# Cannon Microminiature Products

**High Performance Micro Miniature Connectors**

ITT Electronic Components is a division of the multi-national ITT Corporation a $7.5 billion dollar global enterprise. The Cannon Micro Connector portfolio has witnessed many product extensions since ITT first introduced micro technology to the marketplace over fifty years ago. Our portfolio remains the most extensive in the industry offering the most reliable and cost effective range of micro interconnect solutions. These innovations have enabled ITT to provide products and technologies to such markets as:

- Aerospace
- Computers Systems
- Defense Electronics
- Geophysical
- Industrial Automation
- Medical Electronics
- Network Systems
- Telecom Switching
- Underwater Systems
- Wireless

Offering the broadest selections of standard and custom micro interconnect solutions, ITT is the one stop source for design, development, manufacturing, and test of sophisticated multi channel high density connectors. Our product portfolio consists of rectangular, circular, quick disconnect, high speed signal, filter, hermetic, mixed signal packages, and strip style interconnects. Each product has unique mechanical engagement and locking mechanisms to meet the demands of harsh environment applications. These products include our Centi Line .100-inch and .075-inch center spacing, the Micro line .050 inch center spacing, and our Nano line of .025-inch center contact spacing. All of ITT's micro connectors utilize our twist pin contact system, developed by ITT in the early 1960's. A separate section describes in detail the twist pin electrical contact technology (refer to page 6).

**The Standard of Six Sigma**

When you specify a Cannon microminiature connector, you can rely on a product designed, developed, and manufactured to the highest quality and reliability standards in the industry. This tradition of excellence is based on ITT's corporate culture of operating its entire business under the principles of Six Sigma. At ITT, Six Sigma is not just a quality philosophy but a complete corporate culture that drives the entire business. Our Value Based Management and Value Based Product Development systems are two cornerstones of ITT that allows for the development of both leadership and product development principles, ensuring that the correct industry leading products are developed to the accepted market driven lead times. These principles have allowed ITT to become the market leader in all of our business portfolios.

**Six Sigma Engineering**

ITT, utilizing its six sigma tools and multiple lean initiatives, offers the most experienced engineering design team in the micro miniature interconnect field. Using our systems approach, ITT continues to advance new interconnect technologies by developing advanced products including higher density Nano 0.025-inch spacing interconnects, Chip-on-Flex filter connectors, flexible high density circuits terminated directly to ITT contacts, and innovative high speed mixed signal connector configurations. In conjunction with our design teams, ITT operates a world class test lab offering state of the art capabilities in electronic, fiber optic, and mechanical test expertise . Our certified test engineers and technicians can develop a specific test plan based on our customer's specific needs. Additionally, our team is experienced in providing test services and programs for US DOD Defense electronics and Space related programs.

**Six Sigma Manufacturing**

ITT operates manufacturing facilities in the United States, France, Germany, Italy, Mexico, China, and the UK, all of

which have particular product area strengths allowing ITT to offer a truly global footprint to our customers. Our facilities are world class and accommodate full vertical integration with the latest manufacturing technologies including: automated and robotic machining centers, Super Market manufacturing cells, Kanban pull systems, and automated electrical, mechanical, and optical test and inspection equipment. The combination of our manufacturing strength and our advanced manufacturing facilities allows ITT to offer products at market driven prices. Our capabilities, especially in robotics, computerized precision tooling, Kaizen Project Management, Six Sigma tools, and test labs, gives ITT the most optimized global manufacturing footprint in the interconnect industry.

**The Custom Difference**

As the industry leader in harsh environment interconnect applications, ITT's world class engineering teams will work directly with our customers to design and develop cost effective solutions for their applications . In many cases we may modify one of our standard designs to ensure a highly reliable solution where timing is critical. Yet, in those cases where a complete custom interconnect solution is required, ITT will work with our customer's Engineers to design an interconnect solution which will be cost effective yet highly reliable. As professional consultants, our Engineering teams will provide a thorough systems and mechanical analysis of any proposed solution. These analyses provide our customers with sophisticated electrical signal and mechanical characterizations to determine the best solution for their application.

In addition to custom connectors, ITT offers sophisticated custom cable assembly capabilities for a wide range of harsh environment applications. Our in house expertise translates to our ability to integrate different technologies within a custom cable harness. ITT's capabilities include discrete wire terminations to multi wire cable harnesses with multiple connector configurations as part of the final assembly. We also specialize in providing terminated flex circuit assemblies, high temperature geophysical cable assemblies, innovative medical electronics cable assemblies, over mold strain relief systems, and EMI shielded terminations.

**RoHS Compliance Information**

ITT has implemented a strict parts control plan for all ITT electronics plants worldwide that allows the Cannon Microminiature connector product portfolio to meet the requirements of European Union Directive 2002/95/EC better know as the Reduction of Hazardous Substances initiative. To make things easier for our customers, all Cannon Microminiature products can be ordered with an R prefix number which insures our customers will receive RoHS compliant parts for their commercial electronics applications and equipment. Since most RoHS hazardous substances center around specific metal plating and lead solder coatings, ITT's products for RoHS compliance are available in the following plating finishes: electroless nickel, stainless steel, Anodize over aluminum and Gold plating. It should be noted that gold plating would be recommended as the replacement for tin-lead solder when ordering board mount connectors.

**Non Compliant RoHS Materials**

Advanced Aerospace specifications and DOD system performance requirements demand the necessity to maintain production status for the primary base metals and Chem film coatings typically utilized in Aerospace electronics. Thus, in order to support ITT's Aerospace customer base and maintain our leadership position in micro miniature connector technologies, ITT will continue to provide interconnect products with cadmium plating and tin lead solder in support of these markets. These materials are all QPL to Military specifications including M83513.

Please consult Customer Service if RoHS part verification is required.

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# Cannon Microminiature Product Overview Guide

| | MDM | MDM PCB | MDM C/P | MDMH Hermetics | TMDM Filter | MD** | MDB Coaxial | MJS | MIK | MIKM |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| **Type** | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket |
| **Current Rating** | 3A max. | 3A max. | 3A max. | 3A max. | 3A max. | 3A max. | 3A max. | 3A max. | 3A max. | 3A max. |
| **Contact Resistance** | 8 milliohms max. | 8 milliohms max. | 8 milliohms max. | 24 milliohms max. | 15 milliohms max. | 8 milliohms max. | 8 milliohms max. (signal) | 8 milliohms max. | 8 milliohms max. | 8 milliohms max. |
| **Contact Material** | gold plated copper alloy | gold plated copper alloy | gold plated copper alloy | gold plated copper and steel | gold plated copper alloy | gold plated copper alloy | gold plated copper alloy | gold plated copper alloy | gold plated copper alloy | gold plated copper alloy |
| **Shell** | Metal | Metal | Metal | Metal | Metal | Plastic | Plastic | Plastic | Plastic | Metal |
| **Shell Material** | Aluminum | Aluminum | Aluminum | Steel | Aluminum | Thermoplastic & Thermoset | Thermoset | Thermoplastic & Thermoset | Thermoplastic | Steel |
| **Available Layouts** | 9, 15, 21, 25, 31, 37, 51 & 100 | 9, 15, 21, 25, 31, 37, 51 & 100 | 7C/P2, 24C/P4, 27C/P5 & 10C/P10 | 9, 15, 21, 25, 31, 37 & 51 | 9, 15, 21, 25, 31, 37 & 51 | 9, 15, 21, 25, 31, 37 & 51 | 7C/P2 | 10, 26, 51 & 66 - Rect/unshrouded 16, 28 & 35 - Rect/shrouded 26, 38, 42 & 76 - Polarized D | 7 & 55 | 7, 55 & 85 |
| **Configuration** | Polarized D | Polarized D | Polarized D | Polarized D | Polarized D | Polarized D | Polarized D | Rectangular & Polarized D | Circular | Circular |
| **RoHS** | Available | Available | Available | Available | No | Available | Available | Available | Available | Available |
| **Factory Terminated** | Yes* | Yes | Yes | Yes* | Yes | Yes* | Yes | Yes* | Yes | Yes |
| **Space Applications** | Available | Available | Available | Yes | Yes | Available | Available | Available | Yes | Yes |
| **Page Number** | 7 | 18 | 22 | 23 | 25 | 28 | 32 | 39 | 44 | 44 |

| | MIKQ | MT* | MEB | 2D | CDL | CTA* | NDM | NTP | NJS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| **Type** | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket | Plug and Socket |
| **Current Rating** | 3A max. | 3A max. | 3A max. | 5A max. | 5A max. | 5A max. | 1A max. | 1A max. | 1A max. |
| **Contact Resistance** | 8 milliohms max. | 8 milliohms max. | 8 milliohms max. | 9 milliohms max. | 9 milliohms max. | 9 milliohms max. | 60 milliohms max. | 60 milliohms max. | 60 milliohms max. |
| **Contact Material** | gold plated copper alloy | gold plated copper alloy | gold plated copper alloy | gold plated copper alloy | gold plated copper alloy | gold plated copper alloy | precious metal alloy & gold plated copper alloy | precious metal alloy & gold plated copper alloy | precious metal alloy & gold plated copper alloy |
| **Shell** | Metal | Plastic | Plastic | Plastic | Plastic | Plastic | Metal | Plastic | Plastic |
| **Shell Material** | Steel | Thermoplastic | Thermoset | Thermoplastic | Thermoplastic | Thermoplastic | Thermoset | Thermoset | Thermoplastic |
| **Available Layouts** | 7, 19 & 37 | MTV - 1 thru 120 MTB - 1 thru 80 | 64, 128, 92 & 184 | 19, 31, 52, 79 & 100 | 139 | CTA3 - 1 thru 53 CTA4 - 1 thru 60 | 9, 15, 21, 25, 31 & 37 | 1 thru 40 | Rectangular - 9, 24 & 44 Circular - 27, 72 & 246 |
| **Configuration** | Circular | Strip | Polarized D | Polarized D | Polarized D | Strip | Polarized D | Strip | Rectangular & Circular |
| **RoHS** | Available | Available | Available | Available | Yes | Yes | Yes | Yes | Yes |
| **Factory Terminated** | Yes | Yes* | Yes* | No | No | No | Yes | Yes | Yes |
| **Space Applications** | Yes | Yes | Yes | No | No | No | Yes | Yes | Yes |
| **Page Number** | 44 | 48 | 54 | 59 | 65 | 66 | 72 | 71 | 73 |

* Solderpot versions available for end user termination

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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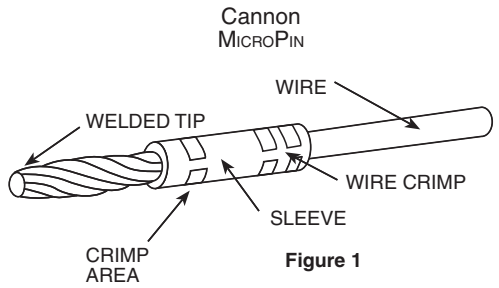


**Figure 1**

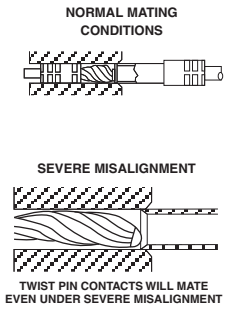


**Figure 2**

**Pos-A-Line Contact Alignment**

The flexible twist-pin is recessed into the insulator and the rigid socket is exposed, reversing the traditional positions of pin and socket. During mating, the socket is guided into the pin insulator by the lead-in chamfer. The pin is kept from flexing beyond the socket capture radius by the walls of the cavity. The hemispherical weld of controlled radius at the tip of the pin combines with the lead-in chamfers of the socket contact and the pin insulator to carn the pin into alignment. By controlling the welding process and the dimensions of the socket contact and the insulators, it is impossible for the recessed pin to escape the socket capture radius.

**Twist Pin Contact Technology**

The foundation of ITT's Cannon Micro Connector portfolio starts with ITT's innovative twist pin contact system. This system was originally developed in the early 1960's and ITT was one of the original interconnect companies to license this technology and improve it. Our forty five years of experience in manufacturing and establishing a fully automated manufacturing system for this contact has truly given ITT the foremost knowledge in twist pin contact technology.

As the core of our micro products, the twist pin contact offers a superior electrical and mechanical system that outperforms traditional machined or stamped electrical contract systems. ITT's twist pin system consists of the Micro Socket and the Micro pin or Twist pin. Figure I show the basic contacts.

**Figure 1**

The twist pin contact system consists of several stranded cores making up the wire bundle. The strands are subsequently heat treated and a weld is performed on the tip of each contact. Crimp sleeves are then inserted over the contact and crimp areas are defined to produce a seamless crimp system. The entire twist pin system is referred by ITT as a Pos-A-Line contact alignment system. Our reference to this system identifies that the flexible twist pin is recessed into the insulator and the rigid socket is exposed thus reversing the traditional positions of the pin and socket. During the mating sequence, the socket is guided into the pin insulator by the lead-in chamfer. The pin is kept from flexing beyond the socket capture radius by the walls of the cavity. The hemispherical weld of controlled radius at the tip of the pin combines with the lead-in chamfer of the socket contact and the pin insulator to cam the pin in alignment. ITT has developed a very robust Six Sigma manufacturing process that controls the welding process as well as the dimensions of the socket contact and insulator material. The net result is a contact system that makes it impossible for the recessed pin to escape the socket capture radius. Figure 2 shows the twist pin features as well as mating and severe misalignment conditions.

The advantages of ITT's twist pin contact system are many and have been field proven in the most demanding applications and environments for over forty five years. Some of these advantages include:

- Seven points of electrical contact (Micro 0.050-inc & Centi Line 0.075-inch Interconnect Products)
- Five points of electrical contact (Nano 0.025-inch Interconnect Products)
- Contact and crimp sleeve materials carefully optimized for extremely reliable crimps- No design tradeoffs
- Seamless crimp sleeves
- Multiple 4-indent wire crimps standard and smaller bore micro socket contacts
- Standard integral tail & thru bundle micro pin contacts (high density packaging)
- High mating cycles
- High current handling capabilities
- System qualification in numerous Aerospace, Defense Electronic, and high temperature Geophysical applications.
- Wide array of wire terminations

The advantages listed above are by no means inclusive of ITT's innovative product improvement processes. Moving forward, ITT plans to introduce additional new product features supporting enhanced twist pin contact performance.

# Micro-D Metal Shell - .050" Contact Spacing

# MDM

MDM connectors are used in applications requiring highly reliable, extremely small, light-weight connectors with higher density contact configurations than available in traditional rectangular connectors. They are available in 8 shell sizes accommodating from 9 to 100 contacts, and special arrangements of power and coaxial contacts.

These connectors are designed to meet the rapidly increasing demands for an environmental, high performance, rugged, moisture-sealed microminiature connector. This connector employs size 24 MICROPIN™/MICROSOCKET™ contacts on .050 (1.27) centers in a contact density identical to the standard MICRO-D connector series, but with these additional features:

- Aluminum shells to provide greater strength, prevent chipping, cracking or breaking, offer electromagnetic (EMI) and RFI shielding.
- Silicone elastomer compression interfacial seal to provide a moisture and humidity seal between each contact and between contacts and shell.

## Specifications

| STANDARD MATERIALS AND FINISHES | |
|---|---|
| Shell | - 6061-T6 Aluminum alloy per QQ-A-200/8, yellow chromate/ cadmium, Type II, Class 3 over electroless nickel per SAE AMS-C-26074, Class 4. |
| Insulator | - Liquid Crystal Polymer per MIL-M-24519, Type GLCP-30F (9-100)<br>- Glass filled diallyl phthalate per MIL-M-14, Type SDGF (7*2 and 24*4)<br>- Polyphenylene sulfide per MIL-M-24519, Type GST-40F (16*5)<br>- Polyester per MIL-M-24519, Type GPT-30F (10*10) |
| Contacts | - Copper alloy, gold plate |
| Mounting Hardware | - 300 Series stainless steel, passivate |
| Kit, Jackpost (3) items | - 300 Series stainless steel, passivate |
| Washer | - 400 Series stainless stell, passivate |
| Standard Epoxy | - Hysol EE4215/HD3561, color black or Hysol EE4198/HD3561, color green |

| MECHANICAL FEATURES | |
|---|---|
| Coupling | - Friction/jackscrews |
| Polarization | - Keystone-shaped shells |
| Contact Spacing Centers | - .050 (1.27) |
| Shell Styles | - Plug and receptacle |
| No. of Contacts | - 9 thru 100 signal;<br>5 signal/2 coaxial;<br>5 signal/2 power;<br>11 signal/5 coaxial;<br>11 signal/5 power;<br>0 signal/10 coaxial;<br>0 signal/10 power;<br>20 signal/4 coaxial;<br>20 signal/4 power |
| Coaxial Cable | - RG - 178/U |
| Wire Size | - #24 thru #32 AWG |
| Contact Termination | - Multiple indent crimp |

## Performance Data

The table below summarizes the results of key tests performed in accordance with MIL-STD-1344, where applicable. Data is applicable to standard connectors with standard termination. Variations may affect this data, so please consult customer service for further information on your requirements.

| Test | Method | Criteria of Acceptance |
|---|---|---|
| Dielectric Withstanding Voltage | Method 3001:<br>600 VAC at sea level<br>150 VAC at 70,00' altitude | <br>No breakdown<br>No breakdown |
| Insulation Resistance | Method 3003 | 5,000 megohms minimum |
| Thermal Shock | Method 1003. Condition A:<br>- 55°C to +125°C | No physical damage |
| Physical Shock | Method 2004, Condition E:<br>50 G's, 3 axes, 6 millisecond duration sawtooth pulse | No physical damage<br>No loss of continuity > 1 µsec |
| Vibration | Method 2005, Condition IV:<br>20 G's, 10-2,000 Hz. 12 hrs | No physical damage<br>No loss of continuity > 1 µsec |
| Durability | 500 cycles of mating and unmating, 500 CPH max. | No mechanical or electrical defects |
| Moisture Resistance | Method 1002, Type II, omit steps 7a & 7b | Insulation resistance > 100 megohms |
| Salt Spray | Method 1001, Condition B:<br>48 hours | Shall be capable of mating and unmating, and meet contact resistance requirements |
| Contact Resistance (MIL-STD-202) | Method 1001, Condition B:<br>At 3 amps<br>At 1 milliamp | <br>8 milliohms maximum<br>10 milliohms maximum |
| Contact Retention | Per MIL-DTL-83513 | 5 lb. minimum axial load |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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## How to Order

**For MIL-DTL-83513 ordering information see pages 16 and 17**

**R MDM - 51 P H 001 P - XXX**

- **RoHS COMPLIANCE**
- **SERIES**
- **CONTACT ARRANGEMENTS**
- **CONTACT TYPE**
- **TERMINATION TYPE**
- **TERMINATION CODE**
- **HARDWARE**
- **SHELL FINISH MOD CODES**

**SERIES**

MDM: (Size 9-100) Liquid Crystal Polymer (LCP)
MDM: (Combo Layout) Diallyl Phthalate (DAP)

**CONTACT ARRANGEMENTS**

9-15-21-25-31-37-51-100 (standard)
16C5, 10C10, 7C2, 24C4 (coaxial) } or combination of
16P5, 10P10, 7P2, 24P4 (power) } coax and power

**CONTACT TYPE**

P - Pin S - Socket

**TERMINATION TYPE**

H - Harness-insulated wire.
L - Solid-uninsulated wire.
S - Solder pot to accept #26 AWG MAX. harness wire. (Not available with power contact arrangements.)

**HARDWARE**

M - Military specification hardware, see page 11 for military hardware codes.
P - Jackpost
K - Jackscrew-standard profile
L - Jackscrew-low profile
F - Float mount
B - No hardware standard
.091 (2.31) dia. hole for sizes 9-51;
.120 (3.05) dia. hole for size 100.
A - .125 (3.18) dia. mounting holes for sizes 9-51;
.166 (4.22) dia. hole for size 100.
B1 - .1475 (3.75) dia. hole for size 100
(Per MIL-DTL-83513)

**TERMINATION CODE***

(H) 001 - 18",7/34 strand,#26 AWG, MIL-W-16878/4, Type E Teflon, yellow.
(H) 003 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I.
(L) 1 - 1/2" uninsulated solid #25 AWG gold plated copper.
(L) 2 - 1" uninsulated solid #25 AWG gold plated copper.

**SHELL FINISH MOD CODES**

No Number - (Standard cadmium/yellow chromate over nickel
A174 - Electroless nickel
A172 - Gold over nickel
A141 - Irridite/alodine
A30 - Black anodize

*See page 79 and 81 for additional Termination codes.

## COTS or Non Mil-Spec or Commercial or Industrial Standard Wire Termination Codes

Cannon Modification Code (Not MS)

The following termination codes are listed for your information. For additional codes please refer to Appendix on page 79 and 81. **All wire lengths are minimum**.

**Harness Type (H)**
#26 AWG per MIL-W-16878/4, 7/34 strand, type E Teflon, stranded.

| Length | All Yellow | Color Coded* |
|---|---|---|
| 3 (76.2) | H020 | H027 |
| 6 (152.4) | H019 | H016 |
| 8 (203.2) | H026 | H034 |
| 10 (254.0) | H029 | H025 |
| 12 (304.8) | H028 | H002 |
| 18 (457.2) | H001 | H003 |
| 20 (508.0) | H038 | H023 |
| 24 (609.6) | H009 | H004 |
| 30 (762.0) | H010 | H005 |
| 36 (914.4) | H011 | H006 |
| 48 (1219.2) | H013 | H048 |
| 72 (1828.8) | H017 | H046 |
| 120 (3048.0) | H042 | H041 |

* Cavity #1 black

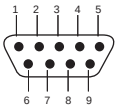
**Solid Uninsulated Type (L)**
#25 AWG gold plated copper

| Termination Code | Length |
|---|---|
| L61 | .125 (3.18) |
| L56 | .150 (3.81) |
| L57 | .190 (4.83) |
| L39 | .250 (6.35) |
| L58 | .375 (9.52) |
| L1 | .500 (12.70) |
| L14 | .750 (19.05) |
| L2 | 1.000 (25.40) |
| L7 | 1.500 (38.10) |
| L6 | 2.000 (50.80) |
| L16 | 2.500 (63.50) |
| L10 | 3.000 (76.20) |

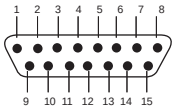
## Contact Arrangements

**(Face View of Pin insert - Use Reverse Order for Socket Side)**

**Standard**




**9 Contacts**

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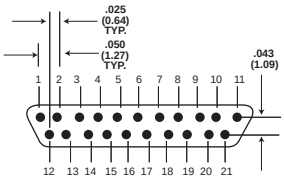
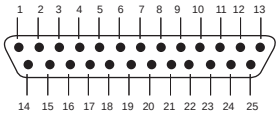
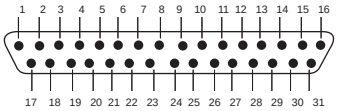


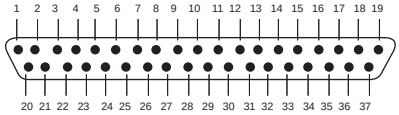

**21 Contacts**



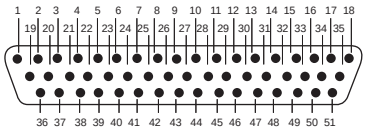

**25 Contacts**



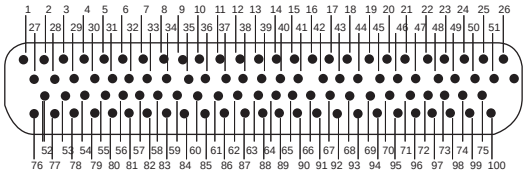

**31 Contacts**




**37 Contacts**

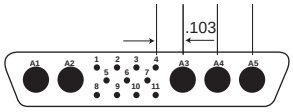



**51 Contacts**



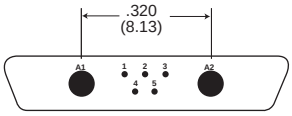

**100 Contacts**

Contact identification numbers are for reference only and do not appear on insulator or connector body.

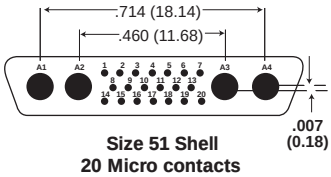



**Size 51 Shell**
**11 Micro contact**
**5 Coax or 5 Power**

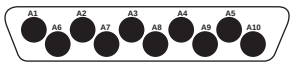
**Coaxial**




**Size 25 Shell**
**5 Micro contact**
**2 Coax or 2 Power**




**Size 51 Shell**
**20 Micro contacts**
**4 Coax or 4 Power**
**(Not MS)**

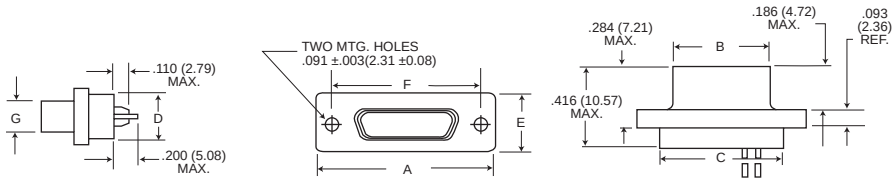



**Size 100 Shell**
**0 Micro contact**
**10 Coax or 10 Power**

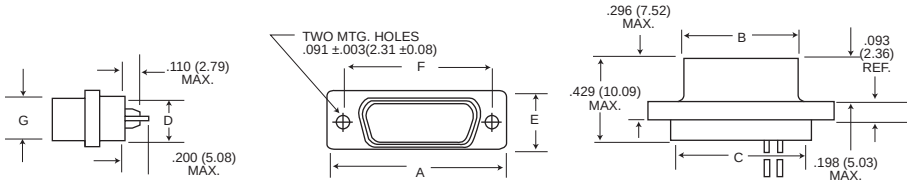
Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## COTS or Non Mil-Spec or Commercial or Industrial Shell Dimensions (Conforms to MIL-DTL-83513)

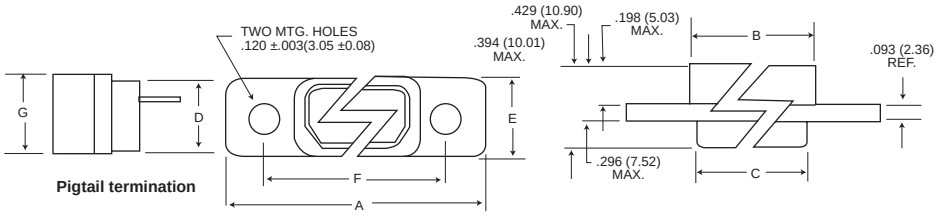
Plug




Receptacle



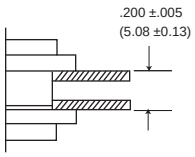

Receptacle (MDM-100 only)



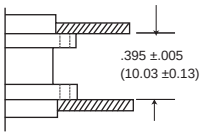

| Part Number By Shell Size | A Max. | B Max. | C Max. | D Max. | E Max. | F +_.005 (0.13) | G Max. | Average Weights** oz. (gm.) ±5% |
|---|---|---|---|---|---|---|---|---|
| **MDM-9P*** | .785 (19.94) | .334 (8.48) | .400 (10.16) | .270 (6.86) | .308 (7.82) | .565 (14.35) | .185 (4.70) | .063 (1.79) |
| **MDM-9S*** | .785 (19.94) | .402 (10.21) | .400 (10.16) | .270 (6.86) | .308 (7.82) | .565 (14.35) | .253 (6.43) | .063 (1.79) |
| **MDM-15P*** | .935 (23.75) | .484 (12.29) | .550 (13.97) | .270 (6.86) | .308 (7.82) | .715 (18.16) | .185 (4.70) | .084 (2.39) |
| **MDM-15S*** | .935 (23.75) | .552 (13.97) | .550 (13.97) | .270 (6.86) | .308 (7.82) | .715 (18.16) | .253 (6.43) | .083 (2.37) |
| **MDM-21P*** | 1.085 (27.56) | .634 (16.10) | .700 (17.78) | .270 (6.86) | .308 (7.82) | .865 (21.97) | .185 (4.70) | .105 (2.99) |
| **MDM-21P*** | 1.085 (27.56) | .702 (17.83) | .700 (17.78) | .270 (6.86) | .308 (7.82) | .865 (21.97) | .253 (6.43) | .104 (2.97) |
| **MDM-25P*** | 1.185 (30.10) | .734 (18.64) | .800 (20.32) | .270 (6.86) | .308 (7.82) | .965 (24.51) | .185 (4.70) | .119 (3.39) |
| **MDM-25S*** | 1.185 (30.10) | .802 (20.37) | .800 (20.32) | .270 (6.86) | .308 (7.82) | .965 (24.51) | .253 (6.43) | .118 (3.36) |
| **MDM-31P*** | 1.335 (33.91) | .884 (22.45) | .950 (24.13) | .270 (6.86) | .308 (7.82) | 1.115 (28.32) | .185 (4.70) | .140 (3.99) |
| **MDM-31S*** | 1.335 (33.91) | .952 (24.18) | .950 (24.13) | .270 (6.86) | .308 (7.82) | 1.115 (28.32) | .253 (6.43) | .139 (3.96) |
| **MDM-37P*** | 1.485 (37.72) | 1.034 (26.26) | 1.100 (27.94) | .270 (6.86) | .308 (7.82) | 1.265 (32.13) | .185 (4.70) | .161 (4.59) |
| **MDM-37S*** | 1.485 (37.72) | 1.102 (27.99) | 1.100 (27.94) | .270 (6.86) | .308 (7.82) | 1.265 (32.13) | .253 (6.43) | .160 (4.56) |
| **MDM-51P*** | 1.435 (36.45) | .984 (24.99) | 1.050 (26.67) | .310 (7.87) | .351 (8.92) | 1.215 (30.86) | .228 (5.79) | .193 (5.50) |
| **MDM-51S*** | 1.435 (36.45) | 1.052 (26.72) | 1.050 (26.67) | .310 (7.87) | .351 (8.92) | 1.215 (30.86) | .296 (7.52) | .188 (5.35) |
| **MDM-100P*** | 2.170 (55.12) | 1.384 (35.15) | 1.442 (36.63) | .360 (9.14) | .394 (10.01) | 1.800 (45.72) | .271 (6.88) | .500 (14.3) |
| **MDM-100S*** | 2.170 (55.12) | 1.508 (38.10) | 1.442 (36.63) | .360 (9.14) | .394 (10.01) | 1.800 (45.72) | .394 (10.01) | 1.040 (29.5) |

*Add lead type and length; see How To Order. ***Weight given is 1/2", uninsulated, solid, #25 AWG gold plated copper pigtails.

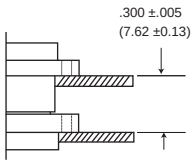
## Panel Mounting Dimensions (Sizes 9 - 100)




Plug and Receptacle
Rear Mounted




Plug and Receptacle
Front Mounted




Plug Front Mounted
Receptacle Rear Mounted

## Panel Cutouts

NOTE: See page 13 for rear panel mounting configuration.

**Shell Sizes 9 thru 51**

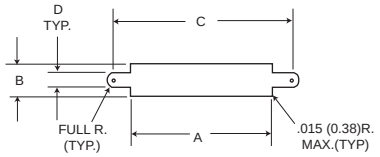



**Figure 1**
**Front Mounting**

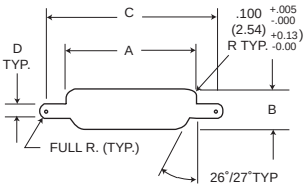



**Figure 2**
**Rear Mounting**

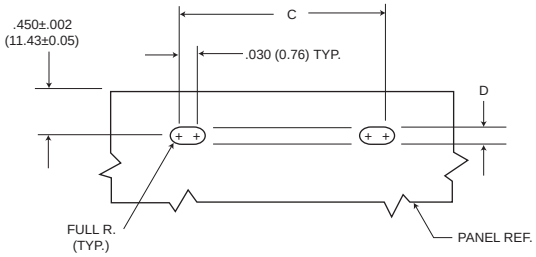



**Figure 3**
**Edgeboard Mounting**

**Shell Size 100**

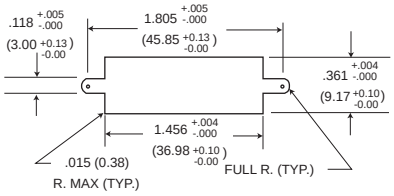



**Figure 1**
**Front Mounting**

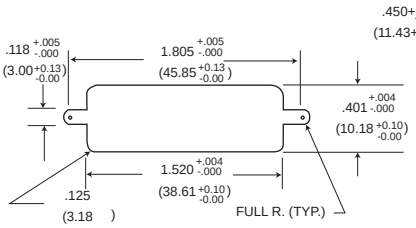



**Figure 2**
**Rear Mounting**

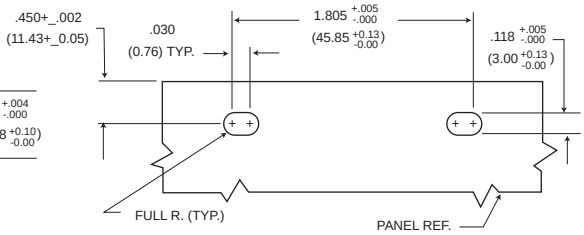



**Figure 3**
**Edgeboard Mounting**

**For 9-51 Shell Sizes**

**NOTES:**

1. Front panel mounting is the preferred mounting method. Front panel mounting dimensions (figure 1) will accommodate either #2-56 screws or jackpost hardware.
2. Rear panel mount dimensions (figure 2) will accommodate #2-56 screw hardware only. When mounting the connector with rear panel mount jackpost see the panel cut-out dimensions.
3. Edgeboard mounting bracket (figure 3) uses #2-56 screws. Dimension .450+/-.002 (11.43+/-0.05) locates the MDM receptacle flush with the end of the board.

**For 100 Shell Size**

**NOTES:**

1. Front mounting is the preferred mounting method. Front panel mounting dimensions (figure 1) will accommodate either #4-40 screws or jackpost hardware.
2. Rear panel mount dimensions (figure 2) will accommodate #4-40 screw hardware only see the panel cut-out dimensions.
3. Edgeboard mounting bracket (figure 3) uses #4-40 screws. Dimension .450+/-.002 (11.43+/-0.05) locates the MDM receptacle flush with the end of the board.

| Shell Size | Cutout Figure | A +.004 -.000 | B +.004 -.000 | C +.005 -.000 | D +.005 -.000 |
|---|---|---|---|---|---|
| 9 | 1 | .408 | .271 | .570 | .089 |
| | 2 | .401 | .252 | .570 | .089 |
| | 3 | - | - | .570 | .089 |
| 15 | 1 | .558 | .271 | .720 | .089 |
| | 2 | .551 | .252 | .720 | .089 |
| | 3 | - | - | .720 | .089 |
| 21 | 1 | .708 | .271 | .870 | .089 |
| | 2 | .701 | .252 | .870 | .089 |
| | 3 | - | - | .870 | .089 |
| 25 | 1 | .808 | .271 | .970 | .089 |
| | 2 | .801 | .252 | .970 | .089 |
| | 3 | - | - | .970 | .089 |
| 31 | 1 | .958 | .271 | 1.120 | .089 |
| | 2 | .951 | .252 | 1.120 | .089 |
| | 3 | - | - | 1.120 | .089 |
| 37 | 1 | 1.108 | .271 | 1.270 | .089 |
| | 2 | 1.101 | .252 | 1.270 | .089 |
| | 3 | - | - | 1.270 | .089 |
| 51 | 1 | 1.058 | .315 | 1.220 | .089 |
| | 2 | 1.051 | .295 | 1.220 | .089 |
| | 3 | - | | 1.220 | .089 |

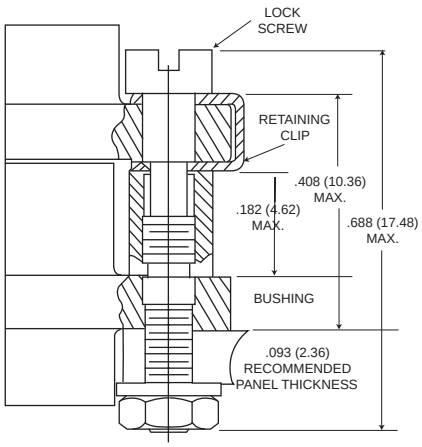
Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Mounting Hardware Views (for sizes 9-51)

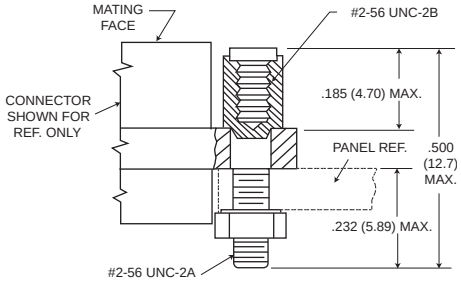
This hardware supplied unassembled.

Screw Lock Assembly

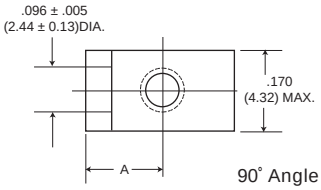
90˚ Angle Mounting Bracket

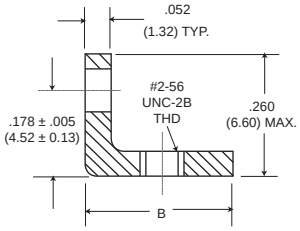



Screw Lock Assembly*
*NOTE Torque value is 2.5 in/lbs max.




**Jackpost - (P)**



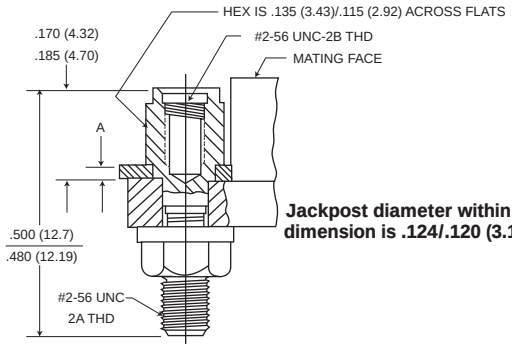




90˚ Angle Mounting Bracket

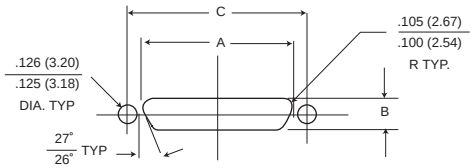
| Description | Part Number | A +/-.005 (±0.13) | B Max. |
|---|---|---|---|
| Screw Lock Assembly | 322-9500-000 | N/A | |
| Jackpost kit | 320-9505-000 | N/A | |
| Mounting Bracket 90˚ MDM for 9 thru 37 Shell Sizes | 015-9516-002 | .147 (3.73) | .308 (7.82) |
| Mounting Bracket 90˚ MDM for 51 Shell Size | 015-9516-003 | .169 (4.29) | .350 (8.89) |

NOTES: Screw lock assembly (322-9500-000) can be used for front mounting only. Jackpost kit (320-9505-000) consists of two assmblies, shipped unassmbled.

## Jackpost Bushing (for rear panel mounting-for sizes 9-51)




**Jackpost diameter within the "A" dimension is .124/.120 (3.15/3.05).**




| Panel A Thickness | A +.005 (0.13) -.000 (0.00) | Jackpost Kit Number* |
|---|---|---|
| 3/32 (2.4) | .087 (2.21) | 320-9505-007 |
| 1/16 (1.6) | .056 (1.42) | 320-9505-006 |
| 3/64 (1.2) | .042 (1.07) | 320-9505-005 |
| 1/32 (0.8) | .025 (0.64) | 320-9505-004 |

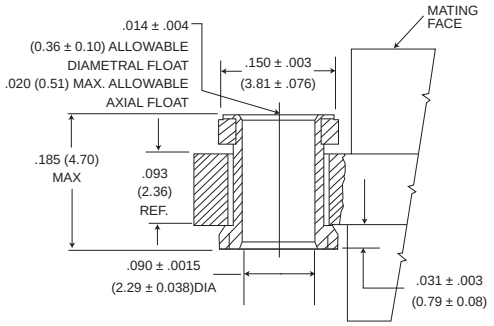
*A kit consists of 2 jackpost, 2 nuts, 2 washers.

**Plug and Receptacle Dimensions**

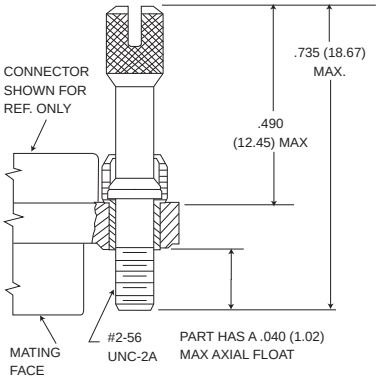
| Shell Size | A +.004 (0.10) -.000 (0.00) | B +.004 (0.10) -.000 (0.00) | C ±.005 (0.13) |
|---|---|---|---|
| **9** | .401 (10.19) | .252 (6.40) | .565 (14.35) |
| **15** | .551 (14.00) | .252 (6.40) | .715 (18.16) |
| **21** | .701 (17.81) | .252 (6.40) | .865 (21.97) |
| **25** | .801 (20.34) | .252 (6.40) | .965 (24.51) |
| **31** | .951 (24.16) | .252 (6.40) | 1.115 (28.34) |
| **37** | 1.101 (27.97) | .252 (6.40) | 1.265 (32.13) |
| **51** | 1.051 (26.70) | .295 (7.49) | 1.215 (30.86) |

## Mounting Hardware Views (sizes 9-51)

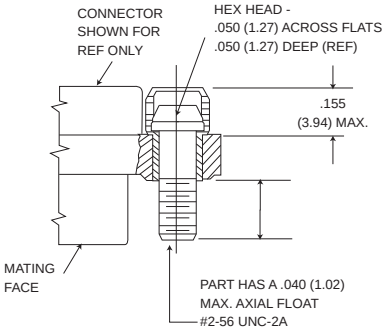
This hardware is factory installed.




Float Mount - (F)




Jackscrew - (K) Standard Profile




Jackscrew - (L) Low Profile

Shown here is a cutaway view of the float mount for the MDM connector. The basic shell dimensions are the same for the float mount and the screw mounting hole configurations. View shown is for standard float mount front panel mounting. Reverse mounting is available on request.

* NOTE: Torque values are as follows:
Low Profile Jackscrew (L)-2.5 in-lbs
Standard Jackscrew (K)-2.5 in-lbs

## Mounting Hardware to Military Specification (for sizes 9 - 100) per MIL-DTL-83513/5

This hardware supplied in kits unassembled (2 pieces of each item).

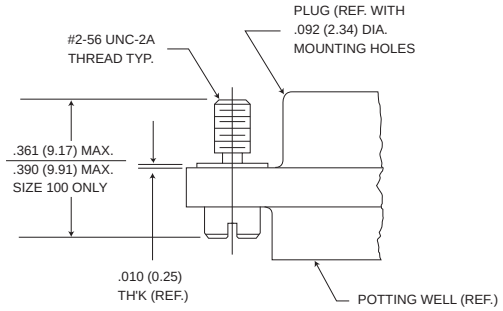
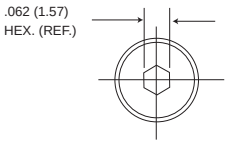



Figure 1. Jackscrew - Low profile
Slotted Head
Size 9-51
Size 100*




Allen head
Optional Head Configuration
Plug and Receptacle
Low and High Profile
Size 9-51
Size 100* (same dimensions)

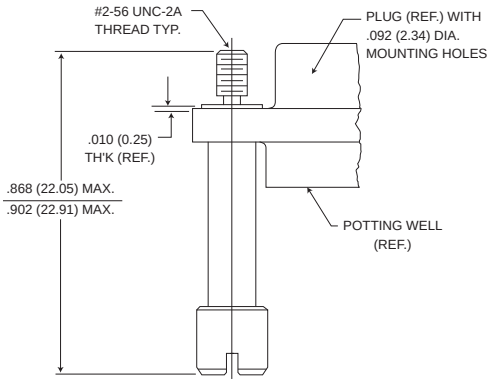



Figure 2. Jackscrew - High Profile
Slotted Head
Size 9-51
Size 100*

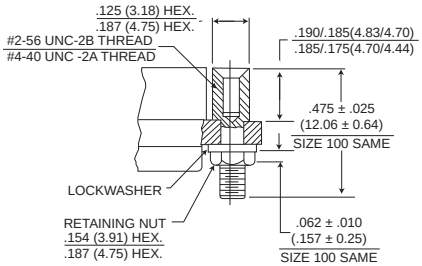



Figure 3. Jackpost Assembly
Size 9-51
Size 100*

To order hardware kits separately, order either by M83513/5-** or by 320-950X-XXX.

| Description | Size 9-51 Mod Code Part Number | ** | Size 100* Mod Code Part Number | ** |
|---|---|---|---|---|
| Slotted Head Jackscrew Assy Low Profile (Figure 1) | M5 320-9508-025 | 05 | M15 320-9508-021 | 15 |
| Slotted Head Jackscrew Assy Low Profile (Figure 2) | M6 320-9508-027 | 06 | M16 320-9508-023 | 16 |
| Allen Head Jackscrew Assy Low Profile (Figure 1) | M2 320-9508-026 | 02 | M12 320-9508-022 | 12 |
| Allen Head Jackscrew Assy High Profile (Figure 2) | M3 320-9508-028 | 03 | M13 320-9508-024 | 13 |
| Jackpost Assy (Figure 3) | M7 320-9505-033 | 07 | M17 320-9505-030 | 17 |

*Size 100 requires B1 size mounting holes for Mil-Spec hardware

Note: Torque values as follows:

Size 9-51 4.0 in-lbs

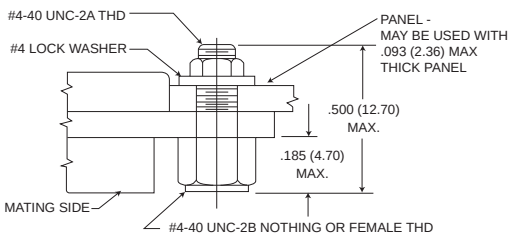
Size 100 6.0 in-lbs

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

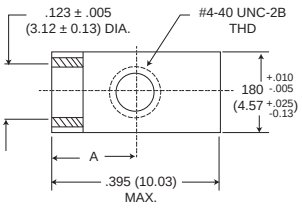
## Mounting Hardware Views (for size 100)

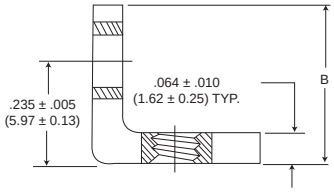
This hardware supplied unassembled.

90˚Angle Mounting Bracket




Jackpost - (P)



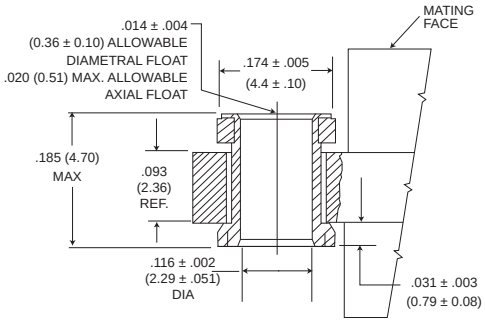




90° Angle Mounting Bracket

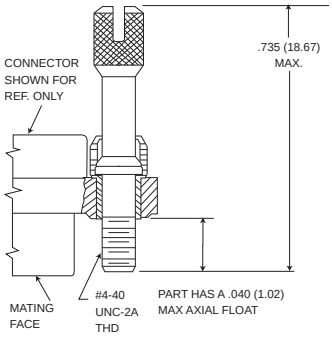
Note: Size 100 requires .120 dia (B) mounting hole when using Commercial (P) jackpost kits.

| Description | Part Number | A ± .005 (0.13) | B Max. |
|---|---|---|---|
| Jackpost kit | 320-9505-015 | N/A | |
| Mounting Bracket 90˚ MDM | 015-9528-000 | .191 (4.85) | .370 (9.40) |

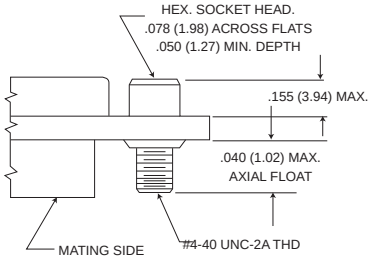
This hardware is factory installed.




Float Mount - (F) Std.




Jackscrew - (K) Standard




Jackscrew - (L) (Low Profile)

*NOTE: Torque values are as follows:
Low Profile Jackscrew (L)-4.0 in-lbs
Standard Profile Jackscrew (K)-4.0 in-lbs

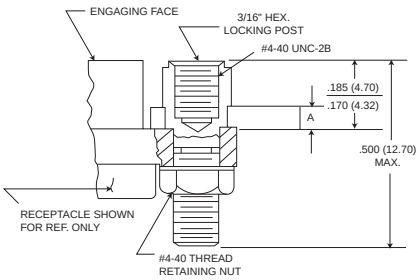
## Jackpost Bushing (for Rear Panel Mounting)

| Panel Thickness | A +.005 (0.13) -.000 (0.00) | Jackpost Kit Number* |
|---|---|---|
| 3/32 (2.4) | .087 (2.21) | 320-9505-013 |
| 1/16 (1.6) | .058 (1.42) | 320-9505-012 |
| 1/32 (0.8) | .025 (0.64) | 320-9505-010 |
| 3/64 (1.2) | .042 (1.07) | 320-9505-011 |

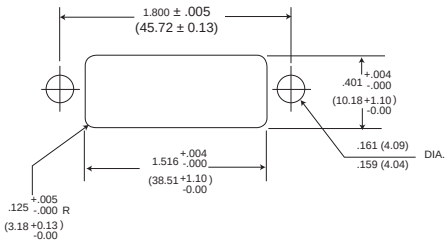
*2 jackposts, 2 nuts, 2 washers

Torque value for size 100

Note: Size 100 requires B mounting hole shell size when using rear panel mount jackposts



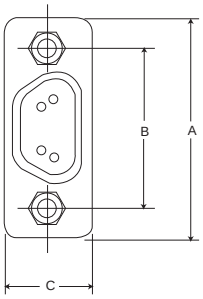

Dimensions for Rear Panel Mounting




ITT

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

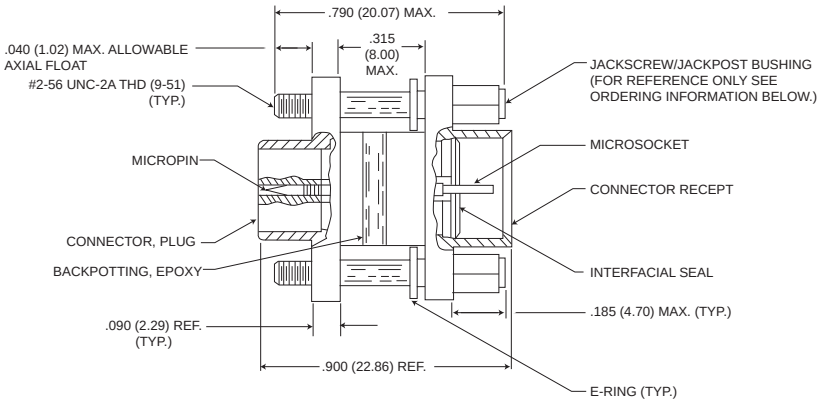
## Connector Saver




Save wear and tear on your equipment and systems connectors by using the "Connector Saver".

The multi-matings and unmatings experienced by most connectors during testing and final check out can be eliminated.

Simply mate the "Connectors Saver" to your unit and use the opposite side for your testing interface...less wear, less tear, less chance of damage. It is available in all eight standard MDM layouts. Mating hardware is available and can be ordered either separately or included with the connector saver.




MDM Size 9 Shown

| Size | Electroless Nickel (A174) Plated With Hardware | Electroless Nickel (A174) Plated W/O Hardware | Cadmium over Nickel (A101) Plated With Hardware | Cadmium over Nickel (A101) Plated W/O Hardware | *Hardware Kits | A Max. | B ± .005 (0.13) | C Max. |
|---|---|---|---|---|---|---|---|---|
| 9 | **MDM98479-86** | **MDM98479-18** | **MDM98479-78** | **MDM-97294-371** | **320-9505-014**** | .785 (19.94) | .565 (14.35) | .308 (7.82) |
| 15 | **MDM98479-87** | **MDM98479-19** | **MDM98479-79** | **MDM-97294-372** | **320-9505-014**** | .935 (23.75) | .715 (18.16) | .308 (7.82) |
| 21 | **MDM98479-88** | **MDM98479-20** | **MDM98479-80** | **MDM-97294-373** | **320-9505-014**** | 1.085 (27.56) | .865 (21.97) | .308 (7.82) |
| 25 | **MDM98479-89** | **MDM98479-21** | **MDM98479-81** | **MDM-97294-374** | **320-9505-014**** | 1.185 (30.10) | .965 (24.51) | .308 (7.82) |
| 31 | **MDM98479-90** | **MDM98479-14** | **MDM98479-82** | **MDM-97294-375** | **320-9505-014**** | 1.335 (33.91) | 1.115 (28.32) | .308 (7.82) |
| 37 | **MDM98479-91** | **MDM98479-15** | **MDM98479-83** | **MDM-97294-376** | **320-9505-014**** | 1.485 (37.72) | 1.265 (32.13) | .308 (7.82) |
| 51 | **MDM98479-92** | **MDM98479-16** | **MDM98479-84** | **MDM-97294-377** | **320-9505-014**** | 1.435 (36.45) | 1.215 (30.86) | .351 (8.91) |
| 100 | **MDM98479-93** | **MDM98479-17** | **MDM98479-85** | **MDM-97294-717** | **320-9508-014***** | 2.170 (55.12) | 1.800 (45.72) | .394 (10.01) |

* Kit contains 2 jackpost/jackscrew bushings and 2 E-Rings.
** Size 9-51-#2-56 UNC-2B Thread
*** Size 100-#4-40 UNC-2B Thread

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## How to Order - MIL-DTL-83513 Part Number Nomenclature – **Slash Sheets 1-9**

**M83513/ 01 - H100 - ** ******

**SERIES**

| | | |
|---|---|---|
| MDM | - | Metal Shell, Liquid Crystal Polymer (LCP) |
| MDB | - | Diallyl Phthalate Insulator |
| MDVB | - | Polyester Insulator |
| | - | |

**MIL-C-83513 SLASH SHEET**

| | | | |
|---|---|---|---|
| 01 | - | Plug, Connector, Solderpot | Metal Shell |
| 02 | - | Receptacle, Connector, Solderpot | Metal Shell |
| 03 | - | Plug, Connector, Crimp Type | Metal Shell |
| 04 | - | Receptacle, Connector, Crimp Type | Metal Shell |
| 05 | - | Hardware Only 7 | |
| 06 | - | Plug, Connector, Solderpot | Plastic 5 |
| 07 | - | Receptacle, Connector, Solderpot | Plastic 5 |
| 08 | - | Plug, Connector, Crimp Type | Plastic 5 |
| 09 | - | Receptacle, Connector, Crimp Type | Plastic 5 |

**INSERT ARRANGEMENT**

| | | METAL SHELL | PLASTIC |
|---|---|---|---|
| A | - | 9 Contact | 9 Contact |
| B | - | 15 Contact | 15 Contact |
| C | - | 21 Contact | 21 Contact |
| D | - | 25 Contact | 25 Contact |
| E | - | 31 Contact | 31 Contact |
| F | - | 37 Contact | 37 Contact |
| G | - | 51 Contact | 51 Contact |
| H | - | 100 Contact | _____ 5 |

**WIRE TYPE**

No Number - For Solderpot

| | | | | |
|---|---|---|---|---|
| 01 | - | 18" | long, #26 AWG per MIL-W-22759/11-26-9 (all white) | |
| 02 | - | 36" | long, #26 AWG per MIL-W-22759/11-26-9 (all white) | |
| 03 | - | 18" | long, #26 AWG per MIL-W-22759/11-26 Color Coded per MIL-STD-681, System 1, 10 colors repeating | 6 |
| 04 | - | 36" | long, #26 AWG per MIL-W-22759/11-26- Color Coded per MIL-STD-681, System 1, 10 colors repeating | 6 |
| 05 | - | .5" | long. #25 AWG, type S per QQ-W-343, Gold Plated | |
| 06 | - | 1.0" | long, #25 AWG, type S per QQ-W-343, Gold Plated | |
| 07 | - | .5" | long, #25 AWG, type S per QQ-W-W-343, Tin Plated | |
| 08 | - | 1.0" | long, #25 AWG, type S per QQ-W-343, Tin Plated | |
| 09 | - | 18" | long, #26 AWG per MIL-W-22759/33-26-9 (all white) | 3 |
| 10 | - | 36" | long, #26 AWG per MIL-W-22759/33-26-9 (all white) | 3 |
| 11 | - | 18" | long, #26 AWG per MIL-W-22759/33-26 Color Coded per MIL-STD-681, System 1, 10 colors repeating | 3 6 |
| 12 | - | 36" | long, #26 AWG per MIL-W-22759/33-26 Color Coded per MIL-STD-681, System 1, 10 colors repeating | 3 6 |
| 13 | - | 72" | long, #26 AWG per MIL-W-22759/11-26-9 (all white) | |
| 14 | - | 72" | long, #26 AWG per MIL-W-22759/11-26 Color Coded per MIL-STD-681, System 1, 10 colors repeating | 6 |
| 15 | - | 72" | long, #26 AWG per MIL-W-22759/33-26-9 (all white) | 3 |
| 16 | - | 72" | long, #26 AWG per MIL-W-22759/33-26 Color Coded per MIL-STD-681, System 1, 10 colors repeating | 3 6 |

**SHELL FINISH**

No number - for plastic type connector
C – for Cadmium/Yellow chromate over nickel
N – A174 - Electroless Nickel A174 3

**NOTES:**

1 - For every Mil Spec Part Number, ITT has one corresponding part number shown an example

2 - Tolerance on wire lengths: 18", 36" and 72" long — +1.00"/-0.00" .5" and 1.00" — + .200"/-.000"

3 - **For space application, connector shell finish must be "A174" and wire must be per MIL-W-22759/33-26.**

4 - Any deviations to these P/N's will result in assignment of a special P/N, consult factory.

5 - Size 100 not available in / 06 through / 09. (Plastic shell)

6 - Color coding in accordance with MIL-STD-681, System 1, no parenthesis. See page 83 for color code chart.

7 - For mounting hardware to Military Specification (sizes 9 to 100) see page 13.

## How to Order - MIL-DTL-83513 Part Number Nomenclature – **Slash Sheets 10-27**

**M83513/ 10 - A ** C ***

**SERIES**

Connector, Electrical, Rectangular
Microminiature, Polarized Shell
PC Board Mounting

**MIL-C-83513 SLASH SHEET**

10 – Connector, Plug, Condensed Board Right Angle (CBR), Sizes 9 – 37
11 – Connector, Plug, CBR, Size 51
12 – Connector, Plug, CBR, Size 100
13 – Connector, Receptacle, CBR, Sizes 9 – 37
14 – Connector, Receptacle, CBR Size 51
15 – Connector, Receptacle, CBR, Size 100
16 – Connector, Plug, Board Right Angle (BR), Sizes 9 – 37
17 – Connector, Plug, BR, Size 51
18 – Connector, Plug, BR, Size 100
19 – Connector, Receptacle, BR, Sizes 9 – 37
20 – Connector, Receptacle, BR Size 51
21 – Connector, Receptacle, BR Size 100
22 – Connector, Plug, Board Straight (BS), Sizes 9 – 37
23 – Connector, Plug, BS, Size 51
24 – Connector, Plug, BS, Size 100
25 – Connector, Receptacle, BS, Sizes 9 – 37
26 – Connector, Receptacle, BS, Size 51
27 – Connector, Receptacle, BS Size 100

**INSERT ARRANGEMENT**

METAL SHELL

A - 9 Contact
B - 15 Contact
C - 21 Contact
D - 25 Contact
E - 31 Contact
F - 37 Contact
G - 51 Contact
H - 100 Contact

**WIRE TYPE**

No Number - For Solderpot
01 - .109" long, #24 AWG solid copper wire per QQ-W-343, Type “S”, solder dipped
02 - .140" long, #24 AWG solid copper wire per QQ-W-343, Type “S”, solder dipped 2
03 - .172" long, #24 AWG solid copper wire per QQ-W-343, Type “S”, solder dipped

**SHELL FINISH**

No letter - for plastic type connector
C - Cadmium / Yellow chromate over nickel
N - Electroless Nickel 3 3

**HARDWARE**

N - No jackpost
P - Jackpost (permanently attached)
T - Threaded insert

**NOTES:**

1 - For every Mil Spec Part Number, ITT has one corresponding part number
2 - Tolerance on wire lengths ±.015
3 - For space application, connector shell finish must be "N".
4 - Any deviations to these P/N's will result in assignment of a special P/N, consult customer service.

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

# Micro-D PCB - .050" Contact Spacing

# MDM-PCB

MDM-PCB connectors are designed for use with flex circuitry, flat cable and printed circuit boards or multi-layer boards. They use the standard MDM metal shell and provide high density and high reliability in board-to-board, board-to-cable and cable-to-cable applications.

MDM-PCB connectors are available in 8 shell sizes with 9 to 100 contacts. Terminations may be straight (BS) or at 90˚ right angle (BR, CBR) board thickness. Jackpost mounting for use with locking hardware is also available.

## How to Order - MDM-PCB Series

**R MDM * - 25 P BS P - T L39 A174**

- **R** — **RoHS COMPLIANCE**
- **MDM** — **SERIES**
- ***** — **INSULATOR MATERIAL**
- **25** — **CONTACT ARRANGEMENT**
- **P** — **CONTACT TYPE**
- **BS** — **TERMINATION TYPE**
- **P** — **MOUNTING HARDWARE (Shell Flange)**
- **T** — **MOUNTING HARDWARE FOR PCB**
- **L39** — **TERMINATION TAIL LENGTH MODIFICATION CODE**
- **A174** — **SHELL FINISH MODIFICATION CODES**

**SERIES**
MDM - Micro "D" Metal Shell

**INSULATOR MATERIAL**
Liquid Crystal Polymer (LCP)

**CONTACT ARRANGEMENT**
9, 15, 21, 25, 31, 37, 51, and 100

**CONTACT TYPE**
P - Pin (Plug)
S - Socket (Receptacle)

NOTE: Back molding material – Epoxy Hysol #MG40FS

**TERMINATION TYPE**
BS - Straight PCB Termination
BR - Right Angle PCB Termination
CBR - Right Angle Narrow Profile PCB Terminations

**MOUNTING HARDWARE (Shell Flange)**
P - Jackposts
M7 - Jackposts
M83513/5-07 (Sizes 9-51)
M17 - Jackposts
M83513/5-17 (Size 100)
No letter - none

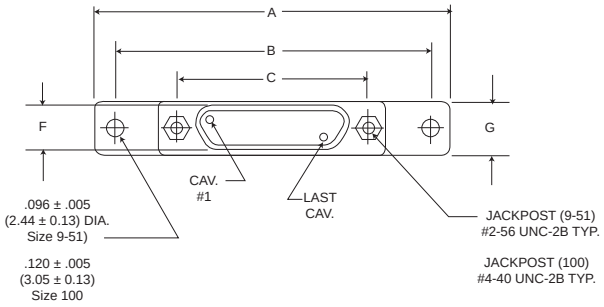
**MOUNTING HARDWARE FOR PCB**
T - Threaded Insert
#2-56 Thd for Shell Sizes 9 thru 51
#4-40 Thd for Shell Size 100
No letter - none

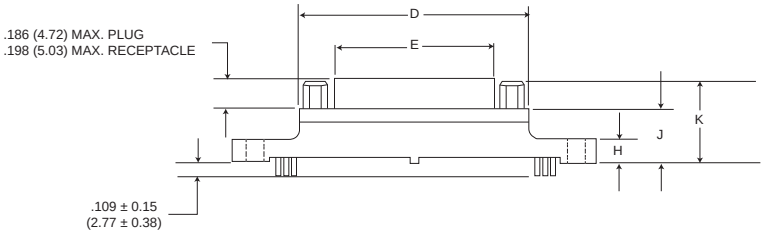
**TERMINATION TAIL LENGTH MODIFICATION CODE**
None - .109 (2.77) ±.015 (0.38) Standard
L61 - .125 (3.18)
L56 - .150 (3.81)
L57 - .190 (4.83)
L39 - .250 (6.35)
L58 - .375 (9.52)

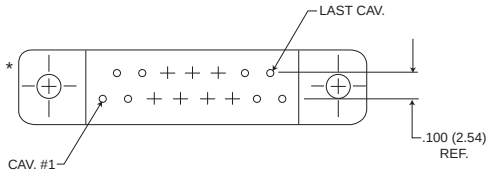
**SHELL FINISH MODIFICATION CODES**
None - Yellow Chromate/Cadmium over Nickel
A174 - Electroless Nickel
A172 - Gold over Nickel
A141 - Irridite/Alodine
A30 - Black Anodize

(For special modification codes, consult customer service.)

## BS (Board Straight) Series



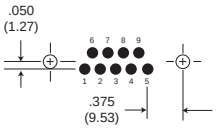



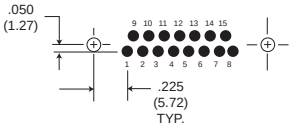

### PCB Termination Arrangements* (Viewed from PCB solder side)

Identification number shown for plug connector, use reverse order for socket connector.

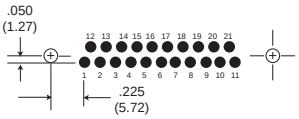
NOTE: Dimensions shown are for reference only-consult factory for final design dimensions.



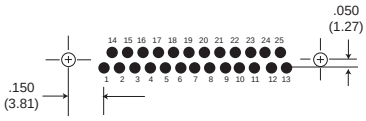

9 Contacts



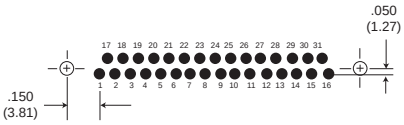

15 Contacts



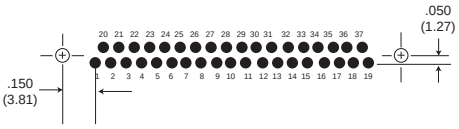

21 Contacts



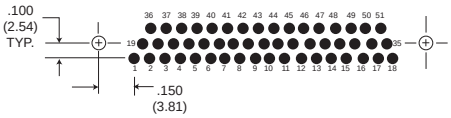

25 Contacts



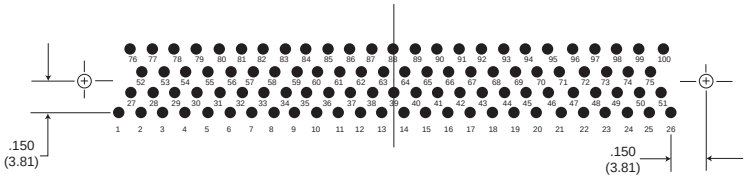

31 Contacts




37 Contacts




51 Contacts




100 Contacts

NOTE: Standard lead termination is #24 AWG, solid copper, solder or tin dipped

All Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27)

| Part Number By Shell Size | A Max. | B ±.007 (.18) | C ±.005 (.13) | D Max. | E Max. | F Max. | G Max. | H Max. | J Max. | K Max. |
|---|---|---|---|---|---|---|---|---|---|---|
| **MDM-9PBS*** | 1.390 (35.31) | 1.150 (29.21) | .565 (14.35) | .785 (19.94) | .334 (8.48) | .185 (4.70) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-9SBS*** | 1.390 (35.31) | 1.150 (29.21) | .565 (14.35) | .785 (19.94) | .402 (10.21) | .253 (6.43) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-15PBS*** | 1.390 (35.31) | 1.150 (29.21) | .715 (18.16) | .935 (23.75) | .484 (12.29) | .185 (4.70) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-15SBS*** | 1.390 (35.31) | 1.150 (29.21) | .715 (18.16) | .935 (23.75) | .552 (13.97) | .253 (6.43) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-21PBS*** | 1.690 (43.93) | 1.450 (36.83) | .865 (21.97) | 1.085 (27.56) | .634 (16.10) | .185 (4.70) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-21SBS*** | 1.690 (43.93) | 1.450 (36.83) | .865 (21.97) | 1.085 (27.56) | .702 (17.83) | .253 (6.43) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-25PBS** | 1.740 (44.20) | 1.500 (38.10) | .965 (24.51) | 1.185 (30.10) | .734 (18.64) | .185 (4.70) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-25SBS*** | 1.740 (44.20) | 1.500 (38.10) | .965 (24.51) | 1.185 (30.10) | .802 (20.37) | .253 (6.43) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-31PBS*** | 2.040 (51.82) | 1.800 (45.72) | 1.115 (28.32) | 1.335 (33.91) | .884 (22.45) | .185 (4.70) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-31SBS*** | 2.040 (51.82) | 1.800 (45.72) | 1.115 (28.32) | 1.335 (33.91) | .952 (24.18) | .253 (6.43) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-37PBS*** | 2.340 (59.44) | 2.100 (53.34) | 1.265 (32.13) | 1.485 (37.72) | 1.034 (26.26) | .185 (4.70) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-37SBS*** | 2.340 (59.44) | 2.100 (53.34) | 1.265 (32.13) | 1.485 (37.72) | 1.102 (27.99) | .253 (6.43) | .308 (7.82) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-51PBS*** | 2.270 (67.66) | 2.000 (50.80) | 1.215 (30.86) | 1.435 (36.45) | .984 (24.99) | .228 (5.79) | .351 (8.92) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-51SBS*** | 2.270 (67.66) | 2.000 (50.80) | 1.215 (30.86) | 1.435 (36.45) | 1.052 (26.72) | .296 (7.52) | .351 (8.92) | .165 (4.19) | .355 (9.02) | .555 (14.10) |
| **MDM-100PBS*** | 3.070 (77.98) | 2.800 (71.12) | 1.800 (45.72) | 2.175 (55.24) | 1.384 (35.15) | .271 (6.88) | .460 (11.68) | .303 (7.70) | .550 (12.70) | .686 (17.42) |
| **MDM-100SBS*** | 3.070 (77.98) | 2.800 (71.12) | 1.800 (45.72) | 2.175 (55.24) | 1.508 (38.30) | .394 (10.01) | .460 (11.68) | .303 (7.70) | .550 (12.70) | .686 (17.75) |

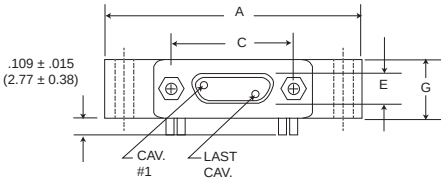
*For jackpost, add letter "P" or "M7" for sizes 9-51, "M17" for size 100.

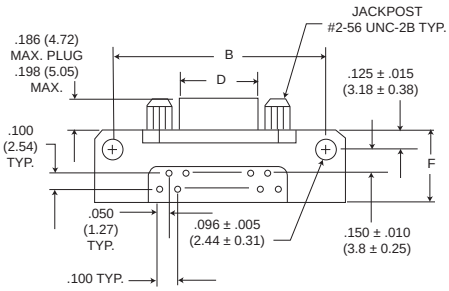
Dimensions shown in inch (mm)

Specifications and dimensions subject to change

www.ittcannon.com

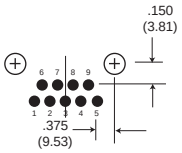
## BR (Board Right Angle) Series



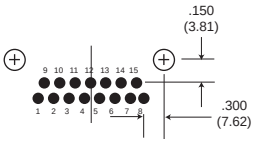




**PCB Termination Arrangements (Viewed from bottom of connector, PCB solder side.)**

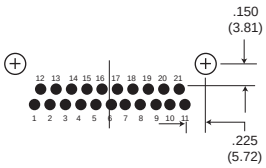
Identification number shown for plug connector, use reverse order for socket connector.



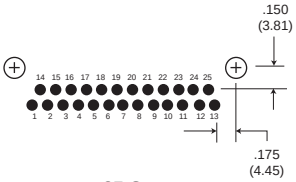

**9 Contacts**



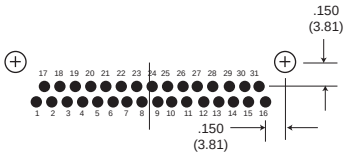

**15 Contacts**



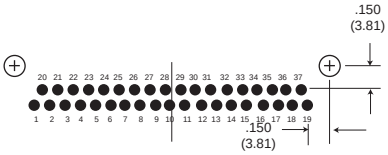

**21 Contacts**



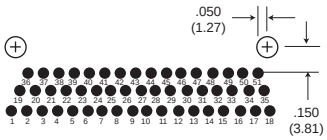

**25 Contacts**



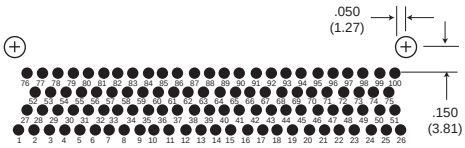

**31 Contacts**




**37 Contacts**




**51 Contacts**



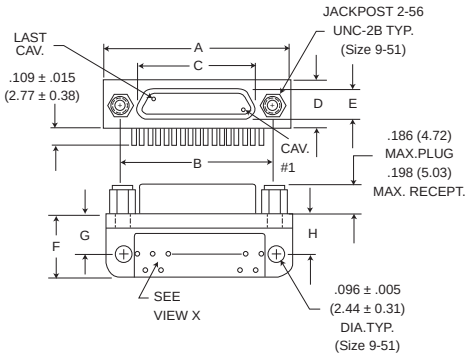

**100 Contacts**

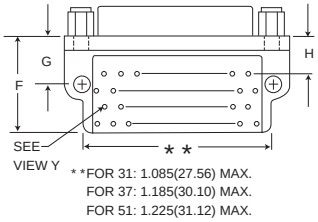
NOTE: Standard lead termination is #24 AWG, gold plated, solid copper, solder or tin dripped. All Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27).

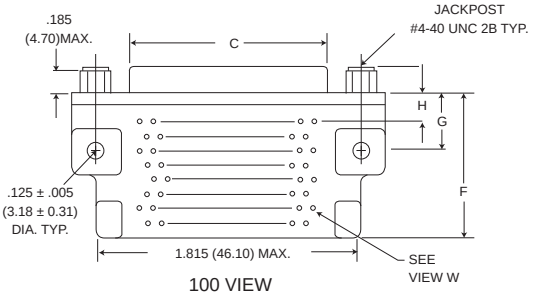
| Part Number By Shell Size | A Max. | B ± .007 (.18) | C ± .005 (.13) | D Max. | E Max. | F Max. | G Max. |
|---|---|---|---|---|---|---|---|
| **MDM-9PBR*** | 1.390 (35.31) | 1.150 (29.21) | .565 (14.35) | .334 (8.48) | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| **MDM-9SBR*** | 1.390 (35.31) | 1.150 (29.21) | .565 (14.35) | .402 (10.21) | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| **MDM-15PBR*** | 1.540 (39.12) | 1.300 (33.02) | .715 (18.16) | .484 (12.29) | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| **MDM-15SBR*** | 1.540 (39.12) | 1.300 (33.02) | .715 (18.16) | .552 (13.97) | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| **MDM-21PBR*** | 1.690 (42.93) | 1.450 (36.83) | .865 (21.97) | .634 (16.10) | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| **MDM-21SBR*** | 1.690 (42.93) | 1.450 (36.83) | .865 (21.97) | .702 (17.83) | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| **MDM-25PBR*** | 1.790 (45.47) | 1.550 (39.37) | .965 (24.51) | .734 (18.64) | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| **MDM-25SBR*** | 1.790 (45.47) | 1.550 (39.37) | .965 (24.51) | .802 (20.37) | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| **MDM-31PBR*** | 2.040 (51.82) | 1.800 (45.72) | 1.115 (28.32) | .884 (22.45) | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| **MDM-31SBR*** | 2.040 (51.52) | 1.800 (45.72) | 1.115 (28.32) | .952 (24.18) | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| **MDM-37PBR*** | 2.340 (59.44) | 2.100 (53.34) | 1.265 (32.13) | 1.034 (26.26) | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| **MDM-37SBR*** | 2.340 (59.44) | 2.100 (53.34) | 1.265 (32.13) | 1.102 (27.99) | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| **MDM-51PBR*** | 1.875 (47.63) | 1.600 (40.64) | 1.215 (30.86) | .984 (24.99) | .228 (5.79) | .565 (14.35) | .351 (8.92) |
| **MDM-51SBR*** | 1.875 (47.63) | 1.600 (40.64) | 1.215 (30.86) | 1.052 (26.72) | .296 (7.52) | .565 (14.35) | .351 (8.92) |
| **MDM-100PBR*** | 2.74 (69.72) | 2.500 (63.50) | 1.800 (45.72) | 1.384 (35.15) | .271 (6.88) | .755 (19.18) | .394 (10.01) |
| **MDM-100SBR*** | 2.74 (69.72) | 2.500 (63.50) | 1.800 (45.72) | 1.508 (38.10) | .394 (10.01) | .755 (19.18) | .394 (10.01) |

*For jackpost, add letter "P" or "M7" for sizes 9-51, "M17" for size 100.

## CBR (Condensed Board Right Angle) Series

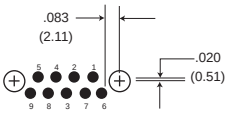


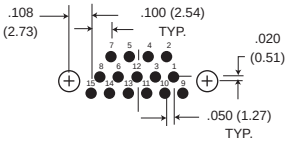




PCB Termination Arrangements (Viewed from bottom of connector, PCB solder side.)

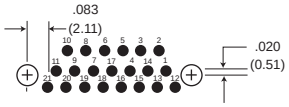
Identification number shown for plug connector, use reverse order for socket connector.



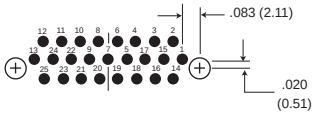

9 Contacts
View X



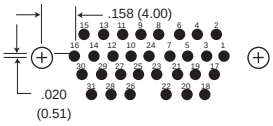

15 Contacts
View X



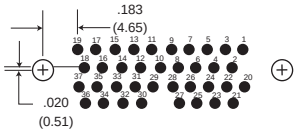

21 Contacts
View X



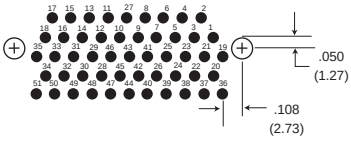

25 Contacts
View X



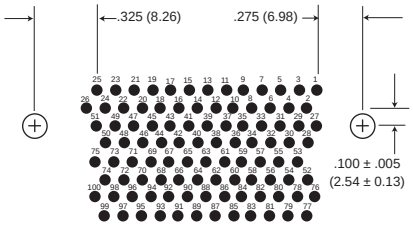

31 Contacts
View Y




37 Contacts
View Y




51 Contacts
View Y




100 Contacts
View W

All Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27).

NOTE: Standard lead termination is #24 AWG, solid copper, solder or tin dripped.

| Part Number By Shell Size | A Max. | B ± .005 (.13) | C Max. | D Max. | E Max. | F Max. | G ± .010 (.25) | H ± .010 (.25) |
|---|---|---|---|---|---|---|---|---|
| MDM-9PCBR* | .785 (19.94) | .565 (14.35) | .334 (8.48) | .308 (7.82) | .185 (4.70) | .420 (10.67) | .250 (6.35) | .230 (5.81) |
| MDM-9SCBR* | .785 (19.94) | .565 (14.35) | .402 (10.21) | .308 (7.82) | .253 (6.43) | .420 (10.67) | .250 (6.35) | .230 (5.81) |
| MDM-15PCBR* | .935 (23.75) | .715 (18.16) | .484 (12.29) | .308 (7.82) | .185 (4.70) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MDM-15SCBR* | .935 (23.75) | .715 (18.16) | .552 (13.97) | .308 (7.82) | .253 (6.43) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MDM-21PCBR* | 1.085 (27.56) | .865 (21.97) | .634 (16.10) | .308 (7.82) | .185 (4.70) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MDM-21SCBR* | 1.085 (27.56) | .865 (21.97) | .702 (17.83) | .308 (7.82) | .253 (6.43) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MDM-25PCBR* | 1.185 (30.10) | .965 (24.51) | .734 (18.64) | .308 (7.82) | .184 (4.70) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MDM-25SCBR* | 1.185 (30.10) | .965 (24.51) | .802 (20.37) | .308 (7.82) | .253 (6.43) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MDM-31PCBR* | 1.335 (33.91) | 1.115 (28.32) | .884 (22.45) | .308 (7.82) | .185 (4.70) | .520 (13.21) | .250 (6.35) | .130 (3.30) |
| MDM-31SCBR* | 1.335 (33.91) | 1.115 (28.32) | .952 (24.18) | .308 (7.82) | .253 (6.43) | .520 (13.21) | .250 (6.35) | .130 (3.30) |
| MDM-37PCBR* | 1.485 (37.72) | 1.265 (32.13) | 1.034 (26.26) | .308 (7.82) | .185 (4.70) | .520 (13.21) | .250 (6.35) | .130 (3.30) |
| MDM-37SCBR* | 1.485 (37.72) | 1.265 (32.13) | 1.102 (27.99) | .308 (7.82) | .253 (6.43) | .520 (13.21) | .250 (6.35) | .130 (3.30) |
| MDM-51PCBR* | 1.435 (36.45) | 1.215 (30.86) | .984 (24.99) | .351 (8.92) | .228 (5.79) | .650 (16.15) | .300 (7.62) | .150 (3.81) |
| MDM-51SCBR* | 1.435 (36.45) | 1.215 (30.86) | 1.052 (26.72) | .351 (8.92) | .296 (7.52) | .650 (16.15) | .300 (7.62) | .150 (3.81) |
| MDM-100PCBR* | 2.170 (55.12) | 1.800 (45.72) | 1.384 (35.15) | .394 (10.01) | .271 (6.88) | 1.000 (25.40) | .400 (10.16) | .200 (5.08) |
| MDM-100SCBR* | 2.170 (55.12) | 1.800 (45.72) | 1.508 (38.10) | .394 (10.01) | .394 (10.01) | 1.000 (25.40) | .400 (10.16) | .200 (5.08) |

*For jackpost, add letter "P" or "M7" for sizes 9-51, "M17" for size 100.

Dimensions shown in inch (mm)

Specifications and dimensions subject to change

# Micro-D Coaxial/Power - .050" Contact Spacing MDM C/P

**MDM Coaxial**
The MDM Metal Shell Connectors have been tooled in several coaxial layouts and offer the versatility of combining coaxial and signal lines in the same connector. Any modifications to these layouts or new requirements, please consult the factory. Standard coax is RG178 white.

**MDM Power**
The same insulator that is used with coaxial contacts is available with power contacts. This offers the versatility of combining power and signal lines in the same connector.

**MDM Coaxial/Power**
Power and coaxial contacts can be interchanged as desired. Power contacts are rated at 13 amps, 24V rms, AWG #16 stranded.

## How to Order

**For MIL-DTL-83513 ordering information see pages 16 and 17**

**R MDM - 51 P H 001 P - XXX**

- **R** — RoHS COMPLIANCE
- **MDM** — SERIES
- **51** — CONTACT ARRANGEMENTS
- **P** — CONTACT TYPE
- **H** — TERMINATION TYPE
- **001** — TERMINATION CODE
- **P** — HARDWARE
- **XXX** — SHELL FINISH MOD CODES

**SERIES**
MDM: (Size 9-100) Liquid Crystal Polymer (LCP)
MDM: (Combo Layout) Diallyl Phthalate (DAP)

**CONTACT ARRANGEMENTS**
9-15-21-25-31-37-51-100 (standard)
16C5, 10C10, 7C2, 24C4 (coaxial)
16P5, 10P10, 7P2, 24P4 (power) } or combination of coax and power

**CONTACT TYPE**
P - Pin S - Socket

**TERMINATION TYPE**
H - Harness-insulated wire.
L - Solid-uninsulated wire.
S - Solder pot to accept #26 AWG MAX. harness wire. (Not available with power contact arrangements.)

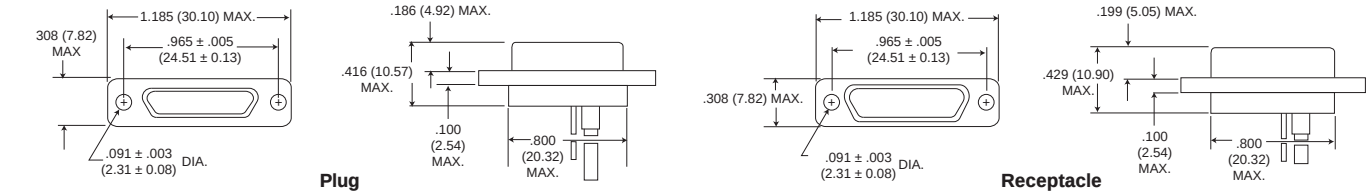
**HARDWARE**
M - Military specification hardware, see page 11 for military hardware codes.
P - Jackpost
K - Jackscrew-standard profile
L - Jackscrew-low profile
F - Float mount
B - No hardware standard
.091 (2.31) dia. hole for sizes 9-51;
.120 (3.05) dia. hole for size 100.
A - .125 (3.18) dia. mounting holes for sizes 9-51;
.166 (4.22) dia. hole for size 100.
B1 - .1475 (3.75) dia. hole for size 100
(Per MIL-DTL-83513)

**TERMINATION CODE***
(H) 001 - 18",7/34 strand,#26 AWG, MIL-W-16878/4, Type E Teflon, yellow.
(H) 003 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I.
(L) 1 - 1/2" uninsulated solid #25 AWG gold plated copper.
(L) 2 - 1" uninsulated solid #25 AWG gold plated copper.

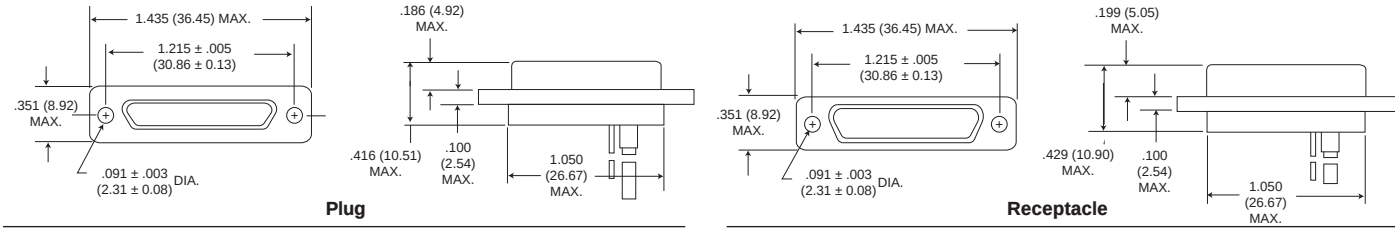
**SHELL FINISH MOD CODES**
No Number - (Standard cadmium/yellow chromate over nickel
A174 - Electroless nickel
A172 - Gold over nickel
A141 - Irridite/alodine
A30 - Black anodize

*See page 79 and 81 for additional Termination codes.

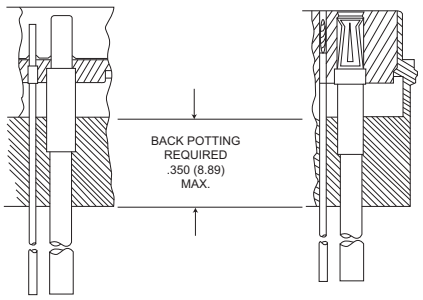
**7C2/7P2**




**24C4/24P4**




## Power Contacts




Receptacle Plug

## Coaxial Contacts

Plug Receptacle

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

ITT

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MDMH connectors are ideal for applications requiring a better seal than can be achieved with epoxy resins.

The connector utilizes size 24 AWG contacts that are compression glass sealed through a steel shell and into a diallyl pthalate front end insulator. An interfacial seal provides environmental protection when mated. We recommend MDMH receptacles be soldered to the chassis or container for a completely leak-proof joint.

MDMH receptacles mate with standard MDM plugs.

**Features**

- Hermetically sealed connector designed for those applications where a vacuum, inert gas or a constant controlled pressure are required to eliminate adverse effects created by atmospheric changes.
- Steel shells to provide greater strength, prevent chipping, cracking or breaking, offer electro-magnetic (EMI) and RFI shielding.
- Silicone elastomer compression interfacial seal to provide a moisture and humidity seal between each contact and between contacts and shell.

## Specifications

### Standard materials & finishes

| | |
|---|---|
| Shell | Mild steel, tin-lead plated |
| Insulator | Glass filled diallyl phthalate per MIL-M-14. Type SDGF |
| Contacts | Copper alloy, gold plated sockets on mild steel gold plated pins. Solder pots - mild steel gold plated |
| Hermetic seal | Compression glass |
| Leak rate | 1 micron cubic ft/hr max (1.04 x 10-5 cc/sec at 1 ATM pressure differential) |
| ELECTRICAL DATA | |
| No. of contacts | 9 to 100 |
| Dielectric withstanding voltage | 150 VAC |
| Insulation resistance | 5000 Mohm minimum |
| Wire size | #26 through #30 AWG |
| Contact termination | Solder pot |
| MECHANICAL FEATURES | |
| Size or length | 8 sizes |
| Service class | Hermetically sealed |
| Coupling | Friction/jacks |
| Polarization | Keystone shaped shells |
| Contact spacing | .050 (1,27) centers |
| Shell style | Receptacle, solder mount |

## How to Order

MDMH – 51 S S

**Hermetic Micro D Receptacle Series**

**Contact layout**
9, 15, 21, 25, 31, 37, 51, 100

**Socket Contacts (only)**

**Termination type**

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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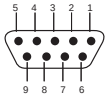
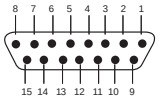
## Contact Arrangements

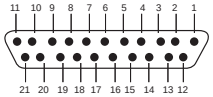
**Face vew of socket insert - use reverse order for wiring side.**



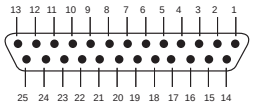

**9 Contacts**



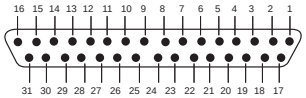

**15 Contacts**



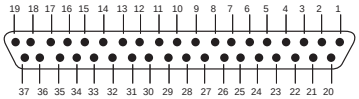

**21 Contacts**



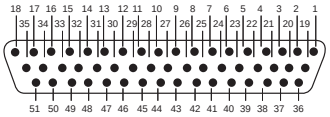

**25 Contacts**



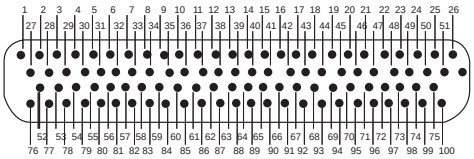

**31 Contacts**




**37 Contacts**



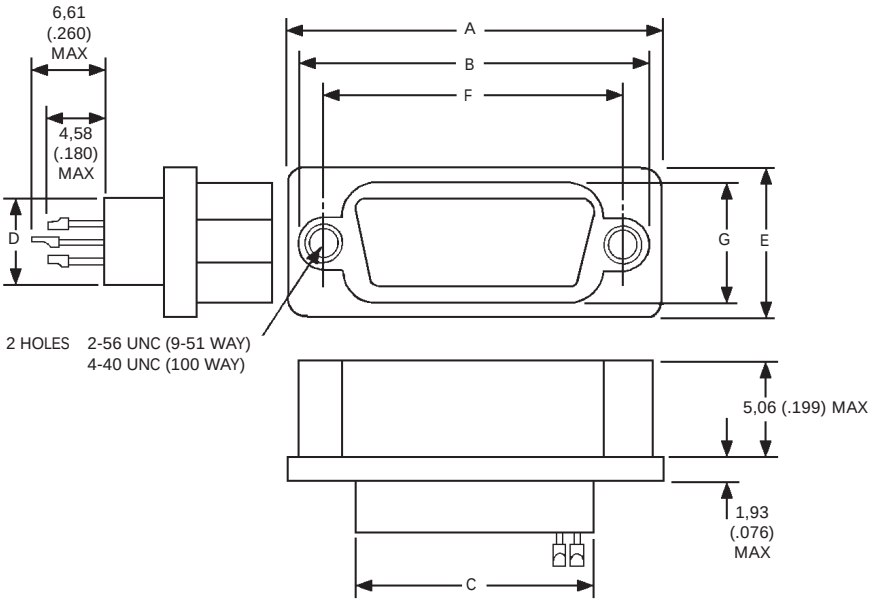

**51 Contacts**




**100 Contacts**

Contact identification numbers are for reference only and do not appear on insulator or connector body.

## Shell Dimensions




| Part Number by shell size | A max | B max | C max | D max | E max | F ±.005 (0,13) | G max |
|---|---|---|---|---|---|---|---|
| **MDMH-9S** | .885 (22,48) | .738 (18,74) | .400 (10,16) | .270 (6,86) | .430 (10,92) | .565 (14,35) | .261 (6,63) |
| **MDMH-15S** | 1.035 (26,29) | .888 (22,55) | .550 (13,97) | .270 (6,86) | .430 (10,92) | .715 (18,16) | .261 (6,63) |
| **MDMH-21S** | 1.185 (30,10) | 1.038 (26,36) | .770 (17,78) | .270 (6,86) | .430 (10,92) | .865 (21,97) | .261 (6,63) |
| **MDMH-25S** | 1.285 (32,64) | 1.137 (28,87) | .800 (20,32) | .270 (6,86) | .430 (10,92) | .965 (24,51) | .261 (6,63) |
| **MDMH-31S** | 1.435 (36,45) | 1.288 (32,72) | .950 (24,13) | .270 (6,86 | .430 (10,92) | 1.115 (28,32) | .261 (6,63) |
| **MDMH-37S** | 1.585 (40,26) | 1.438 (36,53) | 1.100 (27,94) | .270 (6,86) | .430 (10,92) | 1.265 (32,13) | .261 (6,63) |
| **MDMH-51S** | 1.535 (38,99) | 1.388 (35,26) | 1.050 (26,67) | .310 (8,00) | .473 (12,01) | 1.215 (30,86) | .315 (8,00) |
| **MDMH-100S** | 2.275 (57,78) | 2.078 (52,78) | 1.455 (36,97) | .365 (9,27) | .522 (13,26) | 1.800 (45,72) | .410 (10,41) |

ITT

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

With an increasing number of MDM connectors being used in avionics and military equipment and with increasing emphasis being put on EMI, RFI and EMP shielding, Cannon have developed a range of filter connectors to suit most applications.

The TMDM receptacle accommodates from 8 to 37 sizes, 24 AWG socket contacts on 1,27 (.050) centres and mates with the standard MDM plugs.

**Features**

- Transverse monolith filter for EMI and RFI shielding.
- Rugged aluminum one piece shell.
- Silicone interfacial environmental seal.
- Glass filled diallyl phthalate insulator.
- A variety of filter types for each pin.

## Specifications

### Standard materials & finishes

| | |
|---|---|
| Shell | Aluminum alloy per QQ-A-200/8 with electroless nickel finish per QQ-N-290 |
| Insulator | Glass filled diallyl phthalate per MIL-M-14. Type SDGF |
| Contact, socket | Copper alloy, 50 microinch gold per MIL-G-45204, Type II, Class I |
| Interfacial seal | Silicone base rubber |
| ELECTRICAL DATA | |
| No. of contacts | 9 to 37 |
| Dielectric withstanding voltage | 300 VAC |
| Insulation resistance | 5000 Mohm at 100 VDC |
| Voltage rating (working) | 100 VDC |
| Current rating | 3 amps max. |
| Maximum capacitance | 250, 500, 1000, 2000 picofarads |
| Filter type | C |
| MECHANICAL FEATURES | |
| Size or length | 6 sizes |
| Coupling | Friction/jackscrews |
| Polarization | Keystone shaped shell |
| Contact spacing | .050 (1,27) centers |
| Shell style | Single piece receptacle |

## How to Order

TMDM – C1 15 S H 001 B- *

**Series**
**Filter type**
**Number of contacts**
**Contact style**
**Termination type**
**Termination/modifier code**
**Mounting code**
**Modification code**

**Series:**
Filter TMDM - Micro "D" - Metal housing

**Filter type:**
"C" capacitor type
C1 150 - 250 pF capacitance
C2 300 - 500 pF capacitance
C3 700 - 1000 pF capacitance
C4 1300 - 2000 pF capacitance

**Number of contacts:**
9, 15, 21, 25, 31, 37 only

**Contact style:**
S - socket (receptacle)
P - Pin (plug)

**Termination type:**
H - harness, insulated solid or stranded wire
L - lead, solid uninsulated wire

**Termination:**
Consult standard wire termination code for lead material and lead length

**Mounting code:**
A - Flange mounting, Ø.125 (3,18) mounting holes
B - Flange mounting, Ø.092 (2,34) mounting holes
L - Low profile (slotted head)
M2 - Allen head jackscrew assembly, low profile
M3 - Allen head jackscrew assembly, high profile
M5 - Slot head jackscrew assembly, low profile
M6- Slot head jackscrew assembly, high profile
M7 - Jacknut assembly
P - Jackpost

**Modification code:**
Shell finish MOD. Codes. *
To be assigned as required

* No number = Standard tin/lead finish

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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## Guaranteed Minimum Attenuation

| Filter designation | Capacitance range (pF) | Minimum Insertion Loss-decibels 10 MHz | 15 MHz | 30 MHz | 50 MHz | 100 MHz | 200 MHz | 500 MHz | 1 GHz |
|---|---|---|---|---|---|---|---|---|---|
| C1 | 150 - 250 | | | | 4 | 6 | 15 | 20 | 35 |
| C2 | 300 - 500 | | | 3 | 6 | 12 | 18 | 25 | 40 |
| C3 | 700 - 1000 | | 3 | 7 | 13 | 17 | 25 | 38 | 48 |
| C4 | 1300 - 2000 | 5 | 8 | 13 | 18 | 23 | 30 | 40 | 50 |

## Standard Wire Termination Codes

Cannon Modification Codes – (Not Mil Spec)

The following termination codes are listed for your information. For additional codes please refer to Appendix on page 79 and 81. **All wire lengths are minimum.**

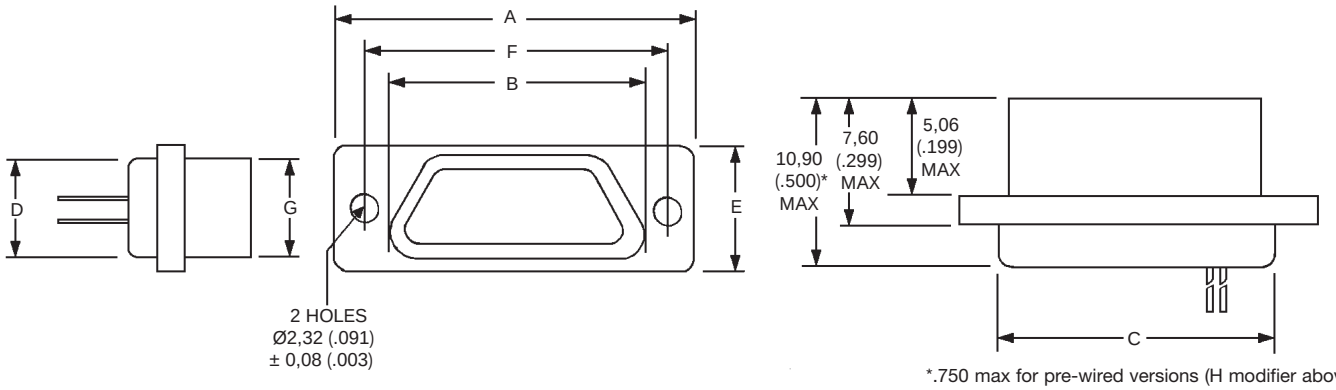
**Harness Type (H) #26 AWG per**
MIL-W-16878/4 Type E Teflon, stranded

| Length | | All Yellow | Color Coded |
|---|---|---|---|
| 3 | (76.2) | H020 | H027 |
| 6 | (152.4) | H019 | H016 |
| 8 | (203.2) | H026 | H034 |
| 10 | (254.0) | H029 | H025 |
| 12 | (304.8) | H028 | H002 |
| 18 | (457.2) | H001 | H003 |
| 20 | (508.0) | H038 | H023 |
| 24 | (509.6) | H009 | H004 |
| 30 | (762.0) | H010 | H005 |
| 36 | (914.4) | H011 | H006 |
| 48 | (1219.2) | H013 | H048 |
| 72 | (1828.8) | H017 | H046 |
| 120 | (3048.0) | H042 | H041 |

**Solid Uninsulated Type (L)**
#25 AWG gold plated copper.

| Code | Length | |
|---|---|---|
| L61 | .125 | (.18) |
| L56 | .150 | (3.81) |
| L57 | .190 | (4.83) |
| L39 | .250 | (5.35) |
| L58 | .375 | (9.52) |
| L1 | .500 | (12.70) |
| L14 | .750 | (19.05) |
| L2 | 1.000 | (25.40) |
| L7 | 1.500 | (38.10) |
| L6 | 2.000 | (50.80) |
| L6 | 2.500 | (63.50) |
| L10 | 3.000 | (76.20) |

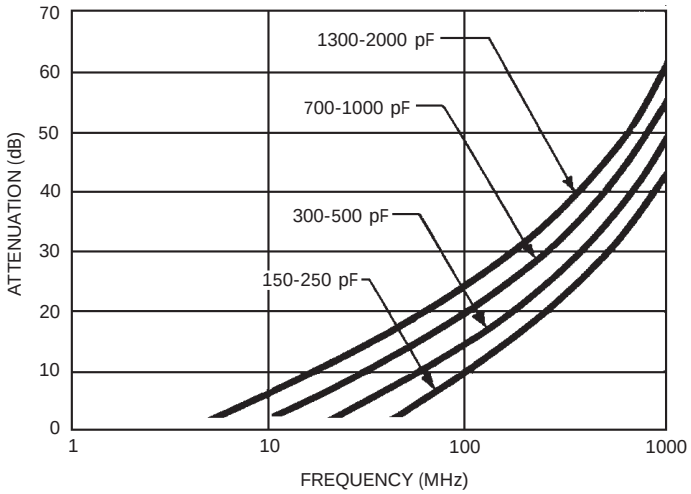
## Shell Dimensions




*.750 max for pre-wired versions (H modifier above)

| Part Number by shell size | A max | B max | C max | D max | E max | F max ±0,13 (.005) | G max |
|---|---|---|---|---|---|---|---|
| MDMT-9S* | .785 (19,94) | .400 (10,16) | .400 (10,16) | .270 (6,86) | .308 (7,83) | .565 (14,36) | .251 (6,38) |
| MDMT-15S* | .935 (23,75) | .550 (13,97) | .550 (13,97) | .270 (6,86) | .308 (7,83) | .715 (18,17) | .251 (6,38) |
| MDMT-21S* | 1.085 (27,60) | .700 (17,78) | .700 (17,78) | .270 (6,86) | .308 (7,83) | .865 (21,98) | .251 (6,38) |
| MDMT-25S* | 1.185 (30,10) | .800 (20,32) | .800 (20,32) | .270 (6,86) | .308 (7,83) | .965 (24,52) | .251 (6,38) |
| MDMT-31S* | 1.335 (33,90) | .950 (24,13) | .950 (24,13) | .270 (6,86) | .308 (7,83) | 1.115 (28,30) | .251 (6,38) |
| MDMT-37S* | 1.485 (37,70) | 1.100 (28,00) | 1.100 (28,00) | .270 (6,86) | .308 (7,83) | 1.265 (32,20) | .251 (6,38) |

## Typical Filter Performance



# Micro-D Plastic Shell - .050" Contact Spacing MD**

**Microminiature Rectangular Connectors with MICRO-Pin Contacts on .050 (1.27) centers.**

MICRO-D microminiature rack/panel connectors are used in applications requiring highly reliable, extremely small, lightweight connectors. These connectors are available in 2 insulator materials, 2 mounting variations, 7 shell sizes accommodating from 9 to 51 contacts and a special arrangement of 5 micro contacts and 2 coaxials. The insulator materials listed give the MICRO-D connector wide versatility in most applications required by industry.

ITT can also terminate a wide variety of stranded or solid wire directly to MICRO-D contacts, which is often desirable in high density arrangements.

MICRO-D connectors can also be custom harnessed to meet any customer requirement of single or multiple connectors. Pigtail lead and harness description must be given by the customer. A typical description would be: .5" #25 AWG, gold plated copper leads or 18" of #26 yellow, Teflon-insulated, Type E wire. Shown below are various methods of termination. Consult customer service for any routine or complex harnessing of MICRO-D connectors.

- Glass-filled diallyl phthalate thermoset material used in high temperature applications that is immune to cleaning solvents. It also has excellent dielectric properties. Temperature range: -65˚F to +300˚F (-55˚C to +149˚C).
- Glass-filled polyester thermoplastic that is not affected by cleaning solvents and exhibits excellent dielectric properties. Temperature range: -55˚F to +257˚F (-65˚C to +125˚C).

## Specifications

| MATERIALS AND FINISHES | |
|---|---|
| Shell/Insulator (One Piece) | MD/MDB: Glass-filled thermoset plastic<br>MDV/MDVB: Thermoplastic |
| Contacts | - Copper alloy, gold plate |

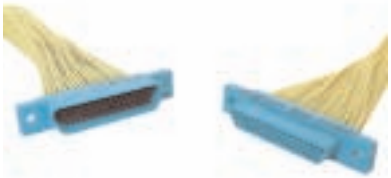
| ELECTRICAL DATA | |
|---|---|
| No of Contacts | - 9 to 51: (1 arrangement of 5 contacts and 2 coaxials - for screw mount only) |
| Coaxial Cable | - RG-178/U (Not available for MD clip mount) |
| Wire Size | - #24 thru #32 AWG |
| Contact Termination | - Multi-indent crimp |

| MECHANICAL FEATURES | |
|---|---|
| Size or Length | - 7 sizes |
| Coupling | - Friction/jackscrews |
| Polarization | - Keystone-shaped shells |
| Contact Spacing Centers | -.050 (1.27mm) |
| Shell Styles | - Plug and receptacle |

Consult factory for availabilty.

## How to Order

**PCB ordering information - page 30**



R MD** 1- 9 P H 001 P

- **RoHS COMPLIANCE** (R)
- **SERIES-INSULATOR STYLE-MATERIAL** (MD**)
- **CONTACT SPACING** (1-)
- **CONTACT ARRANGEMENT** (9)
- **CONTACT TYPE** (P)
- **TERMINATION TYPE** (H)
- **TERMINATION CODE** (001)
- **LOCKING HARDWARE** (P)

**SERIES-INSULATOR STYLE-MATERIAL**
MDB - Screw mounting-Diallyl phthalate
MDVB - Screw mounting-Polyester

**CONTACT SPACING**
1 - .050 (1.27) centers

**CONTACT ARRANGEMENT**
9-15-21-25-31-37-51. See page 9

**CONTACT TYPE**
P - Pin S - Socket

**TERMINATION TYPE**
H - Insulated solid or stranded wire
L - Uninsulated solid wire
S - Solder pot to accept #26 AWG max. harness wire.

**TERMINATION CODE**
See page 79 and 81 for additional codes
(H) 001 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, Yellow.
(H) 003 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I.
(L) 1 - 1/2" uninsulated solid #25 AWG gold plated copper.
(L) 2 - 1" uninsulated solid #25 AWG gold plated copper.

**LOCKING HARDWARE (SCREW MOUNTING ONLY)**
P - Jackpost
K - Jackscrew-standard
L - Jackscrew-low profile
F - Float mount
M - Military specification hardware, see page 13.

No designator - No hardware - standard mounting
.091 (2.31) hole diameter

ITT

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Standard Wire Termination Codes

The following termination codes are listed for your information. For additional codes please refer to Appendix on page 79 and 81. **All wire lengths are minimum.**

**Harness Type (H)**
#26 AWG per MIL-W-16878 Type E Teflon, stranded.

| Length | All Yellow | Color Coded* |
|---|---|---|
| 3 (76.2) | H020 | H027 |
| 6 (152.4) | H019 | H016 |
| 8 (203.2) | H026 | H034 |
| 10 (254.0) | H029 | H025 |
| 12 (304.8) | H028 | H002 |
| 18 (457.2) | H001 | H003 |
| 20 (508.0) | H038 | H023 |
| 24 (609.6) | H009 | H004 |
| 30 (762.0) | H010 | H005 |
| 36 (914.4) | H011 | H006 |
| 48 (1219.2) | H013 | H048 |
| 72 (1828.8) | H017 | H046 |
| 120 (3048.0) | H042 | H041 |

*Cavity #1 black

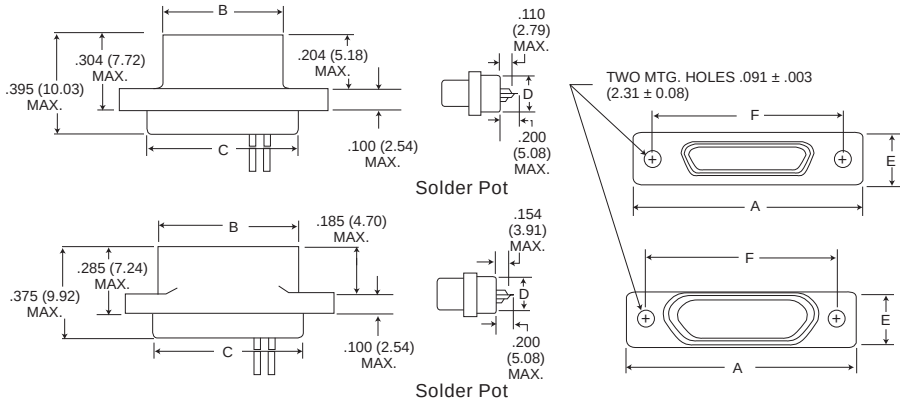
**Solid Uninsulated Type (L)**
#25 AWG Gold Plated Copper

| Termination Code | Length |
|---|---|
| L61 | .125 (3.18) |
| L56 | .150 (3.81) |
| L57 | .190 (4.83) |
| L39 | .250 (6.35) |
| L58 | .375 (9.52) |
| L1 | .500 (12.70) |
| L14 | .750 (19.05) |
| L2 | 1.000 (25.40) |
| L7 | 1.500 (38.10) |
| L6 | 2.000 (50.80) |
| L16 | 2.500 (63.50) |
| L10 | 3.000 (76.20) |

## With Screw Mounting Holes (Conforms to MIL-DTL-83513)

MDB Glass-filled Diallyl Phthalate Plastic Insulator

MDVB Glass-filled Polyester Plastic Insulator




| Part Number by Shell Size | | A Max. | B Max. | C Max. | D Max. | E Max. | F ±.005 | Avg. Weight*** ±5% (oz.) ±5% (gm.) |
|---|---|---|---|---|---|---|---|---|
| MDB1-9P** | MDVB1-9P** | .788 (20.02) | .292 (7.42) | .408 (10.36) | .173 (4.39) | .218 (5.54) | .565 (14.35) | .026 (0.73) |
| MDB1-9S** | MDVB1-9S** | .788 (20.02) | .380 (9.65) | .408 (10.36) | .173 (4.39) | .218 (5.54) | .565 (14.35) | .025 (0.70) |
| MDB1-15P** | MDVB1-15p** | .938 (23.82) | .442 (11.23) | .588 (14.17) | .173 (4.39) | .218 (5.54) | .715 (18.16) | .038 (1.10) |
| MDB1-15S** | MDVB1-15S** | .938 (23.82) | .530 (13.46) | .588 (14.17) | .173 (4.39) | .218 (5.54) | .715 (18.16) | .035 (1.00) |
| MDB1-21P** | MDVB1-21P** | 1.088 (27.64) | .592 (15.04) | .708 (17.98) | .173 (4.39) | .218 (5.54) | .865 (21.97) | .053 (1.50) |
| MDB1-21S** | MDVB1-21S** | 1.088 (27.64) | .680 (17.27) | .708 (17.98) | .173 (4.39) | .218 (5.54) | .865 (21.97) | .050 (1.40) |
| MDB1-25P** | MDVB1-25P** | 1.188 (30.18) | .692 (17.58) | .808 (20.56) | .173 (4.39) | .218 (5.54) | .965 (24.51) | .063 (1.80) |
| MDB1-25S** | MDVB1-25S** | 1.188 (30.18) | .780 (19.81) | .808 (20.56) | .173 (4.39) | .218 (5.54) | .965 (24.51) | .056 (1.60) |
| MDB1-31P** | MDVB1-31P** | 1.338 (33.98) | .842 (21.39) | .958 (24.33) | .173 (4.39) | .218 (5.54) | 1.115 (28.32) | .080 (2.30) |
| MDB1-31S** | MDVB1-31S** | 1.338 (33.98) | .930 (23.62) | .958 (24.33) | .173 (4.39) | .218 (5.54) | 1.115 (38.32) | .073 (2.10) |
| MDB1-37P** | MDVB1-37P** | 1.488 (37.80) | .992 (25.20) | 1.108 (28.14) | .173 (4.39) | .218 (5.54) | 1.265 (32.13) | .086 (2.45) |
| MDB1-37S** | MDVB1-37S** | 1.488 (37.80) | 1.080 (27.43) | 1.108 (28.14) | .173 (4.39) | .218 (5.54) | 1.265 (32.13) | .076 (2.15) |
| MDB1-51P** | MDVB1-51P** | 1.438 (36.52) | .942 (23.93) | 1.058 (26.87) | .220 (5.59) | .260 (6.60) | 1.215 (30.86) | .109 (3.10) |
| MDB1-51S** | MDVB1-51S** | 1.438 (36.52) | 1.030 (26.16) | 1.058 (26.87) | .220 (5.59) | .260 (6.60) | 1.215 (30.86) | .093 (2.64) |

** Add lead type and length, see Part Number Explanation.
*** Weight given is with 1/2", uninsulated solid #25 AWG gold plated copper pigtails.

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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MD*B-PCB connectors use standard MD*B all plastic shells and are designed for use with flex circuitry, printed circuit and multi-layer boards. They are easily mounted and soldered and provide high density/high reliability in board-to-board and board-to-cable applications. While being similar to the MDM-PCB connectors, the MD*B-PCB connectors are all plastic, extremely small, and lightweight yet rugged enough for use in the most demanding applications.

MD*B-PCB connectors are available in seven shell sizes with 9 to 51 contacts in the popular 90° narrow profile PCB termination, with a variety of tail lengths for varying board thickness.

Jackpost mounting for use with locking hardware is also available.

If the connectors shown in the catalog do not meet the requirements of your applications, a special shape, size or layout using the basic all plastic shell can be made available. For further technical and applications information, contact customer service.

## How to Order

R MD*B - 37 S CBR * L39 - ***

- RoHS COMPLIANCE
- SERIES
- CONTACT ARRANGEMENT
- CONTACT TYPE
- TERMINATION TYPE
- HARDWARE
- TERMINATION TAIL LENGTH
- MODIFICATION CODES (Consult Factory)

**CONNECTOR SERIES**
MDVB, MDB

**CONNECTOR ARRANGEMENT**
9, 15, 21, 25, 31, 51

**CONTACT TYPE**
S = Socket
P = Pin

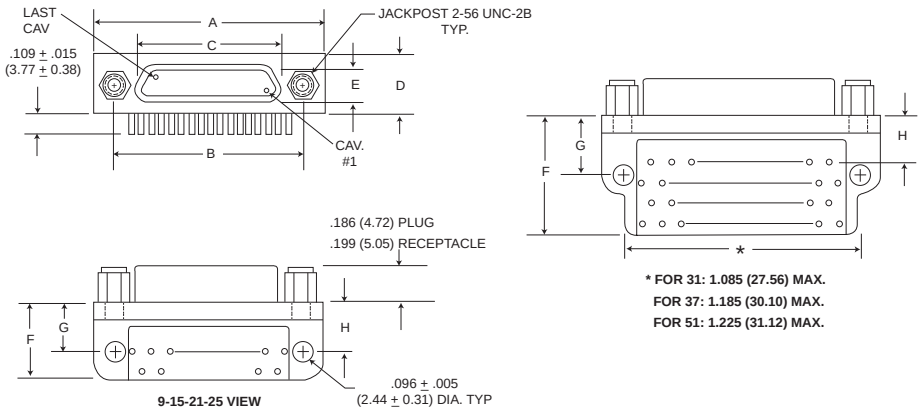
**TERMINATION TYPE**
CBR = 90° Narrow Profile PCB Terminations

**HARDWARE**
P = Jackpost
M7 = Jackposts, M635135-07
No Letter = Less Hardware

**TERMINATION TAIL LENGTH CODES**

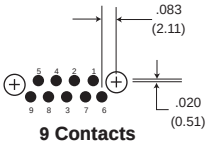
| | |
|---|---|
| NONE | – .109 (2.77) ± 0.15 (0.38) Standard |
| L61 | – .125 (3.18) |
| L66 | – .150 (3.81) |
| L57 | – .190 (4.83) |
| L39 | – .250 (6.35) |
| L58 | – .375 (9.52) |

## CBR Series (90˚ Mounting Narrow Profile)

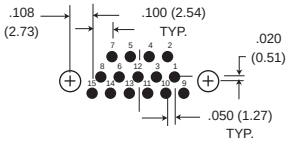



**PCB Termination Arrangements (Viewed from bottom of connector, on PCB solder side.)**

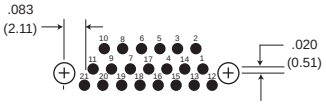
Indentification number shown for plug connector, use reverse order for socket connector.



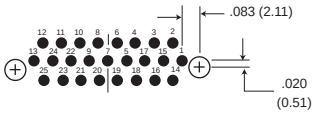

**9 Contacts**



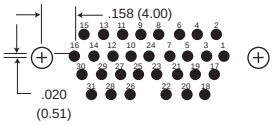

**15 Contacts**



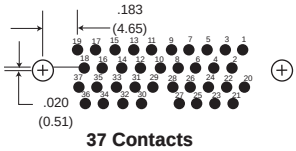

**21 Contacts**



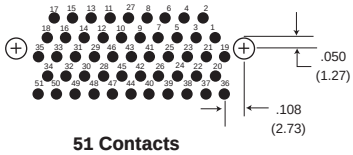

**25 Contacts**




**31 Contacts**




**37 Contacts**




**51 Contacts**

All Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27)

| Part Number By Shell Size | A Max. | B ± .005 (0.13) | C Max. | D Max. | E Max. | F Max. | G ± .010 (0.25) | H ± .010 (0.25) |
|---|---|---|---|---|---|---|---|---|
| MD*B-9PCBR* | .788 (20.01) | .565 (14.35) | .292 (7.42) | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35) | .230 (5.84) |
| MD*B-9SCBR* | .788 (20.01) | .565 (14.35) | .375 (9.52) | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35) | .230 (5.84) |
| MD*B-15PCBR* | .938 (23.82) | .715 (18.16) | .442 (11.23) | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MD*B-15SCBR* | .938 (23.82) | .715 (18.16) | .525 (13.34) | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MD*B-21PCBR* | 1.088 (27.63) | .865 (21.97) | .592 (15.04) | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MD*B-21SCBR* | 1.088 (27.63) | .865 (21.97) | .675 (17.14) | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MD*B-25PCBR* | 1.188 (30.17) | .965 (24.51) | .692 (17.58) | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MD*B-25SCBR* | 1.188 (30.17) | .965 (24.51) | .775 (19.68) | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MD*B-31PCBR* | 1.338 (33.98) | 1.115 (28.32) | .842 (21.39) | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MD*B-31SCBR* | 1.338 (33.98) | 1.115 (28.32) | .925 (23.50) | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35) | .130 (3.30) |
| MD*B-37PCBR* | 1.488 (37.79) | 1.265 (32.13) | .994 (25.25) | .218 (5.54) | .134 (3.40) | .520 (13.21) | .250 (6.35) | .130 (3.30) |
| MD*B-37SCBR | 1.488 (37.79) | 1.265 (32.13) | 1.075 (27.30) | .218 (5.54) | .218 (5.54) | .520 (13.21) | .250 (6.35) | .130 (3.30) |
| MD*B-51PCBR* | 1.438 (36.52) | 1.215 (30.86) | .942 (23.93) | .258 (6.55) | .177 (4.50) | .550 (13.97) | .300 (7.62) | .150 (3.81) |
| MD*B-51SCBR | 1.438 (36.52) | 1.215 (30.86) | 1.026 (26.06) | .258 (6.55) | .258 (6.55) | .550 (13.97) | .300 (7.62) | .150 (3.81) |

* For jackpost locking add letter "P" or "M7".

NOTE: Standard lead termination is #24 AWG, solid copper, solder or tin dipped.

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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## MDB Coaxial Series with Screw Mounting Holes

MDB connectors with two coaxial and five MICRO-PIN™/MICROSOCKET™ contacts. Crimp-type coaxial contacts accommodate RG-178/U cables. A plastic insertion/extraction tool is supplied with each connector assembly having removable coaxial assembly.

## How to Order - MDB Coaxial

R MDB 1 -7 C2 * S H ** * K

- RoHS COMPLIANCE
- SERIES
- SIGNAL CONTACT SPACING
- TOTAL CONTACT CAVITIES
- NUMBER OF COAXIALS
- COAXIAL TYPE
- SIGNAL CONTACT TYPE
- SIGNAL CONTACT LEAD TYPE
- SIGNAL CONTACT LEAD LENGTH
- MODIFICATION
- HARDWARE

**SERIES**
Micro-D Coaxial

**SIGNAL CONTACT SPACING**
1 - .050 (1.27) centers

**TOTAL CONTACT CAVITIES**. . . . . .7

**NUMBER OF COAXIALS**. . . . . 2

**COAXIAL TYPE**
No Letter - Coaxial assembly installed and nonremovable
RO - coaxial assembly ordered serparately
RA - Coaxial shipped assembled but uninstalled

**SIGNAL CONTACT TYPE**
P - Pin
S - Socket

**SIGNAL CONTACT LEAD TYPE**
L - Uninsulated, solid wire
H - Insulated, solid or stranded
S -Solder pot*

**SIGNAL CONTACT LEAD LENGTH**
See Standard Wire Termination
Code on page 29. Coaxial cable will be RG-178U unless otherwise specified; length will be same as wire modification.

**MODIFICATION**
Consult customer service

**HARDWARE**
No letter - No hardware
standard mounting. 091 (2.31) hole diameter
F - Float
K - Jackscrew (standard)
L - Jackscrew (low profile)
P - Jackpost
* Not available with removalbe coax cable type connectors RO and RA.

## How to Order - Coaxial Cable Assemblies

R MD CC S * ***

- RoHS COMPLIANCE
- SERIES
- COAXIAL CABLE
- CONTACT TYPE
- COAXIAL CABLE TYPE
- COAXIAL CABLE LENGTH

**SERIES**
MD

**COAXIAL CABLE**
CC

**CONTACT TYPE**
P - Pin
(used with socket side connection)
S - Socket
(used with pin type connection)

**COAXIAL CABLE TYPE**
1 - RG178/U

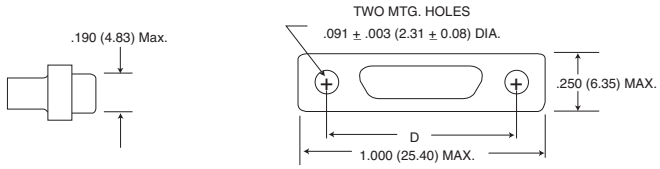
**COAXIAL CABLE LENGTH**
See Standard Wire Termination
Codes on page 29. Coaxial cable will be RG-178U unless otherwise specified; length will be the same as wire modfication.

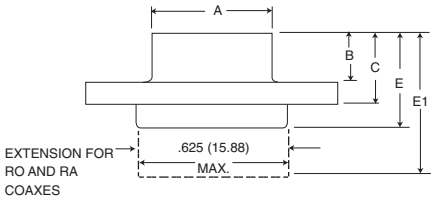
Dimensions shown in inch (mm)

## Dimension - MDB Coaxial Series

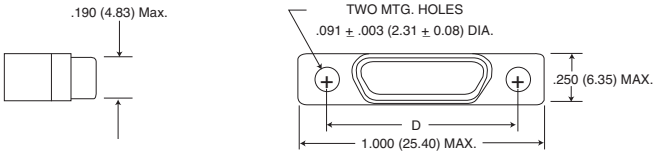
**(See page 9 for layouts)**

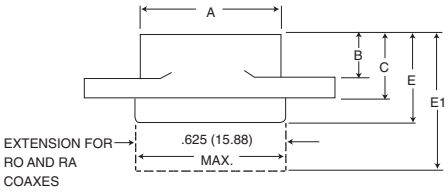
**Plug**




**Receptacle**




| Part Number by Shell Size | A Max. | B Max. | C Max. | D ± .005 (0.13) | E Max. | E1 Max. | Avg. Weight** (oz) ± 5% (gm.) ± 5% |
|---|---|---|---|---|---|---|---|
| **MDB1-7C2P*** | .510 (12.95) | .204 (5.18) | .298 (7.57) | .782 (19.86) | .395 (10.03) | .510 (12.95) | .290 (8.30) |
| **MDB1-7C2S*** | .602 (15.29) | .185 (4.70) | .279 (7.09) | .782 (19.86) | .375 (9.52) | .540 (13.72) | .273 (7.80) |

* Add lead type and length, see Part Number Explanation.
** Weight given is with 7 inch (177.80) insulated leads, #26 AWG silver plated copper pigtails and RG178/U coaxials.

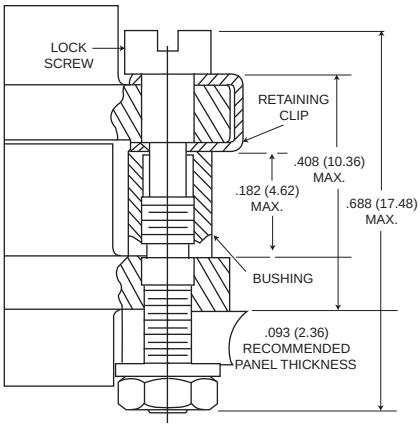
Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Mounting Hardware Views (Sizes 9-51)

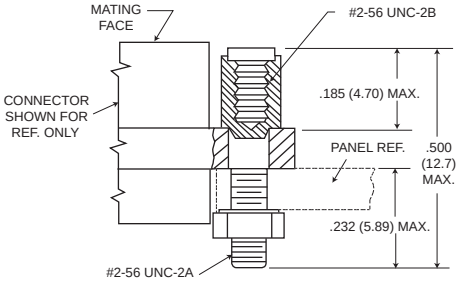
This hardware supplied unassembled.

Screw Lock Assembly

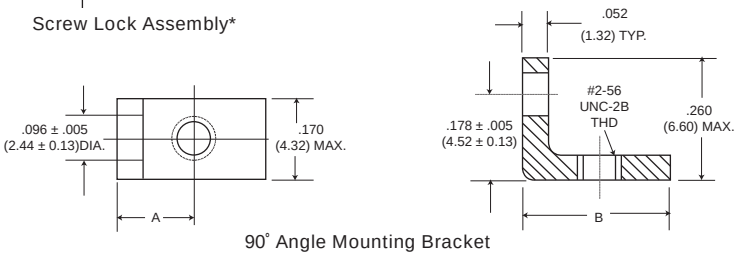
90˚ Angle Mounting Bracket




Screw Lock Assembly*




Jackpost - (P)



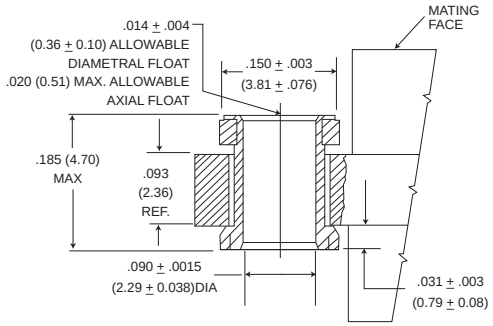

90˚ Angle Mounting Bracket

*NOTE: Torque value is 4.0 in/lbs max.

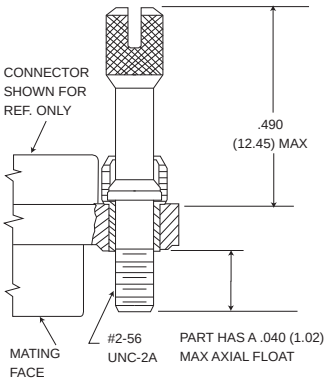
| Description | Part Number | A ± .005 (0.13) | B Max. |
|---|---|---|---|
| Screw Lock Assembly<br>Jackpost Kit | 322-9500-000<br>320-9505-000 | | |
| Mounting Bracket, 90˚ Angle-<br>MD*1<br>for 9 thru 37 Shell Sizes | 015-9516-000 | .100<br>(2.54) | .215<br>(5.46) |
| MD*1<br>for 51 Shell Size | 015-9516-000 | .122<br>(3.10) | .257<br>(6.53) |

NOTES: Screw lock assembly (322-9500-000) can be used for front front mounting. Jackpost kit (320-9505-000) consists of 2 assemblies, shipped unassembled.

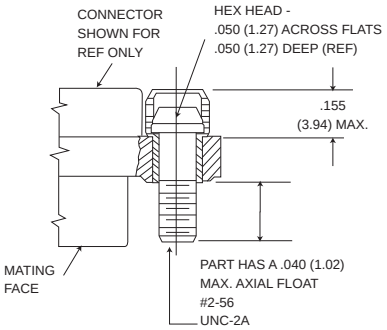
This hardware is factory installed.




**Float Mount - (F)**




**Jackscrew - (K) Standard**



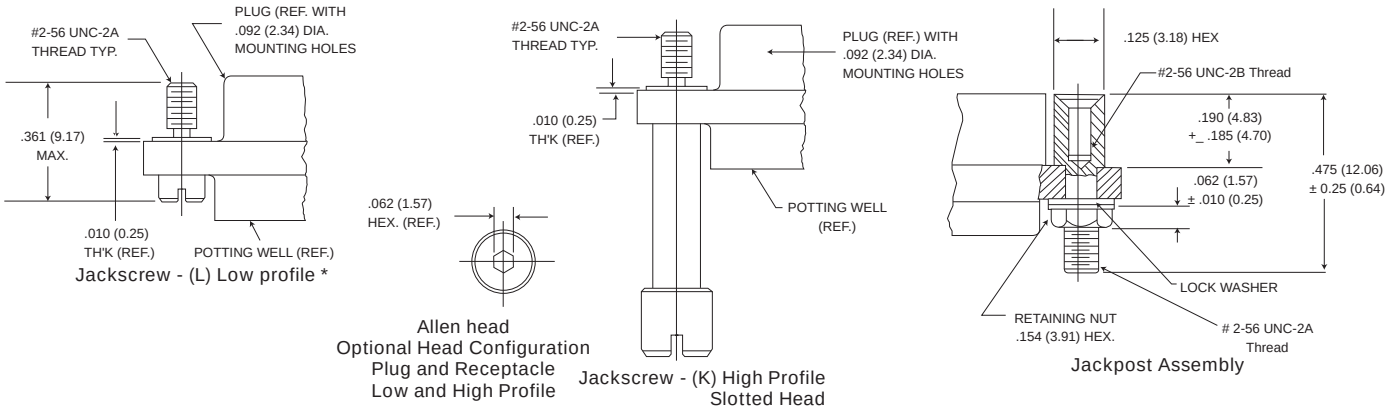

**Jackscrew - (L) Low Profile**

Shown here is a cutaway view of the float mount for the MD connector. The basic shell dimensions are the same for the float mount and the screw mounting hole configurations. View shown is for standard float mount front panel mounting. Reverse mounting is available on request.

* NOTE: Torque values are as follows:
Low Profile Jackscrew (L)-2.5 in/lbs
Standard Jackscrew (K)-2.5 in/lbs

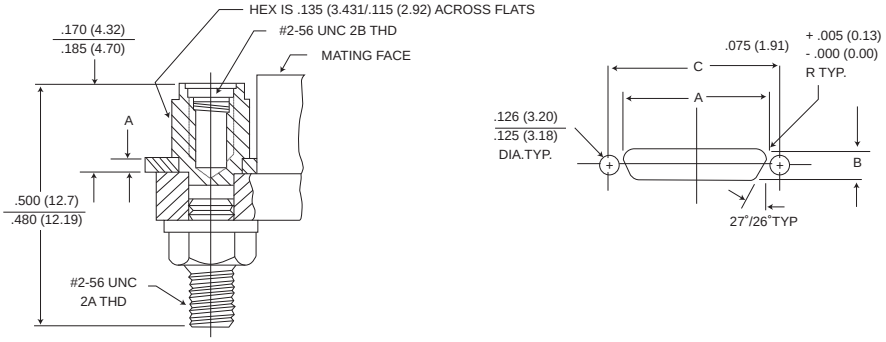
## Mounting Hardware to Military Specification (Sizes 9 - 51) PER MIL-DTL-83513/5

This hardware supplied unassembled.




| Description | M83513/5 | Mode Code | Part Number |
|---|---|---|---|
| Slotted Head Jackscrew Assy Low Profile | -05 | M5 | 320-9508-025 |
| Slotted Head Jackscrew Assy High Profile | -06 | M6 | 320-9508-027 |
| Allen Head Jackscrew Assy Low Profile | -02 | M2 | 320-9508-026 |
| Allen Head Jackscrew Assy High Profile | -03 | M3 | 320-9508-028 |
| Jackpost Assy | -07 | M7 | 320-9505-033 |

## Jackpost Bushing (For Rear Panel Mounting)




| Panel Thickness | A Dim. | Jackpost Kit Number* |
|---|---|---|
| 3/32 (2.4) | .092/.087 (2.34/2.21) | 320-9505-007 |
| 1/16 (1.6) | .061/.056 (2.34/1.42) | 320-9505-006 |
| 3/64 (1.2) | .047/.042 (1.19/1.07) | 320-9505-005 |
| 1/32 (0.8) | .030/.025 (0.76/0.64) | 320-9505-004 |

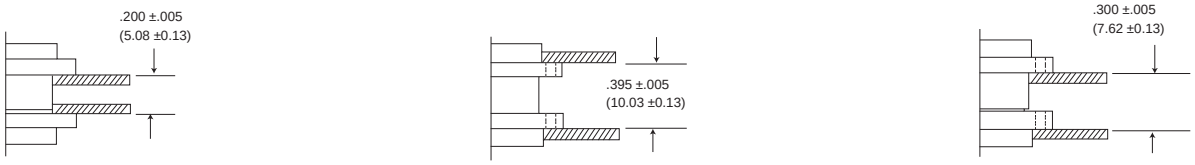
*2 Jackposts, 2 nuts, 2 washers.

NOTE: Torque value for jackpost 2.5 in/lbs

**Plug and Receptacle Dimensions**

| Shell Size | A +.004 (0.10) -.000 (0.00) | B +.004 (0.10) -.000 (0.00) | C ±.005 (0.13) |
|---|---|---|---|
| 9 | .379 ( 9.63) | .219 (5.56) | .565 (14.35) |
| 15 | .529 (13.44) | .219 (5.56) | .715 (18.16) |
| 21 | .679 (17.25) | .219 (5.56) | .865 (21.97) |
| 25 | .779 (19.79) | .219 (5.56) | .965 (24.51) |
| 31 | .929 (23.60) | .219 (5.56) | 1.115 (28.32) |
| 37 | 1.079 (27.41) | .219 (5.56) | 1.265 (32.13) |
| 51 | 1.029 (26.14) | .261 (6.63) | 1.215 (30.86) |

## Panel Mounting Dimensions




Plug and Receptacle Rear Mounted

Plug and Receptacle Front Mounted

Plug Front Mounted Receptacle Rear Mounted

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Panel Cutouts

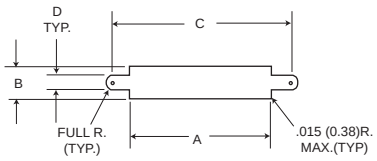



Figure 1
Front Mounting

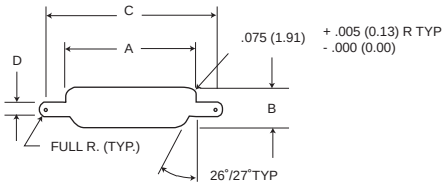



Figure 2
Rear Mounting

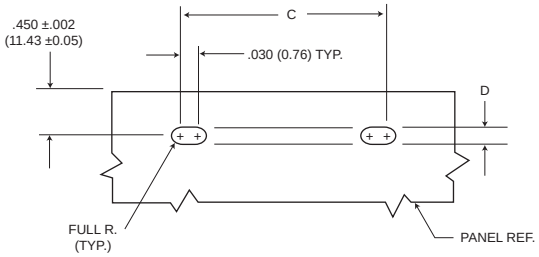



Figure 3
Edgeboard Mounting

| Size | Cutout Figure | A + .004 (0.10) - .000 (0.00) | B + .004 (0.10) - .000 (0.00) | C + .005 (0.13) - .000 (0.00) | D + .005 (0.13) - .000 (0.00) |
|---|---|---|---|---|---|
| 9 | 1 | .409 (10.39) | .172 (4.37) | .570 (14.48) | .089 (2.26) |
| | 2 | .379 ( 9.63) | .219 (5.56) | .570 (14.48) | .089 (2.26) |
| | 3 | - | - | .570 (14.48) | .089 (2.26) |
| 15 | 1 | .559 (14.20) | .172 (4.37) | .720 (18.29) | .089 (2.26) |
| | 2 | .529 (13.44) | .219 (5.56) | .720 (18.29) | .089 (2.26) |
| | 3 | - | - | .720 (18.29) | .089 (2.26) |
| 21 | 1 | .709 (18.00) | .172 (4.37) | .870 (22.10) | .089 (2.26) |
| | 2 | .679 (17.25) | .219 (5.56) | .870 (22.10) | .089 (2.26) |
| | 3 | - | - | .870 (22.10) | .089 (2.26) |
| 25 | 1 | .809 (20.55) | .172 (4.37) | .970 (24.64) | .089 (2.26) |
| | 2 | .779 (19.79) | .219 (5.56) | .970 (24.64) | .089 (2.26) |
| | 3 | - | - | .970 (24.64) | .089 (2.26) |
| 31 | 1 | .959 (24.36) | .172 (4.37) | 1.120 (28.45) | .089 (2.26) |
| | 2 | .929 (23.60) | .219 (5.56) | 1.120 (28.45) | .089 (2.26) |
| | 3 | - | - | 1.120 (28.45) | .089 (2.26) |
| 37 | 1 | 1.109 (28.17) | .172 (4.37) | 1.270 (32.26) | .089 (2.26) |
| | 2 | 1.079 (27.41) | .219 (5.56) | 1.270 (32.26) | .089 (2.26) |
| | 3 | - | - | 1.270 (32.26) | .089 (2.26) |
| 51 | 1 | 1.059 (26.90) | .215 (5.46) | 1.220 (30.99) | .089 (2.26) |
| | 2 | 1.029 (26.14) | .261 (6.63) | 1.220 (30.99) | .089 (2.26) |
| | 3 | - | - | 1.220 (30.99) | .089 (2.26) |

NOTES:
1. Front mounting (figure 1) and rear mounting (figure 2) accommodates #2-56 screws.
2. Front mounting is preferred. However, when rear mounting is necessary. use detail on previous page.
3. Edgeboard mounting bracket (figure3) uses #2-56 screws. Dimension .450 ± .002 (11.43 ± 0.05) locates the MD receptacle flush with the end of the board.

## How to Order

**PCB ordering information - page 30**

| R | MD | 1- | 9 | P | H | 001 | P |
|---|---|---|---|---|---|---|---|

- **RoHS COMPLIANCE**
- **SERIES-INSULATOR STYLE-MATERIAL**
- **CONTACT SPACING**
- **CONTACT ARRANGEMENT**
- **CONTACT TYPE**
- **TERMINATION TYPE**
- **TERMINATION CODE**
- **LOCKING HARDWARE**

**SERIES-INSULATOR STYLE-MATERIAL**
MD - Clip mounting -Diallyl phthalate
MDV - Clip mounting-Polyester

**CONTACT SPACING**
1 - .050 (1.27) centers

**CONTACT ARRANGEMENT**
9-15-21-25-31*-37-51. See page 7

**CONTACT TYPE**
P - Pin S - Socket

**TERMINATION TYPE**
H - Insulated solid or stranded wire
L - Uninsulated solid wire
S - Solder pot to accept #26 AWG max. harness wire.

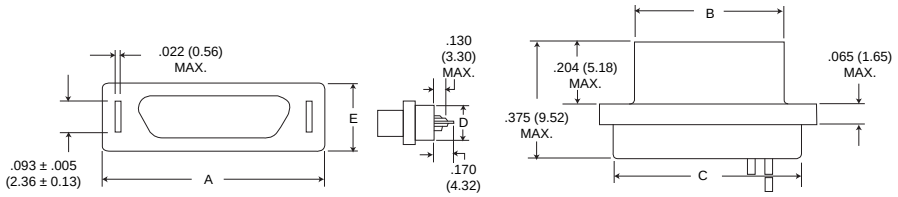
**TERMINATION CODE****
(H) 001 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, Yellow.
(H) 003 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I.
(L) 1 - 1/2" uninsulated solid #25 AWG gold plated copper.
(L) 2 - 1" uninsulated solid #25 AWG gold plated copper.
No designator - No hardware - standard mounting
.091 (2.31) hole diameter

* Not available in clip mounting.
** See page 79 and 81for additional codes.

## With Clip Mounting Slots

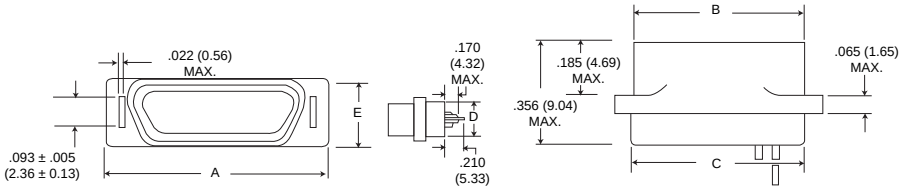
**Plug**

**MD** Glass-filled Diallyl Phthalate Plastic Insulator **MDV** Glass-filled Polyester Plastic Insulator




**Solder Pot**

**Receptacle**




**Solder Pot**

| Part Number by Shell Size | | A Max. | B Max. | C Max. | D Max. | E Max. | Avg. Weight*** ±5% (oz.)/±5% (gm.) |
|---|---|---|---|---|---|---|---|
| **MD1-9P**** | **MDV1-9-P**** | .512 (13.00) | .292 (7.42) | .405 (10.29) | .170 (4.32) | .215 (5.46) | .026 (0.73) |
| **MD1-9S**** | **MDV1-9S**** | .512 (13.00) | .376 (9.55) | .405 (10.29) | .170 (4.32) | .215 (5.46) | .026 (0.73) |
| **MD1-15P**** | **MDV1-15P**** | .662 (16.81) | .442 (11.23) | .555 (14.10) | .170 (4.32) | .215 (5.46) | .038 (1.10) |
| **MD1-15S**** | **MDV1-15S**** | .662 (16.81) | .526 (13.36) | .555 (14.10) | .170 (4.32) | .215 (5.46) | .035 (1.00) |
| **MD1-21P**** | **MDV1-21P**** | .812 (20.62) | .592 (15.04) | .705 (17.91) | .170 (4.32) | .215 (5.46) | .053 (1.50) |
| **MD1-21S**** | **MDV1-21S**** | .812 (20.62) | .676 (17.17) | .705 (17.91) | .170 (4.32) | .215 (5.46) | .050 (1.40) |
| **MD1-25P**** | **MDV1-25P**** | .912 (23.16) | .692 (17.58) | .805 (20.45) | .170 (4.32) | .215 (5.46) | .063 (1.80) |
| **MD1-25S**** | **MDV1-25S**** | .912 (23.16) | .776 (19.71) | .805 (20.45) | .170 (4.32) | .215 (5.46) | .056 (1.60) |
| **MD1-37P**** | **MDV1-37P**** | 1.212 (30.78) | .992 (25.20) | 1.105 (28.07) | .170 (4.32) | .215 (5.46) | .086 (2.45) |
| **MD1-37S**** | **MDV1-37S**** | 1.212 (30.78) | 1.076 (27.33) | 1.105 (28.07) | .170 (4.32) | .215 (5.46) | .076 (2.15) |
| **MD1-51P**** | **MDV1-51P**** | 1.162 (29.51) | .942 (23.93) | 1.055 (26.80) | .213 (5.41) | .258 (6.55) | .109 (3.10) |
| **MD1-51S**** | **MDV1-51S**** | 1.162 (29.51) | 1.026 (26.06) | 1.055 (26.80) | .213 (5.41) | .258 (6.55) | .093 (2.65) |

** Add lead type and length, see Part Number Explanation. *** Weight given is with 1/2", uninsulated solid #25 AWG gold plated copper pigtails.

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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## Panel Mounting Hardware

### Clip Mounting

Illustrated is the recommended method of front mounting with metal panel mounting keys. Panel mounting keys are available with or without coupling retention clips.

For front mounting, place the rear of the connector thru the panel cutout. With the mounting flange against the panel, fully insert the panel mounting keys thru the slots in the flange and thru the panel cutout. Retaining the keys in this position, bend them outward against the rear of the panel. When mating a front mounted connector with an unmounted connector, a coupling retention clip assembly may be used to securely lock the two together. Mounting screw brackets are available and may be used instead of the panel mounting keys.

| Description | Part Number |
|---|---|
| Panel Mounting Key | 201-9100-000 |
| Mounting Key and Coupling Clip Assembly | 294-9100-000 |
| Mounting Screw Bracket | 015-9100-000 |
| * Edgeboard Mounting Bracket | 015-5009-000 |
| ** Edgeboard Mounting Bracket and Coupling Clip Assembly | MD51428-1 |

* Must be ordered separately; specify left and right hand for complete assembly.

** Must be ordered separately; assembly contains set of left and right hand types.

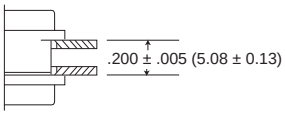
Coupling Retention Clip
(see Figure 2)

Mounting Screw Brackets
(see Figures 1 and 3)

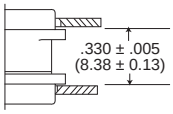
Edgeboard Mounted
(see Figure 4)

Panel
Mounting Key

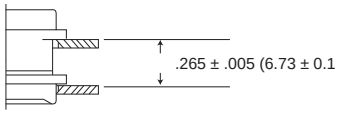
### Dimensions (Clip Mounting Only)




Plug and Receptacle
Rear Mounted




Plug and Receptacle
Front Mounted




Plug Front Mounted
Receptacle Rear Mounted

## Panel Cutouts

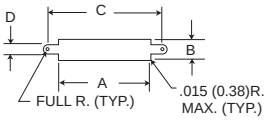



**Figure 1**

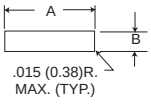



**Figure 2**

**Front Mounting**

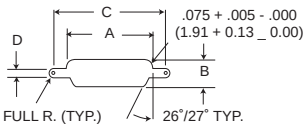



**Figure 3**
**Rear Mounting**

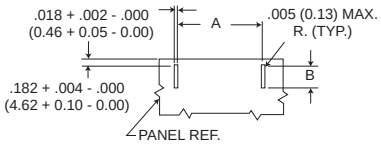



**Figure 4**
**Edgeboard Mounting**

1. A panel thickness of 1/8" (3.17mm) maximum is recommended for ease of tab bending when a panel mounting key & clip assembly or edgeboard mounting brackets are used.
2. Front mounting is preferred. However, when rear mounting is necessary, use figure 3 for dimensions.
3. Figure 4 is for edge board mounting bracket or edgeboard clip assembly. The .184 +_ .002 (2.67 +_ 0.05) dimension locates the MD socket insulator flush with the end of the board.
4. Screw brackets (015-9100-000) will accommodate #2-56 screws.
5. Front mounting (Figure 1) and rear mounting (Figure 3) accommodate #2-56 screws.

| Shell Size | Cutout Figure | A + .004 (0.10) - .000 (0.00) | B + .004 (0.10) - .000 (0.00) | C + .004 (0.10) - .000 (0.00) | D + .005 (0.13) - .000 (0.00) |
|---|---|---|---|---|---|
| 9 | 1 | .408 (10.36) | .172 (4.37) | .650 (16.51) | .089 (2.26) |
| | 2 | .408 (10.36) | .172 (4.37) | - | - |
| | 3 | .378 ( 9.60) | .217 (5.51) | .650 (16.51) | .089 (2.26) |
| | 4 | .400 (10.16) | .091 (2.31) | - | - |
| 15 | 1 | .588 (14.94) | .172 (4.37) | .795 (20.19) | .089 (2.26) |
| | 2 | .588 (14.94) | .172 (4.37) | - | - |
| | 3 | .528 (13.28) | .217 (5.51) | .795 (20.19) | .089 (2.26) |
| | 4 | .550 (13.97) | .091 (2.31) | - | - |
| 21 | 1 | .738 (18.75) | .172 (4.37) | .945 (24.00) | .089 (2.26) |
| | 2 | .738 (18.75) | .172 (4.37) | - | - |
| | 3 | .678 (17.27) | .217 (5.51) | .945 (24.00) | .089 (2.26) |
| | 4 | .700 (17.78) | .091 (2.31) | - | - |
| 25 | 1 | .838 (21.29) | .172 (4.37) | 1.045 (26.54) | .089 (2.26) |
| | 2 | .838 (21.29) | .172 (4.37) | - | - |
| | 3 | .778 (19.76) | .217 (5.51) | 1.045 (26.54) | .089 (2.26) |
| | 4 | .800 (20.32) | .091 (2.31) | - | - |
| 37 | 1 | 1.138 (28.91) | .172 (4.37) | 1.345 (34.16) | .089 (2.26) |
| | 2 | 1.138 (28.91) | .172 (4.37) | - | - |
| | 3 | 1.078 (27.38) | .217 (5.51) | 1.345 (34.16) | .089 (2.26) |
| | 4 | 1.100 (27.94) | .091 (2.31) | - | - |
| 51 | 1 | 1.088 (27.64) | .215 (5.46) | 1.295 (32.89) | .089 (2.26) |
| | 2 | 1.088 (27.64) | .215 (5.46) | - | - |
| | 3 | 1.028 (26.11) | .260 (6.60) | 1.295 (32.89) | .089 (2.26) |
| | 4 | 1.050 (26.67) | .091 (2.31) | - | - |

# Micro Center Jackscrew

# MJS

The MJS jackscrew series provides a reliable interconnect for board-to-board, board-to-cable and in-line cable-to-cable applications. Layouts accommodating up to 76 MICROPIN/MICROSOCKET™ contacts are available, with the same wide range of options as are offered with the other MICRO Line products offered in this catalog.

## How to Order

| R | MJS | * | - | 26 | P | H | 001 |
|---|---|---|---|---|---|---|---|

- **RoHS COMPLIANCE** — R
- **SERIES** — MJS
- **INSULATOR MATERIAL** — *
- **CONTACT ARRANGEMENT** — 26
- **CONTACT TYPE** — P
- **TERMINATION TYPE** — H
- **TERMINATION CODES** — 001

**SERIES**

MJS - Micro Center Jackscrew

**INSULATOR MATERIAL**

B - Diallyl phthalate
V - Polyester
U - Polyetherimide
R - Polyphenylene sulfide

**CONTACT ARRANGEMENTS**

Unshrounded Receptacle: 10, 26, 51, 66
Shrouded Receptacle; 10, 26, 34, 38, 42, 76
Low Profile Plug and Receptacle (shrouded): 28

**CONTACT TYPE**

P - Pin
S - Socket

**TERMINATION TYPE**

H - Insulated wire harness.
I - Integral tail (MJSV-28S only).
L - Solid - uninsulated wire.
S - Solder pot to accept #26 AWG harness wire.
T - Thru bundle pigtail (MJSV-28P only).

**TERMINATION CODE***

(H) 001 - 18" , 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, yellow.
(H) 003 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I.
(L) 1 - 1/2" uninsulated solid #25 AWG gold plated copper.
(L) 2 - 1" uninsulated solid #25 AWG gold plated copper.

* See Termination Codes shown below.

## Standard Wire Termination Codes

The following termination codes are listed for your information. For additional codes please refer to Appendix on page 79 and 81. **All wire lengths are minimum.**

**Harness Type (H)**
#26 AWG per MIL-W-16878/4 Type E Teflon, 7/34 stranded.

| Length | All Yellow | Color Coded |
|---|---|---|
| 3 (76.2) | H 020 | H 027 |
| 6 (152.4) | H 019 | H 016 |
| 8 (203.2) | H 026 | H 034 |
| 10 (254.0) | H 029 | H 025 |
| 12 (304.8) | H 028 | H 002 |
| 18 (457.2) | H 001 | H 003 |
| 20 (508.0) | H 038 | H 023 |

| Length | All Yellow | Color Coded |
|---|---|---|
| 24 (609.6) | H 009 | H 004 |
| 30 (762.0) | H 010 | H 005 |
| 36 (914.4) | H 011 | H 006 |
| 48 (1219.2) | H 013 | H 048 |
| 72 (1828.8) | H 017 | H 046 |
| 120 (3048.0) | H 042 | H 041 |

**Solid Uninsulated Type (L)**
#25 AWG gold plated solid copper.

| Termination Code | Length | Termination Code | Length |
|---|---|---|---|
| L61 | .125 (3.18) | L14 | .750 (19.05) |
| L56 | .150 (3.81) | L2 | 1.000 (25.40) |
| L57 | .190 (4.83) | L7 | 1.500 (38.10) |
| L39 | .250 (6.35) | L6 | 2.000 (50.80) |
| L58 | .375 (9.53) | L16 | 2.500 (63.50) |
| L1 | .500 (12.70) | L10 | 3.000 (76.20) |

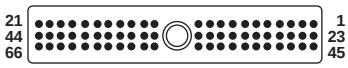
## Contact Arrangements

Face view of pin-use reverse order for socket

10 Contacts

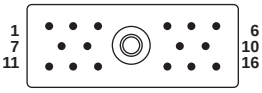
26 Contacts

51 Contacts

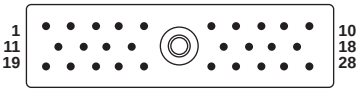



66 Contacts

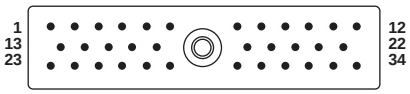
MJSB/MJSU (unshrouded)




16 Contacts**




28 Contacts**




34 Contacts

MJSV (shrouded)

Identification numbers are for reference only and do not appear on connectors.

*Low profile configuration
**MJSV & MJSR

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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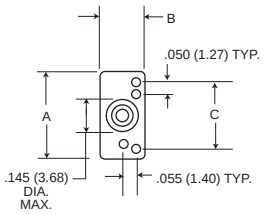
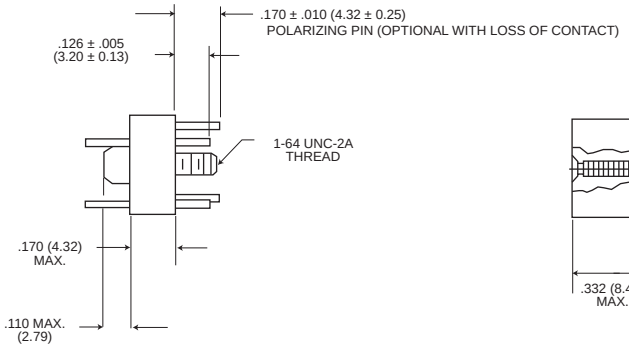
ITT

## Unshrouded Receptacle (10-26-51-66)

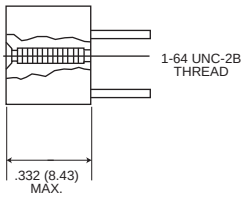
**MJSB/MJSU**




**Rear View**




Receptacle




Plug

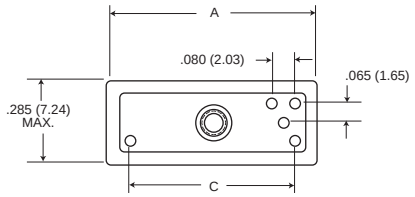
**UNSHROUDED**
**STANDARD MATERIALS AND FINISHES**

| | |
|---|---|
| Micropin | Copper alloy, 50 miro-inch gold |
| Microsocket | Copper alloy, 50 micro-inch gold |
| Insulator | Diallyl phthalate, green color or polyetherimide, natural color |
| Jackscrew | Stainless steel, passivated & lubricated |
| Retainer, Jackscrew | Stainless steel, passivated |
| Insert, Threaded | Stainless steel, passivated |
| Post, Polarizing | Stainless steel, passivated |

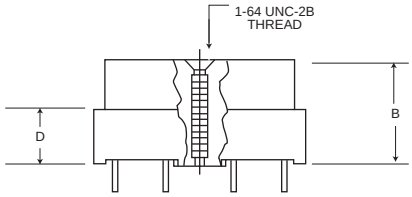
| Part Number | A Max. | B Max. | C Bsc. |
|---|---|---|---|
| MJSB or MJSU-10P | .378 (9.60) | .190 (4.83) | .290 (7.37) |
| MJSB or MJSU-10S | .378 (9.60) | .190 (4.83) | .290 (7.37) |
| MJSB or MJSU-26P | .778 (19.76) | .190 (4.83) | .690 (17.53) |
| MJSB or MJSU-26S | .778 (19.76) | .190 (4.83) | .690 (17.53) |
| MJSB or MJSU-51P | 1.028 (26.11) | .260 (6.60) | .940 (23.88) |
| MJSB or MJSU-51S | 1.028 (26.11) | .260 (6.60) | .940 (23.88) |
| MJSB or MJSU-66P | 1.280 (32.51) | .260 (6.60) | 1.190 (30.23) |
| MJSB or MJSU-66S | 1.280 (32.51) | .260 (6.60) | 1.190 (30.23) |

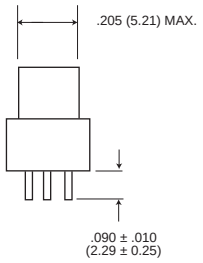
## Shrouded Receptacle (16-28*-34)

**MJSV/MJSR**

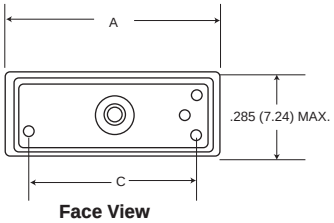



**Face View**

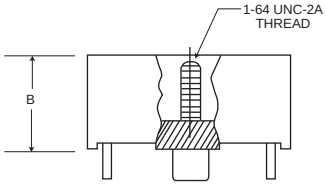


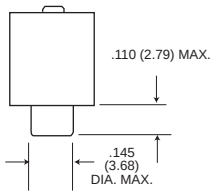




**Plug**




**Face View**




**Receptacle**

**SHROUDED**
**STANDARD MATERIALS AND FINISHES**

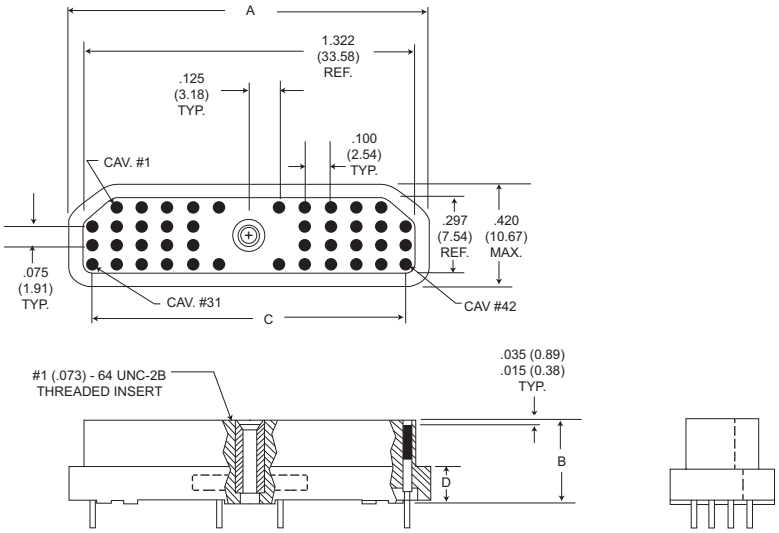
| | |
|---|---|
| Micropin | Copper alloy, 50 miro-inch gold |
| Microsocket | Copper alloy, 50 micro-inch gold |
| Insulator | Polyester, black color<br>Polyphenylene sulfide, black color |
| Jackscrew | Stainless steel, passivated |
| Retainer, Jackscrew | Stainless steel, passivated |
| Insert, Threaded | Stainless steel, passivated |
| Post, Polarizing | Stainless steel, passivated |

| Part Number | A Max. | B Max. | C Ref. | D ± .006 (0.15) |
|---|---|---|---|---|
| **MJSV or MJSR-16P** | .700 (17.78) | .345 (8.76) | .545 (13.84) | .175 (4.45) |
| **MJSV or MJSR-16S** | .700 (17.78) | .320 (8.13) | .545 (13.84) | - |
| **MJSV-28P* or MJSR-28P*** | 1.020 (25.91) | .232 (5.89) | .865 (21.97) | .062 (1.57) |
| **MJSV-28S* or MJSR-28S*** | 1.020 (25.91) | .246 (6.25) | .865 (21.97) | - |
| **MJSV-34P or MJSR-34P** | 1.180 (29.97) | .330 (8.38) | 1.025 (26.04) | .160 (4.06) |
| **MJSV-34S or MJSR-34S** | 1.180 (29.97) | .305 (7.75) | 1.025 (26.04) | - |

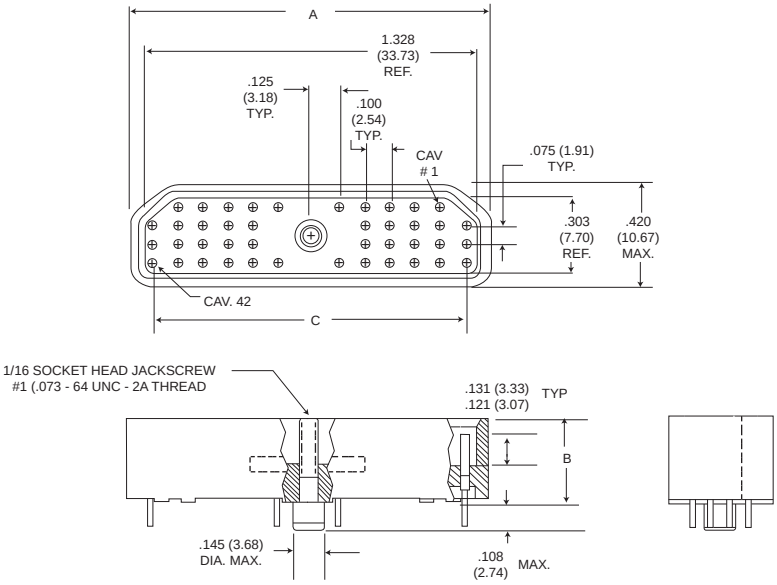
*Low profile configuration, for "L" (uninsulated solid wire) termination add .090 (2.29) to the "B" dimension. For "H" (insulated wire) termination add .200 (5.08) to the "B" dimension. For special configurations with backpotted standoffs consult factory.

## Shrouded Receptacle (42)

MJSR-42P




MJSR-42S




| Part Number | A Max. | B Max. | C Ref. | D ±.006 (0.15) |
|---|---|---|---|---|
| MJSR-42P | 1.445 (36.70) | .345 (8.76) | 1.250 (31.75) | .142 (3.61) |
| MJSR-42S | 1.445 (36.70) | .357 (9.07) | 1.250 (31.75) | - |

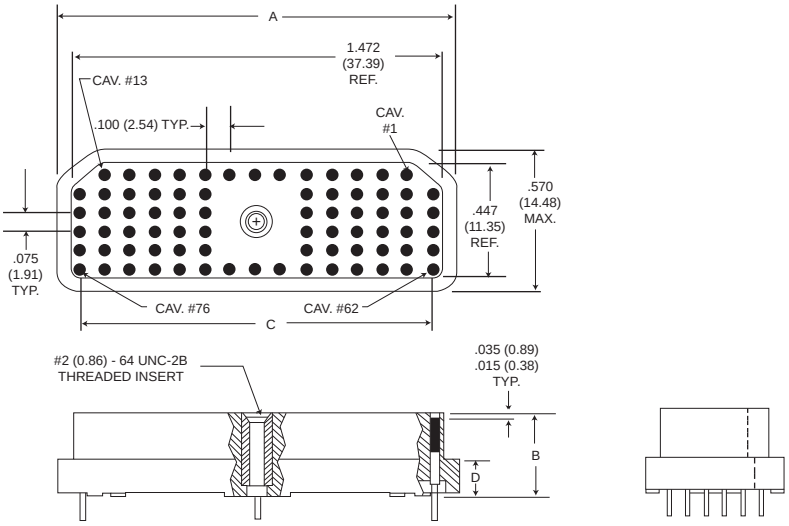
**STANDARD MATERIALS AND FINISHES**

| | |
|---|---|
| Micropin | Copper alloy, 50 miro-inch gold |
| Microsocket | Copper alloy, 50 micro-inch gold |
| Insulator | Polyphenylene sulfide, black color |
| Jackscrew | Stainless steel, passivated |
| Retainer, Jackscrew | Stainless steel, passivated |
| Insert, Threaded | Stainless steel, passivated |

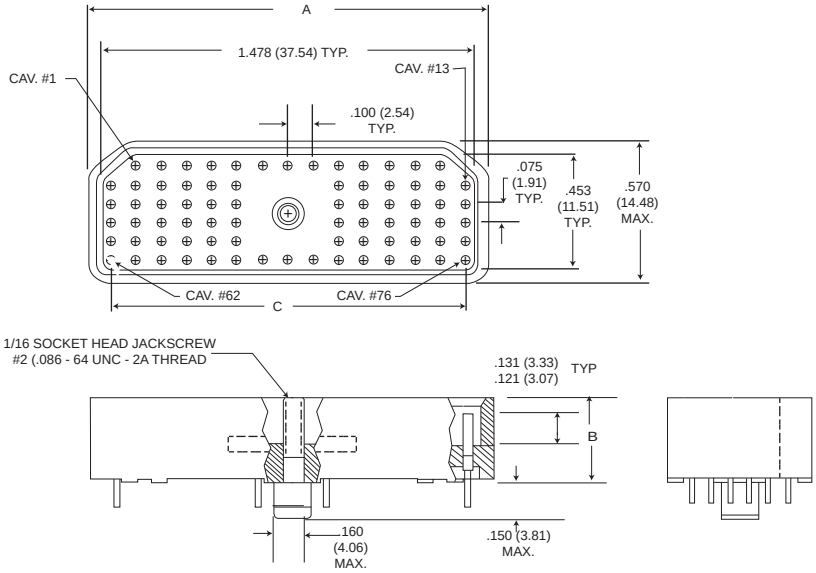
Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Shrouded Receptacle (76)

MJSR-76P




MJSR-76S



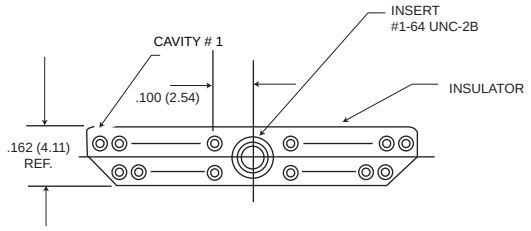

| Part Number | A Max. | B Max. | C Ref. | D ±.006 (0.15) |
|---|---|---|---|---|
| MJSR-76P | 1.595 (40.51) | .345 (8.76) | 1.400 (35.56) | .142 (3.61) |
| MJSR-76S | 1.595 (40.51) | .357 (9.07) | 1.400 (35.56) | - |

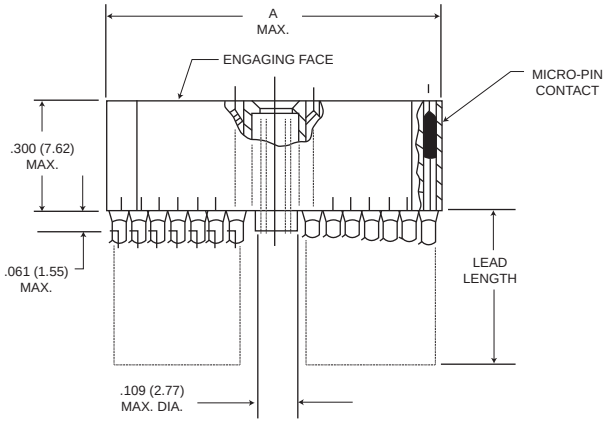
**STANDARD MATERIALS AND FINISHES**

| | |
|---|---|
| Micropin | Copper alloy, 50 miro-inch gold |
| Microsocket | Copper alloy, 50 micro-inch gold |
| Insulator | Polyphenylene sulfide, black color |
| Jackscrew | Stainless steel, passivated |
| Retainer, Jackscrew | Stainless steel, passivated |
| Insert, Threaded | Stainless steel, passivated |

## Plug (Molded-In Insert - Special)

**MJSV**P**



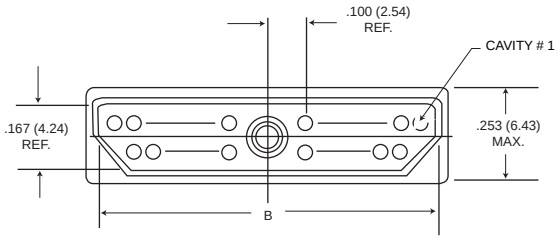



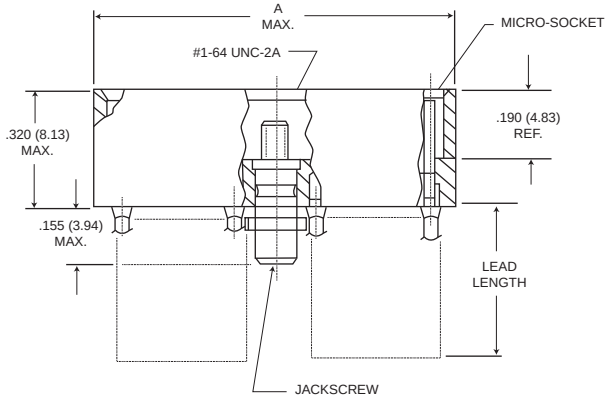

**MJSV-26P****
**(Shown)**

| Part Number | A Ref. |
|---|---|
| MJSV-26P** | .868 (22.05) |
| MJSV-38P** | 1.168 (29.67) |

## Receptacle (Special)

**MJSV**S***



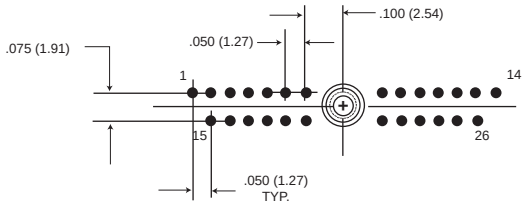




**MJSV-26S****
**(Shown)**

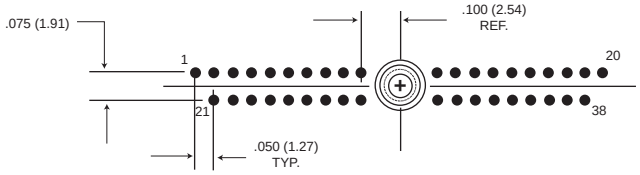
| Part Number | A Max. | B Ref. |
|---|---|---|
| **MJSV-26S**** | .943 (23.95) | .874 (22.20) |
| **MJSV-38S**** | 1.243 (31.57) | 1.174 (29.82) |

## Contact Arrangements

Face view of pin - use reverse order for socket




26 Contacts




38 Contacts

Identification numbers are for reference and do not appear on connectors.

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

# Microminiature Circular - .050" Contact Spacing MICRO-K

MICRO-K microminiature circular connectors are rugged yet lightweight - and meet or exceed the applicable requirements of MIL-DTL-83513. Applications include biomedical, instrumentation and miniature black boxes.

**MIK:** Accommodate up to 55 contacts on .050 (1.27) centers (equivalent to 420 contacts per square inch). Five keyway polarization prevents cross plugging. The threaded coupling nuts provide strong, reliable coupling. MIK receptacles can be either front or back panel mounted; in back mounting applications, panel thickness of up to 3/32" can be used on the larger sizes. Maximum temperature range - 55˚C to + 125˚C.

Standard MIK connectors are available in two shell sizes accommodating two contact arrangements pre-wired to your specific requirements.

**MIKM:** Similar to our MIK, except has a steel shell and receptacle for improved ruggedness and RFI resistance. It accommodates up to 85 twist pin contacts. Maximum temperature range - 55˚C to + 125˚ C.

**MIKQ:** A quick disconnect metal shell and receptacle version that can be instantaneously disconnected yet provides a solid lock when engaged. Applications include commercial TV cameras, portable radios, military gun sights, airborne landing systems and medical equipment. Maximum temperature range - 55˚C to +125˚C.

## Specifications

### STANDARD MATERIAL AND FINISHES

| | MIK | MIKM | MIKQ |
|---|---|---|---|
| Shell | Thermoplastic | Stainless Steel | Brass |
| Coupling Nut | Stainless Steel Passivated | Stainless Steel Passivated | Brass, Electroless Nickel Plated* |
| Insulator | Glass-reinforced Thermoplastic | Glass-reinforced Thermoplastic | Glass-reinforced Thermoplastic |
| Contacts | 50 Microinch Gold Plated Copper Alloy | 50 Microinch Gold Plated Copper Alloy | 50 Microinch Gold Plated Copper Alloy |

*For plug only
Electrodeposited for receptacle.

### ELECTRO/MECHANICAL FEATURES

| | MIK | MIKM | MIKQ |
|---|---|---|---|
| No. of Contacts | 7,55 | 7,55, 85 | 7,19, 37 |
| Wire Size | #24 AWG thru #32 AWG | #24 AWG thru #32 AWG | #24 AWG thru #32 AWG |
| Contact Termination | Crimp | Crimp | Crimp |
| Contact Rating | 3 Amps | 3 Amps | 3 Amps |
| Couping | Threaded | Threaded | Push/Pull |
| Polarization | Keyways | Keyways | Keyways |
| Contact Spacing | .050 (1.27) Centers | .050 (1.27) Centers | .050 (1.27) Centers |
| Shell Styles | 0-Wall Mtg. 6-Straight Plug | 0-Wall Mtg. 6-Straight Plug | 7-Jam Nut 6-Straight Plug 9-Rear Panel Mtg. Receptacle |

## How to Order

R MIK M 6- 55 P * ** ***

- RoHS COMPLIANCE
- SERIES
- CONNECTOR TYPE
- SHELL STYLE
- CONTACT ARRANGEMENT
- CONTACT TYPE
- TERMINATION TYPE
- TERMINATION LENGTH CODE
- HARDWARE

**SERIES**
MIK: Microminiature Circular

**CONNECTOR TYPES**
No Letter - Screw couping, plastic shell
M - Screw coupling, metal shell
Q - Push/Pull, metal shell

**SHELL STYLES**
0 - Wall mounting receptacle (MIK and MIKM only)
6 - Straight plug (MIK, MIKM and MIKQ)
7 - Jam nut mount (MIKQ only)
9 - Rear panel mounted receptacle (MIKQ)

**CONTACT ARRANGEMENTS**
7, 19, 37, 55, 85

**CONTACT TYPE**
P - Pin
S - Socket

**TERMINATION TYPES**
H - Insulated round hook-up wire
L - Uninsulated round solid wire

**TERMINATION LENGTH CODE (STANDARDS)**

| | |
|---|---|
| (H) 001 - | 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, yellow. |
| (H) 003 - | 18",7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I. |
| (L) 1 - | 1/2" uninsulated solid #25 AWG gold plated copper. |
| (L) 2 - | 1" uninsulated solid #25 AWG gold plated copper. |

**HARDWARE**
G - Cable nut and grip (MIKQ plug only)
N - Nut only (MIKQ plug only)

NOTE: Contact types cannot be interchanged between shell styles.

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

ITT

## Standard Wire Termination Codes

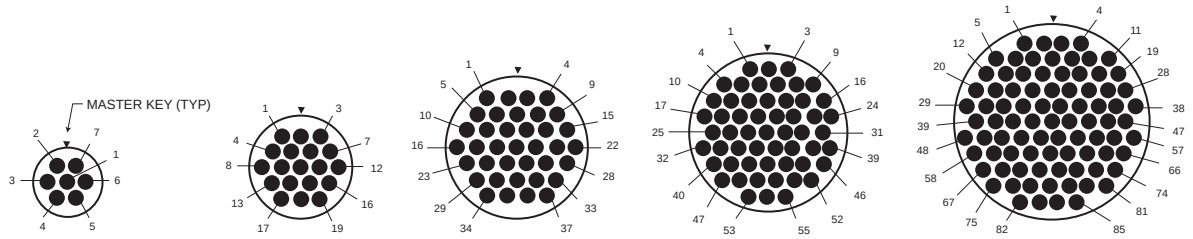
The following termination codes are listed for your information. For additional codes please refer to Appendix on page 79 and 81. **All wire lengths are minimum.**

**HARNESS TYPES (H)**
#26 AWG per MIL-W-16878 Type E, Teflon Stranded

| Length | -All Yellow | Color Coded |
|---|---|---|
| 3 (76.2) | 020 | 027 |
| 6 (152.4) | 019 | 016 |
| 8 (203.2) | 026 | 034 |
| 10 (254.0) | 029 | 025 |
| 12 (304.8) | 028 | 002 |
| 18 (457.2) | 001 | 003 |
| 20 (508.0) | 038 | 023 |
| 24 (609.6) | 009 | 004 |
| 30 (762.0) | 010 | 005 |
| 36 (914.4) | 011 | 006 |
| 48 (1219.2) | 013 | 048 |
| 72 (1828.8) | 017 | 046 |
| 120 (3048.0) | 042 | 041 |

## Contact Arrangements

**Face View, Pin Side-(Male Twist Pin Contacts)**



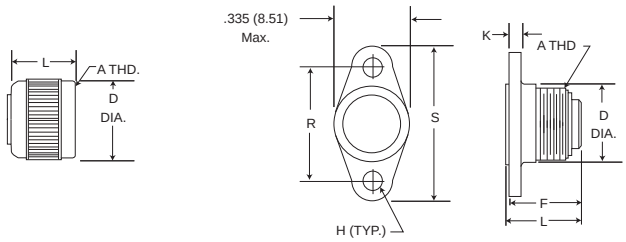

**MIK/MIKM/MIKQ 7 Contacts** | **MIKQ 19 Contacts** | **MIKQ 37 Contacts** | **MIK/MIKM 55 Contacts** | **MIKM 85 Contacts**

Cavity identification numbers are for reference only, they do not appear on connectors.

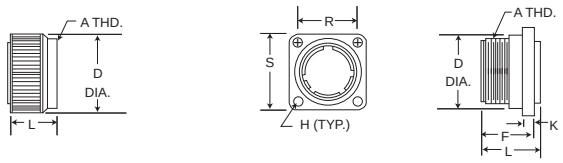
## Shell Dimensions

**MIK (Rear Panel Mount Thickness - see Tabulation "T")**

Weight given is 1/2" uninsulated, solid #25 AWG gold plated copper pigtails




**Plug** | **Receptacle Shell Size 7 only**




**Plug** | **Receptacle Shell Size 55 only**

**Plug**

| Part Number by Shell Size | A Thread | D Max. | L Max. | Avg. Weight oz. (gm.) ±5% |
|---|---|---|---|---|
| **MIK6-7P** | 5/16-24UNF-2B | .375 (9.52) | .315 (8.00) | .054 (1.54) |
| **MIK6-55P** | 9/16-24UNF-2A | .755 (19.18) | .460 (11.68) | .202 (5.72) |

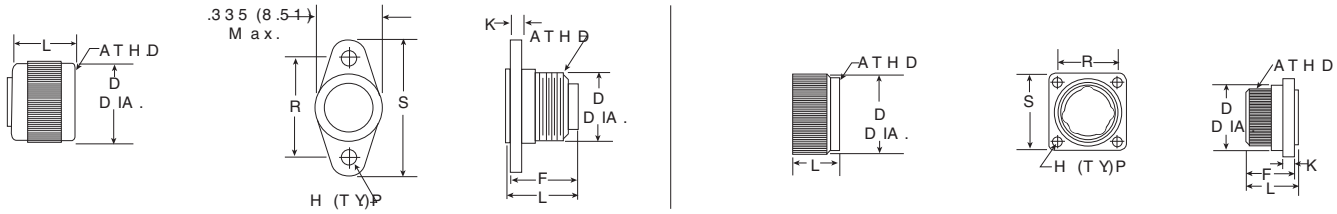
**Receptacle**

| Part Number by Shell Size | A Thread | D ± .010 (0.25) | F Max. | H ± .003 (0.08) | K ± .010 (0.25) | L Max. | R ± .005 (0.13) | S Max. | T Max. | Avg. Weight oz. (gm.) ± 5% |
|---|---|---|---|---|---|---|---|---|---|---|
| **MIK0-7S** | 5/16-24UNF-2B | .325 (8.26) | .315 (8.00) | .078 (1.98) | .062 (1.57) | .355 (9.02) | .460 (11.68) | .630 (16.00) | .032 (0.81) | .022 (.635) |
| **MIK0-55S** | 9/16-24UNF-2A | .625 (15.88) | .440 (11.18) | .089 (2.26) | .100 (2.54) | .495 (12.57) | .580 (14.73) | .760 (19.30) | .062 (1.57) | .134 (3.81) |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Shell Dimensions (Continued)

**MIKM (Rear Panel Mount Thickness .335 (8.51) max. - see Tabulation "T")**




**Plug** | **Receptacle Shell Size 7 only** | **Plug** | **Receptacle Shell Size 55 & 85**

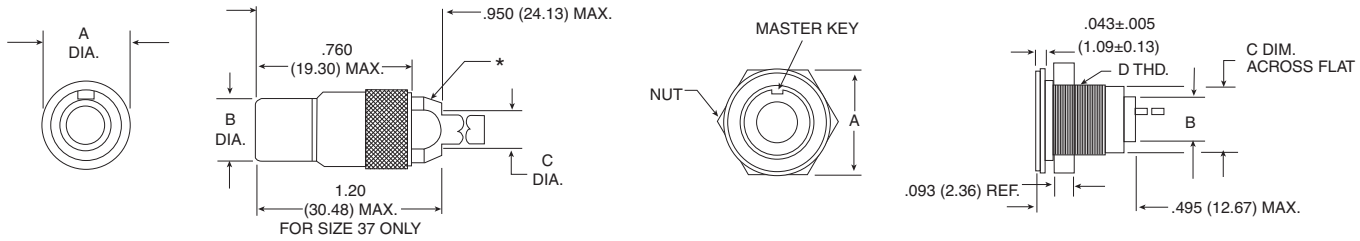
**Plug**

| Part Number by Shell Size | A Thread | D Max. | L Max. | Avg. Weight oz. (gm.)±5% |
|---|---|---|---|---|
| MIKM6-7P | 5/16-24UNF-2A | .375 (9.52) | .315 (8.00) | .054 (1.54) |
| MIKM6-55P | 5/8-24UNEF-2B | .775 (19.18) | .440 (11.18) | .333 (9.44) |
| MIKM6-85P | 11/16-24UNEF-2B | .860 (21.84) | .460 (11.68) | .419 (11.88) |

**Receptacle**

| Part Number by Shell Size | A Thread | D | F Max. | H ± .003 (0.08) | K | L Max. | R ± .005 (0.13) | S Max. | T Max. | Avg. Weight oz. (gm.)±5% |
|---|---|---|---|---|---|---|---|---|---|---|
| MIKM0-7S | 5/16-24UNF-2A | .325 (8.26) | .320 (8.13) | .078 (1.98) | .062 (1.57) | .400 (10.16) | .460 (11.68) | .630 (16.00) | .032 (0.81) | .051 (1.45) |
| MIKM0-55S | 5/8-24UNEF-2A | .625 (15.88) | .440 (11.18) | .091 (2.31) | .062 (1.57) | .490 (12.45) | .580 (14.73) | .760 (19.30) | .125 (3.18) | .269 (7.62) |
| MIKM0-85S | 11/16-24UNEF-2A | .745 (18.92) | .440 (11.18) | .091 (2.31) | .062 (1.57) | .490 (12.45) | .674 (17.12) | .845 (21.46) | .125 (3.18) | .346 (9.80) |

**MIKQ (Front Panel Mounting Type Shown-.093 (2.36) Thickness)**




**Plug** | **Receptacle**

**Plug**

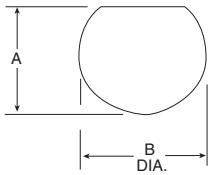
| Part Number by Shell Size | A MAX. | B MAX. | C Ref. | Avg. Weight oz. (gm.)±5% |
|---|---|---|---|---|
| **MIKQ6-7S** | .385 (9.78) | .305 (7.75) | .180 (4.57) | .214 (6.08) |
| **MIKQ6-19S** | .515 (13.08) | .405 (10.29) | .260 (6.60) | .376 (10.70) |
| **MIKQ6-37S** | .760 (19.30) | .635 (16.13) | .350 (8.89) | .714 (20.23) |

*Std. Conn. not supplied with Cable Nut & Grip, See Mod Codes. Lanyard Relase Is Available. Consult factory.

**Receptacle**

| Part Number by Shell Size | A MAX. | B MAX. | C MAX. | D Thread | Avg. Weight oz. (gm.)±5% |
|---|---|---|---|---|---|
| **MIKQ6-7S** | .510 (12.95) | .245 (6.22) | .359 (9.12) | 3/8-32UNEF-2A | .128 (3.63) |
| **MIKQ7-19P** | .575 (14.60) | .345 (8.76) | .470 (11.94) | 1/2-28UNEF-2A | .214 (6.08) |
| **MIKQ7-37P** | .855 (21.71) | .520 (13.20) | .740 (18.80) | 3/4-20UNEF-2A | .300 (8.52) |

MIKQ Front Panel Mounting

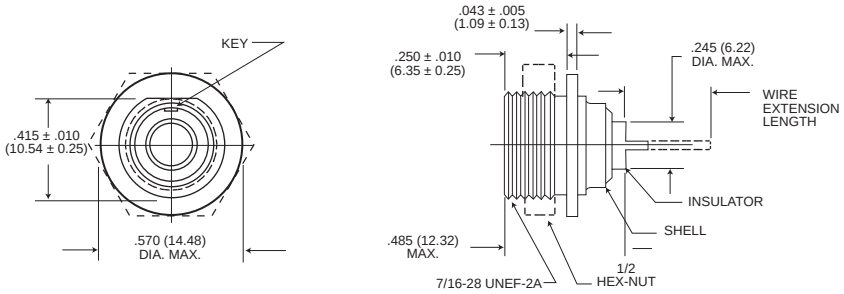



Front Panel Mounting-MIKQ7

| Shell Size | A ± .005 (0.13) | B DIA. |
|---|---|---|
| MIKQ7-7P | .364 (9.24) | .390 (9.91) |
| MIKQ7-19P | .475 (12.06) | .515 (13.08) |
| MIKQ7-37P | .740 (18.78) | .755 (19.17) |

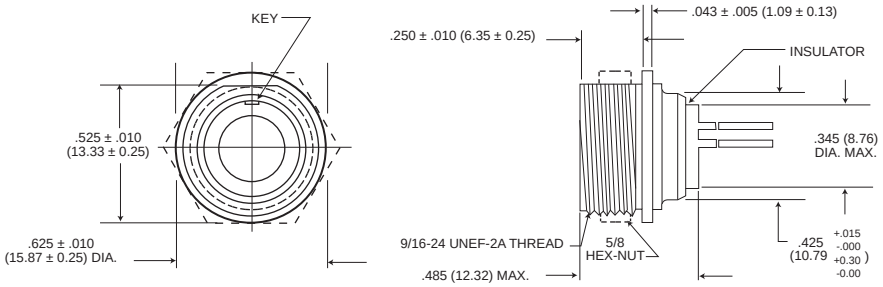
## Shell Dimensions (Continued)

**MIKQ9-7P (Back Panel Mounting)**



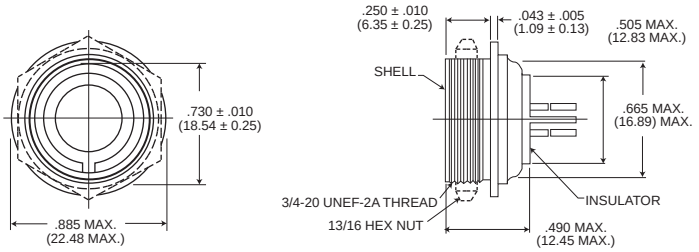

**Receptacle**

**MIKQ9-19P (Back Panel Mounting)**



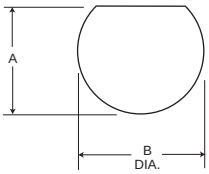

**Receptacle**

**MIKQ9-37P (Back Panel Mounting)**




**Receptacle**

**MIKQ Rear Panel Mounting**




**Rear Panel Mounting-MIKQ9**

| Shell Size | A ± .005 (0.13) | B Dia. |
|---|---|---|
| **MIKQ9-7P** | .425 (10.76) | .440 (11.18) |
| **MIKQ9-19P** | .535 (13.58) | .564 (14.33) |
| **MIKQ9-37P** | .740 (18.78) | .755 (19.17) |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

# Microstrips .050" Contact Spacing



The Cannon Microstrips provide an extremely dense and reliable interconnection solution in a minimum profile package, giving great application flexibility. Available with latches or guide pins, Microstrips are frequently found in board-to-wire applications where high reliability is a primary concern.

Three termination styles are available: solder cup, pigtail, harness, or printed circuit leads. The MicroPin Contact System assures maximum performance in a minimum package.

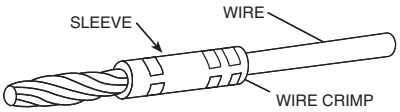
## Product Features

- High Performance MicroPin Contact System
- High-density .050" contact spacing
- Pre-wired for ease of installation
- Fully potted wire terminations
- Guide pins for alignment and polarizing
- Quick-disconnect latches
- 3 Amp current rating
- Precision crimp terminations
- Solder cup, pigtail or printed circuit terminations
- Surface mount leads

### MicroPin Contact System

The Cannon MicroPin Contact System offers uncompromised performance in downsized interconnects. The beryllium copper pin contact is fully recessed in the insulator, assuring positive contact alignment and robust performance. The socket contact is precision machined from high strength copper alloy and features a smooth lead-in chamfer.

The MicroPin features seven points of electrical contact. This contact system assures high normal force, excellent wipe and superior shock and vibration performance.



## Specifications

| | |
|---|---|
| Current Rating | 3 Amps max |
| Dielectric Withstanding Voltage | 900 VAC @ sea level; 300 VAC @ 70,000 feet altitude |
| Insulation Resistance | 5000 megohms min. |
| Contact Resistance | 8 milliohms max. |
| Operating Temperature | MTV polyester -56°C to +125°C; MTB diallyl phthalate -55°C to +150°C |
| Durability | 500 cycles min. |
| Shock/Vibration | 50 G's/20 G's |
| Connector Mating Force | (8 oz.) x (# of contacts) |
| Latch Retention | 5 lbs. min. |
| Wire Size | #26 AWG insulated wire, #25 AWG uninsulated solid wire. MT strips will also accommodate #24 AWG through #32 AWG. For other wiring options contact the factory for ordering information. |
| | General Performance requirements in accordance with MIL-DTL-83513 |

## Materials and Finishes

| | |
|---|---|
| Insulator | MTV: Glass-filled polyester per MIL-M-24519; MTB: Glass-filled diallyl phthalate per MIL-M-14 |
| Contact | Copper Alloy per MIL-C-83513 |
| Contact Finish | 50 Microinches Min. Gold Plated per MIL-G-45204 |
| Insulated Wire | #26 AWG. 19/38 Stranded, silver-plated copper, TFE Teflon insulation per MIL-W-16878/4 |
| Uninsulated Solid Wire | #25 AWG gold-plated copper per QQ-W-343 |
| Potting Material/Contact Encapsulant | Epoxy |
| Latch | 300 series stainless steel, passivated |

ITT

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## How to Order

R MTV1 – 16 P H001 01

**RoHS Compliance**

**Series**

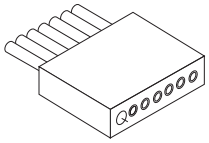
MTB1 – High Temperature Diallyl Phthalate 150°C (Recommended for severe environments)
MTV1 – Polyester 125°C (Recommended for general purpose use)

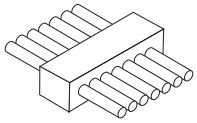
**Number of Cavities**

2 through 40.
This number is the total number of cavities including guide pins and latches. 40 positions is the maximum recommended size for standard strips, but sizes up to 120 positions are available on request.

**Contact Type**

P- Pin
S – Socket


Pin Strip

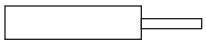

Socket Strip

**Termination Style**

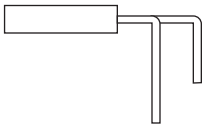
**Solder Cup** contacts for customer termination
S

**Pre-wired Pigtails**
H067 – Pre-wired pigtail with 18” of insulated Teflon wire per M22759/11, #26 AWG, 19 strand, yellow
HY01 – Pre-wired pigtail with 18” of insulated Teflon wire per M22759/11, #26 AWG, 19 strand, 10 color repeating

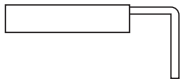
**Straight Terminals** .018” diameter, gold-plated
L1 – 5” extension
L2 – 1” extension
L57 – .190” extension
L61 – .125” extension



**Right Angle Terminals** staggered footprint .018” diameter, gold plated
AL57 – .190” extension
AL61 – .125” extension



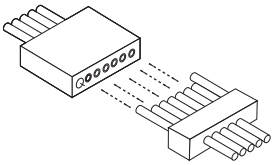
**Right Angle Terminals** .050" in-line footprint .018" diameter, gold plated
BL57 – .190” extension
BL61 – .125” extension

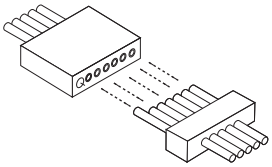


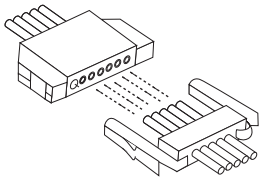
**Surface Mount** .018” diameter, gold-plated
CL1

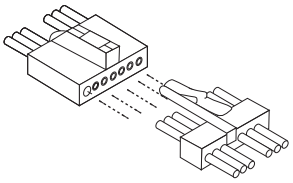
**Guide Pin and Latch Options**

01 – Guide pin installed in end cavities of socket strip. Blank holes in end cavities of pin strip.
02 – Guide pin installed in cavity #1 of socket Strip. Blank holes in cavity #1 of pin strip.
03 – Spring latches installed in end cavities of socket strip. Latch clips installed in end cavities of pin strip. For use with MTV1 only.
04 – Spring latch installed in center cavity of socket strip. Spring latch installed in center cavity of pin strip. For use with MTV1 only.


01
Guide Pins In End Cavities


02
Guide Pins In Cavity #1


03
End Latches

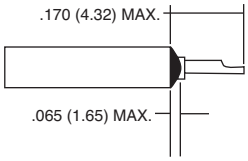

04
Center Latch

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

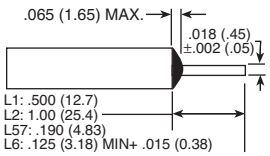
## Connector Weights

| | | | |
|---|---|---|---|
| Contact (with std. 1/2" copper pigtails) | | | .040 gms. |
| | MTB | pin | .021 gms. |
| Insulator (per contact cavity) | MTV | socket | .006 gms. |
| | | pin | .014 gms. |
| | | socket | .004 gms. |
| Guide Post | Stainless Steel | | .035 gms. |
| Latch | Male | | .035 gms. |
| | Female | | .074 gms. |

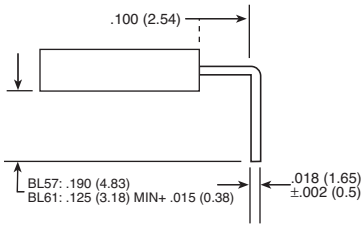
## Terminal Dimensions



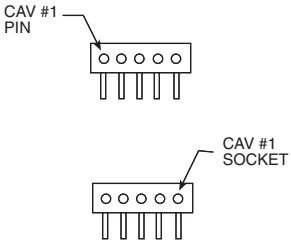

**Solder Cup**

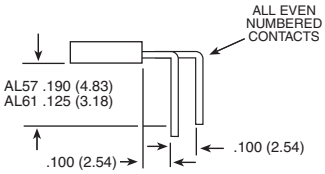



**Straight Terminals**

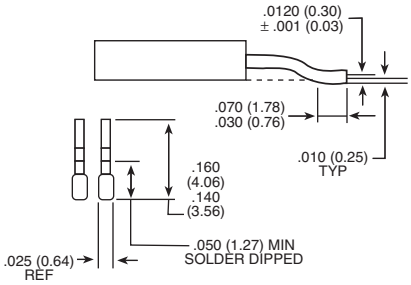



**Right Angle Terminals**
**.050" Centers**



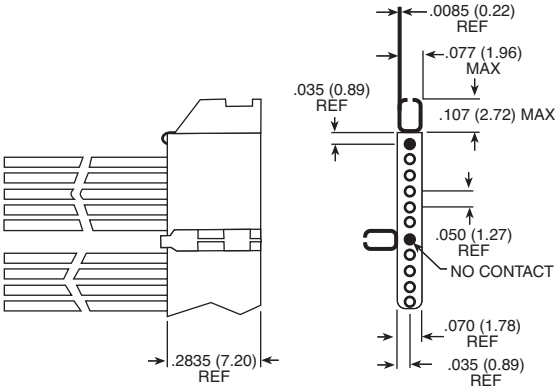




**Right Angle Terminals**
**.100" Spacing Staggered**

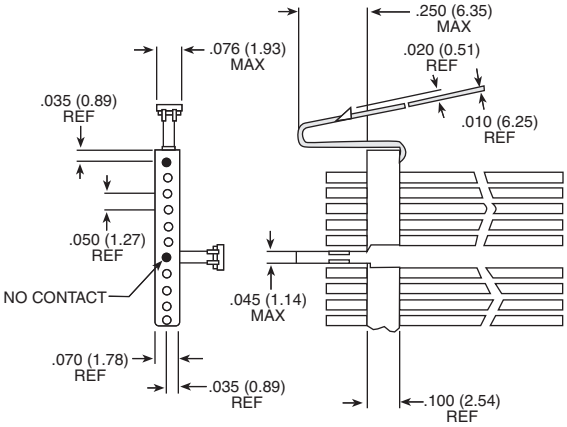



**Surface Mount Terminals**

## Latch Dimensions

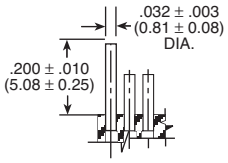



**Female Latch**




**Male Latch**

## Guide Pin Dimensions




## Standard Wire Termination Codes

The following termination codes are listed for your information. For additional codes please refer to Appendix on page 79 and 81. **All wire lengths are minimum**.

**Harness Type - (H)**
#26 AWG per MIL-W-16878 Type E; Teflon Stranded

| Length | All Yellow | Color Coded |
|---|---|---|
| 3 (76.2) | H020 | H027 |
| 6 (152.4) | H019 | H016 |
| 8 (203.2) | H026 | H034 |
| 10 (254.0) | H029 | H025 |
| 12 (304.8) | H028 | H002 |
| 18 (457.2) | H001 | H003 |
| 20 (508.0) | H033 | H023 |
| 24 (609.6) | H009 | H004 |
| 30 (762.0) | H010 | H005 |
| 36 (914.4) | H011 | H006 |
| 48 (1219.2) | H013 | H048 |
| 72 (1828.5) | H017 | H046 |
| 120 (3048.0) | H042 | H041 |

**Solid Uninsulated Type - (L)**
#25 AWG Gold Plated Copper

| Termination Code | Length |
|---|---|
| L61 | .125 (3.18) |
| L56 | .150 (3.81) |
| L57 | .190 (4.83) |
| L39 | .250 (6.35) |
| L58 | .375 (9.52) |
| L1 | .500 (12.70) |
| L14 | .750 (19.05) |
| L2 | 1.000 (25.40) |
| L7 | 1.500 (38.10) |
| L6 | 2.000 (50.80) |
| L16 | 2.500 (63.50) |
| L10 | 3.000 (76.20) |

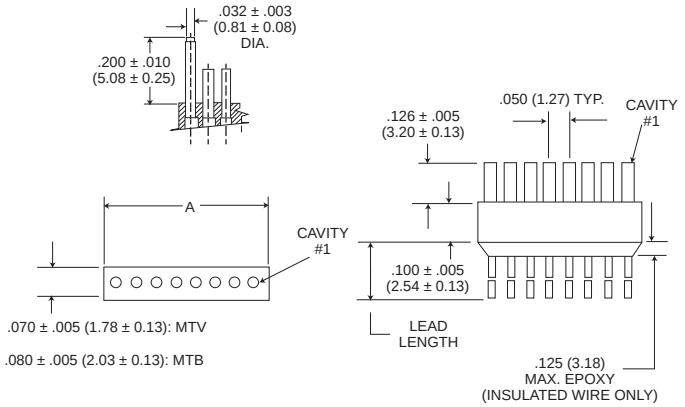
Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Polarization

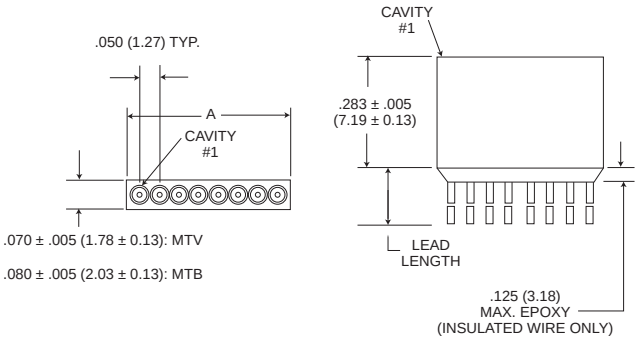
Modification code "-01" in the part number refers to guide posts located on both ends of the socket side of the 50-MIL STRIP connector and empty cavities on the pin side to accept the guide posts.

Although in many cases it is not necessary to polarize 50-MIL STRIP connectors, there are several ways to prevent cross plugging. One method is the use of guide posts that can be located in specified cavities to assure that the contacts will align when these post are positioned before mating.

## MTB1 and MTV1 - .050 (1.27) Contact Centers




Receptacle

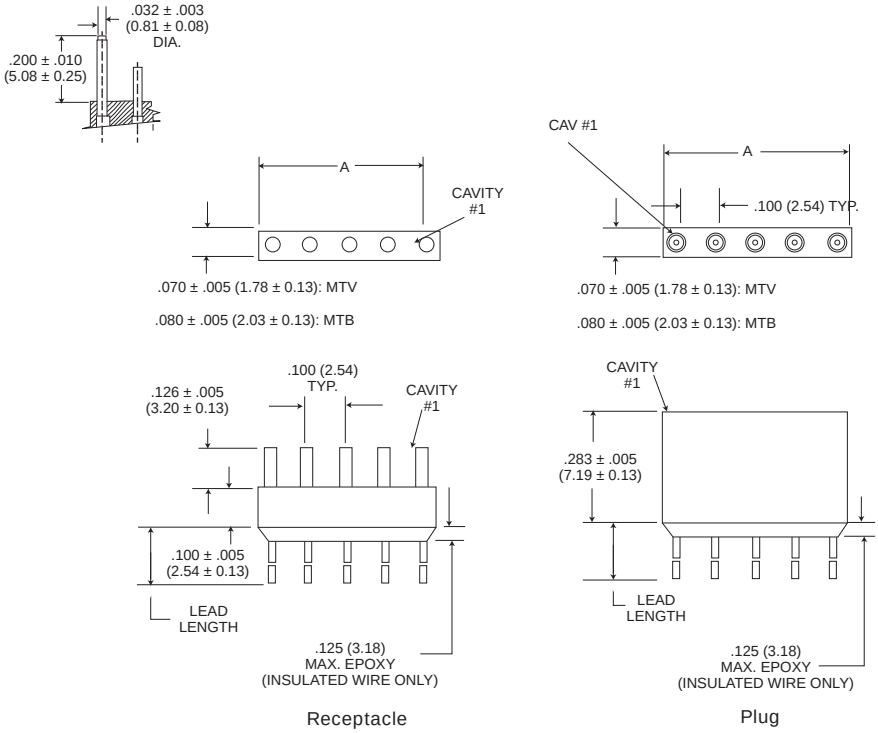



Plug

| Part Number by Size | A ±.015 (0.38) | Part Number by Size | A ±.015 (0.38) | Part Number by Size | A ±.015 (0.38) | Part Number by Size | A ±.015 (0.38) | Part Number by Size | A ±.015 (0.38) | Part Number by Size | A ±.015 (0.38) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MT*1-1**** | .070 (1.78) | **MT*1-21**** | 1.070 (27.18) | **MT*1-41**** | 2.070 (52.58) | **MT*1-61**** | 3.070 (77.98) | **MT*1-81**** | 4.070 (103.38) | **MT*1-101**** | 5.070 (128.78) |
| **MT*1-2**** | .120 (3.05) | **MT*1-22**** | 1.120 (28.45) | **MT*1-42**** | 2.120 (53.85) | **MT*1-62**** | 3.120 (79.25) | **MT*1-82**** | 4.120 (104.65) | **MT*1-102**** | 5.120 (130.05) |
| **MT*1-3**** | .170 (4.32) | **MT*1-23**** | 1.170 (29.72) | **MT*1-43**** | 2.170 (55.12) | **MT*1-63**** | 3.170 (80.52) | **MT*1-83**** | 4.170 (105.92) | **MT*1-103**** | 5.170 (131.32) |
| **MT*1-4**** | .220 (5.59) | **MT*1-24**** | 1.220 (30.99) | **MT*1-44**** | 2.220 (56.39) | **MT*1-64**** | 3.220 (81.79) | **MT*1-84**** | 4.220 (107.19) | **MT*1-104**** | 5.220 (132.59) |
| **MT*1-5**** | .270 (6.85) | **MT*1-25**** | 1.270 (32.36) | **MT*1-45**** | 2.270 (57.66) | **MT*1-65**** | 3.270 (83.06) | **MT*1-85**** | 4.270 (108.46) | **MT*1-105**** | 5.270 (133.86) |
| **MT*1-6**** | .320 (8.13) | **MT*1-26**** | 1.320 (33.53) | **MT*1-46**** | 2.320 (58.93) | **MT*1-66**** | 3.320 (84.33) | **MT*1-86**** | 4.320 (109.73) | **MT*1-106**** | 5.320 (135.13) |
| **MT*1-7**** | .370 (9.40) | **MT*1-27**** | 1.370 (34.80) | **MT*1-47**** | 2.370 (60.20) | **MT*1-67**** | 3.370 (85.60) | **MT*1-87**** | 4.370 (111.00) | **MT*1-107**** | 5.370 (136.40) |
| **MT*1-8**** | .420 (10.67) | **MT*1-28**** | 1.420 (36.07) | **MT*1-48**** | 2.420 (61.47) | **MT*1-68**** | 3.420 (86.87) | **MT*1-88**** | 4.420 (112.27) | **MT*1-108**** | 5.420 (137.67) |
| **MT*1-9**** | .470 (11.94) | **MT*1-29**** | 1.470 (37.34) | **MT*1-49**** | 2.470 (62.74) | **MT*1-69**** | 3.470 (88.14) | **MT*1-89**** | 4.470 (113.54) | **MT*1-109**** | 5.470 (138.94) |
| **MT*1-10**** | .520 (13.60) | **MT*1-30**** | 1.520 (38.61) | **MT*1-50**** | 2.520 (64.01) | **MT*1-70**** | 3.520 (89.41) | **MT*1-90**** | 4.520 (114.81) | **MT*1-110**** | 5.520 (140.21) |
| **MT*1-11**** | .570 (14.48) | **MT*1-31**** | 1.570 (39.88) | **MT*1-51**** | 2.570 (65.28) | **MT*1-71**** | 3.570 (90.68) | **MT*1-91**** | 4.570 (116.08) | **MT*1-111**** | 5.570 (141.48) |
| **MT*1-12**** | .620 (15.75) | **MT*1-32**** | 1.620 (41.15) | **MT*1-52**** | 2.620 (66.55) | **MT*1-72**** | 3.620 (91.95) | **MT*1-92**** | 4.620 (117.35) | **MT*1-112**** | 5.620 (142.75) |
| **MT*1-13**** | .670 (17.02) | **MT*1-33**** | 1.670 (42.42) | **MT*1-53**** | 2.670 (67.82) | **MT*1-73**** | 3.670 (93.22) | **MT*1-93**** | 4.670 (118.62) | **MT*1-113**** | 5.670 (144.02) |
| **MT*1-14**** | .720 (18.29) | **MT*1-34**** | 1.720 (43.69) | **MT*1-54**** | 2.720 (69.09) | **MT*1-74**** | 3.720 (94.49) | **MT*1-94**** | 4.720 (119.89) | **MT*1-114**** | 5.720 (145.29) |
| **MT*1-15**** | .770 (19.56) | **MT*1-35**** | 1.770 (44.96) | **MT*1-55**** | 2.770 (70.36) | **MT*1-75**** | 3.770 (95.76) | **MT*1-95**** | 4.770 (121.16) | **MT*1-115**** | 5.770 (146.56) |
| **MT*1-16**** | .820 (20.83) | **MT*1-36**** | 1.820 (46.23) | **MT*1-56**** | 2.820 (71.63) | **MT*1-76**** | 3.820 (97.03) | **MT*1-96**** | 4.820 (122.43) | **MT*1-116**** | 5.820 (147.83) |
| **MT*1-17**** | .870 (22.10) | **MT*1-37**** | 1.870 (47.50) | **MT*1-57**** | 2.870 (72.90) | **MT*1-77**** | 3.870 (98.30) | **MT*1-97**** | 4.870 (123.70) | **MT*1-117**** | 5.870 (149.10) |
| **MT*1-18**** | .920 (23.37) | **MT*1-38**** | 1.920 (48.77) | **MT*1-58**** | 2.920 (74.17) | **MT*1-78**** | 3.920 (99.57) | **MT*1-98**** | 4.920 (124.97) | **MT*1-118**** | 5.920 (150.37) |
| **MT*1-19**** | .970 (24.64) | **MT*1-39**** | 1.970 (50.04) | **MT*1-59**** | 2.970 (75.44) | **MT*1-79**** | 3.970 (100.84) | **MT*1-99**** | 4.970 (126.24) | **MT*1-119**** | 5.970 (151.64) |
| **MT*1-20**** | 1.020 (25.91) | **MT*1-40**** | 2.020 (51.31) | **MT*1-60**** | 3.020 (76.71) | **MT*1-80**** | 4.020 (102.11) | **MT*1-100**** | 5.020 (127.50) | **MT*1-120**** | 6.020 (152.91) |

NOTE: MTB1 available in up to 120 contacts.

## MTB2 and MTV2 - .100 (2.54) Contact Centers




| Part Number by Size | A ±.015 (0.38) | Part Number by Size | A ±.015 (0.38) |
|---|---|---|---|
| MT*2-1** | .070 (1.78) | MT*2-31** | 3.070 (77.98) |
| MT*2-2** | .170 (4.32) | MT*2-32** | 3.170 (80.52) |
| MT*2-3** | .270 (6.86) | MT*2-33** | 3.270 (83.06) |
| MT*2-4** | .370 (9.40) | MT*2-34** | 3.370 (85.60) |
| MT*2-5** | .470 (11.94) | MT*2-35** | 3.470 (88.14) |
| MT*2-6** | .570 (14.48) | MT*2-36** | 3.570 (90.68) |
| MT*2-7** | .670 (17.02) | MT*2-37** | 3.670 (93.22) |
| MT*2-8** | .770 (19.56) | MT*2-38** | 3.770 (95.76) |
| MT*2-9** | .870 (22.10) | MT*2-39** | 3.870 (98.30) |
| MT*2-10** | .970 (24.64) | MT*2-40** | 3.970 (100.84) |
| MT*2-11** | 1.070 (27.18) | MT*2-41** | 4.070 (103.38) |
| MT*2-12** | 1.170 (29.72) | MT*2-42** | 4.170 (105.92) |
| MT*2-13** | 1.270 (32.26) | MT*2-43** | 4.270 (108.46) |
| MT*2-14** | 1.370 (34.80) | MT*2-44** | 4.370 (111.00) |
| MT*2-15** | 1.470 (37.34) | MT*2-45** | 4.470 (113.54) |
| MT*2-16** | 1.570 (39.88) | MT*2-46** | 4.570 (116.08) |
| MT*2-17** | 1.670 (42.42) | MT*2-47** | 4.670 (118.62) |
| MT*2-18** | 1.770 (44.96) | MT*2-48** | 4.770 (121.16) |
| MT*2-19** | 1.870 (47.50) | MT*2-49** | 4.870 (123.70) |
| MT*2-20** | 1.970 (50.04) | MT*2-50** | 4.970 (126.24) |
| MT*2*21** | 2.070 (52.58) | MT*2*51** | 5.070 (128.78) |
| MT*2-22** | 2.170 (55.12) | MT*2-52** | 5.170 (131.32) |
| MT*2-23** | 2.270 (57.66) | MT*2-53** | 5.270 (133.86) |
| MT*2-24** | 2.370 (60.20) | MT*2-54** | 5.370 (136.40) |
| MT*2-25** | 2.470 (62.74) | MT*2-55** | 5.470 (138.94) |
| MT*2-26** | 2.570 (65.28) | MT*2-56** | 5.570 (141.48) |
| MT*2-27** | 2.670 (67.82) | MT*2-57** | 5.670 (144.02) |
| MT*2-28** | 2.770 (70.36) | MT*2-58** | 5.770 (146.56) |
| MT*2-29** | 2.870 (72.90) | MT*2-59** | 5.870 (149.10) |
| MT*2-30** | 2.970 (75.44) | MT*2-60** | 5.970 (151.64) |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

# Micro Edgeboard - .050" Contact Spacing MEB

The Micro Edgeboard (MEB) connector series provides a combination of high density and high reliability for applications in airborne and space systems, computers and peripherals, and industrial /commercial control systems. This series incorporates the proven MICROPIN™/MICROSOCKET™ contact. This contact has an outstanding record of high reliability and millions of contacts are in use in various applications where electrical interconnects are used.

The MEB has machined aluminum shells for ruggedness, diallyl phthalate insulator for top electrical performance and a 36-position polarization key system to prevent cross plug-ging. Contacts are on .050 (1.27) center spacings. A variety of termination types are available, including 90° or right angle pigtails for multi-layered P.C. boards, "coke bottle" termination for double-sided P.C. boards. Harnessing capability is also available for both pin and socket sides.

The MEB, including the SBR 90° or right angle variation available for multi-layer boards, can be mounted on the female (daughter) side of double or single-sided P.C. boards. The mating male (mother) board side can have the terminations formed to meet the application demands.

Conforms to MIL-C-55302/120 thru 123. (not qualified)

## Specifications

**MATERIALS AND FINISHES**

| | |
|---|---|
| Shell: | 6061-T6 Aluminum Alloy per QQ-A-200/8 or QQ-A-225/8, electroless nickel per SAE AMS-C-26074, Class 4, except .0010 to .0015 (0.03 to 0.04) thick or conversion coating per MIL-C-5541, Class 3, color gold. |
| Contact, Pin and Socket: | Copper Alloy, 50 microinch gold per ASTM B488, Type II, Code C, Class 1.25 |
| Jackscrew/Jackpost: | 303 stainless steel, passivated per QQ-P-35. |
| Insulator: | Glass-filled diallyl phthalate per MIL-M-14, Type SDG-F, color green Polyester per MIL-M-24519, Type GPT-30F , color black available for MEB-128 upon request. |

**TERMINATION TYPES**

Consult factory for stranded wie lead modifications codes.

**MECHANICAL FEATURES**

| | |
|---|---|
| Size or Length: | 2 sizes |
| Coupling: | Friction/Jackscrew |
| Polarization: | Shells, polarizing keys (36 positions) |
| Contact Spacing Centers: | .050 (1.27) |
| Shell Styles: | Plug and receptacle |

## How to Order

Not applicable for printed circuit board configurations shown on pages 55 & 56

**R MEB 1 - 128 P * * ***

- **R** — RoHS COMPLIANCE
- **MEB** — SERIES PREFIX
- **1** — CONTACT SPACING
- **128** — LAYOUT
- **P** — CONTACT TYPE
- ***** — TERMINATION MODIFICATIONS
- ***** — LEAD LENGTH
- ******* — OTHER MODIFICATIONS

**SERIES PREFIX**

MEB - Micro edgeboard, plug with twist pin contacts or recept. with microsocket contacts.

**CONTACT SPACING**

1 - .050 (1.27) centers 128/184
2 - .100 (2.54) centers 64/92
(alternate contact holes)

**LAYOUT**

64, 92, 128, 184

**CONTACT TYPE**

P - Pin
S - Socket

* For other contact spacing acommodations consult customer service.

**TERMINATION MODIFICATIONS**

L - Uninsulated solid wire
H - Insulated stranded round harness wire
S - Solder pots
BR - PC board right angle, socket side only

**LEAD LENGTH**

Consult factory for wire lead modification codes.

**OTHER MODIFICATIONS**

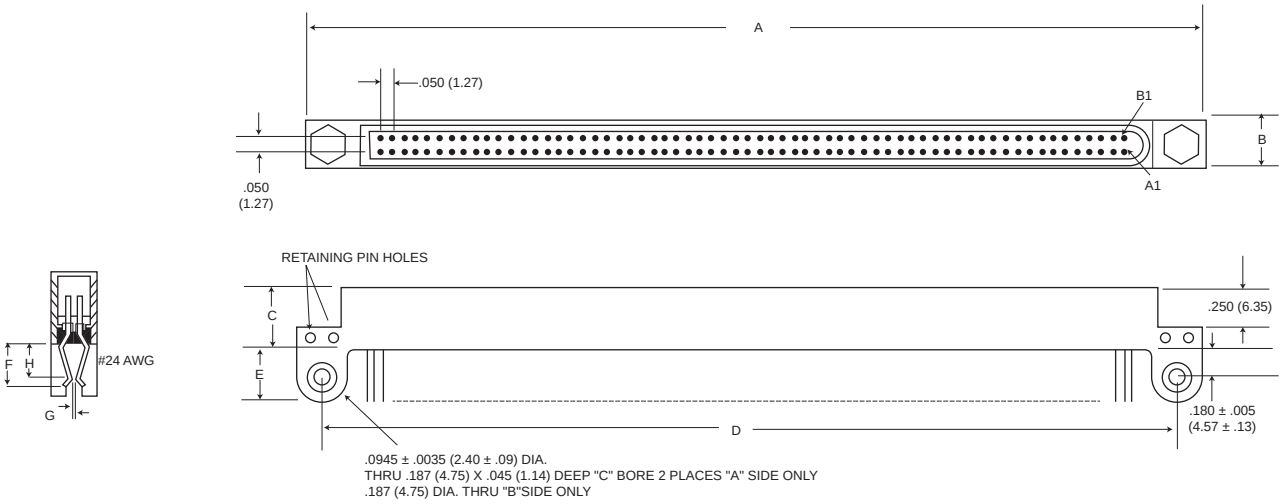
Consult factory

ITT

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Plug (Mother Board)

MEB1-12BS

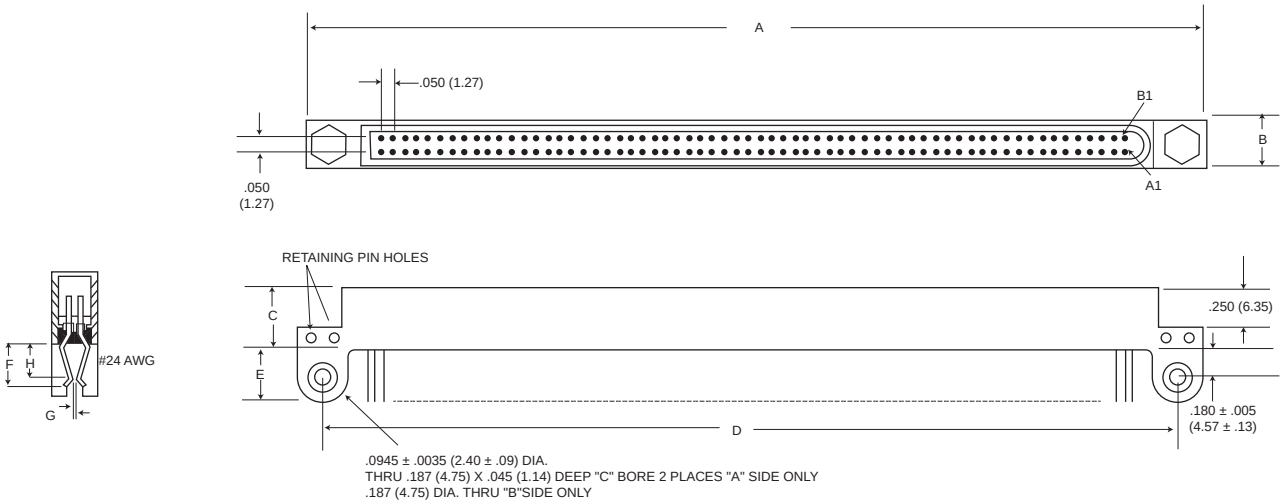



| Part No. | Weight oz. (gm.) Max. | A ±.015 (0.38) | B ±.010 (0.25) | C ±.010 (0.25) | D ±.010 (0.25) | E ±.010 (0.25) | F Max. | G* Max. | H ±.020 (0.51) |
|---|---|---|---|---|---|---|---|---|---|
| 128S | .5 (14.17) | 3.950 (100.33) | .250 (6.35) | .400 (10.16) | 3.700 (93.98) | .300 (7.62) | .280 (7.11) | .030 (0.76) | .200 (5.08) |
| 128SBR | .5 (14.17) | | | | | | | | |

*Will accept up to .093 (2.36) thick P.C. Board with shell modifications.

## Receptacle (Daughter Board)

MEB1-12BS



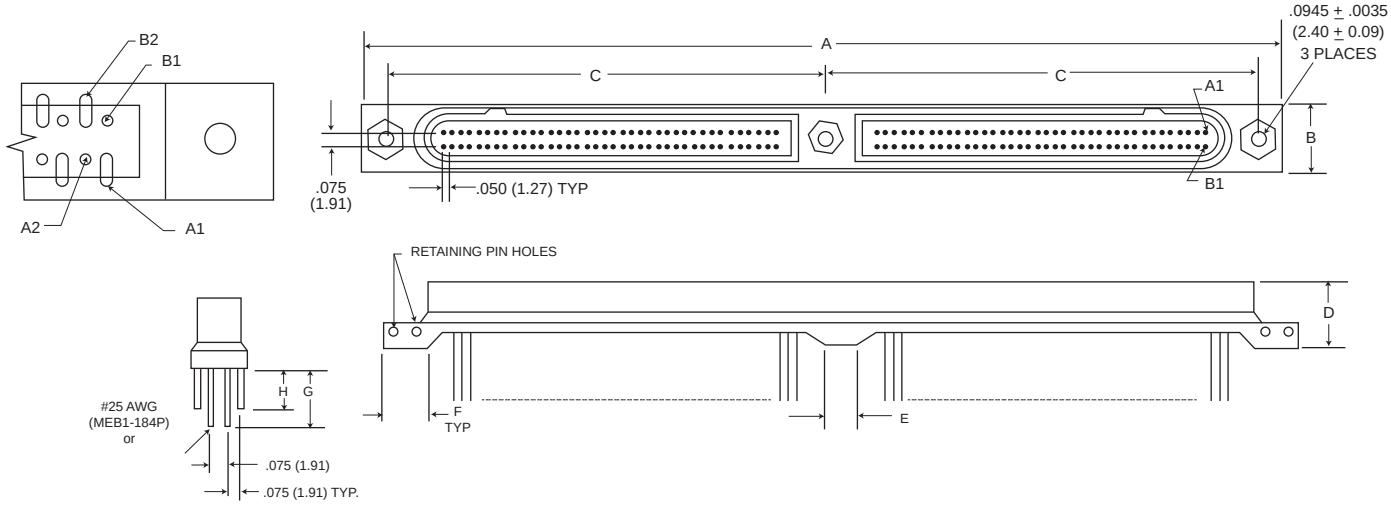

| Part No. | Weight oz. (gm.) Max. | A ±.015 (0.38) | B ±.010 (0.25) | C ±.010 (0.25) | D ±.010 (0.25) | E ±.010 (0.25) | F Max. | G* Max. | H ±.020 (0.51) |
|---|---|---|---|---|---|---|---|---|---|
| 128S | .5 (14.17) | 3.950 (100.33) | .250 (6.35) | .400 (10.16) | 3.700 (93.98) | .300 (7.62) | .280 (7.11) | .030 (0.76) | .200 (5.08) |
| 128SBR | .5 (14.17) | | | | | | | | |

*Will accept up to .093 (2.36) thick P.C. Board with shell modifications.

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Plug (Mother Board)

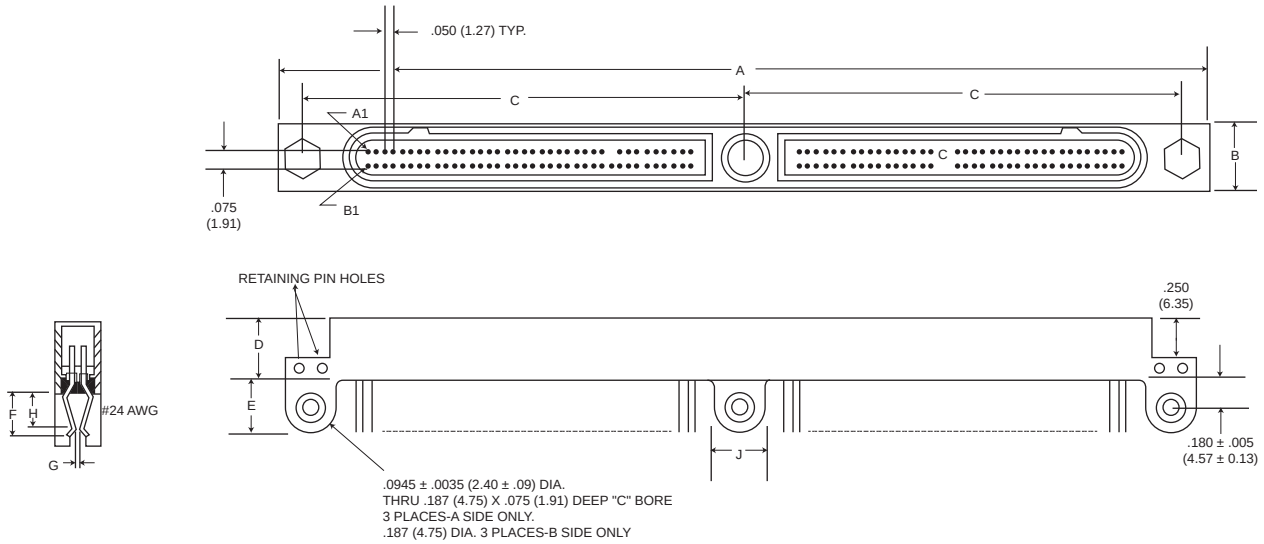
**MEB1-184P**




| Part No. | Weight oz. (gm.) Max. | A ±.015 (0.38) | B ±.010 (0.25) | C ±.005 (0.13) | D ±.010 (0.25) | E ±.010 (0.25) | F ±.010 (0.25) | G ±.025 (0.64) | H ±.025 (0.64) |
|---|---|---|---|---|---|---|---|---|---|
| **184P** | 1.0 (28.35) | 5.800 (147.32) | .343 (8.71) | 2.775 (70.49) | .400 (10.16) | .250 (6.35) | .280 (7.11) | .350 (8.89) | .275 (6.99) |

## Receptacle (Daughter Board)

MEB1-184S



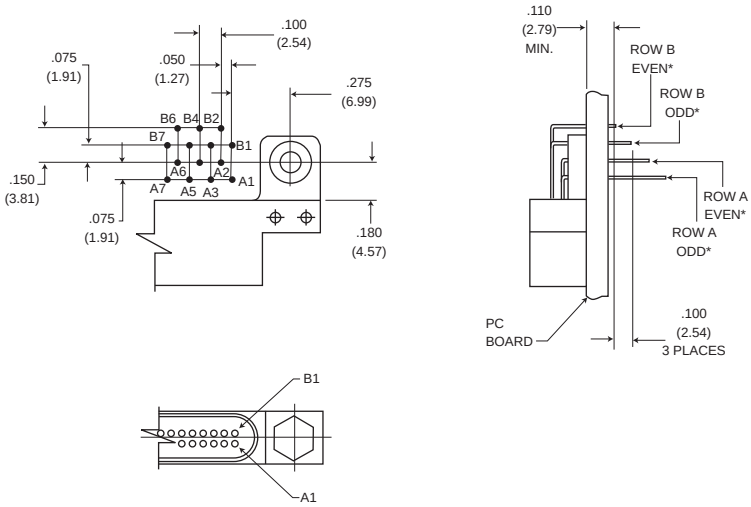

| Part No. | Weight oz. (gm.) Max. | A ±.015 (0.38) | B ±.010 (0.25) | C ±.005 (0.13) | D ±.010 (0.25) | E ±.010 (0.25) | F Max. | G Max. | H ±.020 (0.51) | J ±.010 (0.25) |
|---|---|---|---|---|---|---|---|---|---|---|
| 184S | 1.0 (28.35) | 5.800 (147.32) | .343 (8.71) | 2.775 (70.49) | .400 (10.16) | .300 (7.62) | .280 (7.11) | .030 (0.76) | .200 (5.08) | .250 (6.35) |
| 184SBR | 1.0 (28.35) | | | | | | | | | |

All round pigtail #25 AWG wire termination designs available for the MEB1-12B receptacle will apply on the MEB1-184 series also.

*Will accept up to .093 (2.36) thick P.C. Board with shell modifications.

## PC Board Right Angle

MEB1-128SBR

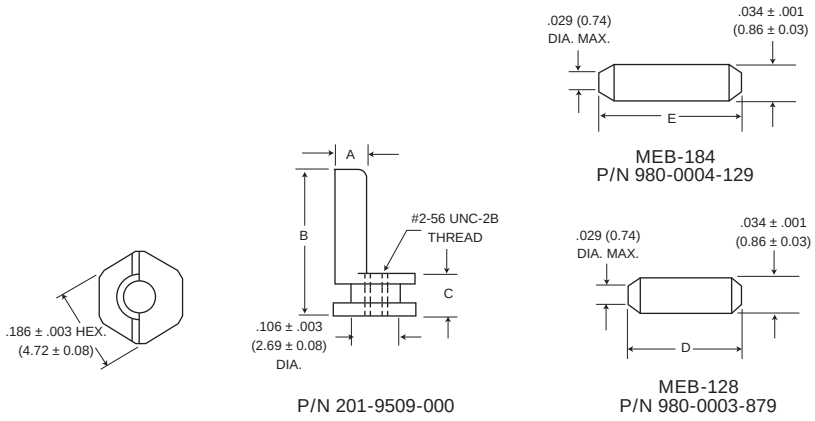



## Keying Accessory - Key and Retaining Pin

Polarizing Hardware Kit

MEB-128-P/N 320-9514-003
MEB-184-P/N 320-9514-002

Contains 2 polarizing keys and 4 spiral pins.




| A<br>± .003 (0.08) | B<br>± .005 (0.13) | C<br>± .003 (0.08) | D<br>± .010 (0.25) | E<br>± .010 (0.25) |
|---|---|---|---|---|
| .081 (2.06) | .325 (8.26) | .089 (2.26) | .250 (6.35) | .313 (7.95) |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Jackscrew/ Jackpost Assembly (MEB 64 & 128 Sizes Only)

Jackpost Kit

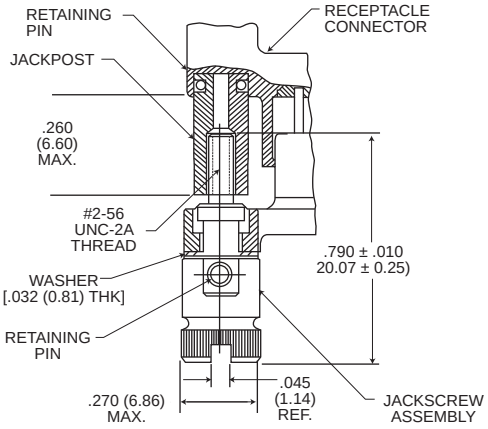
MEB plug or receptacle-P/N 320-9514-001

Contains 2 bushings and 4 spirals pins

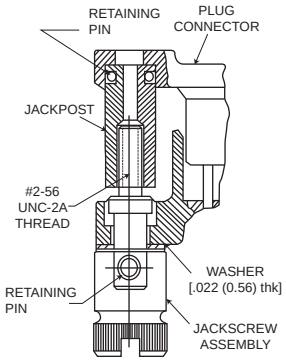
Jackscrew Kit

MEB plug-P/N 320-9521-001
MEB receptacle-P/N 320-9521-000

Contains 2 jackscrew assemblies



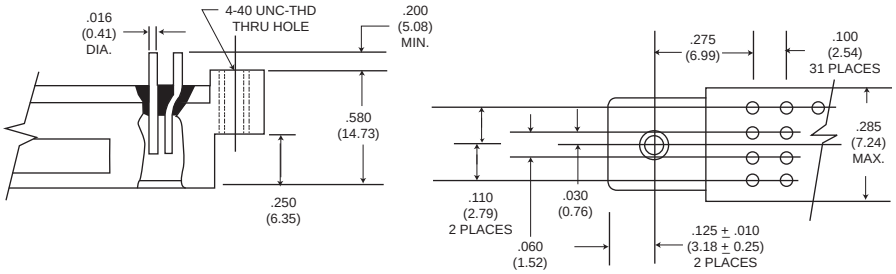

Plug with Jackscrew




Receptacle with Jackscrew

## Special Variations

**Alternative Receptacle Configuration**




Dimensions shown in inch (mm)
Specifications and dimensions subject to change

# The Centi Line - .075" Contact Spacing

The Cannon Centi connectors are especially suitable for commercial applications such as computers, instrumentation, communications and audio equipment. They are available in D subminiature size metal shell rectangular, plastic shell rectangular and strip configurations.

All Centi connectors use the reliable twist pin contact design in a 5 amp version terminated on .075 (1.91) and .100 (2.54) centers. The Centi contact is crimp removable, connectors are available for customer assembly. Standard crimp and assembly tools are available.

The twist pin contact is recessed within the insulator housing while the rugged cylindrical socket is exposed. When the connector halves are mated, the chamfered sockets guide the pins into positive alignment. The Centipin™ contact, now under compression, forms a multi-point contact with the Centisocket™ to provide a high degree of reliability.

## Standard Data

- Contact rating: 5 amps max, except BR Series (2 amps max.)
- Minimum contact centers: 0.075 (1.91).
- Wire sizes: #22 thru #26 AWG, stranded or solid.
- Contact termination: Multiple indent crimp.
- Contact retention: Crimp snap-in/removable.
- Contact materials and finish: Copper alloy, gold- plated per ASTM B488, Type II, Code C, Class 1.25.
- Mating/unmating force: 12 oz. per contact, max.

## Performance Data

| Test | Method | Criteria of Acceptance |
|---|---|---|
| Dielectric Withstanding Voltage | Method 301:<br>1,000 VAC at sea level<br>300 VAC at 70,000' altitude | <br>No breakdown<br>No breakdown |
| Insulation Resistance | Method 302, Condition A | 5,000 megohms minimum |
| Thermal Shock | Method 107, Condition A<br>+55˚C to +85˚C | No physical damage |
| Physical Shock | Method 213, Condition I:<br>100 G's, 3 axes, 6 millisecond duration sawtooth pulse | No physical damage<br>No loss of continutiy> 1/µsec |
| Vibration | Method 204, Condition B:<br>15 G's, 10-2,000 Hz, 12 hours | No physical damage<br>No loss of continuity> 1µsec |
| Durability | 500 cycles of mating and unmating, 500 CPH max. | No mechanical or electrical defects |
| Moisture Resistance | Method 106, Omit 7a and 7b | Insulation resistance > 100 megohms |
| Salt Spray | Method 101, Condition B:<br>48 hours | Shall be capable of mating and unmating and meet contact resistance requirements |
| Contact Resistance | Method 307:<br>At 5 amps | <br>9 milliohms maximum |
| Contact Retention | - | 4 lb. minimum axial load<br>(after 10 insertion extraction cycles) |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

www.ittcannon.com

ITT

# Double Density D - .075" Contact Spacing

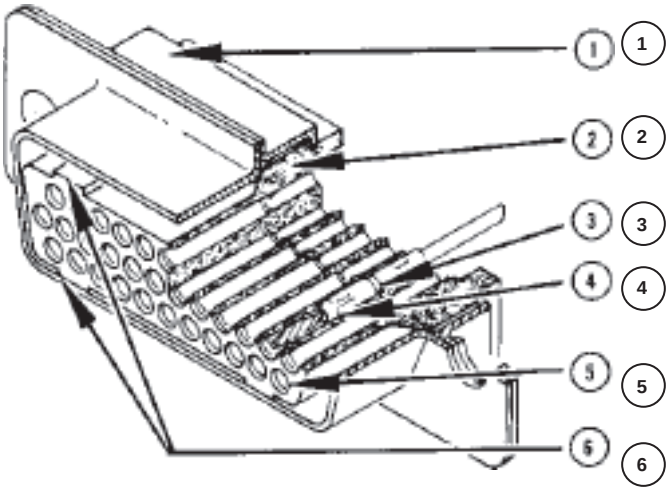


The Double Density D is a rectangular connector in the popular D Subminiature shell configuration featuring double the contact density in the same insert area. The Double Density D connector can thus accommodate up to 100 contacts instead of 50.

This double contact density is achieved by using field-proven, highly reliable Centipin™/Centisocket™ contacts on .075 (1.91) centers, in the positive contact alignment design. In this design contact positions are reversed; the flexible Centipin™ contacts are recessed in the insulator and the more rugged Centisocket™ contacts are exposed. This reversal of positions, and the chamfered-entry of the sockets, assures positive mating even under severe misalignment conditions. The contacts are retained in the monobloc insulator by a resilient internal shoulder that snaps into a locking groove in the contact. The chamfered front of the contact will not damage the internal shoulder in the insulator.

Contacts are crimp removable type.

The Double Density D connector is available in the five popular shell and insert sizes accommodating up to 100 contacts. These connectors mate exclusively with other Double Density D connectors. A wide range of accessories can be used, including junction shells, potting cups, switching shells, guide pin plates, and dust caps.




1. STANDARD D HARDWARE-
   Including full range of D-Subminiature accessories
2. ONE PIECE MONOBLOCK INSULATOR-
   glass-filled nylon material
3. CONTACT RETENTION-
   thermoplastic internal shoulder snaps into a locking groove in the contact.
   Retention Force: 8 lbs. min. initially, 4 lbs. min. after 10 cycles.
4. TWIST PIN CONTACTS-
   seven outer wiping surfaces assure electrical continuity even under severe shock and vibration
5. POSTIVE CONTACT ALIGNMENT-
   flexible pin is recessed in insulator cavity and rugged socket is exposed
6. GUIDE-IN KEYS AND KEYWAYS-
   assure alignment during mating and prevent scooping

## Specifications

### WEIGHT

| Part Number by shell size | Weight (in gr.) Less | Weight (in gr.) With Contacts | Weight (in oz.) Less | Weight (in oz.) With Contacts |
|---|---|---|---|---|
| 2DE19P | 4.05 | 5.02 | .142 | .177 |
| 2DE19S | 3.75 | 5.17 | .133 | .182 |
| 2DA31P | 5.20 | 6.78 | .183 | .239 |
| 2DA31S | 4.90 | 7.22 | .173 | .255 |
| 2DB52P | 8.75 | 11.40 | .308 | .402 |
| 2DB52S | 7.15 | 11.05 | .252 | .390 |
| 2DC79P | 11.70 | 15.73 | .413 | .555 |
| 2DC79S | 9.70 | 15.62 | .342 | .551 |
| 2DD100P | 12.85 | 17.95 | .453 | .633 |
| 2DD100S | 10.95 | 18.45 | .386 | .651 |

### MATERIALS AND FINISHES

| | |
|---|---|
| *Shell | - Steel, cadmium plated with yellow chromate supplementary coating |
| Mounting Hardware and Float Mounts | - Stainless steel |
| Insulator | - Glass-filled nylon |
| Contacts | - Copper alloy, gold plate |
| Alternate finish, Modification Code | - A106 Gold over brass<br>A156 Gold over brass<br>A197 Tin/Lead over steel |

*Brass non-magnetic also available

### MECHANICAL FEATURES

| | |
|---|---|
| Sizes | - Five shell sizes: E, A, B, C, and D |
| Coupling | - Friction or jackscrew |
| Polarization | - Keystone-shaped shells |
| Contact Spacing | - .075 (1.91) |
| Contact Termination | - Crimp snap-in |

## How to Order

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2D | E | | 19 | S | | | |
| R | 2D | A | F | 31 | P | BR | **** | |

- **RoHS COMPLIANCE** — R
- **SERIES** — 2D
- **SHELL SIZE** — A
- **FLOAT MOUNTS** — F
- **CONTACT ARRANGEMENT** — 31
- **CONTACT TYPE** — P
- **TERMINATION** — BR
- **MODIFICATION** — ****

NOTE: Connectors may be ordered less contacts by adding the mod callout "FO" at end of number. Contacts are then supplied in bulk form.

**SERIES**
2D - Double Density D

**SHELL SIZE**
E, A, B, C and D

**FLOAT MOUNTS**
Omit if not required

**CONTACT ARRANGEMENT**
19, 31, 52, 79 and 100

**CONTACT TYPE***
P - Pin
S - Socket

* Accommodates AWG #26 thru #22

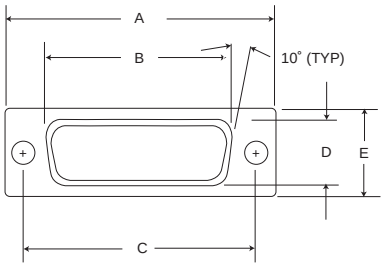
**TERMINATION**
BR - 90˚ right angle PCB mounting
(For BR Series use "P" to designate jackpost)

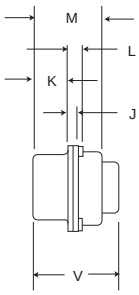
**MODIFICATION**
F171 - Jackpost assembly
F172 - Standard jackscrew
F173 - Low profile jackscrew
For other modifications consult factory

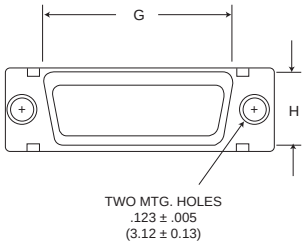
Dimensions shown in inch (mm)
Specifications and dimensions subject to change

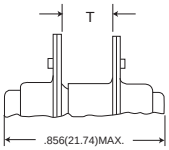
ITT

## Standard Shell



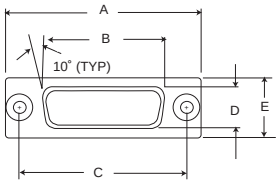



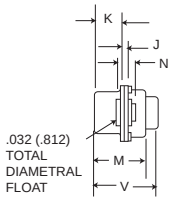



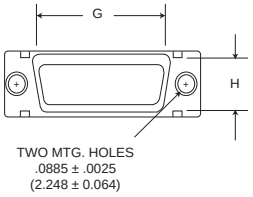




| Part Number by Shell Size | T + .020 (0.51) - .000 (0.00) | Part Number by Shell Size | T + .020 (0.51) - .000 (0.00) |
|---|---|---|---|
| 2DE19P | .250 (6.35) | 2DB52S | .236 (5.99) |
| 2DE19S | .250 (6.35) | 2DC79P | .236 (5.99) |
| 2DA31P | .250 (6.35) | 2DC79S | .236 (5.99) |
| 2DA31S | .250 (6.35) | 2DD100P | .236 (5.99) |
| 2DB52P | .236 (5.99) | 2DD100S | .236 (5.99) |

## Float Mount



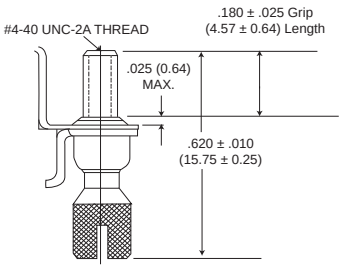



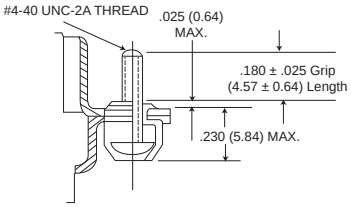

| Part Number by Shell Size | A ± .015 (0.38) | B ± .010 (0.25) | C ± .010 (0.25) | D ± .010 (0.25) | E ±.015 (0.38) | G ± .010 (0.25) | H ± .010 (0.25) | J ± .010 (0.25) | K ± .010 (0.25) | L ± .010 (0.25) | M ± .010 (0.25) | N ± .010 (0.25) | V Max. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2DE19P | 1.213 (30.81) | .697 (17.70) | .984 (24.99) | .360 (9.14) | .494 (12.55) | .759 (19.28) | .422 (10.72) | .036 (.914) | .236 (5.99) | .055 (1.40) | .422 (10.72) | .120 (3.05) | .555 (14.10) |
| 2DE19S | 1.213 (30.81) | .640 (16.26) | .984 (24.99) | .308 (7.82) | .494 (12.55) | .759 (19.28) | .422 (10.72) | .032 (213) | .243 (6.17) | .047 (1.19) | .429 (10.90) | .120 (3.05) | .555 (14.10) |
| 2DA31P | 1.541 (39.14) | 1.025 (26.03) | 1.312 (33.32) | .360 (9.14) | .494 (12.55) | 1.083 (27.51) | .422 (10.72) | .036 (.914) | .236 (5.99) | .055 (1.40) | .422 (10.72) | .120 (3.05) | .555 (14.10) |
| 2DA31S | 1.541 (39.14) | .968 (24.58) | 1.312 (33.32) | .308 (7.82) | .494 (12.55) | 1.083 (27.51) | .422 (10.72) | .032 (213) | .243 (6.17) | .047 (1.19) | .429 (10.90) | .120 (3.05) | .555 (14.10) |
| 2DB52P | 2.088 (53.03) | 1.583 (40.21) | 1.852 (47.04) | .378 (9.60) | .494 (12.55) | 1.625 (41.27) | .422 (10.72) | .036 (.914) | .231 (5.87) | .055 (1.40) | .426 (10.82) | .129 (3.28) | .555 (14.10) |
| 2DB52S | 2.088 (53.03) | 1.508 (38.30) | 1.852 (47.04) | .308 (7.82) | .494 (12.55) | 1.625 (41.27) | .422 (10.72) | .032 (213) | .243 (6.17) | .047 (1.19) | .429 (10.90) | .120 (3.05) | .555 (14.10) |
| 2DC79P | 2.729 (69.31) | 2.231 (56.67) | 2.500 (63.50) | .378 (9.60) | .494 (12.55) | 2.272 (57.71) | .422 (10.72) | .036 (.914) | .231 (5.87) | .055 (1.40) | .426 (10.82) | .129 (3.28) | .555 (14.10) |
| 2DC79S | 2.729 (69.31) | 2.156 (54.76) | 2.500 (63.50) | .308 (7.82) | .494 (12.55) | 2.272 (57.71) | .422 (10.72) | .032 (213) | .243 (6.17) | .047 (1.19) | .429 (10.90) | .120 (3.05) | .555 (14.10) |
| 2DD100P | 2.635 (66.92) | 2.127 (54.02) | 2.406 (61.11) | .484 (12.29) | .605 (15.37) | 2.178 (55.32) | .534 (13.56) | .036 (.914) | .231 (5.87) | .055 (1.40) | .426 (10.82) | .129 (3.28) | .555 (14.10) |
| 2DD100S | 2.635 (66.92) | 2.062 (52.37) | 2.406 (61.11) | .420 (10.67) | .605 (15.37) | 2.178 (55.32) | .534 (13.56) | .032 (213) | .243 (6.17) | .047 (1.19) | .429 (10.90) | .120 (3.05) | .555 (14.10) |

For shell with float mounts, add letter F after shell size, e.g., 2DEF19P.

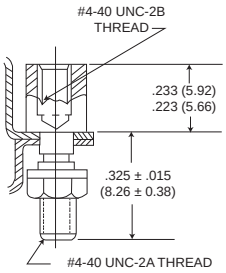
## Jackscrew/Jackpost Assembly




Standard (F172) Jackscrew
(factory installed)




Low Profile (F173) Jackscrew
(factory installed)

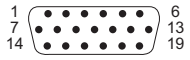



Jackpost (F171)
Front Panel Connector Mounting Only

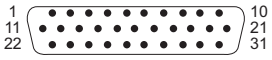
Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Contact Arrangements

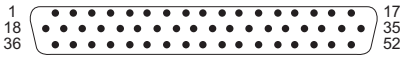
All views are pin front face. Use reverse order for socket side.



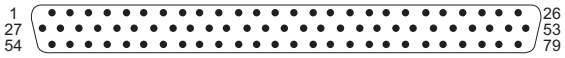

DE
19 Contacts



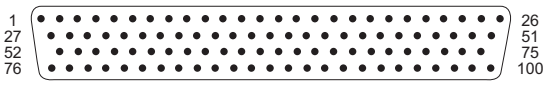

DA
31 Contacts




DB
52 Contacts



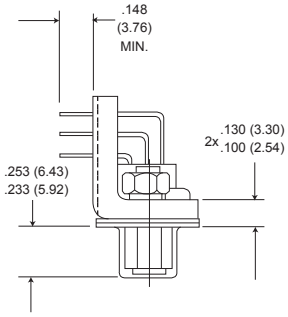

DC
79 Contacts

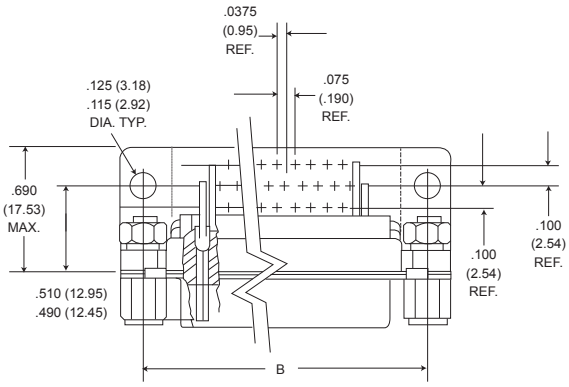


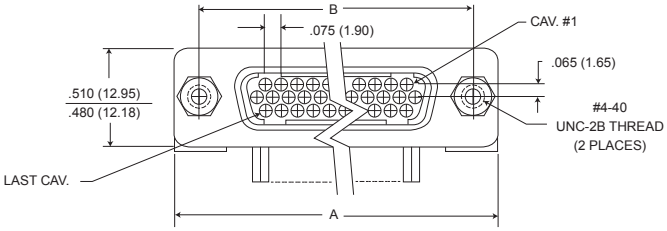

DD
100 Contacts

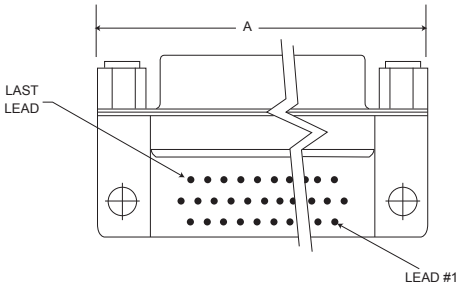
Cavity identification numbers are shown for reference only and do not appear on insulator front face. However they do appear on rear of insulator.

## 90˚ PCB Mounting - 3 Row



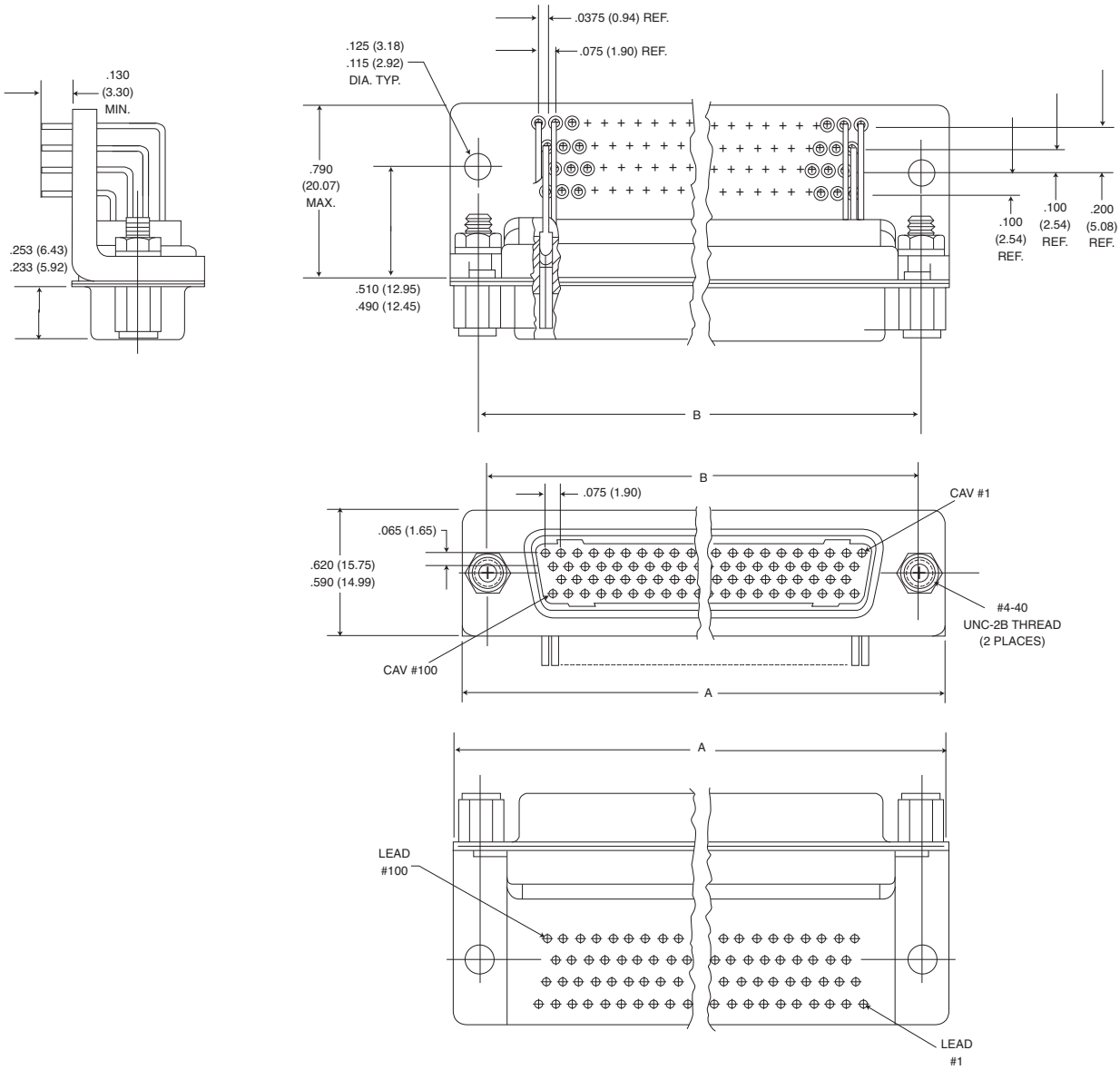




**PCB Termination Leads**
**(all contact arrangements)**
**.024 (6.10) to .028 (7.11).**

**Suggested finished PC hole**
**Size .033 (8.38) +_ .003 (0.08)**

| Part Number by Shell Size | A ± .015 (0.38) | B ± .010 (0.25) | C Max. |
|---|---|---|---|
| 2DE19SBRP | 1.215 (30.86) | .984 (24.99) | .690 (17.53) |
| 2DA31SBRP | 1.540 (39.12) | 1.312 (33.32) | .690 (17.53) |
| 2DB52SBRP | 2.090 (53.09) | 1.852 (47.04) | .690 (17.53) |
| 2DC79SBRP | 2.730 (69.34) | 2.500 (63.50) | .690 (17.53) |

## 90° PCB Mounting - 4 Row

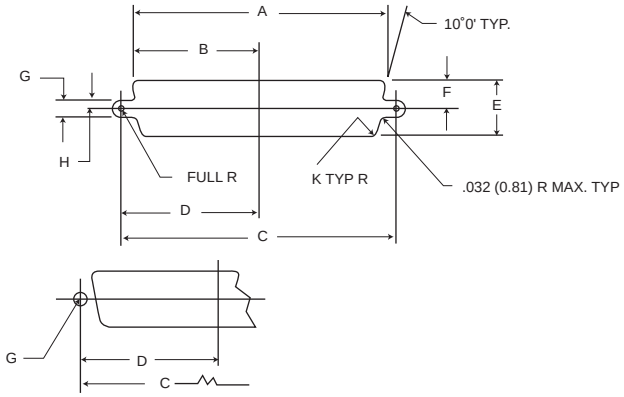



| Part Number by Shell Size | A ± .015 (0.38) | B ± .010 (0.25) | C Max. |
|---|---|---|---|
| **2DD100SBRP** | 2.635 (66.93) | 2.406 (61.11) | .790 (20.07) |


Contact Arrangements - Page 62


Dimensions shown in inch (mm)
Specifications and dimensions subject to change

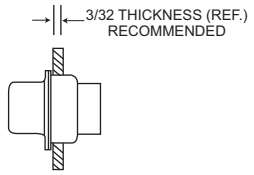
## Panel Cutouts



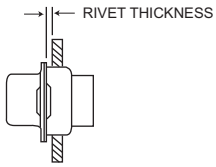

| Conn. | Mtg. Method | A ± .005 (0.13) | B ± .005 (0.13) | C ± .005 (0.13) | D ± .005 (0.13) | E ± .005 (0.13) | F ± .005 (0.13) | G ± .002 (0.05) | H ± .002 (0.05) | K ± .002 (0.05) |
|---|---|---|---|---|---|---|---|---|---|---|
| **2DE** | Front | .874 (22.20) | .437 (11.10) | .984 (24.99) | .492 (12.50) | .513 (13.03) | .257 (6.53) | .120 (3.05) | .060 (1.52) | .083 (2.11) |
| | Rear | .806 (20.47) | .403 (10.24) | .984 (24.99) | .492 (12.50) | .449 (11.40) | .225 (5.71) | .120 (3.05) | .060 (1.52) | .132 (3.35) |
| **2DA** | Front | 1.202 (30.53) | .601 (15.26) | 1.312 (33.32) | .656 (16.66) | .513 (13.03) | .257 (6.53) | .120 (3.05) | .060 (1.52) | .083 (2.11) |
| | Rear | 1.134 (28.80) | .567 (14.40) | 1.312 (33.32) | .656 (16.66) | .449 (11.40) | .225 (5.71) | .120 (3.05) | .060 (1.52) | .132 (3.35) |
| **2DB** | Front | 1.743 (44.27) | .872 (22.15) | 1.852 (47.04) | .926 (23.52) | .513 (13.03) | .257 (6.53) | .120 (3.05) | .060 (1.52) | .083 (2.11) |
| | Rear | 1.674 (42.52) | .837 (21.26) | 1.852 (47.04) | .926 (23.52) | .449 (11.40) | .225 (5.71) | .120 (3.05) | .060 (1.52) | .132 (3.35) |
| **2DC** | Front | 2.391 (60.73) | 1.196 (30.38) | 2.500 (63.50) | 1.250 (31.75) | .513 (13.03) | .257 (6.53) | .120 (3.05) | .060 (1.52) | .083 (2.11) |
| | Rear | 2.326 (59.08) | 1.163 (29.54) | 2.500 (63.50) | 1.250 (31.75) | .449 (11.40) | .225 (5.71) | .120 (3.05) | .060 (1.52) | .132 (3.35) |
| **2DD** | Front | 2.297 (58.34) | 1.149 (29.18) | 2.406 (61.11) | 1.203 (30.56) | .623 (15.82) | .312 (7.92) | .120 (3.05) | .060 (1.52) | .083 (2.11) |
| | Rear | 2.218 (56.34) | 1.109 (28.17) | 2.406 (61.11) | 1.203 (30.56) | .555 (14.10) | .278 (7.06) | .120 (3.05) | .060 (1.52) | .132 (3.35) |

For contact part numbers, termination tooling and assembly see pages 67-69.

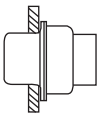
## Panel Mounting



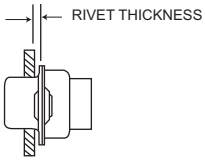

**Front Mounting Standard**




**Front Mounting Float**



**Rear Mounting Standard**




**Rear Mounting Float**

# Centi-D Loc-.075" Contact Spacing

# CDL

A subminiature all plastic high density "D" rectangular connector. The CDL is a general purpose connector with a peripheral o-ring and wire sealing gasket. Connector utilizes rear insertion, front release, crimp snap-in size 22, centi-loc contacts installable by the custormer or, if preferred, by the factory.

**MATERIAL**

| | |
|---|---|
| Insulator: | Black Nylon |
| Dielectric Gasket: | Polychloroprene |
| Contact: | Copper Alloy, Gold Plated |
| Seal Ring | Silicone |

## How to Order

**R CDL 2A - 139 P - * - F0**

- **RoHS COMPLIANCE** — R
- **SERIES** — CDL
- **TYPE** — 2A
- **CONTACT ARRANGEMENT** — 139
- **CONTACT STYLE** — P
- **MODIFICATION CODES** — *, F0

**SERIES**

Centi-D Loc Series

**TYPE**

2 - No lock (mtg. holes)
2A - No lock type with rear gasket

**CONTACT ARRANGEMENT**

139
(Consult customer service for other sizes)

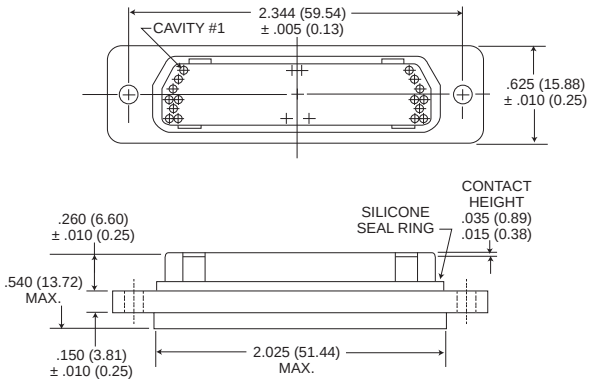
**CONTACT STYLE**

P - Centi-loc pin
S - Centi-loc socket

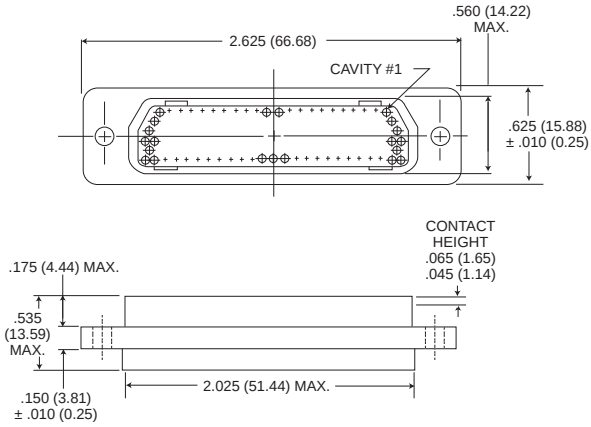
**MODIFICATION CODES**

F0 - Less contacts

## Plug

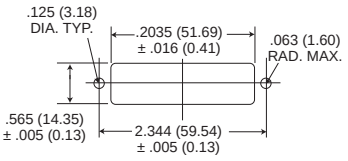



Plug



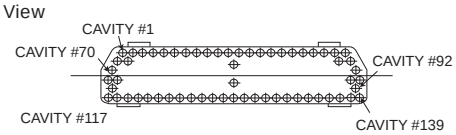

Receptacle

## Recommended Panel Cutouts

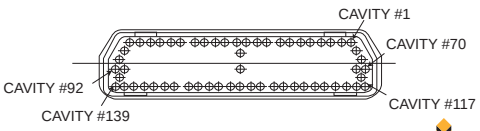



## Contact Arrangements

Engaging Face View




Plug

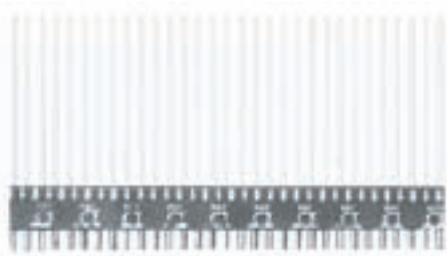



Receptacle

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

www.ittcannon.com

# Strip Connectors - .100"/.075" Contact Spacing CTA



CENTI-LOC connectors are low-cost nylon strip connectors designed for commercial applications such as instrumentation, communications, and medical equipment. They are available in continuous strip form up to a maximum length of 6 inches (152.40mm), accommodating from 1 to 60 rear insertion, front release, crimp snap-in size 22 CENTIPIN™/CENTISOCKET™ contacts. These contacts utilize a proven positive contact alignment design, giving additional contact strength and positive contact alignment during mating.

These connectors can be ordered in kit or bulk form. The kit comprises all the parts necessary to assemble one complete 6-inch (152.40) strip connector with 60 contacts on .100 (2.54) centers or a 4-inch (101.60mm) strip with 53 contacts on .075 (1.91) centers. If more then one connector is required, the parts can be ordered in bulk and assembled as desired.

## Components and Accessories

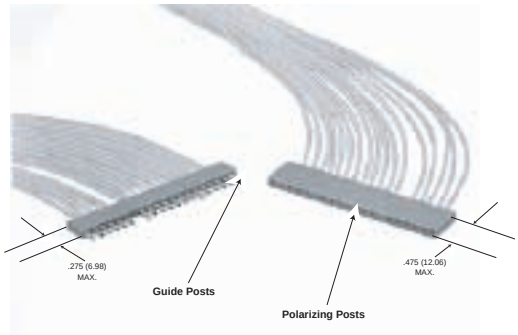
The CENTI-LOC strip connector can be ordered in kit or bulk form. The kit includes matin g insulators with a full compliment of contacts and two guide posts. If more than one connector is required, the parts can be ordered in bulk and assembled as desired.

**Kit Form**

Kits include mating insulators with full complement of contacts and two guide posts.

| Part Number | Contact Center spacing |
|---|---|
| CTA3-KIT | .075 (1.91) |
| CTA4-KIT | .100 (2.54) |
| CTA3-CTA4-KIT | .075 (1.91) & .100 (2.54) |

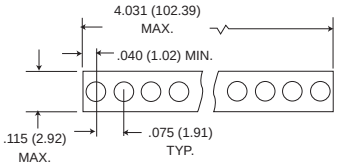
Insulator



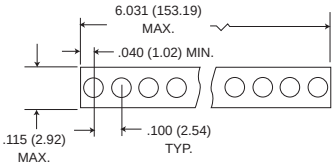

The guide posts and polarizing posts are inserted in the same manner as the contacts. The guide posts are inserted into the socket insulator and the polarizing posts are inserted into the pin insulator. The corresponding contact in the mating insulator must be removed for each.
See assembly instructions.

| | Part Number | Contact Center Spacing | Type | Material |
|---|---|---|---|---|
| Insulator | CTA3-IP-53 | .075 (1.91) | Pin | Nylon |
| | CTA3-IS-53 | .075 (1.91) | Socket | Nylon |
| | CTA4-IP-60 | .100 (2.54) | Pin | Nylon |
| | CTA4-IS-60 | .100 (2.54) | Socket | Nylon |
| Guide Post | CTA-GP | P/N 230-9507-000 | | Passivated Stainless Steel |
| Polarizing Post | CTA-PP | P/N 230-9506-000 | | Passivated Stainless Steel |

## Dimensional Data




CTA3-.075(1.91) Centers




CTA4-.100(2.54) Centers

Weights

| Part Number | No. of Contacts | Contacts Type | Avy. Weight oz. | ± 5% gm. |
|---|---|---|---|---|
| CTA3 | 53 | pin | .185 | 5.25 |
| | | socket | .203 | 5.75 |
| CTA4 | 60 | pin | .230 | 6.30 |
| | | socket | .241 | 6.90 |

ITT

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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## Contacts

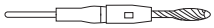
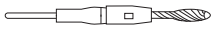
A resilient internal shoulder retains the contacts in the insulator housing. The front of the contact is chamfered to prevent damage to the internal shoulder as the contact is pushed into position.

**P.C. Tail Contacts**

Subtract .064 (1.63) ± .010 (.25) from pigtail length when used in 2D pin insulator for potting well of connector assembly.

Subtract .081 (2.08) ± .010 (.25) from pigtail length when used in 2D socket insulator for potting well of connector assembly.

**Contact Part Number**

| Part Number Pin | Part Number Socket | Type | Pin | Socket |
|---|---|---|---|---|
| 031-9540-000 | 030-9542-001 | Standard 30µin. plating | | |
| 031-9540-004 | 030-9542-002 | 50µ in. plating | | |
| 031-9540-005 | 030-9542-004 | With inspection hole; 50µ in. plating | | |
| N/A | 030-9542-011 | P.C. tail .026 dia. x .083 lg. Soc. | | |
| *031-9540-013 | 030-9542-012 | P.C. tail .020 dia. x .183 lg. Soc. .183 lg. Pin |  | |
| 031-9540-016 | 030-9542-014 | Long crimp barrel ** | | |
| 031-9540-022 *** | 030-9556-000 *** | Small crimp bore For AWG #32 & 30 | | |
| 031-9540-007 | 030-9542-022 | Small crimp bore For AWG #28 & 30 | | |
| *031-9540-015 | 030-9542-015 | P.C. tail .020 dia. x .232 lg. Soc. .255 lg. Pin | | |
| *031-9540-019 | 030-9542-016 | P.C. tail .018 dia. x .444 lg. Soc. .445 lg. Pin 50µ in. plating |  | |

NOTE: Plating, except as noted, is 30 micro-inch gold.

* Consult factory for any tail size or plating requirements.
** Special crimp locator required. Part number: 995-0001-714. (L3198-CL-PSL)
*** Use special insertion tip (323-9510-016 &-017).

## 2D and Centi-Loc Crimp and Assembly Tools

M22520/2-01

| | Tool | Locators Pin | Locators Socket |
|---|---|---|---|
| Description | M22520/2-01 | L3198-CLP | L3198-CLS |
| Part Number | 995-0001-584 | 995-0001-338 | 995-0001-353 |

CIET-CTA Handle

Insertion Tips

Insertion Tools For Standard Contact

| AWG Size* | Kit Part Number (handle and tip) | Tip Part Number** | Handle Part Number** |
|---|---|---|---|
| 22 | CIT-PS-CTA-22 | 323-9510-001 | 204-9500-000 |
| 24 | CIT-PS-CTA-24 | 323-9510-002 | 204-9500-000 |
| 26 | CIT-PS-CTA-26 | 323-9510-003 | 204-9500-000 |
| 28 | CIT-PS-CTA-28 | 323-9510-004 | 204-9500-000 |
| 30/P.C. Tail | CIT-PS-CTA-30 | 323-9510-005 | 204-9500-000 |

* Based on wire size per MIL-W-16878 with Type E insulation, use smaller tool for wire with thin insulation, larger tool for wire having thick insulation.
** The 5 insertion tips (part numbers 323-9510-001 thru - 005). plus handle, and the pin and socket extaction tips maybe ordered as a SINGLE KIT by specifying the part number CIET-CTA-2. [Part number: 070143-0002].

CTA-AB Assembly Holding Block
Part Number: 328-9508-000

Insertion Tools For Long Crimp barrel Contacts

| AWG Size* | Tip Part Number *** Pin Contact | Tip Part Number *** Socket Contact | Handle Part Number*** |
|---|---|---|---|
| 22 | 323-9510-008 | 323-9510-012 | 204-9500-000 |
| 24 | 323-9510-009 | 323-9510-013 | 204-9500-000 |
| 26 | 323-9510-010 | 323-9510-014 | 204-9500-000 |

*** To order the SINGLE KIT for the long crimp barrel contact (tip part numbers 323-9510-008 thru -014, handle and pin and socket extraction tips) please specify CIET-CTA-3.

Socket Extraction Tip

Pin Extraction Tip

Extraction Tools

| Contact | Description | Kit Part Number (handle and tip) | Tip Part Number | Handle Part Number |
|---|---|---|---|---|
| CENTIPIN | CET-P-CTA-2 | 070112-0002 | 324-9502-000 | 204-9500-000 |
| CENTISOCKET | CET-S-CTA-1 | 070113-0001 | 324-9501-000 | 204-9500-000 |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## 2D/CTA CENTI-LOC™ Connectors Assembly Instructions

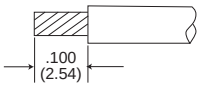
The Double Density D/CTA CENTI-LOC Connectors are highly reliable and simple connectors to use. There are a few helpful suggestions that will assure complete satisfaction when followed:

1. The following instructions should be followed.
2. The proper crimp tool and locator (if required) must be used. These tools have been designed for use with this product. Substitutions of crimping equipment may result in connector failure at the assembly operation.
3. After crimping a contact to a lead it is of vital importance that the proper tool be used to assure seating the contact in the insulator in the proper position. Any substitution of insertion tools may result in over or under insertion of the contact which may damage the retention system of the insulator.
4. The female (socket) side of the connector has been designed with a controlled float to allow for ease of mating. To avoid reducing this float or causing a splaying of the contacts, any unnecessary strain caused by clamping the leads too close to the rear of the connector should be avoided.

Use of recommended tooling together with proper assembly techniques will pay dividends in reliability and reduced costs.

## 2D Assembly Instructions

**WIRE STRIPPING**




Cut the wires to length required and strip .100" of insulation from the end to be crimped. Check for cut or broken wires and frayed insulation.

**CONTACT CRIMPING**

Using the proper crimp tool and locator, insert the contact into the locator. Insert the stripped end of the wire into the contact crimp pot, and crimp the contact to the wire. Squeeze the handles firmly to insure a proper crimp (tool will not release if crimping is incomplete). NOTE: Contact stop must be changed in tool locator when crimping pin and socket contacts.

**CONTACT INSERTION**

1. Place the proper insertion tip in the insertion/-extraction handle and put the tip over the wire as shown. The tool tip will butt up against the crimp pot. Connector must be firmly supported during both insertion and extraction operations.

2. Using a firm, steady pressure, push the contact into the cavity until the resilient internal shoulder in the insulator snaps into the locking groove in the contact. The shoulder of the tool tip bottoms against the rear of the insulator, preventing over-insertion. Repeat for balance of contacts.

**CONTACT EXTRACTION**

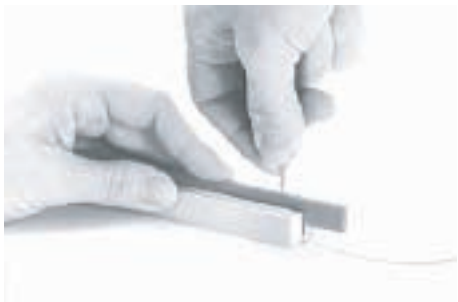
1. For contact extraction, remove the insertion tool tip and replace it with the proper extraction tool tip. (The socket tip will fit into the socket, and the pin tip will slide over the pin bundle). Insert the tool tip into the contact cavity: (the pin tip will butt up against the shoulder of the pin contact, and the socket tip will bottom out in the socket contact.)

2. Apply a firm, steady pressure until the contact is released from the internal shoulder in the insulator. The shoulder of the tool tip bottom against the insulator face to prevent damage to the internal shoulder. Remove the tool tip and pull the contact from the rear of the connector. Repeat for the balance of contacts to be removed.

## CTA Assembly Instructions

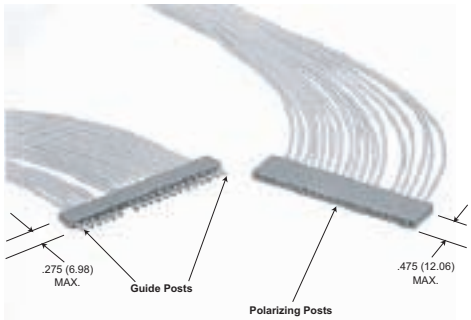
### INSERTION

1. Place the connector into the slot in the assembly block with the arrows on the insulator pointing downward. The connector will bottom against the internal shoulder in the groove in the assembly block. Start contact insertion by placing the crimped contact in the cavity by hard.



2. Position the insertion tool tip on the rear of contact as shown. The insulation must be pulled back from the crimp pot approximately 1/32" to allow the tool tip to butt against the contact crimp pot.

3. With firm steady pressure, push the contact into the cavity until the resilient internal shoulder snaps into the locking groove in the contact. To prevent over insertion, the tool tip bottoms against the rear of the insulator.




4. The guide post and polarizing posts are inserted in teh same manner as the contacts. The guide posts are inserted into the socket insulator, and the polarizing posts are inserted into the pin insulartor. The corresponding contact in the mating insulator must be removed for each.

### EXTRACTION

1. To extract the contacts, place the conector face up in the assembly block so that the contact to be extracted is in the end of the block that has a fully slotted opening.

2. The pin extraction tool tip is tubular, slides over the pin bundle and butts against the front shoulder of the pin. The socket extraction tool is a solid rod that fits into the socket contact, the external shoulder butts against the contact socket shoulder.

3. Insert the extraction tool into the cavity and apply firm pressure until the contact is pushed thru the rear of the connector.

4. Lift the insulator from the groove and pull the contact out. Repeat for balance of contacts to be removed.

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

# The NANO Line - .025" Contact Spacing

NANO contacts incorporate the highly reliable Twist Pin concept, which allows continuity in very dense areas and under severe shock and vibration, requiring low engagement and separation forces. Termination can consist of uninsulated pigtails or insulated wire all pre-harnessed at our factory to your specifications.

Due to various industry application requirements the NANO line is available in several different configurations, available in strip, metal shell and plastic, rectangular or circular configurations with center jackscrew.

Successful applications for NANO connectors are many and varied, from the Air Force's AIRS program to actual human implantations in the medical research field.

## Specifications

- Contact Rating - 1 amp max.
- Minimum contact centers - 0.025 (0.64).
- Wire sizes - #32 AWG stranded, #30 AWG solid.
- Contact termination - integral pigtail or multiple indent crimp.
- Contact rentention - fixed via epoxy.
- Contact materials - socket: nickel silver.
  pin bundle: precious metal alloy or BeCu.
  pin Sleeve: nickel silver or cartridge brass.
- Mating/unmating force - 6oz. per contact max.

| | NTP | NDM | NJS | NJSC |
|---|---|---|---|---|
| Type | Single Row Strip | Metal Shell Rectangular | Rectangular Center Jackscrew | Circular Center Jackscrew |
| Shell | | Alum. alloy 2024 T351 per QQ-A-250 or 6061-T6 per QQ-A-200 nickel plate | | |
| Insulator | Phenolic | Phenolic | Polyester | Polyester |
| No. of Contacts | 1-40 Contacts | 9, 15, 21, 25 31, 37 | 9, 24, 44 | 27, 72, 266 |
| Pin Bundle Material | - Precious metal per ASTM B477 and ASTM B541, or BeCu per CDA alloy 172 & 102 - | | | |
| Socket Sleeve Material | - Nickel silver/ASTM B122, Comp. B- | | | |
| Pin Sleeve Material | - Nickel silver per ASTM B122, Comp. B or Cartridge Brass per CDA alloy 260 - | | | |

## Test Data

The table below summarizes the results of key tests performed in accordance with MIL-STD-202, where applicable. Data is applicable to standard connector with standard terminations. Variations may affect this data, so please consult the factory for further information on your requirements.

| Test | Method | Criteria of Acceptance |
|---|---|---|
| Dielectric Withstanding Voltage | Method 301:<br>350 VAC at sea level<br>100 VAC at 70,000' altitude | <br>No breakdown<br>No breakdown |
| Insulation Resistance | Method 302, Condition A | 5,000 megohms minium |
| Thermal Shock | Method 107, Condition B:<br>-65˚C to +125˚C | No physical damage |
| Physical Shock | Method 213, Condition I:<br>100 G's, 3-axes, 6 millisecond duration sawtooth pluse | No physical damge<br>No loss of continuity > 1 µ sec |
| Vibration | Method 204, Condition D:<br>15 G's, 10-2,000 Hz, 12 hours | No physical damge<br>No loss of continuity > 1 µ sec |
| Durability | 500 cycles of mating and unmating, 500 CPH max. | No mechanical or electrical defect |
| Moisture Resistance | Method 106, omit 7b | Insulation resistance > 100 megohms |
| Salt Spray | Method 101, Condition B:<br>48 hours | Shall be capable of mating and unmating, and meet contact resistance requirements |
| Contact Resistance | Method 307:<br><br>At 1 amp<br>At 100 milliamps | 30 milliohms maximum } With gold plated Be-Cu Nanopin contact.<br>60 milliohms maximum<br>80 milliohms maximum } With precious metal alloy Nanopin contact. |
| Contact Retention | - | 3 lb. minimum axial load |

ITT

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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## How to Order - NT

R NT P 2 40 S H ***

- RoHS COMPLIANCE
- SERIES
- INSULATOR MATERIAL
- CONTACT LOCATION
- CONTACT ARRANGEMENTS
- CONTACT TYPE
- TERMINATION TYPE
- MODIFICATION CODE

**SERIES**
Nano Strip

**INSULATOR MATERIAL**
P - Phenolic

**CONTACT LOCATION**
1 - Contacts on .025 (0.64) centers
2 - Contacts on .050 (1.27) centers

**CONTACT ARRANGEMENTS**
40 Maximum - .025 (0.64) centers
20 Maximum - .050 (1.27) centers

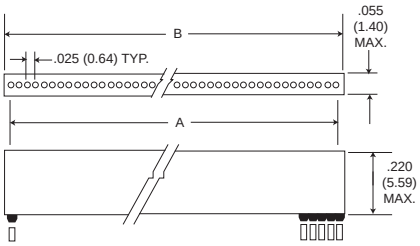
**CONTACT TYPE**
P - Pin (Plug)
S - Socket (Receptacle)

**TERMINATION MODIFICATION**
L - Solid uninsulated wire
T - One piece contact/lead
H - Insulated harness wire

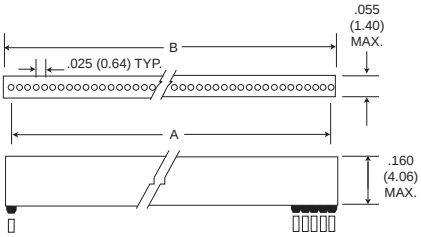
**MODIFICATION CODE**
For termination code, see NJS section, page 73.

## Dimensions

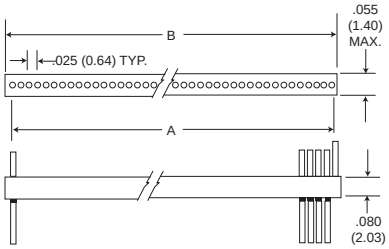
NTP




Plug - "H" and "L"
Termination Types




Plug - "T"
Termination Types




Receptacle - "H", "L", and "T"
Termination Types

| Part Number by Insulator Size | A Ref. | B ±.010 (0.25) | Part Number by Insulator Size | A Ref. | B ±.010 (0.25) | Part Number by Insulator Size | A Ref. | B ±.010 (0.25) | Part Number by Insulator Size | A Ref. | B ±.010 (0.25) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NTPI-1*-** | - | .050 (1.27) | NTPI-11*-** | .250 (6.35) | .300 (7.62) | NTPI-21*-** | .500 (12.70) | .550 (13.97) | NTPI-31*-** | .750 (19.05) | .800 (20.32) |
| NTPI-2*-** | .025 (0.64) | .075 (1.91) | NTPI-12*-** | .275 (6.99) | .325 (8.26) | NTPI-22*-** | .525 (13.34) | .575 (14.61) | NTPI-32*-** | .775 (19.69) | .825 (20.96) |
| NTPI-3*-** | .050 (1.27) | .100 (2.54) | NTPI-13*-** | .300 (7.62) | .350 (8.89) | NTPI-23*-** | .550 (13.97) | .600 (15.24) | NTPI-33*-** | .800 (20.32) | .850 (21.59) |
| NTPI-4*-** | .075 (1.91) | .125 (3.18) | NTPI-14*-** | .325 (8.26) | .375 (9.53) | NTPI-24*-** | .575 (14.61) | .625 (15.88) | NTPI-34*-** | .825 (20.96) | .875 (22.23) |
| NTPI-5*-** | .100 (2.54) | .150 (3.81) | NTPI-15*-** | .350 (8.89) | .400 (10.16) | NTPI-25*-** | .600 (15.24) | .650 (16.51) | NTPI-35*-** | .850 (21.59) | .900 (22.86) |
| NTPI-6*-** | .125 (3.18) | .175 (4.45) | NTPI-16*-** | .375 (9.53) | .425 (10.80) | NTPI-26*-** | .625 (15.88) | .675 (17.15) | NTPI-36*-** | .875 (22.23) | .925 (23.50) |
| NTPI-7*-** | .150 (3.81) | .200 (5.08) | NTPI-17*-** | .400 (10.16) | .450 (11.43) | NTPI-27*-** | .650 (16.51) | .700 (17.78) | NTPI-37*-** | .900 (22.86) | .950 (24.13) |
| NTPI-8*-** | .175 (4.45) | .225 (5.72) | NTPI-18*-** | .425 (10.80) | .475 (12.07) | NTPI-28*-** | .675 (17.15) | .725 (18.42) | NTPI-38*-** | .925 (23.50) | .975 (24.77) |
| NTPI-9*-** | .200 (5.08) | .250 (6.35) | NTPI-19*-** | .450 (11.43) | .500 (12.70) | NTPI-29*-** | .700 (17.78) | .750 (19.05) | NTPI-39*-** | .950 (24.13) | 1.000 (25.40) |
| NTPI-10*-** | .225 (5.72) | .275 (6.99) | NTPI-20*-** | .475 (12.07) | .525 (13.34) | NTPI-30*-** | .725 (18.42) | .775 (19.69) | NTPI-40*-** | .975 (24.77) | 1.025 (26.04) |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## How to Order - NDM

**SERIES**
NDM - NANO D Metal Shell

**CONTACT ARRANGEMENTS**
9, 15, 21, 25, 31, 37

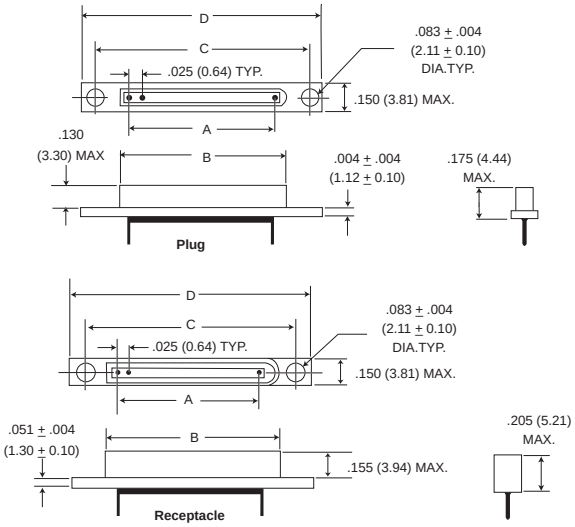
**CONTACT TYPE**
P = Pin (Plug)
S = Socket (Receptacle)

**TERMINATION TYPE**
H = Insulated harness wire
L = Solid copper
T = One piece contact/lead

**MODIFICATION CODE**
To specifiy lead lengths, type and mechanical modifications consult customer service.

## Dimensions

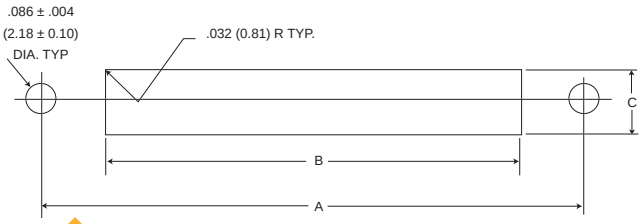
**NDM**




| Part Number By Shell Size | A Ref. | Plug B Ref. | Receptacle B Ref. | C ±.005 (0.13) | D Max. |
|---|---|---|---|---|---|
| NDM-9P*/S* | .200 (5.08) | .317 (8.05) | .380 (9.65) | .565 (14.35) | .725 (18.42) |
| NDM-15P*/S* | .350 (8.89) | .467 (11.86) | .530 (13.46) | .715 (18.16) | .875 (22.23) |
| NDM-21P*/S* | .500 (12.7) | .617 (15.67) | .680 (17.27) | .865 (21.97) | 1.025 (26.04) |
| NDM-25P*/S8 | .600 (15.24) | .717 (18.21) | .780 (19.81) | .965 (24.51) | 1.125 (28.58) |
| NDM-31P*/S* | .750 (19.05) | .867 (22.02) | .930 (23.62) | 1.115 (28.32) | 1.275 (32.39) |
| NDM-37P*/S* | .900 (22.86) | 1.017 (25.83) | 1.080 (27.43) | 1.265 (32.13) | 1.425 (36.20) |

Consult customer service for availability of other sizes.

## Panel Mounting Dimensions




| Size | A ±.005 (0.13) | B + .005 (0.13) - .000 (0.00) | C + .005 (0.13) - .000 (0.00) |
|---|---|---|---|
| 9 | .565 (14.35) | .261 (6.63) | .095 (2.41) |
| 15 | .715 (18.16) | .411 (10.44) | .095 (2.41) |
| 21 | .865 (21.97) | .561 (14.25) | .095 (2.41) |
| 25 | .965 (24.51) | .661 (16.79) | .095 (2.41) |
| 31 | 1.115 (28.32) | .811 (20.60) | .095 (2.41) |
| 37 | 1.265 (32.13) | .961 (24.41) | .095 (2.41) |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## How to Order - NJS

R NJS - 24 P H ***

- RoHS COMPLIANCE
- SERIES
- CONTACT ARRANGEMENTS
- CONTACT TYPE
- TERMINATION TYPE
- TERMINATION CODE

**SERIES**

NJS - Nano center jackscrew rectangular (9, 24, 44)

NJSC - Nano center jackscrew circular (27, 72 266)

**CONTACT ARRANGEMENTS**

9, 24, 27, 44, 72, 266

**CONTACT TYPE**

P = Pin (Plug)

S = Socket (Receptacle)

**TERMINATION TYPE**

H = Insulated harness wire

L = Solid uninsulated wire

T = One piece contact/Lead

**TERMINATION CODE***

(H) 001 = 18" #32 AWG 7/40 strd. Type "ET" Teflon per MIL-W-16878/6, color yellow.

(H) 003 = 18" #32 AWG 7/40 strd. Type "ET" Teflon per MIL-W-16878/6 color coded to MIL-STD-681, System 1.

(L) 1 = 1/2" uninsulated solid #30 AWG gold plated copper.

(L) 2 = 1" uninsulated solid #30 AWG gold plated copper

(T)* = Consult customer service

* See Termination Codes shown below for additional length modification codes.

## Standard Wire Termination Codes

The following termination codes are listed for your information. For additional codes please refer to Appendix on page 80 and 82. **All wire lengths ae minimum.**

**Harness Type (H)**

#32 AWG, 7/40 stranded, Type "ET" per MIL-W-16878/6

| Length | All Yellow | Color Coded | Length | All Yellow | Color Coded |
|---|---|---|---|---|---|
| 3 (76.2) | H 020 | H 027 | 24 (609.6) | H 009 | H 004 |
| 6 (152.4) | H 019 | H 016 | 30 (762.0) | H 010 | H 005 |
| 8 (203.2) | H 026 | H 034 | 36 (914.4) | H 011 | H 006 |
| 10 (254.0) | H 029 | H 025 | 48 (1219.2) | H 013 | H 048 |
| 12 (304.8) | H 028 | H 002 | 72 (1828.8) | H 017 | H 046 |
| 18 (457.2) | H 001 | H 003 | 120 (3048.0) | H 042 | H 041 |
| 20 (508.0) | H 038 | H 023 | | | |

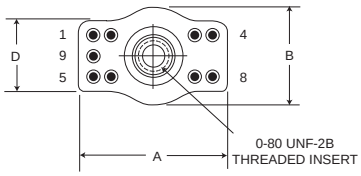
**Solid Uninsulated Type (L)**

#32 AWG gold plated copper.

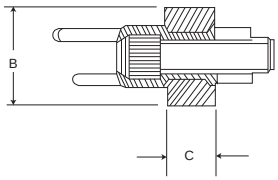
| Code | Length | Code | Length |
|---|---|---|---|
| L61 | .125 (3.18) | L14 | .750 (19.05) |
| L56 | .150 (3.81) | L2 | 1.000 (25.40) |
| L57 | .190 (4.83) | L7 | 1.500 (38.10) |
| L39 | .250 (6.35) | L6 | 2.000 (50.80) |
| L58 | .375 (9.53) | L16 | 2.500 (63.50) |
| L1 | .500 (12.70) | L10 | 3.000 (76.20) |

## Center Jackscrew/Rectangular

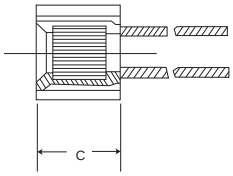
NJS-9 & NJS-24




Face View Pin Insert




Receptacle Side View



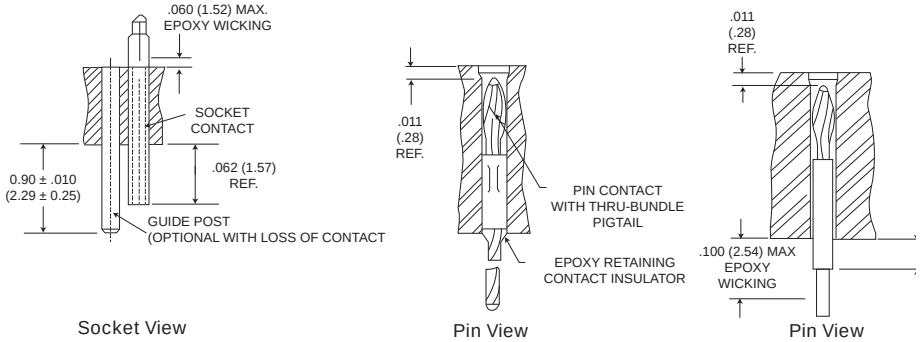

Plug Side View

| Part Number | A Max. | B Max. | C ±.005 (0.13) | D ±.005 (0.13) |
|---|---|---|---|---|
| NJS-9P* | .255 (6.48) | .165 (4.19) | .138 (3.51) | .116 (2.95) |
| NJS-9S* | .255 (6.48) | .165 (4.19) | .078 (1.98) | .116 (2.95) |
| NJS-24P* | .435 (11.05) | .165 (4.19) | .138 (3.51) | .116 (2.95) |
| NJS-24S* | .435 (11.05) | .165 (4.19) | .078 (1.98) | .116 (2.95) |
| NJSC-266 | | .165 (4.19) | | .116 (2.95) |
| NJSC-72 | | .165 (4.19) | | .116 (2.95) |
| NJSC-44 | | .165 (4.19) | | .116 (2.95) |
| NJSC-27 | | .165 (4.19) | | .116 (2.95) |

Dimensions shown in inch (mm)

Specifications and dimensions subject to change

## Contacts




Socket View

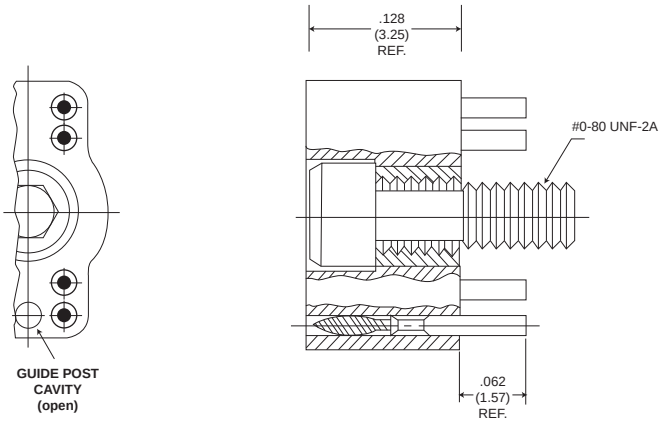
Pin View
(Thru-Bundle Contact)

Pin View
(Crimp-Type Contact

NOTE: Guide posts can be installed in any contaact cavity for polarization purposes.

## Connector Saver

**NJS-9P & S**




**Part Number: NJS97294-835**

# Custom Cable Assemblies

**Dynamic Custom Cable Assemblies for Harsh Environments**

ITT has been a world leader in designing and manufacturing harsh environment micro interconnects and cable assemblies for over fifty years. In addition, our historical product and assembly expertise dates back over 85 years to the founding of the original ITT Cannon. Today, we provide complete turnkey cable assemblies for all of ITT's micro connector portfolio including: Cent Line Interconnects, MDM series, M83513 Series, MEB series, MDM Mixed Signal Packages, MT strip interconnects, micro miniature circular MIK series, and our high density Nano Connectors. Our cable assembly expertise has allowed ITT to develop innovative Six Sigma driven manufacturing processes that allows our customers a full breadth of tight pitch cable assemblies in 0.100, 0.075, 0.050, and 0.025 contact spacing.

ITT's harsh environment interconnects and cable assemblies are used in the most demanding applications and environments. You will find our products in such markets as: Aerospace, Defense Electronics, Geophysical Exploration, High Speed Computer Networking, Industrial Automation, Medical Electronics, Satellite and Space Communications, and Telecommunications. Our complete interconnect solutions have flown on every major Aircraft and Space platform since the 1940's. In fact, many aircraft mechanics still refer to ITT Cannon connector and cable assemblies as the Aviation standard.

Our product portfolio has been developed and is continuing to be developed to provide our customers with new and better technologies that offer superior system level performance while lowering overall system level costs. Our corporate culture in Six Sigma Methodologies allows ITT to continuously challenge our Engineering and Scientific professionals to develop new processes and technologies in Material Science, Automation, and Testing to ensure that our customers get the best cost effective harsh environment cable assemblies from ITT. You should expect no less from an Industry leader.

The following paragraphs highlight several examples of interconnect cable assemblies for various Market segments that ITT services. These examples represent just a snapshot of the many custom micro interconnects or cable assemblies that ITT can provide the industry.

**Custom Micro D and M83513 Interconnect cable assemblies**

As one of the original developers of the Micro Interconnect technology, ITT has been an industry innovator in providing complete harsh environment cable assemblies and stretching the state of art in such areas as: Filtering, Hermetics, moisture barriers, High Speed and Mixed Signal Packages, EMI suppression, and multiple cable types. Most of ITT's custom cable assemblies utilize our standard Micro pin contact system. However, ITT does use other types of contact systems when manufacturing mixed signal interconnect systems where signal speed and power contacts will be incorporated into a complete cable assembly solution.

ITT manufactures complete cable assemblies worldwide at locations in Santa Ana California, Basingstoke UK, and Nogales Mexico. The various engineering and manufacturing centers of excellence are utilized to best fit various cable assembly and product platform specialties to provide our customers with the most cost effective solutions.

**Space Grade Micro Interconnect cable assemblies**

ITT has been deciding and manufacturing Space Rated interconnects and cable assemblies since the beginning of the US space Program in the mid 20th century. Prior to the MIL DTL M83513 specification ITT had been qualified for all NASA GSFC performance and specification requirements, on numerous satellite and space launch systems. ITT's Engineering and Product teams have over 200 years of combined experience in design, manufacture, and test of Space flight interconnects and cable assemblies. Our expertise in material science, manufacturing processes, out gassing, testing and screening, Magnetic permeability, and Cryogenics has given ITT a tremendous understanding in developing high reliability space system interconnects and cable assemblies .

All of ITT's Space rated micro interconnect assemblies utilize ITT QPL M83513 connectors. These cable assemblies are tested to meet the most stringent performance requirements as outlined by numerous NASA GSFC specifications. Additional performance and test requirements beyond existing NASA GSFC guidelines can always be tailored so that additional custom test programs can be incorporated.

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

# Custom Cable Assemblies

### High Temperature Harsh Environment Interconnect Assemblies

The proliferation of deep water drilling prospects in the world's oceans has created increased performance demands for micro miniature interconnects and cable assemblies for down hole oil field exploration. Not only are new fields being discovered in ocean depths greater than five miles but the wells themselves are being drilled deeper into the earths crust, sometimes to depths of 30,000 feet. Thus, the temperature extremes in excess of 200 degrees C are becoming the norm. In this the most demanding of environments, ITT has been designing and manufacturing such micro interconnect connector and cable assemblies for over forty years. Again our engineering and manufacturing expertise in the material science of Liquid Crystal Polymer (LCP), flourosilicones, plating, metals, and high temperature epoxies is leading ITT to develop high temperature performance beyond 200 degree C operating temperatures.

Pictured below is an ITT high temperature nano interconnect assembly. ITT is developing new products around this nano interconnect platform that will not only increase signal density but will include new material's and processes for higher temperature applications.

### Medical Electronics Cable Assemblies:

As microminiaturization continues in the medical technologies field so the contributions of ITT's micro interconnect devices and assemblies. Our custom medical assemblies are utilized in such applications as: patient monitoring, diagnostics, imaging, and disposable systems. These types of application have been well served by ITT's Nano, MT strip and MIKQ series of interconnects. In addition to there specific connector types, ITT is well experienced in the careful selection of medical grade cables and termination materials to ensure fully compliant med. cal cable assemblies.

Shown below is an example of ITT's MIKQ high strength plastic circular quick disconnect connector cable assembly for a medical application.

# Flex Circuit Cable Assembly

## Terminating to Flexible Circuits

Ideally, for a low profile and a neat finish, it is best to terminate flexible circuits in line with the contacts. Since most Microminiature connectors have contacts set into two or three rows, termination is a simple process.

The diagrams opposite are basically a design guide for pad arrangements, to suit MDM connectors in particular and to ensure the circuits enter the potting well. The length of the pad is optional but of course it is important to provide enough coverlay, especially at the edges of the circuit, to avoid de-lamination. We suggest at least 0,51 mm (.020 inches). Our standard potting shrouds provide support to the circuit with a dimension of 7,00 mm (.275 inches) from the rear of the flange.

Please consult Customer Service for specific flex circuit assembly design considerations and requirements.

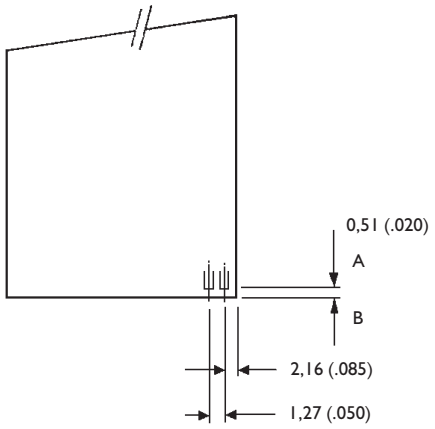
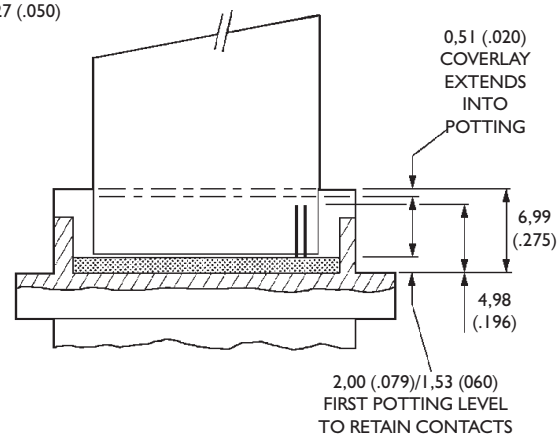



Diagram 1 shows details of the pad spacing and the suggested amount of material to be left between the end of the pad A and the edge of the flex B.

Diagram 2 illustrates how the connector is prepared with short pigtails and a special first pot which just captures the contacts. The final back potting for strength is controlled by our standard 7,00 (.275) potting fixtures.




Dimensions shown in inch (mm)
Specifications and dimensions subject to change

## Custom Back Shell Systems

ITT has designed numerous back shell solutions for micro miniature interconnects for many harsh environment applications. Although ITT does not offer a standard back shell portfolio today, we can design and manufacture a range of back fittings for our MDM connector products depending on the customer requirements. Utilizing one of our partnership relationships, one of our UK based micro product groups of ITT can provide can provide custom designs utilizing proven banded systems in which the braid is captivated over a chimney style outlet. These types of back shell systems are available in different material finishes and sizes and can be provided with special process termination methods. In addition, ITT has developed a method of riveting the back fitting to the shell within the jacking area. This option guarantees 360 degree shielding effectiveness even when jackscrews or jacking posts are not being used.

Where a conduit system is preferred such as for test box environments in field locations, back fittings and a fully screened weatherproof convoluted trunking can be provided

In addition to the above ITT can provide special back potting style termination systems for environmental protection and strain relief. These types of a back shell style system are typically filled with epoxy or other encapsulating materials to provide a robust and effective back shell system.

## Sealing Gaskets

We have received requests for gasket materials to seal the MDM connectors into various enclosures. We recommend that you consider wider flanged connectors together with a low cost conductive gasket to provide an adequate surface area. This combination will give you IP-66 sealing with good EMC compliance. The following dimensions for gaskets and flange dimensions are regarded as the minimum that you should consider.

Conductive elastomers generally offer a superior shielding performance when compared with alternatives as in table below.

| Gasket Type | Neoprene (wire impregnated) | Silicone (wire impregnated) | Silicone (oriented wire) | Neoprene (fabric wrap) | Metallic finger stock | Metallic fibres | Conductive silicone rubber |
|---|---|---|---|---|---|---|---|
| Shielding performance | S | S | G | G | G | G | G |
| Temperature range | S | G | G | S | G | G | G |
| IP sealing | P | P | S | S | P | P | G |
| Compression force | G | G | G | G | G | S | S |
| Compression range | S | S | S | G | G | P | S |
| Surface texture | P | P | G | P | G | P | S |
| Compression set | S | S | S | S | G | P | G |
| Re-usability | S | S | S | S | G | P | G |

* Neoprene is a trademark of Dupont  P = Poor  S = Satisfactory  G = Good

Conductive rubber gaskets can be loaded with many different metallic fillers but the choice of material is dependent upon a number of factors such as level of conductivity, shielding effectiveness, galvanic compatibility and cost.

Galvanic Corrosion can occur when two dissimilar metals are in contact with one another in the presence of an electrolyte. The type of gasket material has to be assessed because of the use of metallic fillers. Many applications are dry indoor environments where corrosion is not a major concern. However, for external use, particularly marine, it is recommended that consideration be given to compatibility. The table on the next page is a summary.

| Enclosure Material | Silver/Nickel | Silver/Copper | Silver/aluminum | Inert aluminum | Silver/Glass | Silver | Nickel/Graphite | Nickel |
|---|---|---|---|---|---|---|---|---|
| aluminum alloys | X | X | □ | ▲ | X | X | □ | □ |
| Magnesium alloys | X | X | □ | □ | X | X | □ | □ |
| Stainless steel | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| Copper alloys | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| Cadmium plating | X | X | □ | □ | X | X | □ | □ |
| Tin plating | □ | X | □ | ▲ | □ | □ | ▲ | ▲ |
| Nickel plating | ▲ | □ | □ | ▲ | ▲ | ▲ | ▲ | ▲ |
| Chromium plating | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| Silver plating | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| Zinc & galvanise plating | X | X | □ | □ | X | X | □ | □ |
| Titanium | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |

▲ = good  □ = Satisfactory  X = Not recommended

## "L" Code Chart

| SORTED BY LENGTH | | | SORTED BY CODE | | |
|---|---|---|---|---|---|
| Wire Length, IN. | | | Wire Length, IN. | | |
| Decimal | Fraction | Code | Code | Decimal | Fraction |
| 0.080 | | L63 | L1 | 0.500 | 1/2 |
| 0.094 | 3/32 | L62 | L2 | 1.000 | |
| 0.110 | | L65 | L3 | 6.000 | |
| 0.125 | 1/8 | L61 | L4 | 12.000 | |
| 0.140 | | L67 | L5 | 20.000 | |
| 0.150 | | L56 | L6 | 2.000 | |
| 0.171 | | L66 | L7 | 1.500 | |
| 0.187 | 3/16 | L17 | L8 | 7.000 | |
| 0.190 | | L57 | L9 | 5.000 | |
| 0.210 | | L59 | L10 | 3.000 | |
| 0.250 | 1/4 | L39 | L11 | 4.000 | |
| 0.312 | 3/8 | L60 | L12 | 0.625 | 5/8 |
| 0.375 | 3/8 | L58 | L13 | 10.000 | |
| 0.380 | | L64 | L14 | 0.750 | 3/4 |
| 0.500 | 1/2 | L1 | L15 | 3.500 | |
| 0.625 | 5/8 | L12 | L16 | 2.500 | |
| 0.750 | 3/4 | L4 | L17 | 0.187 | 3/16 |
| 1.000 | | L2 | L18 | 8.000 | |
| 1.500 | | L7 | L25 | 2.250 | |
| 2.000 | | L6 | L28 | 4.500 | |
| 2.250 | | L25 | L39 | 0.250 | 1/4 |
| 2.500 | | L16 | L45 | 9.000 | |
| 3.000 | | L10 | L46 | 15.000 | |
| 3.500 | | L15 | L52 | 11.500 | |
| 4.000 | | L11 | L55 | 18.000 | |
| 4.500 | | L28 | L56 | 0.150 | |
| 5.000 | | L9 | L57 | 0.190 | |
| 6.000 | | L3 | L58 | 0.375 | 3/8 |
| 7.000 | | L8 | L59 | 0.210 | |
| 8.000 | | L18 | L60 | 0.312 | 5/16 |
| 9.000 | | L45 | L61 | .0125 | 1/8 |
| 10.000 | | L13 | L62 | 0.094 | 3/32 |
| 11.500 | | L52 | L63 | 0.080 | |
| 12.000 | | L4 | L64 | 0.380 | |
| 15.000 | | L46 | L65 | 0.110 | |
| 18.000 | | L55 | L66 | 0.171 | |
| 20.000 | | L5 | L67 | 0.140 | |

#25AWG, SOLID COPPER WIRE PER QQ-W-343, TYPE "S", GOLD PLATED PER MIL-G-45204, TYPE II GRADE C OR D, CLASS 1 (50 MICROINCHES MINIMUM)

**Nano "L" Code Charts on page 80.**

# Appendix

## “L” Code Chart (for Nano products only)

**SORTED BY LENGTH**

| Wire Length, IN. | | |
|---|---|---|
| Decimal | Fraction | Code |
| 0.080 | | L63 |
| 0.094 | 3/32 | L62 |
| 0.110 | | L65 |
| 0.125 | 1/8 | L61 |
| 0.140 | | L67 |
| 0.150 | | L56 |
| 0.171 | | L66 |
| 0.187 | 3/16 | L17 |
| 0.190 | | L57 |
| 0.210 | | L59 |
| 0.250 | 1/4 | L39 |
| 0.312 | 3/8 | L60 |
| 0.375 | 3/8 | L58 |
| 0.380 | | L64 |
| 0.500 | 1/2 | L1 |
| 0.625 | 5/8 | L12 |
| 0.750 | 3/4 | L4 |
| 1.000 | | L2 |
| 1.500 | | L7 |
| 2.000 | | L6 |
| 2.250 | | L25 |
| 2.500 | | L16 |
| 3.000 | | L10 |
| 3.500 | | L15 |
| 4.000 | | L11 |
| 4.500 | | L28 |
| 5.000 | | L9 |
| 6.000 | | L3 |
| 7.000 | | L8 |
| 8.000 | | L18 |
| 9.000 | | L45 |
| 10.000 | | L13 |
| 11.500 | | L52 |
| 12.000 | | L4 |
| 15.000 | | L46 |
| 18.000 | | L55 |
| 20.000 | | L5 |

**SORTED BY CODE**

| Wire Length, IN. | | |
|---|---|---|
| Code | Decimal | Fraction |
| L1 | 0.500 | 1/2 |
| L2 | 1.000 | |
| L3 | 6.000 | |
| L4 | 12.000 | |
| L5 | 20.000 | |
| L6 | 2.000 | |
| L7 | 1.500 | |
| L8 | 7.000 | |
| L9 | 5.000 | |
| L10 | 3.000 | |
| L11 | 4.000 | |
| L12 | 0.625 | 5/8 |
| L13 | 10.000 | |
| L14 | 0.750 | 3/4 |
| L15 | 3.500 | |
| L16 | 2.500 | |
| L17 | 0.187 | 3/16 |
| L18 | 8.000 | |
| L25 | 2.250 | |
| L28 | 4.500 | |
| L39 | 0.250 | 1/4 |
| L45 | 9.000 | |
| L46 | 15.000 | |
| L52 | 11.500 | |
| L55 | 18.000 | |
| L56 | 0.150 | |
| L57 | 0.190 | |
| L58 | 0.375 | 3/8 |
| L59 | 0.210 | |
| L60 | 0.312 | 5/16 |
| L61 | .0125 | 1/8 |
| L62 | 0.094 | 3/32 |
| L63 | 0.080 | |
| L64 | 0.380 | |
| L65 | 0.110 | |
| L66 | 0.171 | |
| L67 | 0.140 | |

#30AWG, SOLID COPPER WIRE PER QQ-W-343, TYPE “S”, GOLD PLATED PER MIL-G-45204, TYPE II GRADE C OR D, CLASS 1 (50 MICROINCHES MINIMUM)

## "H" Code Charts

16878/4

Wire, Electrical, Polyetrafluorethylene (PTFE) Insulated, 200 Degrees C, 600 Volts, Extruded Insulation

| Length | Yellow | White | System 1 |
|---|---|---|---|
| 1 | 030 | C30 | A30 |
| 2 | 024 | C24 | A24 |
| 3 | 020 | C20 | 027 |
| 4 | – | C33 | 033 |
| 5 | 031 | C31 | A31 |
| 6 | 019 | 047 | 016 |
| 8 | 026 | C26 | 034 |
| 9 | 015 | C15 | A15 |
| 10 | 029 | C29 | 025 |
| 12 | 028 | 008 | 002 |
| 16 | 039 | C39 | A39 |
| 17 | 036 | C36 | A36 |
| 18 | 001 | 044 | 003 |
| 20 | 038 | C38 | 023 |
| 21 | 055 | C55 | A55 |
| 24 | 009 | 045 | 004 |
| 30 | 010 | C10 | 005 |
| 35 | 018 | C18 | A18 |
| 36 | 011 | 058 | 006 |
| 40 | 037 | C37 | A37 |
| 42 | 012 | 021 | A12 |
| 48 | 013 | C13 | 048 |
| 50 | 040 | C40 | A40 |
| 60 | 014 | C14 | 056 |
| 72 | 017 | 059 | 046 |
| 80 | 032 | C32 | A32 |
| 92 | 022 | C22 | A22 |
| 96 | 035 | C35 | A35 |
| 120 | 042 | C42 | 041 |
| 180 | 043 | C43 | A43 |

**Nano "H" Code Charts on page 82.**

22759/11-26

Wire, Electrical, Fluoropolymer-Insulated, Extruded TFE, Silver-Coated Copper Conductor, 600 Volt

| Length | White | 10 Color Repeat | System 1 |
|---|---|---|---|
| 1 | G30 | Y30 | H30 |
| 2 | G24 | Y24 | H24 |
| 3 | G20 | Y20 | H20 |
| 4 | G33 | Y33 | H33 |
| 5 | G31 | Y31 | H31 |
| 6 | 065 | Y19 | 072 |
| 8 | G26 | Y26 | H26 |
| 9 | G15 | Y15 | H15 |
| 10 | G29 | Y29 | H29 |
| 12 | 066 | Y28 | 073 |
| 16 | G39 | Y39 | H39 |
| 17 | G36 | Y36 | H36 |
| 18 | 067 | Y01 | 074 |
| 20 | G38 | Y38 | H38 |
| 21 | G55 | Y55 | H55 |
| 24 | 068 | Y09 | 075 |
| 30 | G10 | Y10 | H10 |
| 35 | G18 | Y18 | H18 |
| 36 | 069 | Y11 | 076 |
| 40 | G37 | Y37 | H37 |
| 42 | G12 | Y12 | H12 |
| 48 | 070 | Y13 | 077 |
| 50 | G40 | Y40 | H40 |
| 60 | G14 | Y14 | H14 |
| 72 | 071 | Y17 | 078 |
| 80 | G32 | Y32 | H32 |
| 92 | G22 | Y22 | H22 |
| 96 | G35 | Y35 | H35 |
| 120 | G42 | Y42 | H42 |
| 180 | G43 | Y43 | H43 |

22759/33-26

Wire, Electrical, Fluoropolymer-Insulated, Crosslinked Modified, ETFE, Lightweight, Silver-Coated, High-Strength Copper Alloy 200 Degrees C, 600 Volt

| Length | White | 10 Color Repeat | System 1 |
|---|---|---|---|
| 1 | V30 | W30 | X30 |
| 2 | V24 | W24 | X24 |
| 3 | V20 | W20 | X20 |
| 4 | V33 | W33 | X33 |
| 5 | V31 | W31 | X31 |
| 6 | V19 | W19 | X19 |
| 8 | V26 | W26 | X26 |
| 9 | V15 | W15 | X15 |
| 10 | V29 | W29 | X29 |
| 12 | V28 | W28 | X28 |
| 16 | V39 | W39 | X39 |
| 17 | V36 | W36 | X36 |
| 18 | V01 | W01 | X01 |
| 20 | V38 | W38 | X38 |
| 21 | V55 | W55 | X55 |
| 24 | V09 | W09 | X09 |
| 30 | V10 | W10 | X10 |
| 35 | V18 | W18 | X18 |
| 36 | V11 | W11 | X11 |
| 40 | V37 | W37 | X37 |
| 42 | V12 | W12 | X12 |
| 48 | V13 | W13 | X13 |
| 50 | V40 | W40 | X40 |
| 60 | V14 | W14 | X14 |
| 72 | V17 | W17 | X17 |
| 80 | V32 | W32 | X32 |
| 92 | V22 | W22 | X22 |
| 96 | V35 | W35 | X35 |
| 120 | V42 | W42 | X42 |
| 180 | V43 | W43 | X43 |

## “H” Code Charts (for Nano products only)

MIL-W-16878/6

Wire, Electrical, Polyetrafluorethylene (PTFE) Insulated, 200 Degrees C, 250 Volts, Extruded Insulation

| Length | Yellow | White | System 1 |
|---|---|---|---|
| 1 | 030 | C30 | A30 |
| 2 | 024 | C24 | A24 |
| 3 | 020 | C20 | 027 |
| 4 | – | C33 | 033 |
| 5 | 031 | C31 | A31 |
| 6 | 019 | 047 | 016 |
| 8 | 026 | C26 | 034 |
| 9 | 015 | C15 | A15 |
| 10 | 029 | C29 | 025 |
| 12 | 028 | 008 | 002 |
| 16 | 039 | C39 | A39 |
| 17 | 036 | C36 | A36 |
| 18 | 001 | 044 | 003 |
| 20 | 038 | C38 | 023 |
| 21 | 055 | C55 | A55 |
| 24 | 009 | 045 | 004 |
| 30 | 010 | C10 | 005 |
| 35 | 018 | C18 | A18 |
| 36 | 011 | 058 | 006 |
| 40 | 037 | C37 | A37 |
| 42 | 012 | 021 | A12 |
| 48 | 013 | C13 | 048 |
| 50 | 040 | C40 | A40 |
| 60 | 014 | C14 | 056 |
| 72 | 017 | 059 | 046 |
| 80 | 032 | C32 | A32 |
| 92 | 022 | C22 | A22 |
| 96 | 035 | C35 | A35 |
| 120 | 042 | C42 | 041 |
| 180 | 043 | C43 | A43 |

## Reference Data

| PIN No. | MIL-STD-681 No. | Base Color | First Stripe | Second Stripe | Third Stripe | PIN No. | MIL-STD-681 No. | Base Color | First Stripe | Second Stripe | Third Stripe |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1* | 0 | BLK | | | | 51 | 957 | WHT | GRN | VIO | |
| 2* | 1 | BRN | | | | 52 | 958 | WHT | GRN | GRY | |
| 3* | 2 | RED | | | | 53 | 967 | WHT | BLU | VIO | |
| 4* | 3 | ORN | | | | 54 | 968 | WHT | BLU | GRY | |
| 5* | 4 | YEL | | | | 55 | 978 | WHT | VIO | GRY | |
| 6* | 5 | GRN | | | | 56 | 9012 | WHT | BLK | BRN | RED |
| 7* | 6 | BLU | | | | 57 | 9013 | WHT | BLK | BRN | ORN |
| 8* | 7 | VIO | | | | 58 | 9014 | WHT | BLK | BRN | YEL |
| 9* | 8 | GRY | | | | 59 | 9015 | WHT | BLK | BRN | GRN |
| 10* | 9 | WHT | | | | 60 | 9016 | WHT | BLK | BRN | BLU |
| 11 | 90 | WHT | BLK | | | 61 | 9017 | WHT | BLK | BRN | VIO |
| 12 | 91 | WHT | BRN | | | 62 | 9018 | WHT | BLK | BRN | GRY |
| 13 | 92 | WHT | RED | | | 63 | 9023 | WHT | BLK | RED | ORN |
| 14 | 93 | WHT | ORN | | | 64 | 9024 | WHT | BLK | RED | YEL |
| 15 | 94 | WHT | YEL | | | 65 | 9025 | WHT | BLK | RED | GRN |
| 16 | 95 | WHT | GRN | | | 66 | 9026 | WHT | BLK | RED | BLU |
| 17 | 96 | WHT | BLU | | | 67 | 9027 | WHT | BLK | RED | VIO |
| 18 | 97 | WHT | VIO | | | 68 | 9028 | WHT | BLK | RED | GRY |
| 19 | 98 | WHT | GRY | | | 69 | 9034 | WHT | BLK | ORN | YEL |
| 20 | 901 | WHT | BLK | BRN | | 70 | 9035 | WHT | BLK | ORN | GRN |
| 21 | 902 | WHT | BLK | RED | | 71 | 9036 | WHT | BLK | ORN | BLU |
| 22 | 903 | WHT | BLK | ORN | | 72 | 9037 | WHT | BLK | ORN | VIO |
| 23 | 904 | WHT | BLK | YEL | | 73 | 9038 | WHT | BLK | ORN | GRY |
| 24 | 905 | WHT | BLK | GRN | | 74 | 9045 | WHT | BLK | YEL | GRN |
| 25 | 906 | WHT | BLK | BLU | | 75 | 9046 | WHT | BLK | YEL | BLU |
| 26 | 907 | WHT | BLK | VIO | | 76 | 9047 | WHT | BLK | YEL | VIO |
| 27 | 908 | WHT | BLK | GRY | | 77 | 9048 | WHT | BLK | YEL | GRY |
| 28 | 912 | WHT | BRN | RED | | 78 | 9056 | WHT | BLK | GRN | BLU |
| 29 | 913 | WHT | BRN | ORN | | 79 | 9057 | WHT | BLK | GRN | VIO |
| 30 | 914 | WHT | BRN | YEL | | 80 | 9058 | WHT | BLK | GRN | GRY |
| 31 | 915 | WHT | BRN | GRN | | 81 | 9067 | WHT | BLK | BLU | VIO |
| 32 | 916 | WHT | BRN | BLU | | 82 | 9068 | WHT | BLK | BLU | GRY |
| 33 | 917 | WHT | BRN | VIO | | 83 | 9078 | WHT | BLK | VIO | GRY |
| 34 | 918 | WHT | BRN | GRY | | 84 | 9123 | WHT | BRN | RED | ORN |
| 35 | 923 | WHT | RED | ORN | | 85 | 9124 | WHT | BRN | RED | YEL |
| 36 | 924 | WHT | RED | YEL | | 86 | 9125 | WHT | BRN | RED | GRN |
| 37 | 925 | WHT | RED | GRN | | 87 | 9126 | WHT | BRN | RED | BLU |
| 38 | 926 | WHT | RED | BLU | | 88 | 9127 | WHT | BRN | RED | VIO |
| 39 | 927 | WHT | RED | VIO | | 89 | 9128 | WHT | BRN | RED | GRY |
| 40 | 928 | WHT | RED | GRY | | 90 | 9134 | WHT | BRN | ORN | YEL |
| 41 | 934 | WHT | ORN | YEL | | 91 | 9135 | WHT | BRN | ORN | GRN |
| 42 | 935 | WHT | ORN | GRN | | 92 | 9136 | WHT | BRN | ORN | BLU |
| 43 | 936 | WHT | ORN | BLU | | 93 | 9137 | WHT | BRN | ORN | VIO |
| 44 | 937 | WHT | ORN | VIO | | 94 | 9138 | WHT | BRN | ORN | GRY |
| 45 | 938 | WHT | ORN | GRY | | 95 | 9145 | WHT | BRN | YEL | GRN |
| 46 | 945 | WHT | YEL | GRN | | 96 | 9146 | WHT | BRN | YEL | BLU |
| 47 | 946 | WHT | YEL | BLU | | 97 | 9147 | WHT | BRN | YEL | VIO |
| 48 | 947 | WHT | YEL | VIO | | 98 | 9148 | WHT | BRN | YEL | GRY |
| 49 | 948 | WHT | YEL | GRY | | 99 | 9156 | WHT | BRN | GRN | BLU |
| 50 | 956 | WHT | GRN | BLU | | 100 | 9157 | WHT | BRN | GRN | VIO |

* 10 colors repeat is the standard wire color code for MIL-DTL-83513 connectors.

# Terminology

**Adhesive dispensing:** a computer-controlled machine automatically dispenses epoxy adhesive.

**Backmolding:** this term refers to the process of transfer-molding epoxy performs into a old. The epoxy is heated and pressurized, much like conventional plastic molding.

**Backpotting:** the application of epoxy to connector wire terminations for strain relief and sealing. Epoxy is dispensed with pneumatic syringes. Standard Micro products have built-in potting wells to contain the epoxy, but optional potting in custom configurations is accomplished with inexpensive molds.

**Brady labels:** wraparound adhesive labels for multi-conductor cable.

**Breakout:** the area where one or more cables are joined together. A breakout frequently requires splices and extra strain relief such as cable ties or tubing.

**Electrical testing:** Hi-pot, insulation resistance, and continuity testing are standard tests for cable assemblies.

**Etching:** etching is a chemical process to prepare certain types of Teflon insulated wire for potting. Without etching, the epoxy will not bond properly.

**Expando:** braided sleeving used to protect a wire bundle. The simplest and least expensive method of jacketing a cable, expando tubing is made of abrasion-resistant nylon or other materials. The ends of the tubing are usually encapsulated in epoxy.

**Header:** a general term for any printed circuit board mounted connector used as an I/O port.

**Hot stamping:** insulated wire is imprinted with identification numbers or text.

**Hot-stamped heat shrink tubing:** used for multi-conductor cables, heat shrink tubing is impression stamped, then installed on the cable and shrunk.

**Ink-jet marking:** dots of ink are sprayed through a stationary nozzle onto a part moving on a conveyer. Ink jet marking is now standard.

**Ink-stamping:** the traditional method of placing metal type in a marking machine which is inked with a roller. The metal type transfers the ink to a rubber pad, and the part is pressed onto the pad. Oven curing is required.

**Jumper Cable:** this term usually applies to a short cable assembly that plugs into a printed circuit board one one end, with the other end mounted in an I/O panel.

**Lacing:** the process of tying individual wires together into bundles. Special lacing tape is used.

**Laser stripping:** insulation is removed from the wire by using a special laser stripping machine. Typically used on flat cable.

**Mass-termination:** simultaneous termination of multiple contacts. Normally associated with IDC termination, mass termination is also used on micropins in a special multi-contact crimp tool.

**Pigtail:** a single-ended cable assembly having one connector on one end and unterminated wire on the other end.

**Potting:** the application of various adhesives to a connector. Potting encapsulates the wires or terminals, providing environmental sealing and strain relief.

**Silkscreening:** Ink is transferred through a screen.

**Stripping:** insulation is removed from wire ends on automatic cut and strip equipment.

**Thermal Shock:** a conditioning environmental test that cycles a part repeatedly through a specified temperature range. Thermal shock is frequently performed prior to pressure testing.

**Tinning:** the application of molten solder to connector terminals. Micro products are tinned on a fully automatic machine with cleaning, preheating and inert gas tinning. Pre-tinned leads ensure excellent solderabillity.

**Wire marking:** individual numbered adhesive tags are attached to each wire.

**Wire striping:** insulated wire from #24 thru #28 AWG is striped with colors for circuit identification.

**Wiring fixtures:** flat wiring boards or more complicated three-dimensional fixtures are required for many multi-branched cable harnesses. Mating connectors are fixtured in the exact position of the end use equipment, and the cable assembly is built on the fixture.

# Product Safety Information

**THIS NOTE MUST BE READ IN CONJUNCTION WITH THE PRODUCT DATA SHEET/CATALOG. FAILURE TO OBSERVE THE ADVICE IN THIS INFORMATION SHEET AND THE OPERATING CONDITIONS SPECIFIED IN THE PRODUCT DATA SHEET/ CATALOG COULD RESULT IN HAZARDOUS SITUATIONS.**

**1. MATERIAL CONTENT AND PHYSICAL FORM**

Electrical connectors do not usually contain hazardous materials. They contain conducting and non-conducting materials and can be divided into two groups.

a) Printed circuit types and low cost audio types which employ all plastic insulators and casings.

b) Rugged, Fire Barrier and High Reliability types with metal casings and either natural rubber, synthetic rubber, plastic or glass insulating materials. Contact materials vary with type of connector and also application and are usually manufactured from either: Copper, copper alloys, nickel, alumel, chromel or steel. In special applications, other alloys may be specified.

**2. FIRE CHARACTERISTICS AND ELECTRIC SHOCK HAZARD**

**There is no fire hazard when the connector is correctly wired and used within the specified parameters. Incorrect wiring or assembly of the connector or careless use of metal tools or conductive fluids, or transit damage to any of the component parts may cause electric shock or burns. Live circuits must not be broken by separating mated connectors as this may cause arcing, ionization and burning.** Heat dissipation is greater at maximum resistance in a circuit. Hot spots may occur when resistance is raised locally by damage, e.g. cracked or deformed contacts, broken strands of wire. Local overheating may also result from the use of the incorrect application tools or from poor quality soldering or slack screw terminals. Overheating may occur if the ratings in the product Data Sheet/Catalog are exceeded and can cause breakdown of insulation and hence electric shock. If heating is allowed to continue it intensifies by further increasing the local resistance through loss of temper of spring contacts, formation of oxide film on contacts and wires and leakage currents through carbonization of insulation and tracking paths. Fire can then result in the presence of combustible materials and this may release noxious fumes. Overheating may not be visually apparent. Burns may result from touching overheated components.

**3. HANDLING**

Care must be taken to avoid damage to any component parts of electrical connectors during installation and use. Although there are normally no sharp edges, care must be taken when handling certain components to avoid injury to fingers. Electrical connectors may be damaged in transit to the customers, and damage may result in creation of hazards. Products should therefore be examined prior to installation/use and rejected if found to be damaged.

**4. DISPOSAL**

Incineration of certain materials may release noxious or even toxic fumes.

**5. APPLICATION**

Connectors with exposed contacts should not be selected for use on the current supply side of an electrical circuit, because an electric shock could result from touching exposed contacts on an unmated connector. Voltages in excess of 30 V ac or 42.5 V dc are potentially hazardous and care should be taken to ensure that such voltages cannot be transmitted in any way to exposed metal parts of the connector body. The connector and wiring should be checked, before making live, to have no damage to metal parts or insulators, no solder blobs, loose strands, conducting lubricants, swarf, or any other undesired conducting particles. Circuit resistance and continuity check should be made to make certain that there are no high resistance joints or spurious conducting paths. Always use the correct application tools as specified in the Data Sheet/Catalog. Do not permit untrained personnel to wire, assemble or tamper with connectors. For operation voltage please see appropriate national regulations.

**IMPORTANT GENERAL INFORMATION**

**(i) Air and creepage paths/Operating voltage.** The admissible operating voltages depend on the individual applications and the valid national and other applicable safety regulations.

For this reason the air and creepage path data are only reference values. Observe reduction of air and creepage paths due to PC board and/or harnessing.

**(ii) Temperature**

All information given are temperature limits. The operation temperature depends on the individual application.

**(iii) Other important information**

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## Fiber Optic Connectors and Cable Assemblies

Cannon fiber optic solutions provide an excellent performance/cost value. Performance can be tailored to the end system, and our use of superior materials and bonding agents provides highly effective solutions. Our wide variety of products includes fiber optic hybrid contacts, multi-channel, rack and panel, and hi-rel assemblies, including MIL and ARINC standard solutions.

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## Microminiature Connectors

Cannon microminiature connectors offer high performance and reliability with exceptional versatility. Available in rectangular, circular and strip configurations for countless applications, many of our connectors meet or exceed applicable requirements of the MIL-DTL-83513 specification.

**www.ittcannon.com/micro**

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ITT