181AH	Size 22D Crimp Socket 22 Thru 28 AWG	M22520/7-01			.160" - .190"		M81969/14-01
YSK0102-095AH	Size 20 Crimp Socket 20 Thru 24 AWG	M22520/1-01			.230" - .260"		M81969/14-10
YSK0158-012H	Size 16 Crimp Socket 20 Thru 16 AWG	M22520/1-01			.230" - .260"		M81969/14-03
YSK0239-001AH	Size 12 Crimp Socket 12 Thru 14 AWG	M22520/1-01			.230" - .260"		M81969/14-04
YSK0076-189AH	Size 22D High Temp Crimp Socket 22 Thru 28 AWG	M22520/7-01			.160" - .190"		M81969/14-01
YSK0102-101AH	Size 20 High Temp Crimp Socket 20 Thru 24 AWG	M22520/1-01			.230" - .260"		M81969/14-10
YSK0158-015AH	Size 16 High Temp Crimp Socket 20 Thru 16 AWG	M22520/1-01			.230" - .260"		M81969/14-03
YSK0239-002AH	Size 12 High Temp Crimp Socket 12 Thru 14 AWG	M22520/1-01			.230" - .260"		M81969/14-04
YSK004-041AH	Crimp Socket	AFM8 or M22520/2-01	T2030			T1916	Receptacle Insulator extraction Tool T2057
YPN004-028H	Crimp Pin	AFM8 or M22520/2-02	T2030			T1916	Receptacle Insulator extraction Tool T2057
YPN004-029H	Crimp Pin	AFM8 or M22520/2-03	T2030			T1916	Receptacle Insulator extraction Tool T2057
YSK004-037AH	Crimp Socket	AFM8 or M22520/2-04	T2030			T1916	Receptacle Insulator extraction Tool T2057

* Crimping Instructions - Doc #550063