

Full Line Catalog

EMI/EMP Filter • Quadrax • Twinax • Fiber Optic • Triax
Coax • High Power • High Density Circular
Connectors • Contacts • Cable Assemblies



Your Connection to the Future

Sabritec is a highly integrated engineering and manufacturing company providing special interconnect solutions for military, aerospace, telecom, space, medical, test and measurement, and commercial applications. Sabritec designs and manufactures a full spectrum of connectors that include Filter, Quadrax, Twinax, Fiber Optic, Coax, and Triax connectors, contacts and cable assemblies. Sabritec also manufactures custom multi-pin circular, rack and panel and D-Subminiature connectors, as well as extreme environmental water immersion proof connectors for sea and military land based equipment applications. Our products span the broad spectrum of interconnects from highly integrated assemblies on military missile systems to microminiature connectors on printed circuit boards. Our connectors provide protection to sensitive avionics electronic systems yet can endure harsh environments that are found in military operations.

Sabritec is known for solving complex problems within tight time constraints. Our in-house capabilities encompass design, development, manufacturing and testing. As an engineering driven company, our staff has in-depth experience in electrical and mechanical design, EMI/RFI/EMP suppression techniques, microwave transmission, high voltage applications, severe environments, and material and plating selection. We manufacture multi-layer thick film ceramic capacitors in house.

Sabritec's modern 50,300 sq. ft. facility is conveniently located in Irvine, California. Major emphasis is placed on sophisticated computer controlled precision fabrication equipment. We employ a number of CNC lathes, screw machines, milling machines, and turret machines. Additional capabilities include soldering and brazing, heat-treating, plating and fabrication. Sabritec also has manufacturing facilities in Mexico and the United Kingdom.



Sabritec is an ISO 9001:2000/AS9100 Rev B Certified company.

About Smiths Interconnect

Smiths Interconnect, www.smithsinterconnect.com, is a leading provider of specialized electronic and radio frequency products for the wireless telecommunications, aerospace, defense, and medical markets. It is part of Smiths Group www.smiths.com, a global leader in applying advanced technologies for markets in threat and contraband detection, energy, medical devices, communications and engineered components. Smiths Group employs around 22,000 people in more than 50 countries.

smiths
bringing technology to life



Our Vision

To be the preferred solution provider for high reliability interconnects while maximizing stakeholder value.

Our Mission

Partnering with our customers to design and manufacture high performance, precision interconnects for our chosen markets. Through teamwork with our employees and suppliers, we will achieve sustained profitable growth by providing excellent customer service.

This catalog is a guide to Sabritec's connector manufacturing capabilities. For the most up to date product offering visit our website at www.sabritec.com. If you require a new product or modification of an existing product, please contact our applications engineering department who will help you find the appropriate interconnect solution. All specifications listed in this catalog are subject to change without notice.



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Vertical Integration

Sabritec's facility is completely vertically integrated, creating high quality precision interconnect products from initial concept, design and development, through production and acceptance testing.



3D CAD Modeling

Engineering

- Design and support engineers (manufacturing, industrial and quality)
- Autocad drafting
- Solid modeling capabilities
- Finite element analysis (mechanical & electrical)
- Electrical Simulation
- Product Lifecycle Management (PLM)

Machine Shop

- Full model machine shop
- Plastic and rubber molding
- Prototyping & assembly tooling
- Full turning equipment
- CNC Milling machines
- CNC Lathes
- CNC Screw machines



CNC Swiss Machining Centers



Ceramic Capacitor Manufacturing



CNC Mill Machining Centers



CNC Lathes



Fibre Channel Copper Solder Assembly

Assembly Capabilities

- Soldering IPC-A-610 & J-STD-001 Certified
- Solder trained personnel
- Reflow ovens, static pots, & hand solder stations
- Marking, offset printing, electro & plasma etching
- Semiautomatic equipment
- Wire strippers
- Crimpers
- Automatic installation of clips, hoods and mill-max

Other Capabilities

- Plastic injection molding
- Rubber compression molding
- Metal forming
- Heat treating
- Plating (Gold, electroless nickel and passivation)
- X-Ray fluorescents



Plating Capability



Mechanical and Electrical Testing

Sabritec's testing capabilities support wide bandwidth (DC to 50 GHz with up to 12.5 GHz Trigger). We utilize the Tektronix CSA8000 to measure the differential pair TDR impedance between twinax connectors, cable assemblies, and quad cable fibre channel interconnect systems. CSA8000 testing features 20 GHz bandwidth with 80E04 sampling module, 35 ps TDR reflected rise time, differential TDR and crosstalk.

Sabritec's Wiltron 360B Vector Network Analyzer measures VSWR & insertion loss up to 20 GHz. All four parameters can be measured simultaneously & efficiently measuring precision RF transmission and reflection coefficients. Rapid data storage and retrieval functions are quickly obtained for complex TDR analysis, stub tubing, and precise phase matching of RF cable assemblies, high frequency probes and waveguide tuners. Assembly line personnel also perform complex RF measurements. Rapid high production testing is performed with the use of pass/fail limit line set-ups and calibrations ensuring complete reliability of high quality 100% tested precision RF connectors and cable assemblies.

Sabritec's Production Automation Model 4720 Automatic Filter/Diode Array Test System is a battery of peripheral and OEM instruments. The system is capable of 100% rapid testing of modules, connectors and cable assemblies for capacitance, dissipation factor, IR and DWV (pin to shell and pin to pin), inductance, resistance, stand off voltage, break down voltage, and reverse bias leakage current. For connectors with EMI and EMP protection, the filter module is tested at the higher voltages before attachment to the diode module.

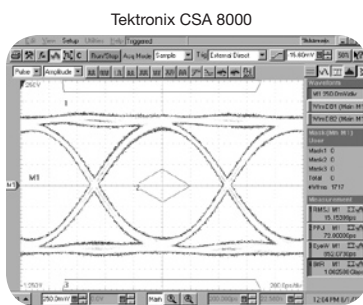
Testing Capabilities Include:

Capabilities Electrical

- DWV, IR, & Continuity
- EMI, Crosstalk & Impedance
- Capacitance & Diode Verification
- VSWR to 40 GHz
- Jitter & Eye Pattern
- Fiber Optic Insertion Loss Testing

Capabilities Mechanical/Environmental

- Thermal Cycling & Thermal Shock
- Temperature Humidity & Salt Spray
- Durability
- Mechanical Loading
- Electrical Born-In Life Testing of Components and Connectors



Eye-Pattern, Jitter & Skew Measurements



Automatic Electrical Testing

Quality

Our goal is to provide a high quality interconnect product to our customers through innovative design and continuous improvement of manufacturing processes and operational performance.

We will accomplish this through:

- Anticipating the needs of our market
- Listening to and understanding our customer's expectations
- Investing in tools and equipment to expand our technology
- Investing in our people through training and education
- Evaluating/improving our internal capabilities
- Partnering with a knowledgeable and capable supply base



Mitutoyo Quick Vision ELF Pro

Certifications

- MIL - I - 45208A
- ISO 9001 Certified
- ISO 14001 Certified
- AS 9100 Certified
- OHSAS 18001 Compliant
- Six Sigma Focus

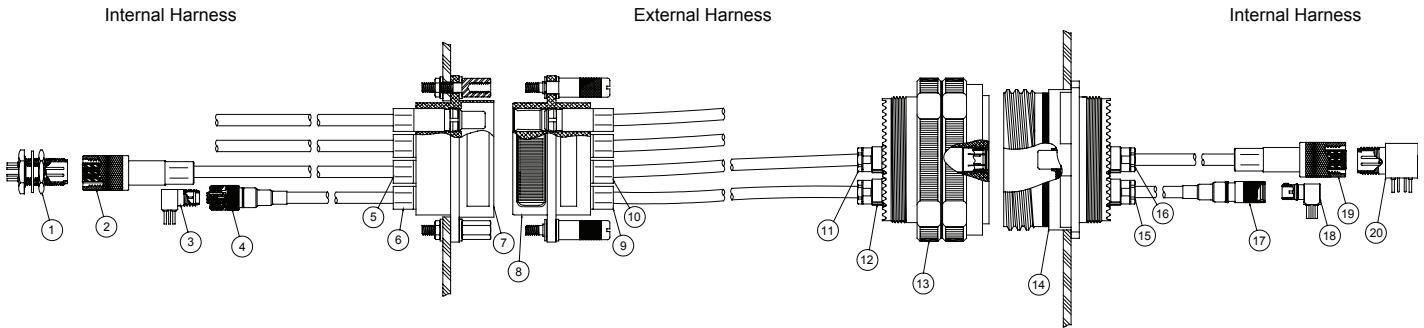




Sabritec System Diagram Examples

High Speed Copper and Fiber Optic System Diagrams

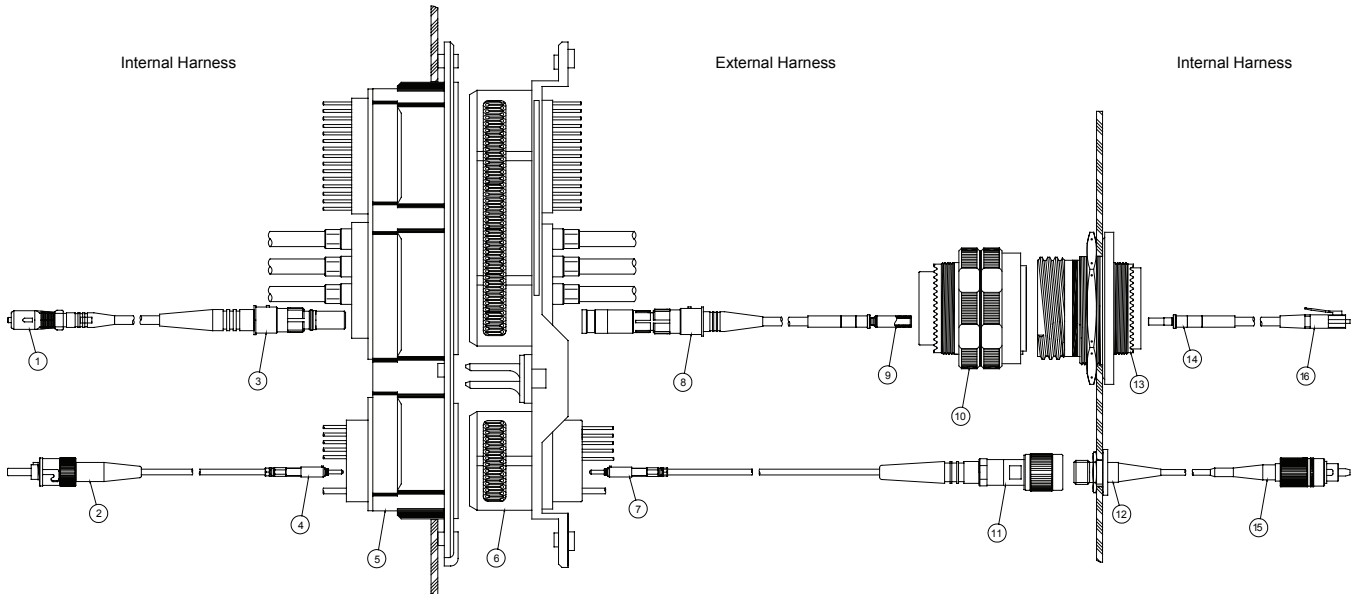
High Speed Quadrx and Twinax System Diagram



	Description	Type	Sabritec P/N
1	100 Ohm Straight Bulkhead Quadrx connector, PCB mount.	Jack	012817-5001
2	100 Ohm Straight Quadrx cable connector.	Plug	012735-2XXX
3	100 Ohm R/A Micro Twinax connector, PCB mount.	Jack	014117-1030
4	100 Ohm Micro Twinax cable connector.	Plug	014034-2XXX
5	#9 Quadrx Cable Contact.	Pin	019235-8XXX
6	#9 Twinax Cable Contact.	Pin	019234-2XXX
7	4 Way Ruggedized D-sub connector.	Receptacle	012800-3XXX
8	4 Way Ruggedized D-sub connector.	Plug	012700-2XXX
9	#9 Twinax Cable Contact.	Socket	019135-0XXX
10	#9 Quadrx Cable Contact.	Socket	019135-8XXX

	Description	Type	Sabritec P/N
11	#8 Quadrx Cable Contact.	Socket	019535-0XXX
12	#8 Twinax Cable Contact.	Socket	019534-0XXX
13	MIL-DTL-38999/26, #25-8, N Polarization	Plug	012600-2XXX
14	MIL-DTL-38999/20, #25-8, N Polarization	Receptacle	012600-3XXX
15	#8 Twinax Cable Contact.	Pin	019634-0XXX
16	#8 Quadrx Cable Contact.	Pin	019635-0XXX
17	100 Ohm Straight Quick Connect Micro Twinax Connector.	Plug	014034-2XXX
18	100 Ohm R/A Quick Connect Micro Twinax Connector, PCB Mount.	Jack	014117-1037
19	100 Ohm Straight Micro Quadrx cable connector.	Plug	012735-2XXX
20	100 Ohm R/A Quadrx Connector, PCB Mount.	Jack	012817-1000

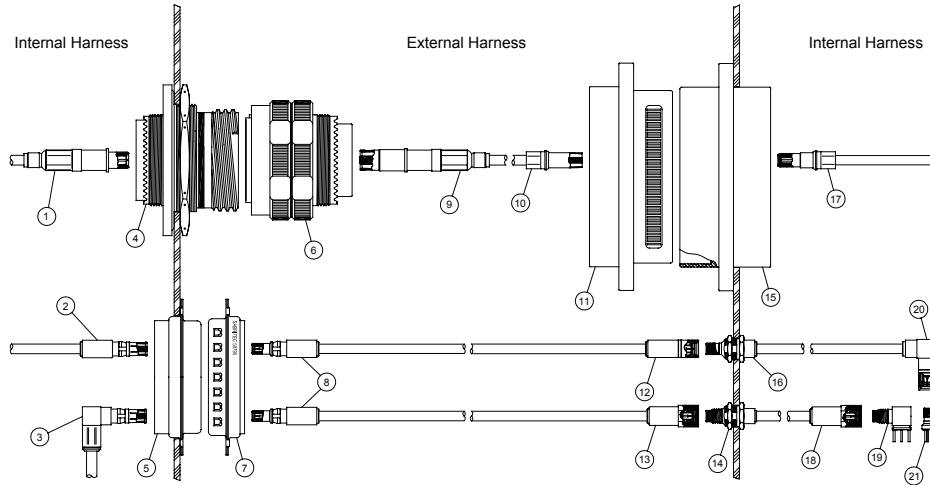
Fiber Optic System Diagram



	Description	Type	Sabritec P/N
1	SC Connector	Plug	230533-2XXX
2	ST Connector	Plug	230033-2XXX
3	Size 5 Expanded Beam	Pin	239433-8XXX
4	Size 16 Arinc 801	N/A	238500-8XXX
5	Arinc 600	Receptacle	0176XX-3XXX
6	Arinc 600	Plug	0176XX-2XXX
7	Size 16 Arinc 801	N/A	238500-8XXX
8	Size 5 Expanded Beam	Socket	239333-8XXX

	Description	Type	Sabritec P/N
9	Size 12 Expanded Beam	Socket	238733-8XXX
10	D38999, 21-11 arrangement	Plug	0164XX-2XXX
11	Ruggedized Single Channel	Plug	230533-2XXX
12	Ruggedized Single Channel	Receptacle	230633-3XXX
13	D38999, 21-11 arrangement	Receptacle	0164XX-3XXX
14	Size 12 Expanded Beam	Pin	238633-8XXX
15	FC Connector	Plug	230033-2XXX
16	LC Connector	Plug	239033-2XXX

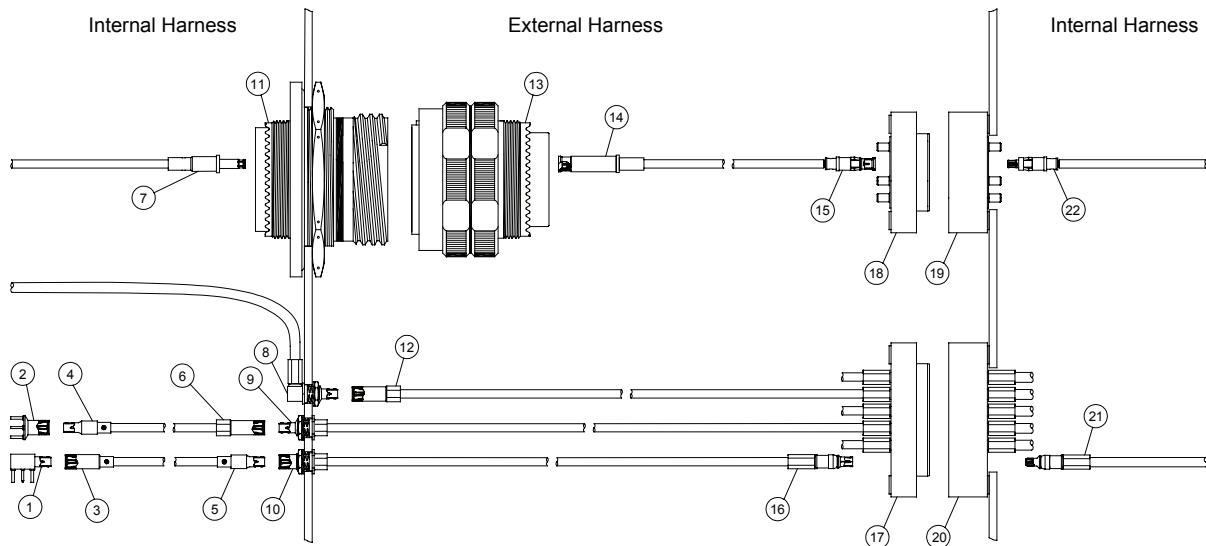
Triaxial System Diagram



	Description	Type	Sabritec P/N
1	#8 Triax Cable Contact for MIL-DTL-38999 Connector	Pin	019612-2XXX
2	#8 Triax Cable Contact for MIL-PRF-24308 Connector	Pin	019812-2XXX
3	R/A #8 Triax Cable Contact for MIL-PRF-24308 Connector	Socket	019712-1XXX
4	MIL-DTL-38999/20, ARR. 21-75	Receptacle	016400-3XXX
5	5W5S D-SUB Connector, SIZE 3	Receptacle	017132-3XXX
6	MIL-DTL-38999/26, ARR. 21-75	Plug	016400-2XXX
7	5W5P D-SUB Connector, SIZE 3	Plug	017131-2XXX
8	#8 Triax Cable Contact for MIL-PRF-24308 Connector	Pin	019812-2XXX
9	#8 Triax Cable Contact for MIL-DTL-38999 Connector	Socket	019512-2XXX
10	#10 Triax Cable Contact	Socket	018912-2XXX
11	7 Way Ruggedized D-sub Connector	Plug	012900-2029

	Description	Type	Sabritec P/N
12	Straight NDL-Q SERIES Cable Connector	Plug	016028-2XXX
13	Straight NDL-T SERIES Cable Connector	Plug	015028-2XXX
14	Straight NDL-T Series Bulkhead Mount Cable Connector	Jack	015128-5XXX
15	7 Way Ruggedized D-Sub Connector	Receptacle	012900-3004
16	Straight NDL-Q Series Bulkhead Mount Cable Connector	Jack	016128-5XXX
17	#10 Triax Cable Contact	Pin	018812-2XXX
18	Straight NDL-T Series Cable Connector	Plug	015028-2XXX
19	R/A NDL-T Series PCB Mount Connector	Jack	015100-1XXX
20	R/A NDL-T Series Cable Connector	Plug	015028-1XXX
21	R/A NDL-Q Series PCB Mount Connector	Jack	016100-1XXX

Coaxial System Diagram



	Description	Type	Sabritec P/N
1	R/A SCX Miniature Coax Connector, PCB mount	Plug	013200-1004
2	SCX Miniature Coax Connector	Receptacle	013100-2036
3	SCX Miniature Coax Cable Connector	Receptacle	013120-2XXX
4	SCX Miniature Coax Cable Connector	Plug	013220-2XXX
5	SCX Miniature Coax Cable Connector	Plug	013220-2XXX
6	SCX Miniature Coax Cable Connector	Receptacle	013120-2XXX
7	#12 Coax cable contact	Pin	018624-8XXX
8	R/A SCX Miniature Coax Cable Connector	Plug	013212-1XXX
9	SCX Miniature Coax Connector, Bulkhead mount	Plug	013220-5XXX
10	SCX Miniature Coax Connector, Bulkhead mount	Receptacle	013109-5XXX
11	MIL-DTL-38999/24, #21-75, N-POL	Receptacle	016400-3XXX

	Description	Type	Sabritec P/N
12	SCX Miniature Coax Cable Connector	Receptacle	013120-2XXX
13	MIL-DTL-38999/24, #21-75, N-POL	Plug	012600-2XXX
14	#12 Coax Cable Contact	Pin	018624-8XXX
15	High Frequency MDHC Coax Cable Connectors	Socket	013109-2XXX
16	MDCX Coax Cable Contact	Socket	019911-3XXX
17	6-0 MDCX Cable Connector	Plug	017300-2XXX
18	4-0 MDHC Cable Connector	Plug	017300-2XXX
19	4-0 MDHC Cable Connector	Receptacle	017300-3XXX
20	6-0 MDCX Cable Connector	Receptacle	017300-3XXX
21	MDCX Coax Cable Contact	Pin	019911-2XXX
22	High Frequency MDHC Coax Cable Connectors	Pin	013209-2XXX



FILTER CONNECTORS

EMI/EMP/RFI TRANSIENT PROTECTION





Your Filter Connection to the Future

Our Products

Sabritec designs and manufactures a full spectrum of sophisticated filter connector products. Our specialty is in the design of interconnect solutions addressing EMI/RFI filtering, and transient protection to meet demanding HIRF and Lightning requirements.

In addition to MIL-Spec interface type products, many of our designs are unique, built to conform to customer specifications requiring a high level of integration, special packaging, and critical electrical performance. Innovation is our distinction and our products address a wide variety of applications. Our achievements lead the industry in the design and manufacture of special filter connector products.



Our Design Strategy

Sabritec's design strategy for filter connectors is based on extensive experience with filter capacitor arrays and diodes. Our engineers understand the extreme environmental conditions that can cause a filter or diode to fail or, worse yet, cause a system dysfunction. This design strategy is built on the foundation of system reliability and the efficient use of available space. The capacitor array is protected from thermally induced mechanical stresses by a barrier located between the capacitor array surface and the epoxy filled region. This barrier isolates the epoxy and the ceramic array and prevents damage to the array from the expansion influence of the epoxy.



Modularization

A disciplined design approach that employs methods of grouping multiple components into subassemblies wherever feasible. Such subassemblies may include a filter module, diode module, circuit assembly module and a transition interface assembly. Modularization results in cleaner, more standardized designs that provide flexibility in maintaining and upgrading the connector. An important advantage of modularization is that individual modules may be removed or replaced in the field without disturbing other subassemblies and components.

Integration

There is considerable unused space available in a standard non-filtered connector. Sabritec takes advantage of this space by removing components from elsewhere in the system and integrating them within the connector freeing up valuable board space. Isolating components electrically eliminates external wire connections and decreases crosstalk. The connector shell protects critical components from environmental or mechanical damage.



Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.

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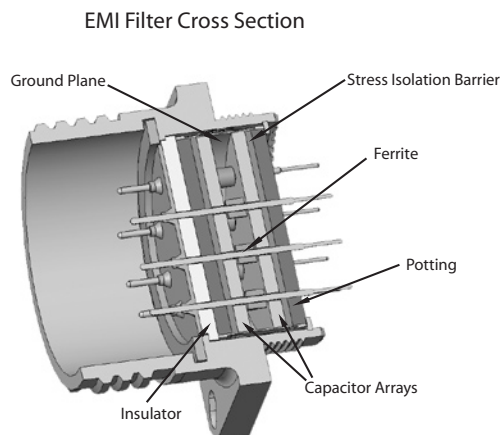


Filter Connectors

Advantages/Mounting Configurations/Water Sealed Versions

Advantages of Sabritec Filter Connectors

- Sabritec's filter connectors use monolithic capacitor arrays, the most reliable method of EMI/RFI filtering
- A single capacitor array can provide multiple capacitance values
- Most space efficient method of packaging EMI/RFI and EMP transient protection
- Connector shell protects the capacitor array and diodes from environmental, mechanical and thermal damage
- Transient voltage suppressors (transorbs) integrated into the connector offer EMP transient protection to sensitive circuitry. JANTX level or equivalent diode reliability screening is available
- System weight is reduced by integrating the filters and diodes into the connector
- Modular design techniques reduce the overall package size and improve connector maintainability
- Tested and documented using automatic test equipment

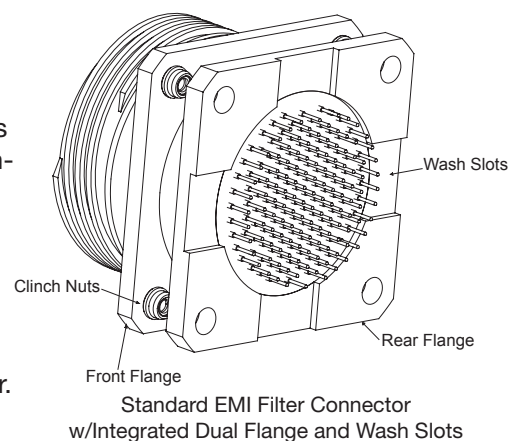


Integrated Dual Flange

Another useful feature that can be incorporated into the connector design in order to ease final assembly and reduce system build costs is that of a dual flange. This enables the PCB or Flex Circuit to be soldered or fixed directly to the PC Tails protruding from the rear of the connector, after having been quickly and reliably 'mechanically fixed' by the use of self locking helicoils incorporated into the flange itself. Wash slots machined in the flange enable superior soldered joints to be achieved as a result of the void created, which allows even heat transfer during soldering. Subsequent cleaning processes being undertaken are also improved as a result of the same void, ensuring that no damaging flux residue remains in place.

Incorporation of this feature further acts as a rigid and mechanically strong standoff for the PCB, providing a solid datum point internally thus reducing any force experienced by the rear PC tails. Attachment of heavy PCB's can be easily tolerated with no damage to the connector experienced throughout its service life.

The final assembly stage can also be taken a step further with self-locking clinch nuts fixed to the front flange, resulting in faster assembly to the bulkhead and removing the need to purchase additional assembly components. These features can be accommodated in virtually all filter connector variants and enable the true system cost to be reduced for the user.



Water Sealed Filter Connectors

Electronic equipment that is used in harsh environments requires connectors that can withstand exposure to moisture, dust and other elements. Also many applications require components to meet the Ingress Protection (IP) rating of IP67 as specified by IEC 60529. Sabritec can provide water sealed connectors that can be successfully used in systems where moisture, humidity, water, and dust are present. These connectors are ideal for high-pressure/low leakage applications in land, air, sea, and space environments.

Water sealed connector features can be added to EMI/EMP filtered connector types that meet the applicable requirements of MIL-DTL-38999, MIL-DTL-26482, MIL-DTL-83527, MIL-DTL-81659, and ARINC 600. These connectors can also incorporate any special features desired including different mounting types and unique shell or flange configurations.



MIL-DTL-38999 Compliant Water Sealed Connector

The increased sensitivity of electronic systems and mandated performance requirements such as RTCA DO-160 make transient protection paramount in system design today. Transient suppression built into the connector provides the most space efficient and effective method of protection against Electromagnetic Pulse (EMP), Lightning, Nuclear EMP and voltage transients. The excess energy is shunted to ground at the connector interface before it can even enter the system.



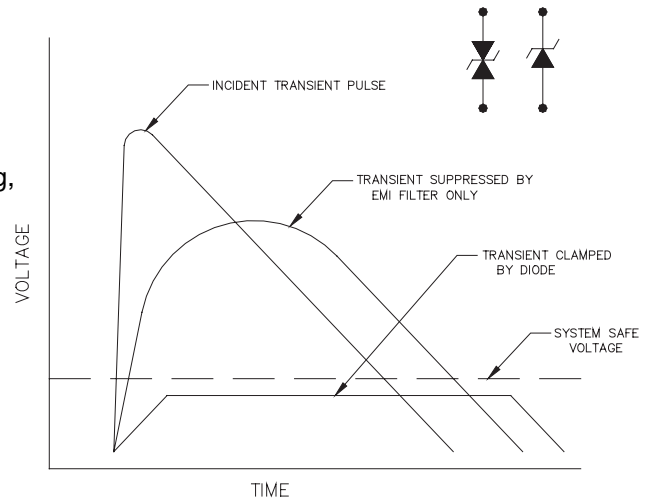
EMI Connector with Diodes

TVS diodes are mounted inside the connector around the periphery of the insert arrangement. Standard “catalog” diodes are utilized in order to increase reliability and minimize cost. JANTX diodes can be supplied; additionally, Sabritec has the capability to pre-screen diodes at component level testing and burn-in which eliminates infant mortality.

The connector shell dimensions vary with the quantity and type of diodes chosen, but generally fit within the outline defined by the mounting flange. Sabritec’s method of mounting the diodes can be incorporated into any connector type including, but not limited to MIL-DTL-38999, ARINC 600 and ARINC 404.

Where required, transient protection can be combined with EMI/RFI filtering to provide maximum protection. The diodes as well as the EMI filter are packaged separately so that the construction of the connector remains modular. Therefore, individual diodes as well as the EMI filter can be removed or replaced without disassembling the connector.

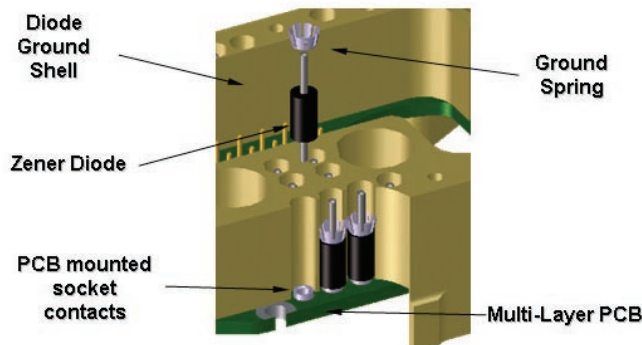
Transient Curves



Advantages of Filtered EMP Connectors with Transient Protection and EMI Suppression

- Transient protection can be combined with EMI filtering if required
- Mixture of diode parameters varying power, voltage and polarity within the same connector is available
- Diodes can be removed and replaced without disassembly of the connector
- Transient protection is located at the interface of the system
- Separable diode and filter modules are more easily repaired
- Diodes and filters are protected by the shell reducing environmental and mechanical damage
- System retrofit to EMP/EMI is compatible with unprotected connectors

EMP Filter Construction





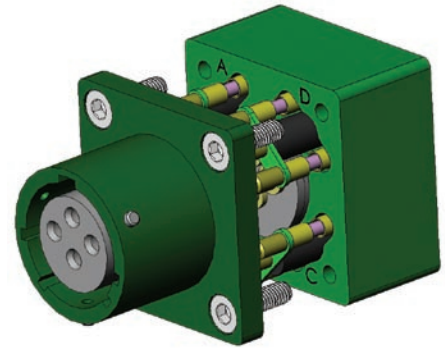
Transient Protection

High Speed EMP Protection/Surface Mount TVS Chip Diodes

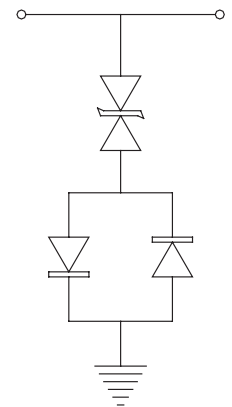
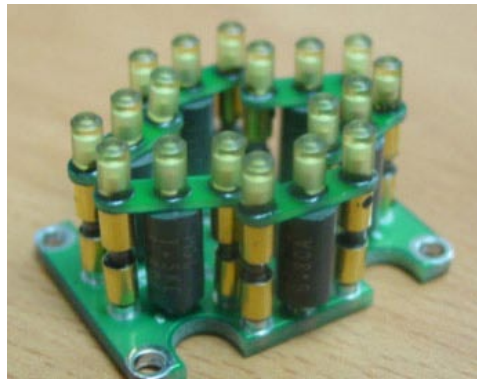
In order to meet the ever increasing EMC system requirements mandated in today's world, Sabritec offers solutions for both EMC and EMP protection on high speed data lines. For Coax, Triax, and Twinax contact types, Sabritec has a unique design solution that offers tailored protection without degradation of the data signals being transmitted. This is accomplished by maintaining extremely low capacitance and leakage current levels on uniquely designed and packaged diode stacks, in combination with in-house manufactured high frequency EMC filters.

Manufactured in a robust modular manner, the connectors can be quickly disassembled from the front/rear providing access to the diode stacks for removal/replacement if they become damaged as a result of excess transients experienced in service. Operating frequencies in excess of 100 MHz can be successfully used with full EMC/EMP protection, fully safeguarding the equipment and offering a low risk / high performance solution.

With the advent of today's high signal transmission speeds coupled with low-level operating voltages, a need for high speed EMP protection circuitry has arisen. Sabritec has developed a complete series of EMP products ideally suited for this need. Densely packaged and protected within the connector shell, Sabritec employs the use of low voltage transient voltage suppressor (TVS) bipolar diodes connected in series to a parallel network of back-back rectifiers as shown in the schematic diagram.



High Speed Data Connector w/ Integrated EMI/EMP



Schematic High Speed EMP Protection

Surface Mount Technology for Transient Protection

Sabritec can also offer transient protection in our connectors utilizing surface mount technology (SMT) chip diodes. These can be provided as an alternative to axially leaded components in instances where availability or source of supply problems could potentially become an issue. SMT diodes are provided by numerous manufacturers and distributors and in most cases readily available as they are widely used in the electronics industry. The incorporation of SMT components can potentially provide space and weight savings as well based on the particular connector and application requirements. If you have any questions in regards to SMT technology please contact Sabritec for further information.



Sabritec is able to offer lead free filter connector solutions upon request. Consult factory for more details.



Transient Voltage Suppression Diode Selection Guide

RTCA DO-160, Environmental Conditions and Test Procedures for Airborne Equipment, is a widely used criterion for verifying the capability of equipment to withstand the effects of lightning induced electrical transients. In Section 22 of this standard, entitled Lightning Induced Transient Susceptibility, the test methods and procedures for performing pin injection and cable bundle testing on aircraft equipment are defined.

In order to verify the capability of an electronic system to withstand the effect of lightning induced transients, test procedures define the lightning induced transient by two characteristics:

1. The **transient waveform** which shows how quickly the transient is induced and how long it lasts. This is sometimes referred to as the pulse width and is measured in microseconds. The pulse width is related to the level of damaging energy contained within the transient, i.e. the longer the pulse, the more damage it will cause. The three most commonly referenced pin injection lightning waveforms from RTCA/DO-160E, Section 22, are shown in the figures below.
2. The **test level** which defines the magnitude of the pulse. This is related to the anticipated level of exposure of the electronic system, i.e. if a system is tucked away in a safe environment, e.g. inside a metal enclosure with the interconnecting wiring being well shielded, the test level will be low. However, if the system is highly exposed to the electromagnetic environment, the test level will be high. The test level is described in terms of the open circuit voltage (Vc) and the short circuit current (Isc).

In the table below for waveforms 3, 4, and 5A, we show the recommended diode clamping voltage (Vc) and power rating (Ppp) at each test level for these waveforms.

Diode Clamping Voltage (Vc) Selection for Lightning Strike Waveform Threats						
RTCA/DO-160	LEVEL 1 100V/4A	LEVEL 2 250V/10A	LEVEL 3 600V/24A	LEVEL 4 1600V/60A	LEVEL 5A 3200V/128A	Recommended TVS (Ppp) @10/1000us
Waveform 3 1MHz Damped Sinusoidal Wave (Ref. Fig. 22-4 from DO-160E)	Vc 97 V	Vc 243 V	Vc 275 V	Vc 87 V	Vc 32.2 V	500 Watts
	Vc 97 V	Vc 243 V	Vc 275 V	Vc 87 V	Vc 35.8 V	600 Watts
	All	All	All	Vc 243 V	Vc 96.8 V	1,500 Watts
	All	All	All	Vc 275 V	Vc 209 V	3,000 Watts
	All	All	All	All	Vc 275 V	5,000 Watts
RTCA/DO-160	LEVEL 1 50V/10A	LEVEL 2 125V/25A	LEVEL 3 300V/60A	LEVEL 4 750V/150A	LEVEL 5A 1600V/320A	Recommended TVS (Ppp) @10/1000us
Waveform 4 Double Exponential 6.4 X 69 μsec (Ref. Fig. 22-5 from DO-160E)	All	All	Vc 31.9 V	Vc 11.3 V	NONE	500 Watts
	All	All	Vc 38.2 V	Vc 13.6 V	NONE	600 Watts
	All	All	All	Vc 35.0 V	Vc 16.0 V	1,500 Watts
	All	All	All	Vc 74.0 V	Vc 29.2 V	3,000 Watts
	All	All	All	Vc 134 V	Vc 35.5 V	5,000 Watts
	All	All	All	All	Vc 114 V	15,000 Watts
	All	All	All	All	Vc 146 V	30,000 Watts
All	All	All	All	All	200,000 Watts @ 10/40us	
RTCA/DO-160	LEVEL 1 50V/50A	LEVEL 2 125V/125A	LEVEL 3 300V/300A	LEVEL 4 750V/750A	LEVEL 5A 1600V/1600A	Recommended TVS (Ppp) @10/1000us
Waveform 5A Double Exponential 40 X 120 μsec (Ref. Fig. 22-6 from DO-160E)	All	Vc 10 V Vc 114.9 V	NONE	NONE	NONE	500 Watts
	All	Vc 12.4 V Vc 112.6 V	NONE	NONE	NONE	600 Watts
	All	Vc 42.2 V Vc 82.8 V	Vc 12.1 V	None	NONE	1,500 Watts
	All	All	Vc 25.5 V	Vc 9.4 V	NONE	3,000 Watts
	All	All	Vc 45.8 V	Vc 15.9 V	NONE	5,000 Watts
	All	All	All	Vc 49.9 V	NONE	15,000 Watts
	All	All	All	Vc 77.4 V	NONE	30,000 Watts
	All	All	All	Vc 231 V	NONE	200,000 Watts @ 10/40us

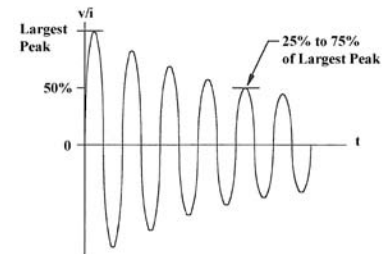


Figure 22-4: 1MHz Frequency Damped Sinusoidal Voltage/Current Waveform 3

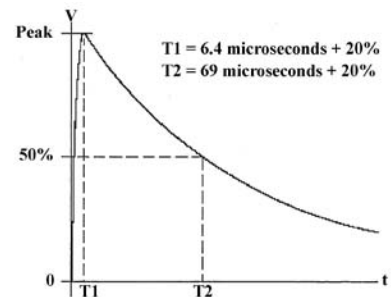


Figure 22-5: Voltage Waveform 4

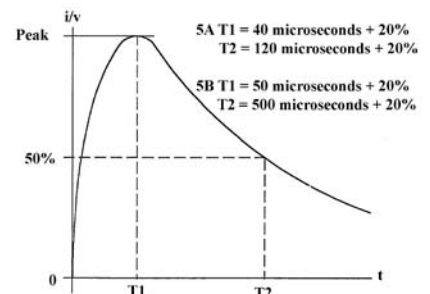


Figure 22-6: Voltage Waveform 5A



Planar Array Technology

Sabritec internally manufactures the monolithic ceramic capacitor array on both thick and thin film technology. Using a dry process to laminate the layers of X7R and COG material ceramic tape, Sabritec is capable of achieving capacitance values from 100pF to 100nF on the same array.

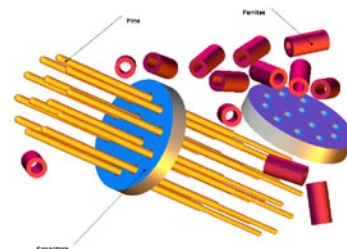
Parameter	Planar Array	Tubular	Chip
Capacitance	>60,000 PF	>10,000 PF	>50,000 PF
DWV	750 VDC	500 VDC	500 VDC
Resonance	None	None	120 MHz
Vibration	Very Good	Very Poor	Poor
MTBF	High	Low	Moderate

Our extensive in house capability allows for unique applications and arrangements not engineered elsewhere in the connector world. This may include mixed contact sizes, new insert arrangements, or high voltage applications up to 2000 VDC Dielectric Withstand Voltages (DWV).

The planar array is much more complex and versatile in its design. The planar uses the same X7R material as the tubular capacitor, however the electrodes run perpendicular to the contact, allowing higher capacitance and higher voltage ratings, as the pin to pin spacing is not effected by this design approach. With the electrodes running perpendicular to the contact, we can stack more electrodes thus increasing capacitance and at the same time, thicken the dielectric between electrodes to increase the withstanding voltages within the medium.

The planar array also has the advantage of strength. As the layers of ceramics are stacked perpendicular to the contact, we can increase the planar thickness to about .100" to withstand high vibration scenarios. This far outweighs the .015" thickness found in the tubular capacitor.

Because the capacitor is ceramic, it is relatively brittle in comparison to the other components of a connector (metal, rubber and plastic). Therefore, the internal construction of the filter connector must isolate the capacitors from mechanical stress.



Sabritec uses a thin wall ground plane or spring to house the filter elements. The ground plane is captured between halves of the connector shell to provide mechanical retention as well as electrical contact with 3GG degree attachment to ground. Thermal stress from the connector shell is not transferred to the capacitor arrays due to a compliant fit between the outside diameter of the ground plane or spring and the inside of the shell. Stress from the contacts is eliminated through the use of a block of epoxy on either side of the capacitors. Sabritec further isolates the capacitors with a proprietary stress isolation barrier between the epoxy and the capacitors.

Filter Type	Filter Circuit	Best Application
Pi		Unknown or medium source and load impedance
LC		Low source and high load impedance
CL		High source and low load impedance
C		High source and high load impedance
T		Low source and low load impedance

High source or load impedance >100 Ohms
 Low source or load impedance < 10 Ohms

Note: All Filters are passive low pass filters. Please consult factory for other types of filters such as band-pass, notch, or high pass filters.

The heart of the filter connector is the capacitor array, consisting of multiple layers of ceramic insulators and precious metal conductors. The ceramic component has the unique ability to store a charge. The amount of charge that a capacitor can store depends on its capacitance and the applied voltage. The capacitance depends upon the composition of the insulator (better known as the dielectric).

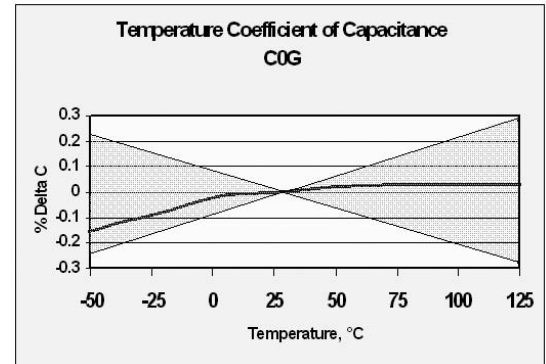
Every dielectric has an inherent ability to store charge when compared to a vacuum. This ratio is called a dielectric constant (K). Air, for example, has a dielectric constant of about 1.0. In comparison, mica has a dielectric constant of 6.0. In other words, mica has the ability to hold 6 times more of a charge than air. The dielectric materials used at Sabritec have dielectric constants of 95 (C0G) and 3000 (X7R). The capacitance also is influenced by the geometry of the capacitor. For a simple single layer capacitor, the capacitance increases with an increase in cross-sectional area. The capacitance can also increase with decreasing thickness.

There are four major guidelines when designing a particular capacitor array:

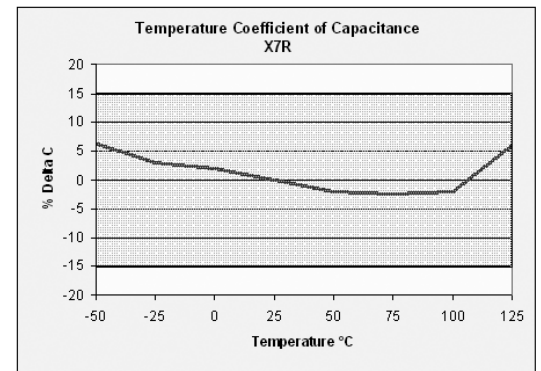
1. The design must be large enough to compensate for shrinkage.
2. Multi-capacitance arrays require several multi screen designs.
3. A high capacitance design should not exceed a certain number of layers.
4. A high voltage design must meet a minimum fired thickness.

The capacitance is influenced by the number of active printed layers, the overlap area, and the thickness of each layer. There must be a balance between all three parameters to ensure a reliable and economical component. With each printed layer, precious metal is used which is costly. The amount of overlapping area between the ground plane and positive pattern must be small enough to minimize alignment variations, which can lead to failure, yet large enough to minimize the number of printed layers required to obtain a particular capacitance target. Large overlapping areas can increase the distribution of capacitance between the population of holes within a part.

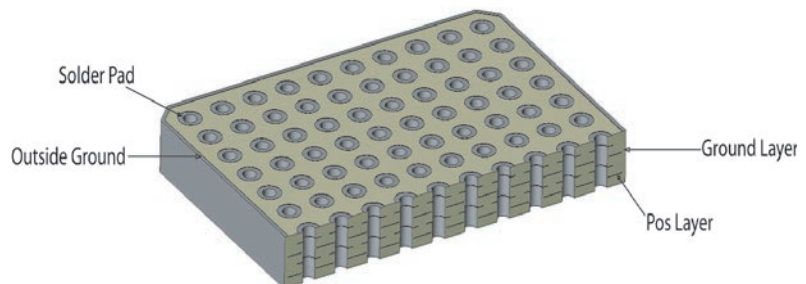
Finally, the layer thickness must be large enough to safely exceed the specified voltage requirements. If the layer thickness design is too large, then more printed layers are needed, increasing the overall thickness, making the capacitor too thick to fit into the connector design. If the capacitor is too thin, it may be prone to cracking during ceramic processing. There will always be at least two screens used for any one ceramic design; the ground plane and positive pad. The ground plane provides the ground connection to the connector shell. The positive pad provides connection to the contact pins.



C0G is an EIA designation for a low dielectric constant temperature, voltage, and frequency stable dielectric ceramic material. The above graph shows the stability of capacitance over the temperature range from -55°C to +125°C.



X7R is an EIA designation for a class II mid K dielectric material that has a maximum temperature coefficient of $\pm 15\%$ over the temperature range from -55°C to 125°C.





Ceramic Multi-layer Capacitors

Tubular Capacitors vs. Chip Capacitors

Tubular Capacitor Technology

In the early 1980's the filter connector (still in its infancy) used exclusively tubular type capacitors. These capacitors served the needs of the industry well at that time. However, low yields and an array of quality problems suggested that the tubular capacitor was no longer sufficient for the systems it was designed into. Therefore, in the late 1980's the monolithic planar array was born into existence.

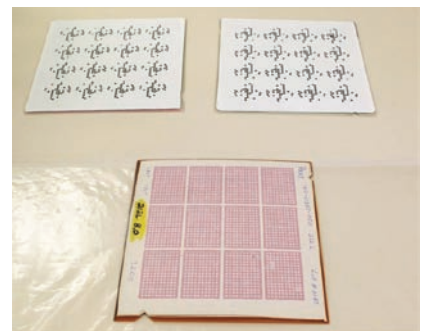
This new technology incorporated the monolithic chip capacitor technology and adapted it to a multi line configuration. This gave both the ability to achieve higher capacitance per line as well as higher dielectric withstanding voltages. The two technologies are vastly different in their design and capabilities. The tubular capacitor is, as it suggests, a tube running the length of the contact with electrodes buried inside. The wall thickness of the tube is dictated by the pin to pin spacing of the connector, the metal ground plate used to ground the capacitor, and the size of the ferrite in a Pi section filter. In a 150 line ARINC 600 module, the pin to pin spacing is .100". Therefore the wall thickness of the tube is .050" minus the web dimension of the ground plane minus the wall thickness of the ferrite. Typically it ends up being around .015" thick. This limited thickness has to be designed to withstand the voltage rating of the system, achieve the desired capacitance and be strong enough for system vibration.

The systems of today typically require much higher capacitance values and/or require higher voltage ratings. The Eurofighter Typhoon has several requirements that exceed 2000 VDC and the vibration requirements are the highest in the industry. The .015" tubular capacitor is not designed to handle these high vibration requirements and there is no space to increase either the capacitance or the voltage rating.

Today's systems mandate harsh environmental constraints to be subjected to component hardware. The dielectric material in the capacitor typically is X7R type material to achieve the highest capacitance with the least change in capacitance over the temperature range. The tube has the electrodes (which when stacked together increase capacitance) running parallel to the contact. This in combination with the pin to pin spacing limits the capacitance to about 7000 pF at 200 VDC working voltage.

Chip Capacitors

The use of chip capacitors in military applications is typically not allowed in connectors. The reason is two fold; First, chip capacitors tend to resonate at frequencies above 120 MHz and during a swept EMC test tend to fail at those frequencies. Secondly, they also take up too much space and tend to lower the MTBF rating of the connector as a whole. The planar array is much more rugged of an assembly and not subject to the thermal shock and vibration that the chip capacitors surface mounted to the PCB would face. Lastly, the planar array ensures a 360 degree attachment to ground to maximize insertion loss up to 1 GHz and beyond. The chip capacitor does not have a circumferential ground and radiated emissions may not be captured by this solution.





Filter Connector Terminology

Working or Operational Voltage is the maximum voltage that can be continuously sustained. The dielectric utilized to manufacture the capacitor sets this value, which is directly proportional to the distance between ground planes and electrodes, whether a tubular capacitor or a planar array.

Insulation resistance (IR) is generally measured at the capacitor or connectors working voltage. This ensures that when utilized at these voltages, there is sufficient resistance between contacts and from a contact to ground, so as not to cause electrical shorts. Typical values are approximately 5000 mega-ohms. Lower values may be required for high capacitance values.

Capacitance is a product of the overlap between ground planes and electrodes, and the dielectric utilized (The dielectric constant of the ceramic k). Capacitance plays a key role in the filter performance. Capacitors impedance lowers as frequency increases. The greater the frequency, the greater the effect of filtering or attenuation for a low-pass filter.

Noise Floor is the value at which the connector will not exceed. Typically 75-85dB. This is limited by capacitor performance, source and load impedance and ground resistance. The graph on the right shows attenuation still increasing at 80db.

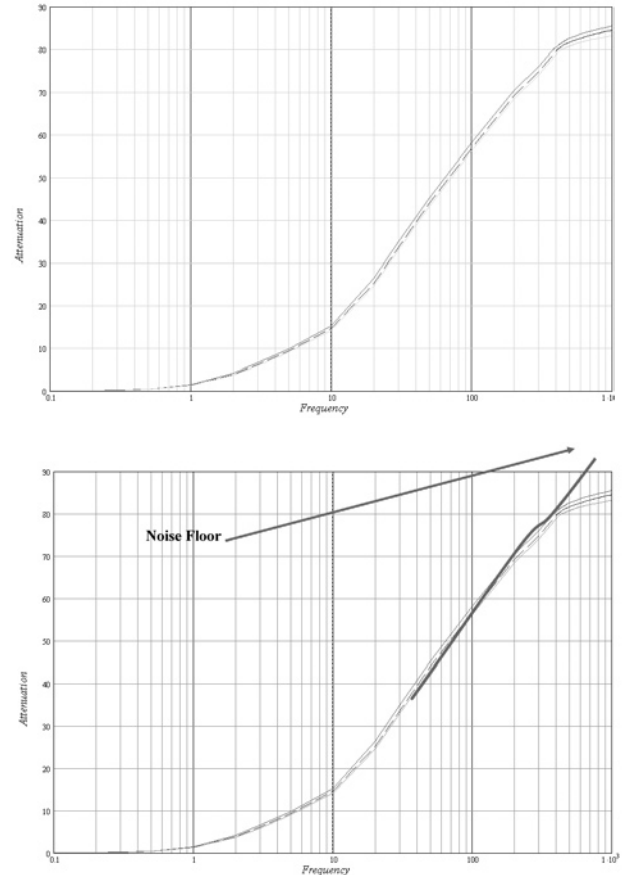
Cross talk is a disturbance, caused by electromagnetic interference, along a circuit or a cable pair. A telecommunication signal disrupts a signal in an adjacent circuit and can cause the signals to become confused and cross over each other.

Dielectric Withstanding Voltage (DWW) is the connectors upper voltage capability, for short non sustainable periods only. This can be specified as duration. The capacitor array will be weakened by multiple and sustained applied voltages at DWV levels.

Planar Array is the most common form of filter components utilized in connectors within our market areas. They provide high performance filters, are rugged enough to withstand high environmental vibration levels and can be manufactured with working voltages up to 1000 VDC with relative ease.

Dissipation Factor (DF) is the ratio of the energy dissipated to the energy stored in a dielectric per hertz, also equal to the tangent of the loss angle. It is also defined as the reciprocal of the ratio between the insulating materials capacitive reactance to its resistance at a specified frequency. It measures the inefficiency of an insulating material. If a material were to be used for strictly insulating purposes, it would be better to have a lower dielectric constant.

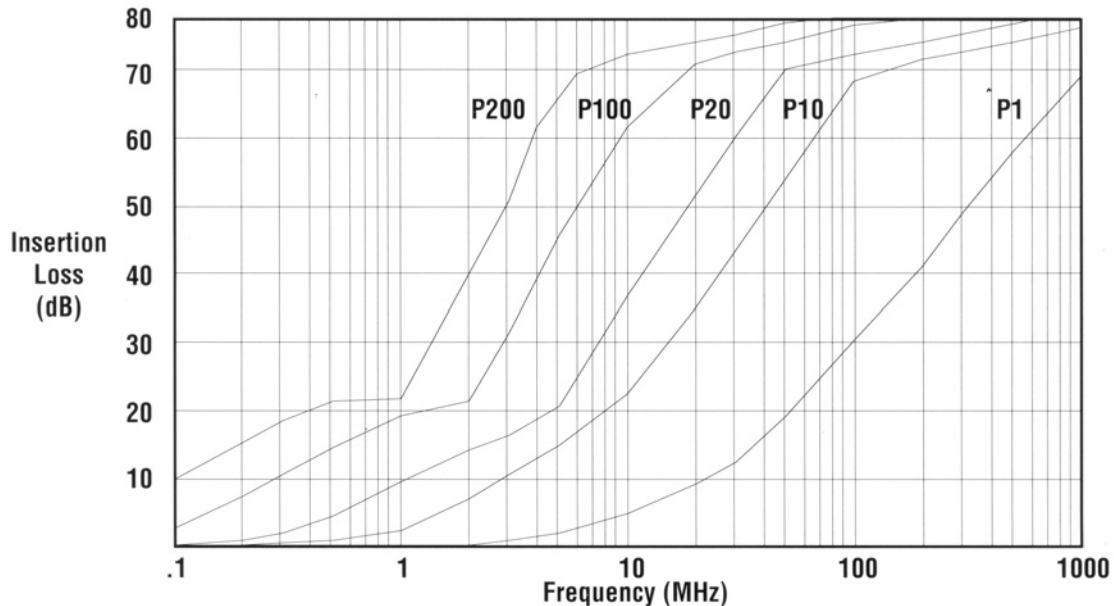
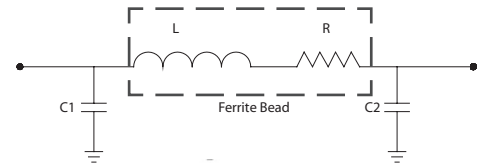
Attenuation Curve for Low Pass Filters



Electrical Characteristics - 'Pi' Section

Filter Description	P200	P100	P76	P38	P20	P10	P8	P4	P2	P1
Operating Temperature Range	-55°C to + 125°C									
Voltage Rating	100 VDC			200 VDC-120 Vrms 400 Hz						
Current Rating DC				15 amps size 16/7.5 amps size 20/5 amps size 22						
Insulation Resistance	5000 megohms min. @100 VDC									
Current Rating R.F.	3.0 amps max.									
DWV Sea Level w/ 50 micro-amps max. charge/discharge	250 VDC			500 VDC						

'Pi' Section Curves



Insertion Loss Table

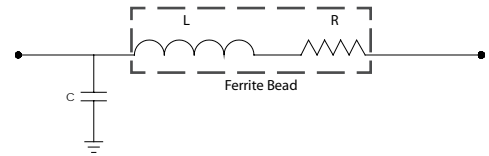
Filter Description	See Notes	P200	P100	P76	P38	P20	P10	P8	P4	P2	P1
Capacitance in Nanofarads @ 1Khz., 1VRMS		160	80	60	30	16	8	6.4	3.2	1.6	.8
		240	120	91	46	24	12	9.2	4.8	2.4	1.2
Minimum No Attenuation loss @ 25°	Freq Mhz										
	.1	8	4.1	3	1	.3	.1	-	-	-	-
	1.0	22.2	19.6	18.2	13.3	8.2	3.9	2.9	.9	.2	-
	2	32.8	21.7	19.7	16.8	12.7	8	6.6	2.9	1	.3
	10	73.5	61	57	44.4	31.5	20.6	18.3	12.8	8.1	4.0
	100	85+	85+	85+	85+	78	65.8	61.9	49.6	37.3	25.6
500-1k	85+	85+	85+	85+	85+	85+	80	75	64	52	

Notes:

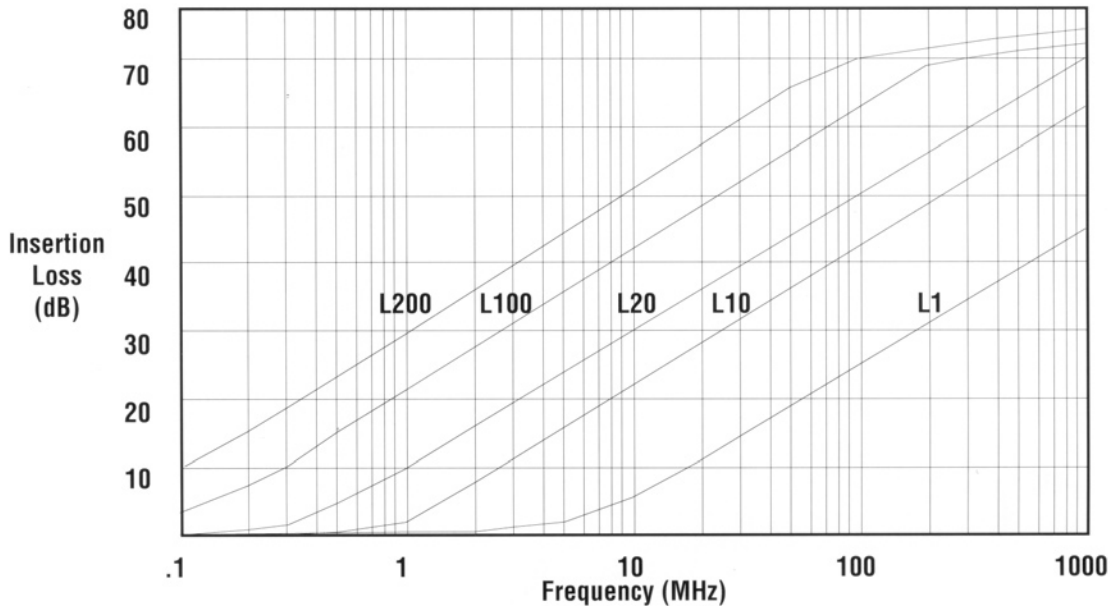
1. P200 & P100 Capacitance Values for Size 20 Contact Arrangement & Larger
2. No Load Minimum Attenuation Values per MIL-STD-220
3. Capacitance in Nanofarads (Nominal Value)
4. Consult Factory for Higher Voltages & Capacitance Values

Electrical Characteristics - 'L' Section

Filter Description	L200	L100	L76	L38	L20	L10	L8	L4	L2	L1
Operating Temperature Range	-55°C to + 125°C									
Voltage Rating	100 VDC					200 VDC-120 Vrms 400 Hz				
Current Rating DC						15 amps size 16/7.5 amps size 20/5 amps size 22				
Insulation Resistance	5000 megohms min. @100 VDC									
Current Rating R.F.	3.0 amps max.									
DWV Sea Level w/ 50 micro-amps max. charge/discharge	250 VDC					500 VDC				



'L' Section Curves



Insertion Loss Table

Filter Description	See Notes	L200	L100	L76	L38	L20	L10	L8	L4	L2	L1
Capacitance in Nanofarads @ 1Khz, 1VRMS		160 240	80 120	60 91	30 46	16 24	8 12	6.4 9.2	3.2 4.8	1.6 2.4	.8 1.2
Minimum No Attenuation loss @ 25°	Freq Mhz										
	.1	8.6	4.1	3	1	.3	.1	-	-	-	-
	1.0	28	22	20.1	14.2	8.6	4	3	.9	.2	-
	2	34.3	28.3	26.3	20.3	14.4	8.8	7.2	3.1	1	-
	10	49	43	41.1	35	29	23	21.1	15.1	9.5	4.8
	100	69.9	63.9	62	55.9	49.9	43.9	42	35.9	29.9	23.9
500-1k	83.7	77.7	75.8	69.7	63.7	57.7	55.8	49.7	43.7	37.7	

Notes:

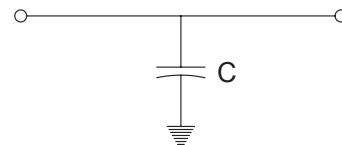
1. L200, L100 & L76 Capacitance Values for Size 20 Contact Arrangement & Larger
2. No Load Minimum Attenuation Values per MIL-STD-220
3. Capacitance in Nanofarads (Nominal Value)
4. Consult Factory for Higher Voltages & Capacitance Values



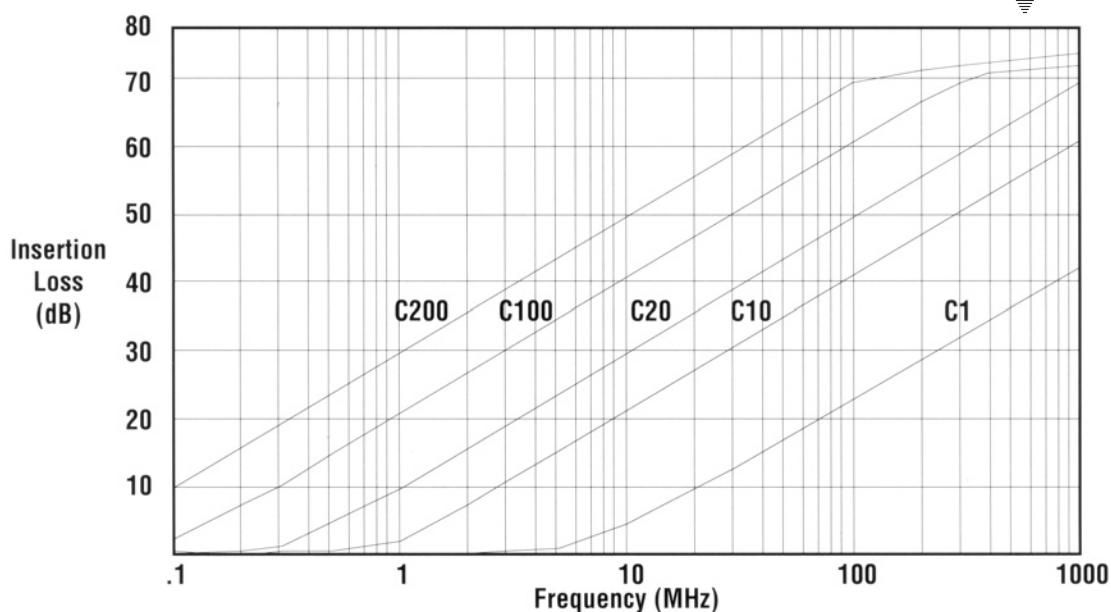
Electrical Performance "C" Filter

Electrical Characteristics - 'C' Section

Filter Description	C200	C100	C76	C38	C20	C10	C8	C4	C2	C1
Operating Temperature Range	-55°C to + 125°C									
Voltage Rating	100 VDC					200 VDC-120 Vrms 400 Hz				
Current Rating DC						15 amps size 16/7.5 amps size 20/5 amps size 22				
Insulation Resistance	5000 megohms min. @100 VDC									
Current Rating R.F.	3.0 amps max.									
DWV Sea Level w/ 50 micro-amperes max. charge/discharge	250 VDC					500 VDC				



'C' Section Curves



Insertion Loss Table

Filter Description	See Notes	C200	C100	C76	C38	C20	C10	C8	C4	C2	C1
Capacitance in Nanofarads @ 1KHz, 1VRMS		160	80	60	30	16	8	6.4	3.2	1.6	.8
		240	120	91	46	24	12	9.2	4.8	2.4	1.2
Minimum No Attenuation loss @ 25°	Freq Mhz										
	.1	8.6	4.1	3	1	.3	.1	-	-	-	-
	1.0	28	22	20.1	14.2	8.6	4.1	3	1	.3	.1
	2	34	28	26.1	20.1	14.2	8.6	7	3	1	.3
	10	48	42	40	34	28	22	20.1	14.2	8.6	4.1
	100	68	62	60	54	48	42	40	34	28	22
500-1k	82	76	74	68	62	56	54	48	42	36	

Notes:

1. C200, C100 & C76 Capacitance Values for Size 20 Contact Arrangement & Larger
2. No Load Minimum Attenuation Values per MIL-STD-220
3. Capacitance in Nanofarads (Nominal Value)
4. Consult Factory for Higher Voltages & Capacitance Values



Mechanical & Qualification Data

Sabritec connectors conform to the applicable military specifications and standards for materials, finishes and mechanical form, fit, and function. Filter connectors are fully intermateable and interchangeable in most instances with standard non-filtered QPL MIL-SPEC connectors.



Material and Finishes	
Shell & Jam Nut	Aluminum Alloy Electroless Nickel per MIL-C-26074
Pin Contacts	Brass per ASTM B16 Gold Plate per MIL-G-45204
Socket & Contacts	Copper Alloy Gold Plate per MIL-G-45204
Insulators	High Grade Plastic/Epoxy
Seal & Grommet	Silicon Base Elastomer

Production Automation Test System Measurements			
	Range	Accuracy	Notes
Capacitance	1 pF-1µf	0.2% + 0.1 pf	1
DF	0.00001-10	1%	2
Inductance	100 nH-10KH	0.2%+10 nH	1
IR	1 K Ohm - 5 T Ohm	1%	3,4,5
DWV	10 pA-100 mA	1%+10 pA	3,4,6
VR	10 mV-100V	0.2% + 10 mV	7
Ground & Contact Resistance	0.1 mV-1V	0.1%+0.1 mV	7
Notes:			
1. Frequency = 20 Hz to 1 MHz			
2. Dissipation factor			
3. With 5-500 volts applied			
4. Measures each pin to all other pins grounded to shell			
5. Insulation resistance			
6. Dielectric withstanding voltage			
7. Isource = 1nA-1A			

Performance Data

Sabritec's Filter Connectors meet or exceed the applicable requirements of the following specifications:

MIL-DTL-38999 MIL-C-26482
MIL-DTL-83723 MIL-DTL-26500
MIL-DTL-24308 MIL-DTL-83723
MIL-DTL-83513 MIL-C-81511
MIL-DTL-83527 ARINC 600
ARINC 404 (MIL-C-81659)

Sabritec connectors can meet qualification requirements of MIL-DTL-38999, MIL-C-26482, ARINC 404 (MIL-C-81659), and ARINC 600. Sabritec can perform most test requirements in-house. This includes both electrical and mechanical testing for qualification, engineering evaluation and final acceptance. All products are available for space grade applications.

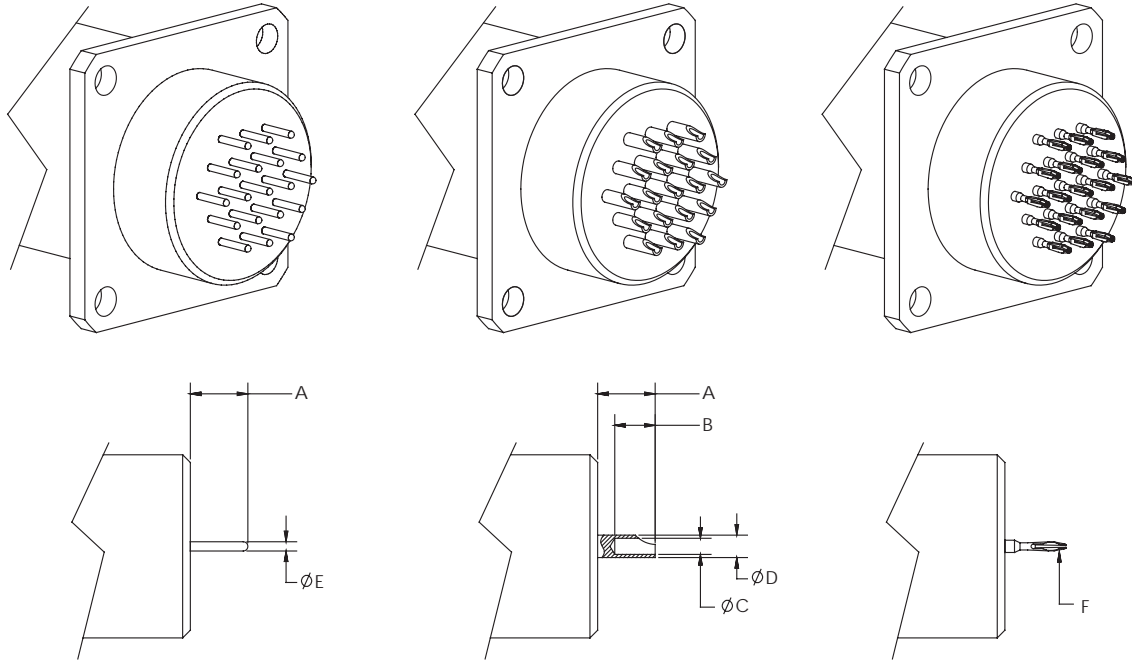
All specifications subject to change without notice.

Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.

PC TAIL

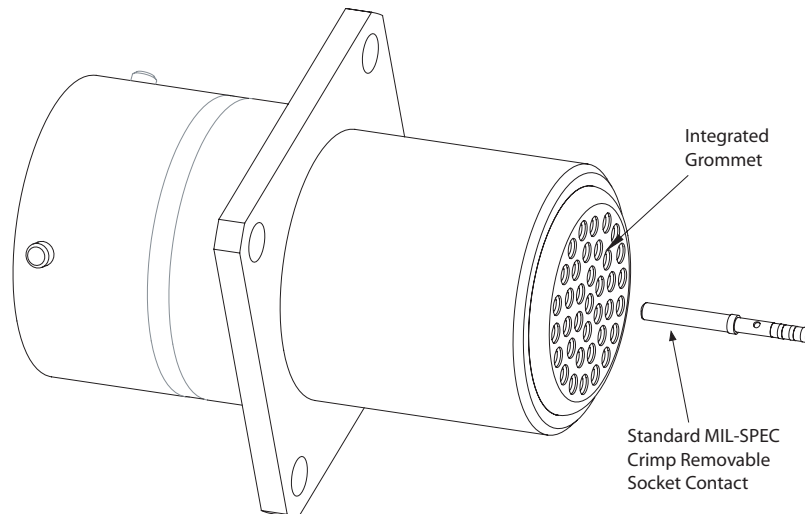
SOLDER CUP

COMPLIANT PRESS-FIT
(SOLDERLESS)



Dimensions						
Contact Size	A ± .025	B	C	D	E ± .003	F
22	0.175	.125 .094	.040 .035	.055 .051	.020	PCB Finished Hole 0.026 ± .002
20		.156 .125	.048 .042	.088 .061	.030	Consult factory for alternate size
16		.172 .141	.082 .069	.103 .097	.050	
12		.120 .112	.142 .136	.065		

Crimp / Removable*

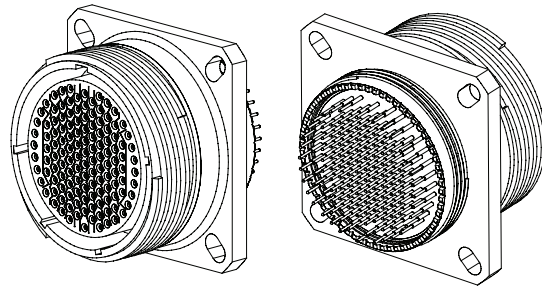


* Add 0.700" to overall length for crimp removable connector with integrated grommet.



Sabritec's ESD Connector line is available for circular, rack and panel (ARINC), and D-Sub receptacles. These connectors offer the utmost protection against EMI and ESD environments. ESD connectors have a faraday cage which protects the components inside the connector from electrostatic discharges. The composite material shell is able to resist severe corrosion up to 2000 hours of salt spray and helps increase durability (up to 1500 cycles). ESD connectors meet protection requirements of IEC 801-2 and MIL-STD-1686.

Material and Finishes	
Shell	Composite Material
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Ground Plane	Aluminum Nickel
Capacitor	Barium Titanate
Inductor	Ferrite bead



COMPOSITE CONNECTORS



Sabritec's filter composite connectors are available for the MIL-DTL-38999 circular connector series. The filter composite materials can resist severe corrosion of up to 2000 hrs of salt spray. Using composite filter connectors can help increase durability up to 1500 cycles. Filter composite connectors have magnetic permeability that meet all MIL-DTL-38999 requirements. These connectors are ideal for power management systems, video processing equipment, and military fighter jets.

Filter connectors are also available with transient and EMI suppression. These connectors conform to the applicable military specifications and standards for materials and mechanical form, fit, and function. All Sabritec filter connectors can mate with non-filter connectors and in most cases are interchangeable.

Features:

- All shell sizes and contact layouts for MIL-DTL-38999 series
- Composite materials resist severe corrosion up to 2000 hrs of salt spray
- Nickel, electroless nickel and cadmium plated versions
- Increased durability (up to 1500 cycles) with composite materials
- Magnetic permeability meets all MIL-DTL-38999 requirements



Crimp Removable Composite Filter Connector

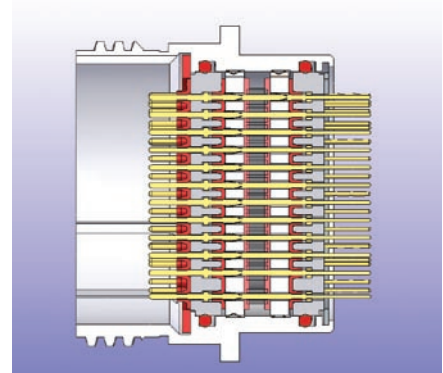


RoHS Compliant Solderless Filter Connectors

Sabritec has developed a new series of filtered connectors that are capable of providing exceptional low pass filtering and effective insertion loss without the use of soldered components.

Sabritec has qualified the solderless filter connector design to the applicable requirements listed in MIL-DTL-38999. For the qualification test report summary, please visit the technical notes section of our website.

Solderless filter connectors contain a specially designed contact clip to make the connection from the signal/power contact to the capacitor array. An EMI ground spring provides a low resistance path between the capacitor array and connector shell. These connectors meet the same stringent electrical and mechanical requirements of soldered type filter connectors. A uniquely designed seal allows for water wash immersion of the connector in the unmated condition.

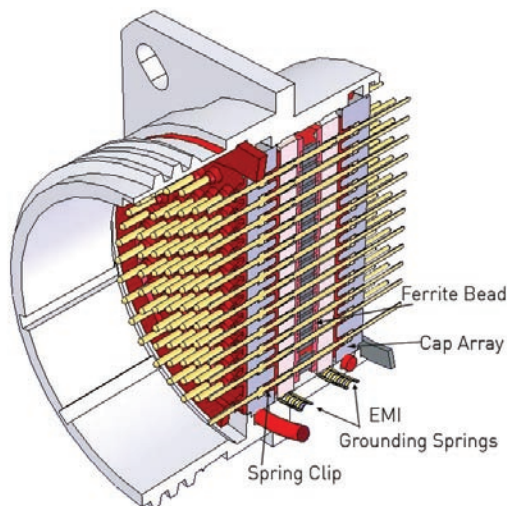


Benefits of Solderless Filter Technology

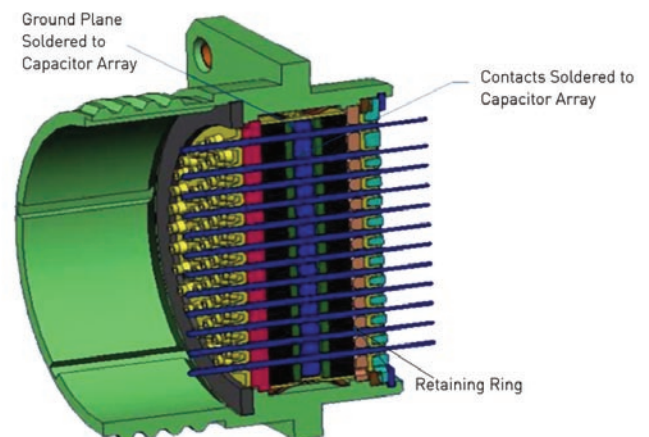
- RoHS Compliant
- No Solder design (not potted)
- Reworkable filter module assembly
- Modular construction
- High temperature lead free solder tolerant
- Qualification data available upon request

Material and Finishes	
Connector Shell	Aluminum alloy/Steel/Composite
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Jam Nut (if used)	Aluminum alloy
Capacitor	Barium Titanate
Inductor	Ferrite bead

Solderless Filter Assembly



Solder Filter Assembly





MIL-DTL-38999 Connectors

MIL-DTL-38999 filter connectors are designed to meet or exceed all applicable requirements of Series I, II, III and IV. Filter connectors are intermateable and interchangeable with the standard non-filtered connectors.



Material and Finishes	
Shell	Aluminum alloy/Steel/Composite
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Jam Nut	Aluminum alloy
Ground Plane	Brass, silver plate
Capacitor	Barium Titanate
Inductor	Ferrite bead

Part Number Description Code

P76 - 38999 - C - J - R - C - 25 - 61 - P - P - N

FILTER TYPE: _____

P, L, C

PREFIX: _____

SERIES: _____

A - I

B - II

C - III

D - IV

SHELL STYLE: _____

J - Jam Nut (Rear Mount)

B - Box Mount (Series II)

W - Wall Mount (Front or Rear Mount)

MOUNTING: _____

F - Front Mount

R - Rear Mount

MATERIAL/PLATING: _____

C - Aluminum Alloy/Cadmium over Nickel

N - Aluminum Alloy/Electroless Nickel

S - Stainless Steel /Electrolytic

CC - Composite/Cadmium over Nickel

CN - Composite/Electroless Nickel

SP - Stainless Steel/Passivated

(Consult factory for alternate plating options)

POLARIZATION: _____

N, A, B, C, D, E

CONTACT TERMINATION: _____

S - Solder Cup

P - PC Tail

C - Crimp

CONTACT TYPE: _____

P - Pin

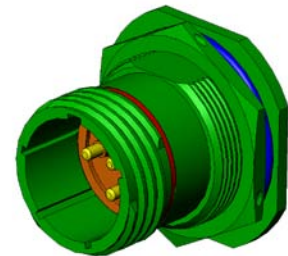
S - Socket

INSERT ARRANGEMENT: _____

SHELL SIZE: _____

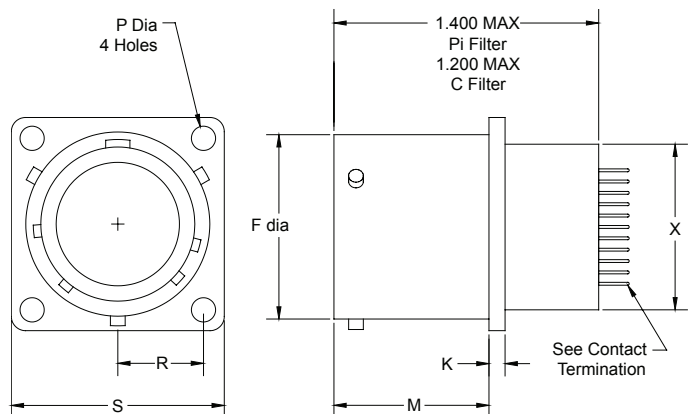
9 thru 25: Series I, III and IV

8 thru 24: Series II



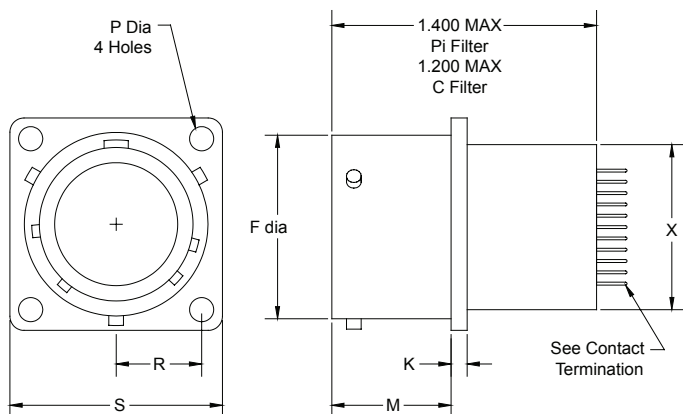
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.

MS27505 Square Flange Receptacle Rear Mount



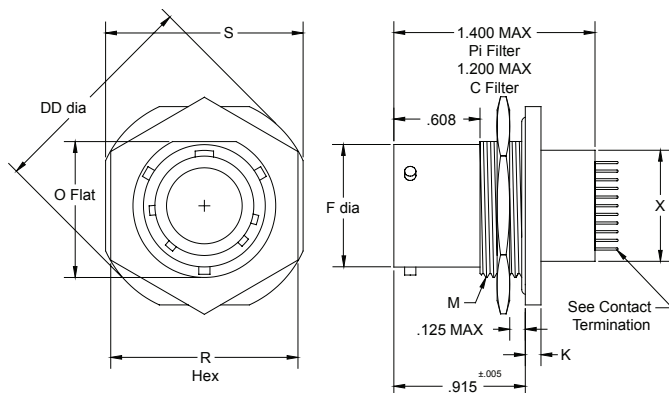
Dimensions							
Shell Size	F ± .001 -.005	K ± .015 -.000	M ± .000 -.005	P Dia ± .010 -.005	R BSC	S ± .020	X Max. Dia
9	0.572	0.085	0.820	0.128	0.3595	0.938	.500
11	.700				0.406	1.031	.620
13	.850				0.453	1.125	.740
15	.975				0.4845	1.219	.890
17	1.100				0.531	1.312	1.000
19	1.207	0.115	0.790	0.147	0.578	1.438	1.120
21	1.332				0.625	1.562	1.250
23	1.457				0.6875	1.688	1.390
25	1.582				.750	1.812	1.500

MS27466 Square Flange Receptacle Front Mount



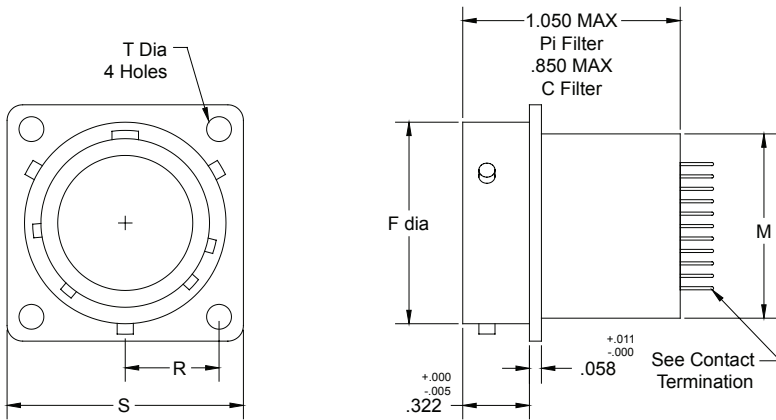
Dimensions							
Shell Size	F ± .001 -.005	K ± .015 -.000	M ± .000 -.005	P Dia ± .010 -.005	R BSC	S ± .020	X Max. Dia
9	0.572	0.085	0.632	0.128	0.3595	0.938	.500
11	.700				0.406	1.031	.620
13	.850				0.453	1.125	.740
15	.975				0.4845	1.219	.890
17	1.100				0.531	1.312	1.000
19	1.207	0.115	0.602	0.147	0.578	1.438	1.120
21	1.332				0.625	1.562	1.250
23	1.457				0.6875	1.688	1.390
25	1.582				.750	1.812	1.500

MS27468 Jam Nut Receptacle



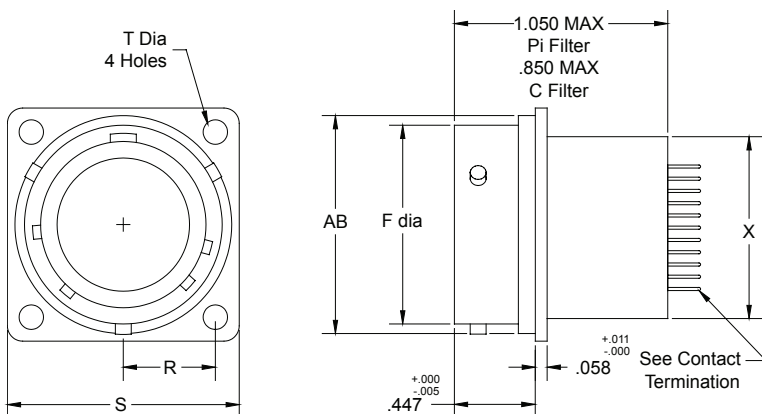
Dimensions								
Shell Size	F ± .001 -.005	K ± .015 -.000	M Thread	O Flat ± .000 -.010	R Hex ± .017 -.016	S ± .016	X Max. Dia	DD ± .016
9	0.572	0.085	.6875-24	.655	.875	1.062	.500	1.188
11	.700		.8125-20	.755	1.000	1.250	.620	1.375
13	.850		1.000-20	.942	1.188	1.375	.740	1.5
15	.975		1.125-18	1.066	1.312	1.500	.890	1.625
17	1.100		1.250-18	1.191	1.438	1.625	1.000	1.75
19	1.207	0.115	1.375-18	1.316	1.562	1.812	1.120	1.938
21	1.332		1.500-18	1.441	1.688	1.938	1.250	2.062
23	1.457		1.625-18	1.566	1.812	2.062	1.390	2.188
25	1.582		1.750-18	1.691	2.000	2.188	1.500	2.312

MS27508 Square Flange Receptacle Rear Mount



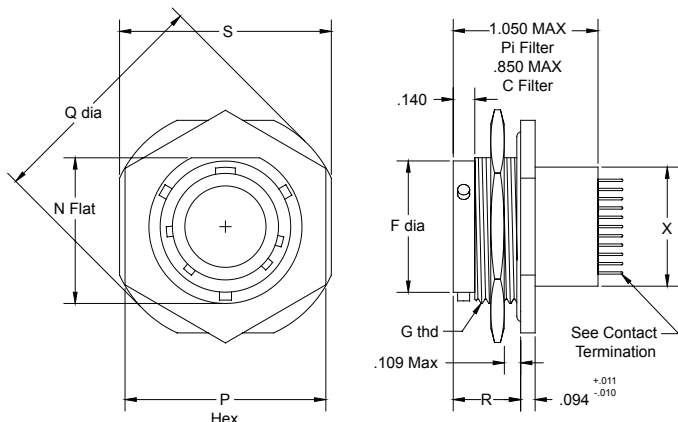
Dimensions						
Shell Size	F ± .001 -.005	T ± .010 -.005	R BSC	S ± .020	X Max. Dia	
8	0.473	0.12	0.297	0.828	0.5	
10	0.59		0.3595	0.954	0.62	
12	0.75		0.406	1.047	0.74	
14	0.875		0.453	1.141	0.89	
16	1.000		0.4845	1.234	1	
18	1.125		0.531	1.328	1.12	
20	1.25		0.578	1.453	1.25	
22	1.375		0.625	1.578	1.39	
24	1.5		0.147	0.6875	1.703	1.5

MS27499 Square Flange Receptacle Front Mount



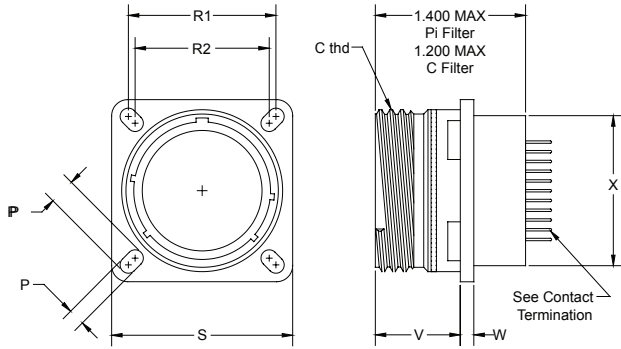
Dimensions							
Shell Size	F ± .001 -.005	T ± .010 -.005	R BSC	S Max	X Max	AB Max	
8	0.473	0.120	0.297	0.828	0.500	0.547	
10	0.590		0.360	0.954	0.620	0.672	
12	0.750		0.406	1.047	0.740	0.844	
14	0.875		0.453	1.141	0.890	0.969	
16	1.000		0.485	1.234	1.000	1.094	
18	1.125		0.531	1.328	1.120	1.219	
20	1.250		0.578	1.453	1.250	1.344	
22	1.375		0.625	1.578	1.390	1.469	
24	1.500		0.147	0.688	1.703	1.500	1.594

MS27474 Jam Nut Receptacle



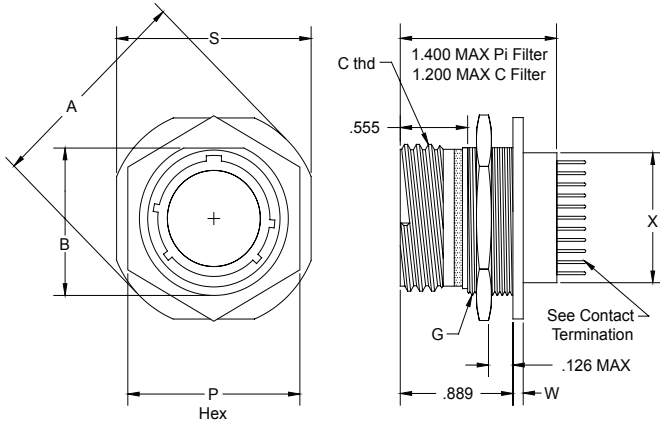
Dimensions								
Shell Size	F ± .001 -.005	N + .001 -.006	G Thread	P Hex + .017 -.016	Q + .016	S + .016	X Max. Dia	R ± .005
8	.473	.817	.875-20	1.062	1.375	1.250	.500	0.438
10	.590	.941	1.000-20	1.188	1.5	1.375	.620	
12	.750	1.065	1.125-18	1.312	1.625	1.500	.740	
14	.875	1.190	1.250-18	1.438	1.75	1.625	.890	
16	1.000	1.320	1.375-18	1.562	1.938	1.781	1.000	
18	1.125	1.440	1.500-18	1.688	2.016	1.890	1.120	
20	1.250	1.565	1.625-18	1.812	2.141	2.016	1.250	0.464
22	1.375	1.690	1.750-18	2.000	2.265	2.140	1.390	
24	1.500	1.815	1.875-16	2.125	2.39	2.265	1.500	

D38999/20 Box Mount Receptacle



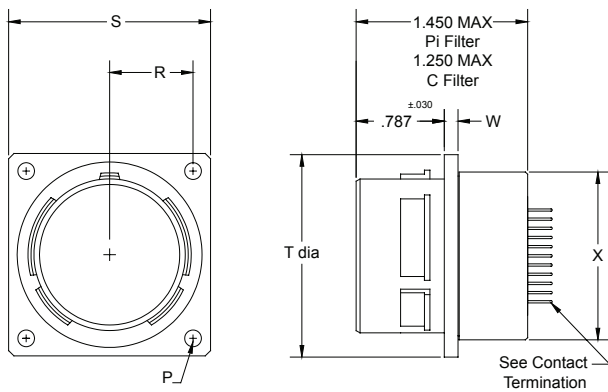
Dimensions									
Shell Size	C Thread .1 Pitch .3 Lead	P ± .008	R1 BSC	R2 BSC	V Max	W Max	X Max	PP Max ± .008	S ± .012
9	0.625	0.128	.719	.564	.820	.098	.500	.194	.937
11	.750		.812	.719			.620		1.031
13	.875		.906	.812			.740		1.126
15	1.000		.969	.906			.890		1.220
17	1.188		1.062	.969			1.000		1.311
19	1.250	1.156	1.062	1.120	1.437				
21	1.375	0.154	1.250	1.156	.790	.126	1.250	.242	1.563
23	1.500		1.375	1.250			1.390		1.689
25	1.625		1.500	1.375			1.500		1.811

D38999/24 Jam Nut Receptacle



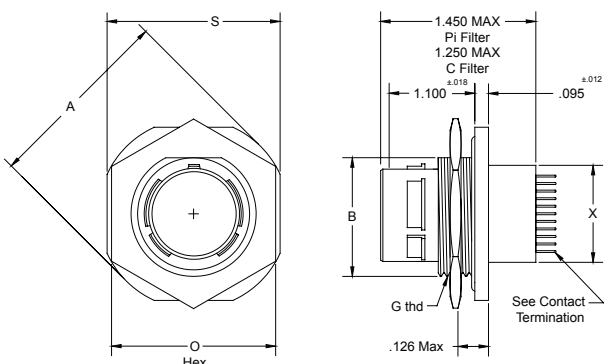
Dimensions								
Shell Size	A ± .012	B + .004 - .006	C Thread .1 Pitch .3 Lead	G Thread 6g .10R	P Hex	S ± .015	W + .028 - .004	X Max
9	1.189	.651	.625	M17x1	.945 .912	1.063	.087	.500
11	1.374	.751	.750	M20x1	1.062 .0983	1.252		.620
13	1.500	.938	.875	M25x1	1.260 1.234	1.374		.740
15	1.625	1.062	1.000	M28x1	1.456 1.424	1.500		.890
17	1.812	1.187	1.1875	M32x1	1.614 1.581	1.626	.118	1.000
19	1.938	1.312	1.250	M35x1	1.811 1.781	1.811		1.120
21	2.062	1.437	1.375	M38x1	1.968 1.938	1.937		1.250
23	2.188	1.562	1.500	M41x1		2.063		1.390
25	2.312	1.687	1.625	M44x1		2.189		1.500

D38999/40 Box Mount Receptacle

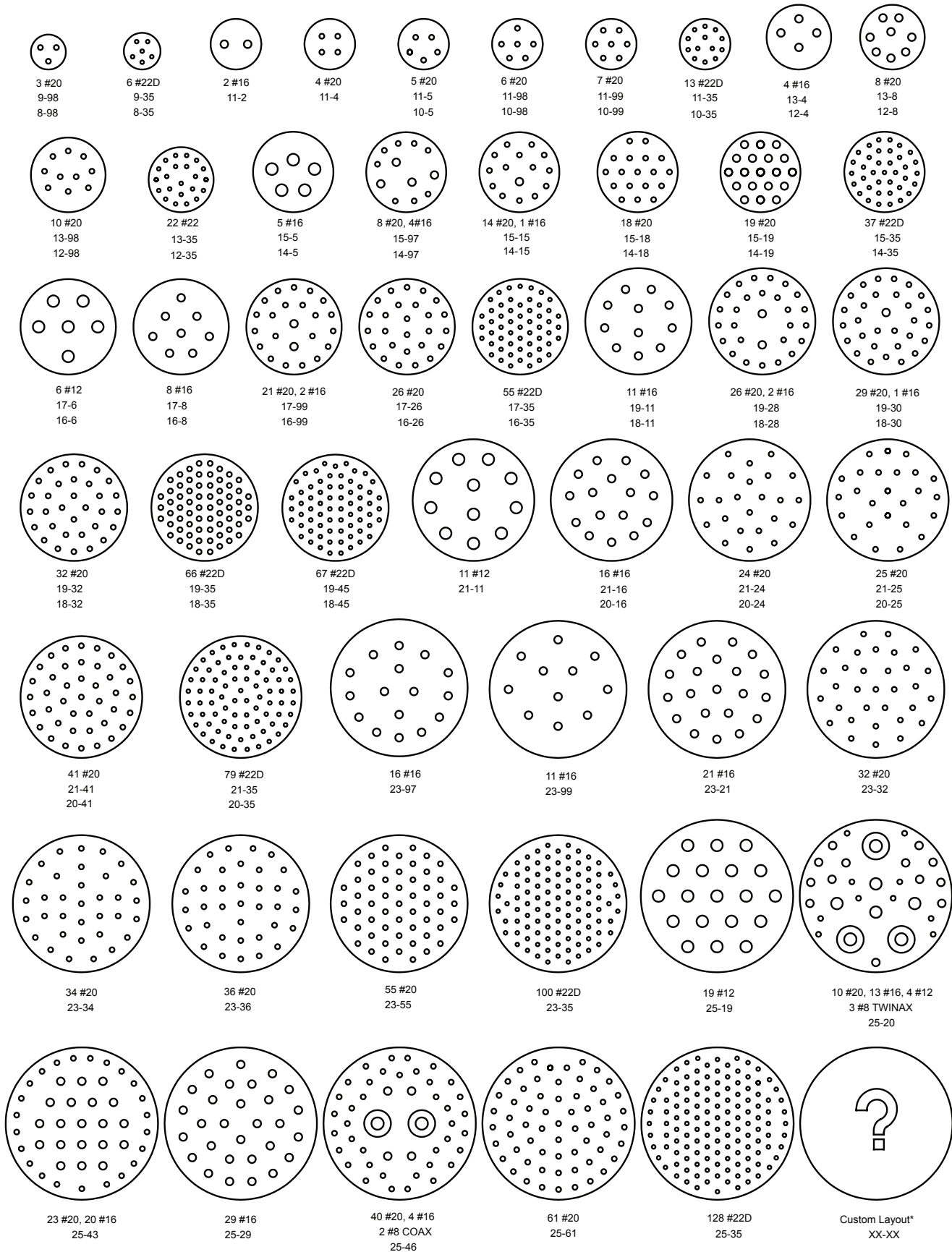


Dimensions						
Shell Size	T ± .008	W ± .010	P ± .008	R BSC	S ± .021	X Max
11	0.786	0.093	0.139	0.406	1.029	0.620
13	0.912			0.453	1.124	0.740
15	1.036			0.485	1.218	0.890
17	1.162			0.531	1.312	1.000
19	1.286			0.578	1.439	1.120
21	1.412	0.124	0.150	0.625	1.561	1.250
23	1.536			0.688	1.706	1.390
25	1.662			0.750	1.813	1.500

D38999/44 Jam Nut Receptacle



Dimensions						
Shell Size	B Flat ± .004	G THD 6g 0.1R	A Dia. ± .020	O Hex ± .013	S ± .020	X Max
11	0.938	M25x1	1.500	1.250	1.374	0.620
13	1.062	M28x1	1.622	1.405	1.5	0.740
15	1.1875	M31x1	1.749	1.600	1.622	0.890
17	1.318	M34x1	1.937		1.78	1.000
19	1.4375	M38x1	2.015	1.796	1.89	1.120
21	1.562	M41x1	2.138	1.954	2.016	1.250
23	1.6875	M44x1	2.268		2.138	1.390
25	1.812	M47x1	2.390		2.141	1.500



* Odd Numbered Shell Sizes Series I, III & IV, Even Numbered Shell Sizes Series II



MIL-DTL-83723 Series III / MIL-DTL-26500



Type T



Type B

MIL-DTL-83723 Series III / MIL-DTL-26500 filter connectors are designed to meet or exceed all applicable requirements of the military specifications. The filter connectors are intermateable and interchangeable with the standard non-filtered connectors.

Part Number Description Code

P200 - 83723 - J - 20 - 41 - P - S - N - N

Material and Finishes	
Shell	Aluminum alloy/Steel/Composite
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Jam Nut	Aluminum alloy
Ground Plane	Brass, silver plate
Capacitor	Barium Titanate
Inductor	Ferrite bead

FILTER TYPE:
Pi, L, C

PREFIX:

SHELL STYLE:
J - Jam Nut
F - 4 Hole Flange

SHELL SIZE:
8 thru 24

INSERT ARRANGEMENT:

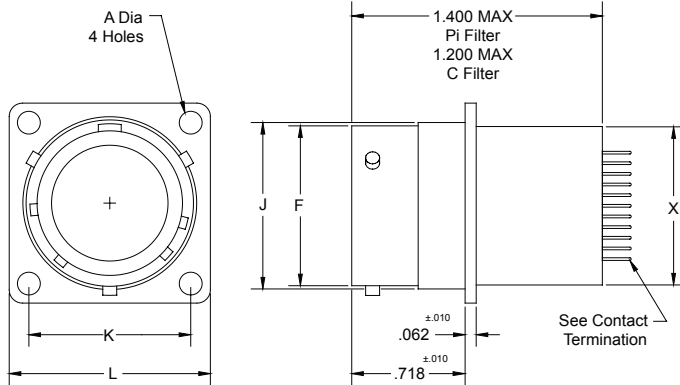
POLARIZATION:
N, 6, 7, 8, 9

PLATING:
C - Olive Drab Cadmium over Nickel
N - Electroless Nickel

CONTACT TERMINATION:
S - Solder Cup
P - PC Tail
C - Crimp

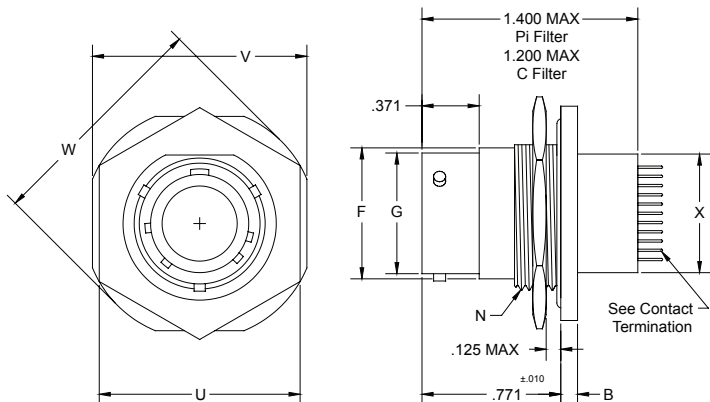
CONTACT TYPE:
P - Pin
S - Socket

Square Flange Receptacle - Type B



Shell Size	DIMENSIONS					
	A Max	K BSC	L	J Dia	F Dia	X Max Dia
8	.120	.594	.812	.561	.536 .531	.500
10	.120	.719	.937	.696	.659 .654	.620
12	.120	.812	1.031	.875	.829 .824	.740
14	.120	.906	1.125	.925	.898 .893	.890
16	.120	.969	1.250	1.062	1.025 1.020	1.000
18	.120	1.062	1.343	1.187	1.131 1.126	1.120
20	.120	1.156	1.437	1.312	1.256 1.251	1.250
22	.120	1.250	1.562	1.437	1.381 1.376	1.390
24	.149	1.375	1.703	1.562	1.506 1.501	1.500

Jam Nut Receptacle - Type B



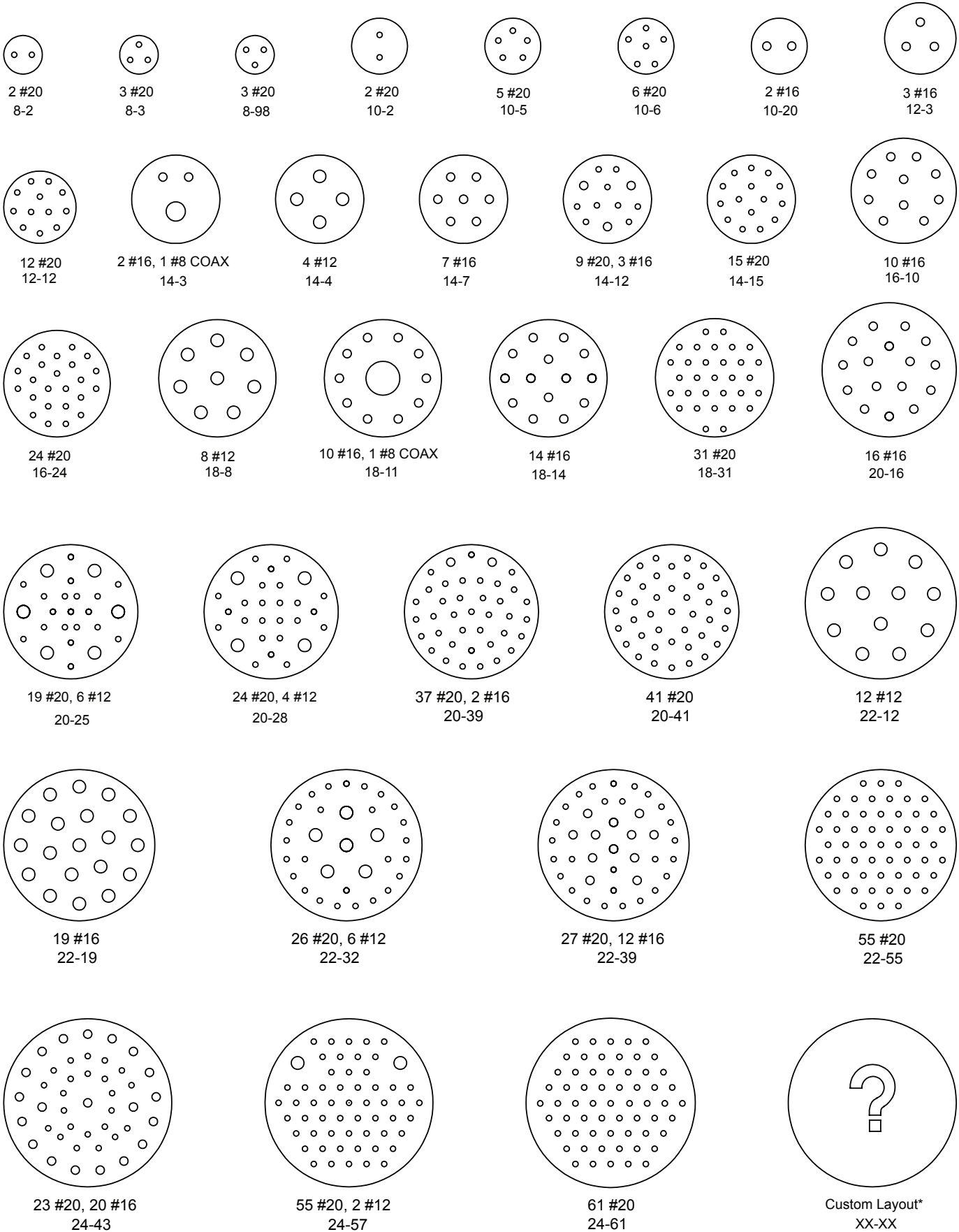
Shell Size	DIMENSIONS							
	B	F Dia	G Dia	N Thrd	U	V	W	X
8	.137 .097	.561	.536 .531	.625-20	.670	.979	1.068	.500
10	.137 .097	.696	.659 .654	.750-20	.796	1.104	1.192	.620
12	.113 .097	.875	.829 .824	.9375-20	.984	1.291	1.380	.740
14	.137 .097	.935	.898 .893	1.000-20	1.046	1.391	1.505	.890
16	.137 .097	1.062	1.025 1.020	1.125-20	1.171	1.516	1.630	1.00
18	.137 .097	1.187	1.131 1.126	1.250-18	1.296	1.641	1.756	1.120
20	.137 .097	1.312	1.256 1.251	1.375-18	1.484	1.766	1.860	1.250
22	.168 .128	1.437	1.381 1.376	1.500-18	1.609	1.954	2.068	1.390
24	.168 .128	1.562	1.506 1.501	1.625-18	1.734	2.079	2.160	1.500

Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



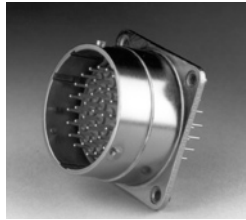
MIL-DTL-83723 Series III / MIL-DTL-26500

INSERT ARRANGEMENTS





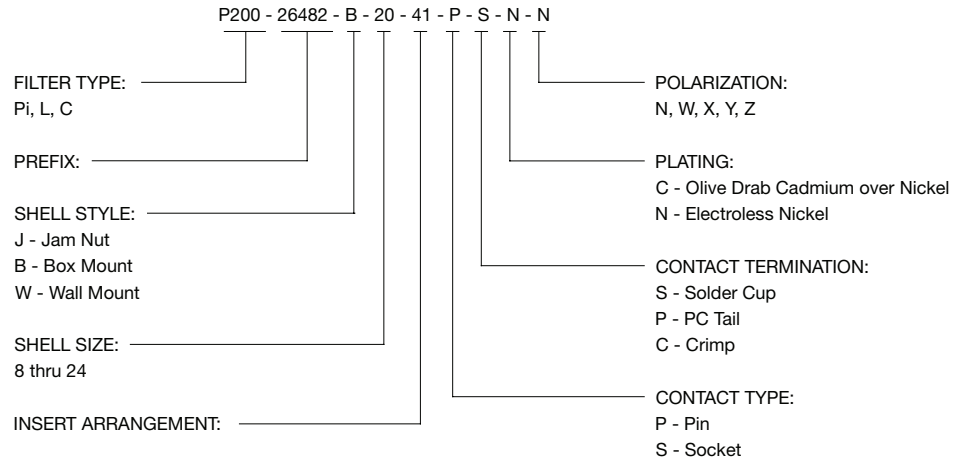
MIL-C-26482 Series II MIL-DTL-83723 Series I



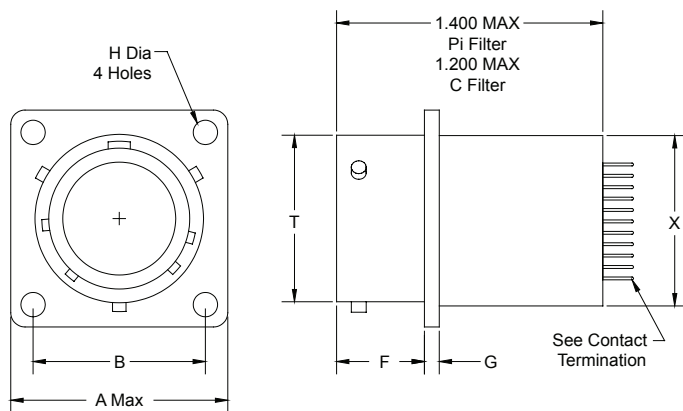
MIL-C-26482 Series II / MIL-DTL-83723 Series I filter connectors are designed to meet or exceed all applicable requirements of the military specifications. The filter connectors are interchangeable and interchangeable with the standard non-filtered connectors.

Part Number Description Code

Material and Finishes	
Shell	Aluminum alloy
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Jam Nut	Aluminum alloy
Ground Plane	Brass, silver plate
Capacitor	Barium Titanate
Inductor	Ferrite bead

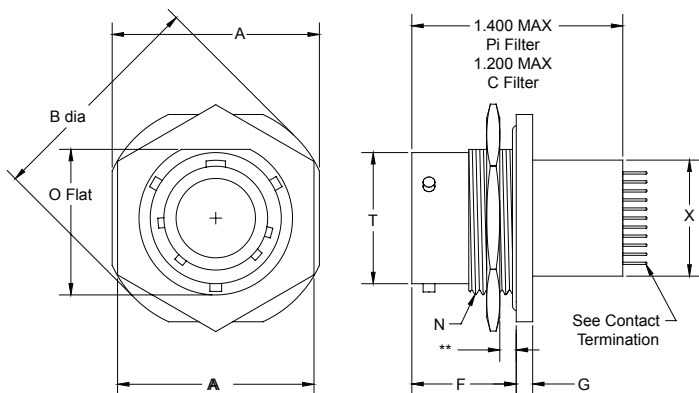


MS3470 Square Flange Receptacle



Shell Size	DIMENSIONS						
	A Max	B BSC	F	G Dia	H Dia	T Max	X Max Dia
8	.828	.594	.462 .431	.078 .046	.120	.474 .468	.500
10	.954	.719				.591 .585	.620
12	1.047	.812	.751 .745	.740			
14	1.141	.906	.876 .870	.890			
16	1.231	.969	1.001 .995	1.000			
18	1.328	1.062	1.126 1.120	1.120			
20	1.458	1.156	1.251 1.245	1.250			
22	1.578	1.250	1.376 1.370	1.390			
24	1.703	1.375	1.501 1.495	1.500			

MS3474 Jam Nut Receptacle



Shell Size	DIMENSIONS								
	A Max	B Dia.	F	G Dia	N	O 1.005 Flat	T Dia.	X Max Dia	AA Hex Dia
8	.954 .923	1.078 1.047	.707 .658	.113 .086	.5625-24	.625	4.74 4.68	.500	0.767
10	1.078 1.047	1.203 1.172			.6875-24	.650	.591 .585	.620	0.892
12	1.266 1.235	1.391 1.360			.875-20	.813	.751 .745	.740	1.079
14	1.391 1.360	1.516 1.485			1.000-20	.937	.876 .870	.890	1.205
16	1.516 1.485	1.641 1.610			1.125-18	1.061	1.001 .995	1.000	1.329
18	1.641 1.610	1.766 1.735			1.120-18	1.166	1.126 1.120	1.120	1.455
20	1.828 .797	1.954 1.923			1.375-18	1.311	1.251 1.245	1.250	1.579
22	1.954 1.923	2.078 2.047			1.500-18	1.436	1.376 1.370	1.390	1.705
24	2.078 2.047	2.203 2.172			1.625-18	1.561	1.501 1.495	1.500	1.829

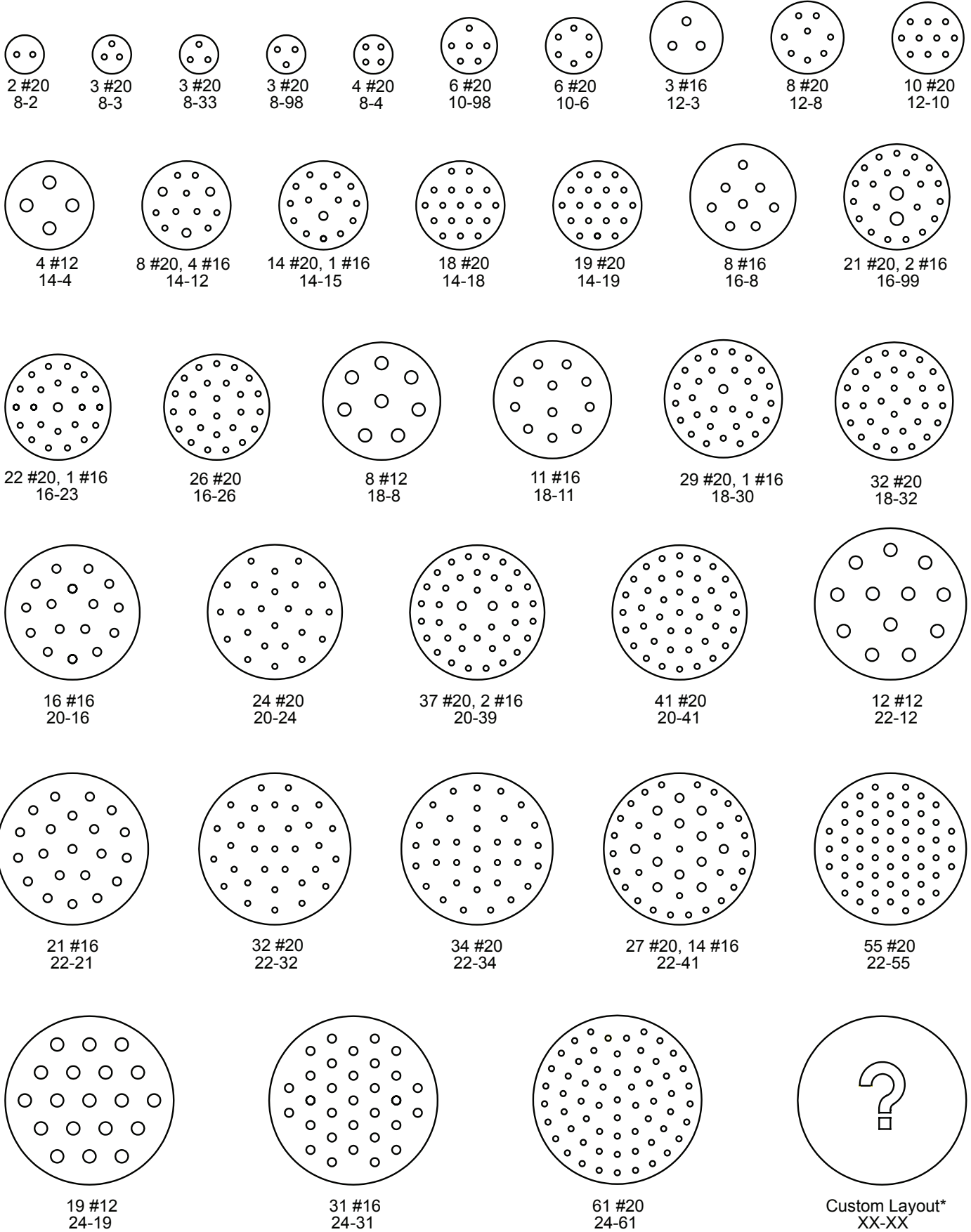
** .187 Max Shell Size 8-18
.250 Max Shell Size 20-24

Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



MIL-C-26482 / MIL-DTL-83723

Insert Arrangements





ARINC 404

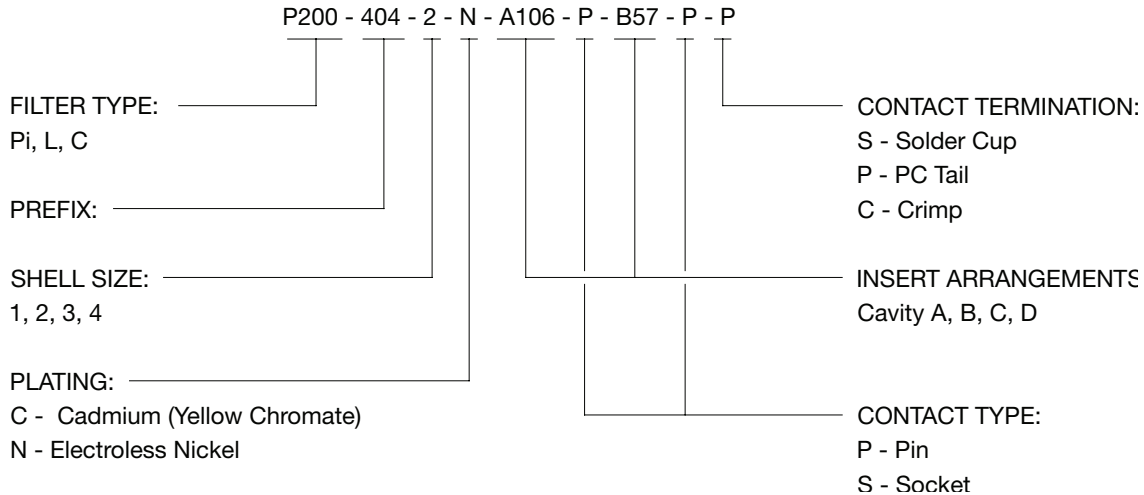
MIL-C-81659



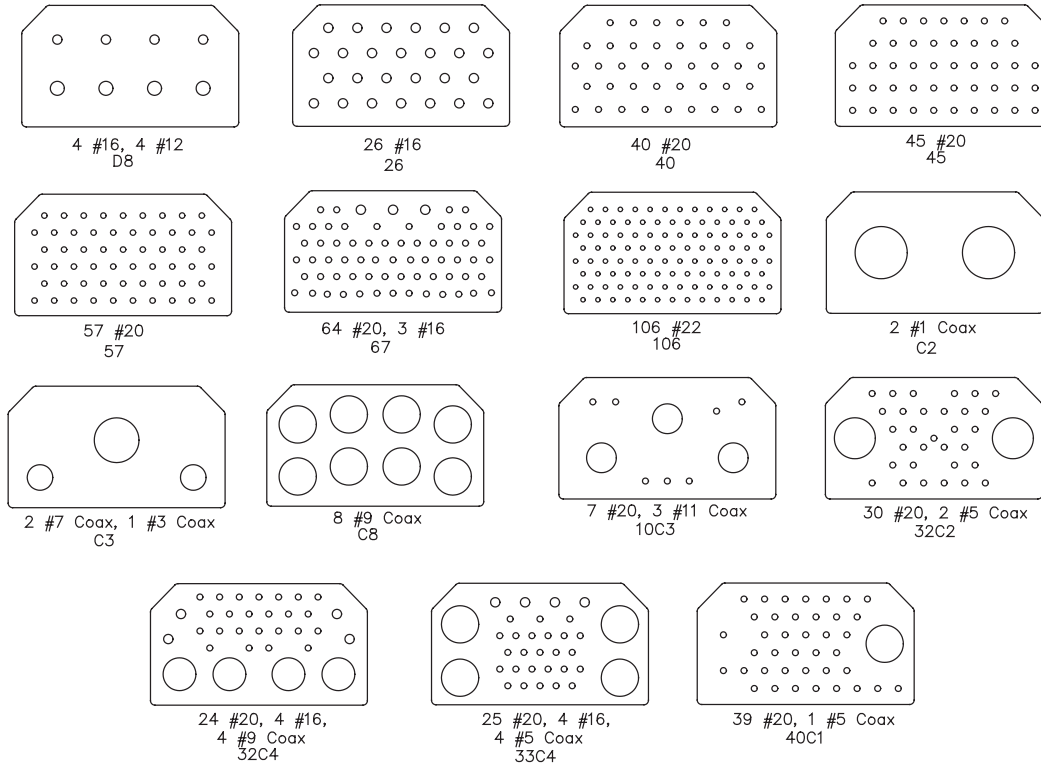
Sabritec's ARINC 404 filter connectors are designed to meet or exceed all applicable requirements of the military specification. These connectors are intermateable and interchangeable with the standard non-filtered connectors.

Material and Finishes	
Shell	Aluminum alloy/Steel/Composite
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Ground Plane	Beryllium copper, silver plate
Capacitor	Barium Titanate
Inductor	Ferrite bead

Part Number Description Code



Insert Arrangements



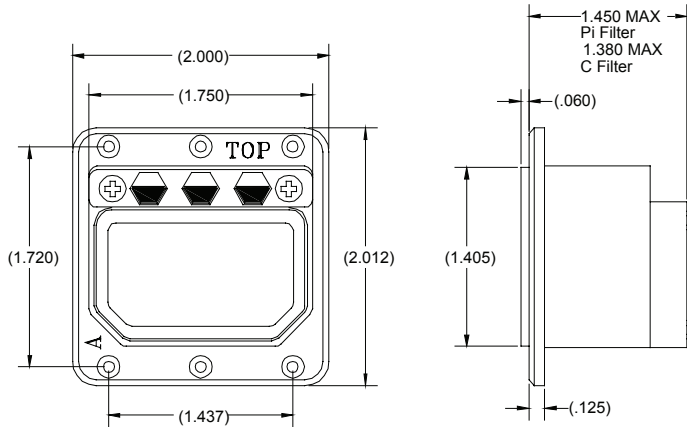
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



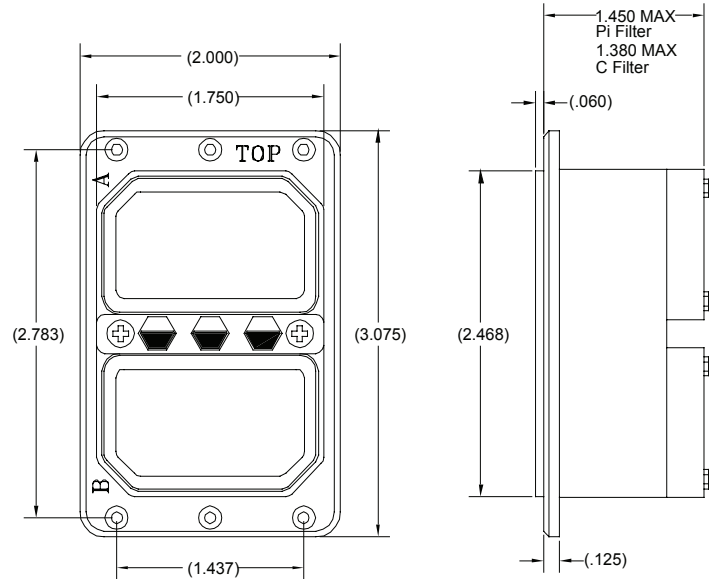
ARINC 404

MIL-C-81659

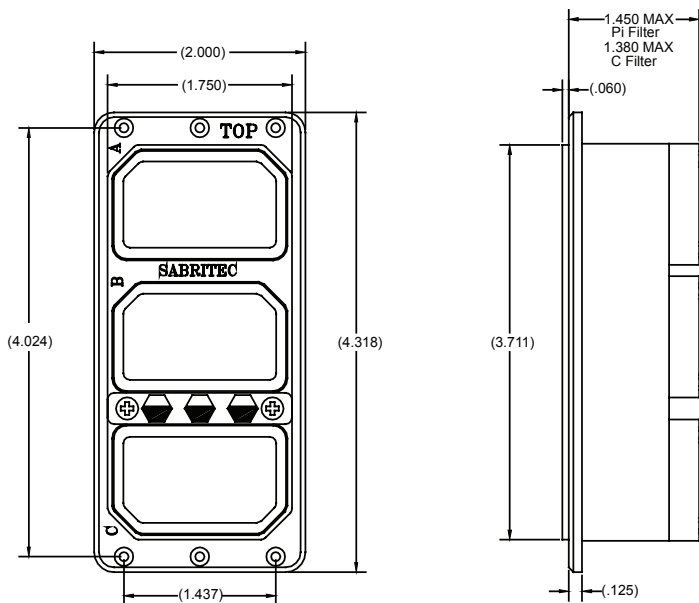
Shell Size 1



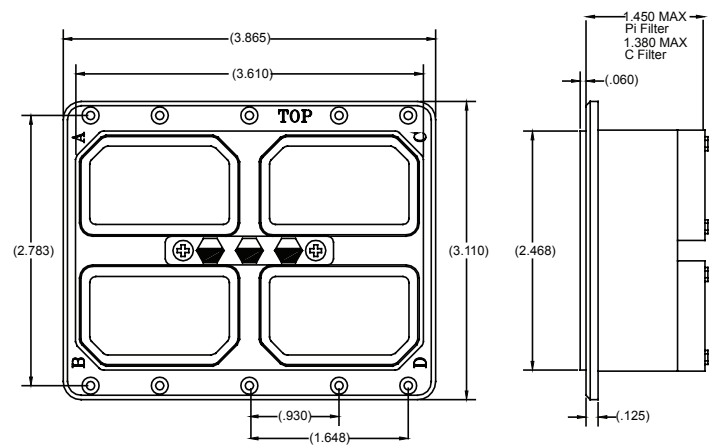
Shell Size 2



Shell Size 3



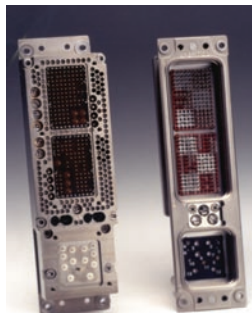
Shell Size 4





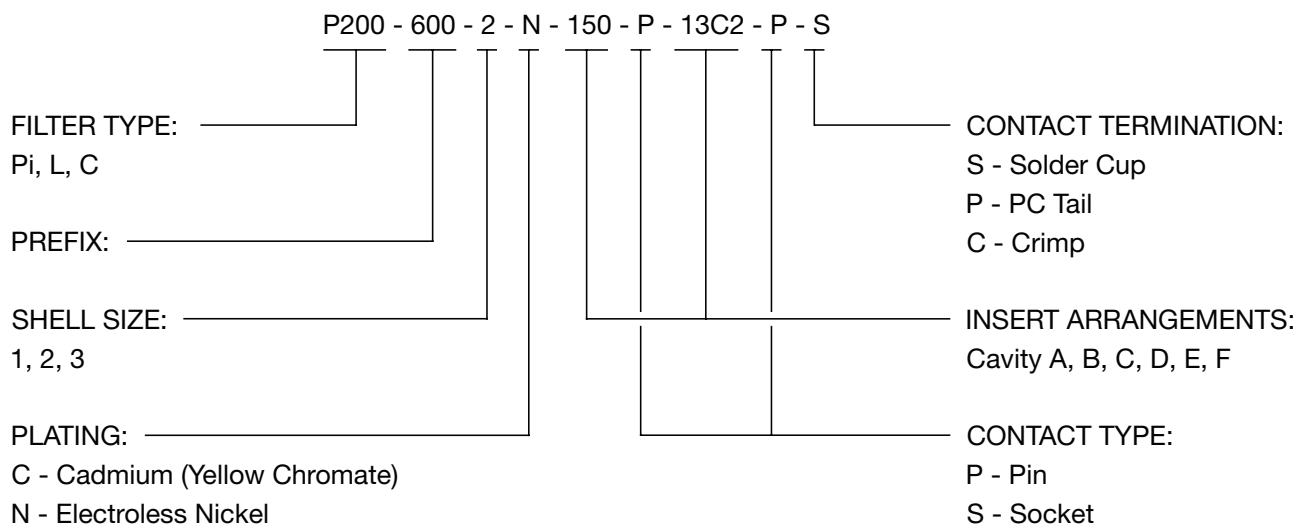
ARINC 600

ARINC 600 filter connectors are designed to meet or exceed all applicable requirements of the specification. These connectors are intermateable and interchangeable with the standard non-filtered connectors.

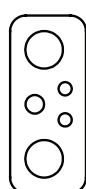


Material and Finishes	
Shell	Aluminum alloy
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Ground Plane	Brass, Silver Plate
Capacitor	Barium Titanate
Inductor	Ferrite bead

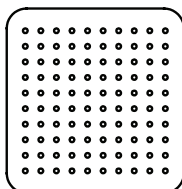
Part Number Description Code



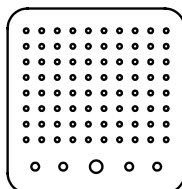
Insert Arrangements



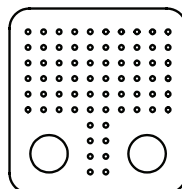
1 #12, 2 #16,
2 #5 Coax
5C2



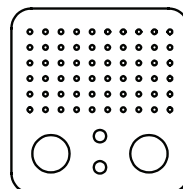
100 #22
100



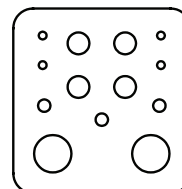
80 #22, 4 #20, 1 #16
85



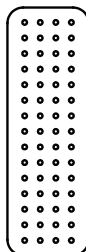
68 #22, 2 #8
68Q2



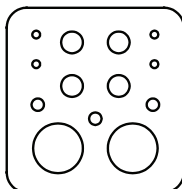
60 #22, 2 #16, 2 #8
62Q2



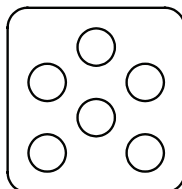
4 #20, 3 #16, 4 #12
11Q2



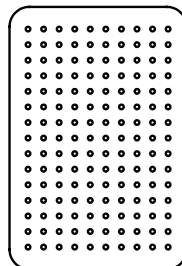
60 #22
60



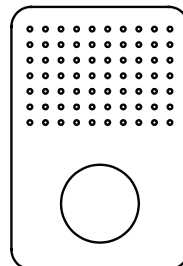
4 #20, 4 #12, 3 #16
2 #5 Coax
13C2



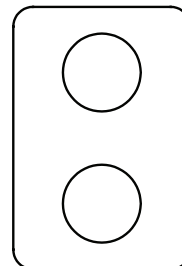
6 #8
Q6
Metallic Insert



150 #22
150



70 #22, 1 #1 Coax
150



2 #1 Coax
C2

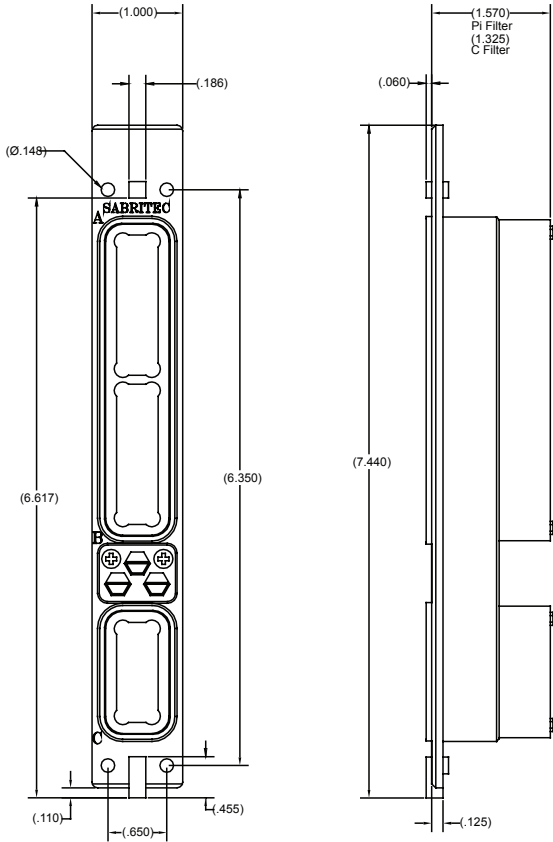
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



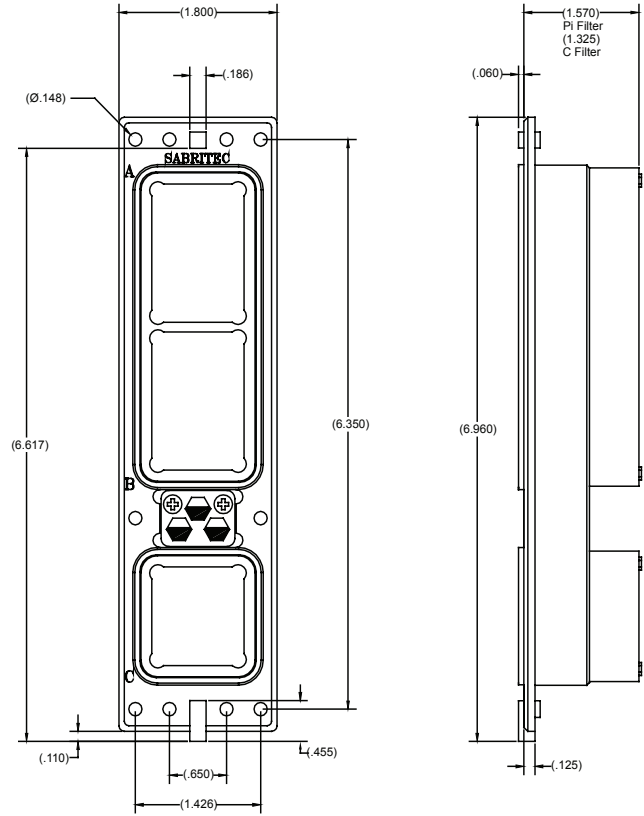
ARINC 600

Shell Sizes 1-3

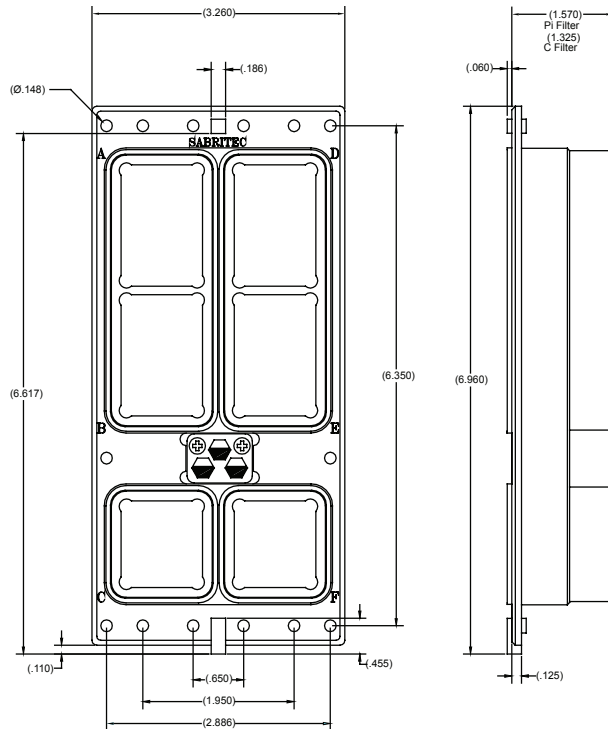
Shell Size 1



Shell Size 2

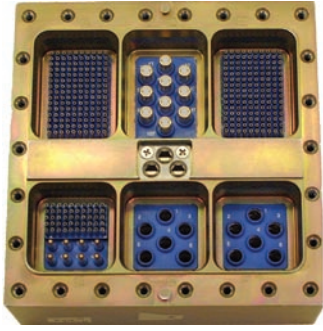


Shell Size 3



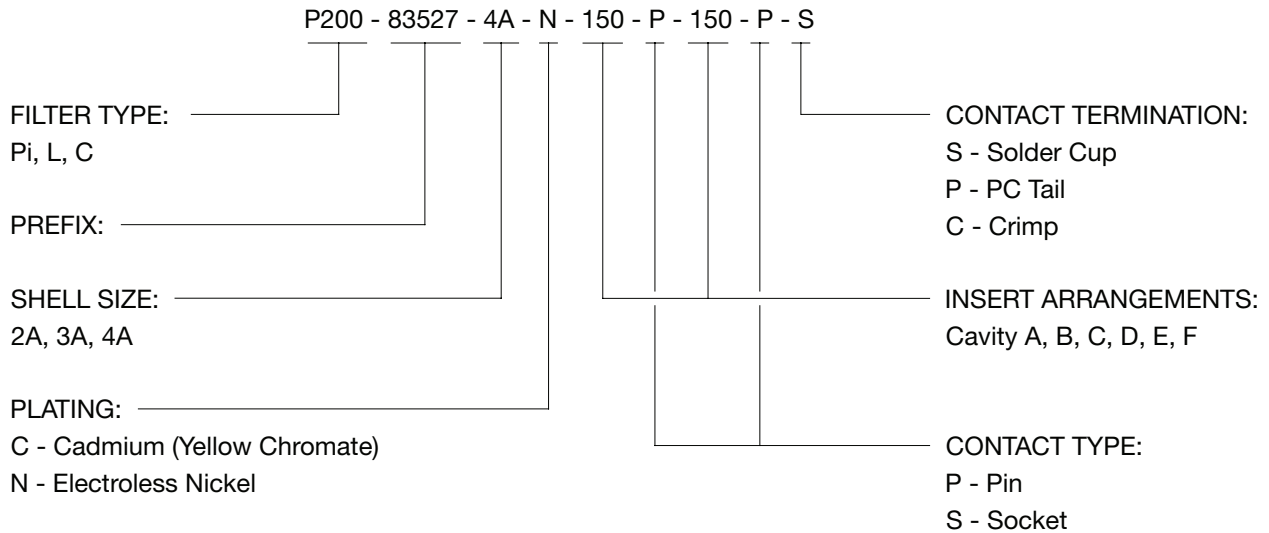


MIL-DTL-83527

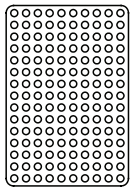


MIL-DTL-83527 connectors are designed to meet or exceed all applicable requirements of the military specification. These connectors come standard with anti-rotational keyed insert assemblies for filter, high-speed fibre channel or Ethernet twinax and quadrx contacts. Offered in a number of different contact arrangements and shell sizes, these connectors are intermateable and interchangeable with the standard non-filtered MIL-DTL-83527 connectors.

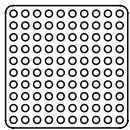
Part Number Description Code



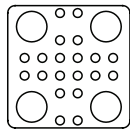
Insert Arrangements



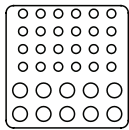
I-150
150 #22



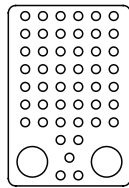
II-100
100 #22



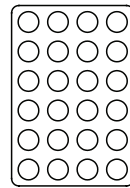
II-20T4
20 #20
4 #8 T/C



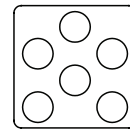
II-34
24 #20
10 #16



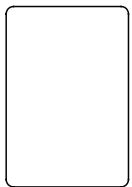
I-47T2
47 #20
2 #8 T/C



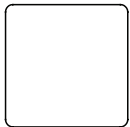
I-24
24 #12



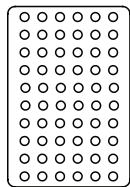
II-T6
6 #8 T/C



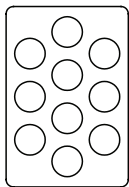
I-0
BLANK
CUSTOM



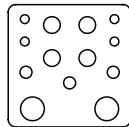
II-0
BLANK
CUSTOM



I-60
60 #20



10P10
10 #8 T/C



II-11C2
4 #20
3 #16
4 #12
2 #5

For Size 8 Contacts Please Specify:
T = Twinax/Quadrx Cavity (Anti-Rotational)
C = Coaxial/Triaxial Cavity

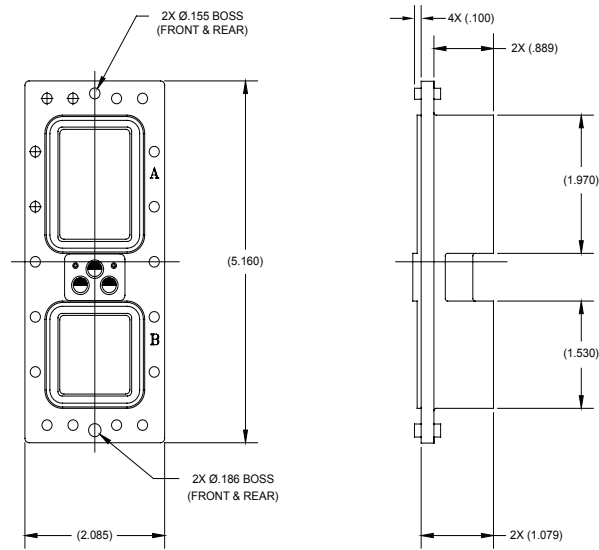
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



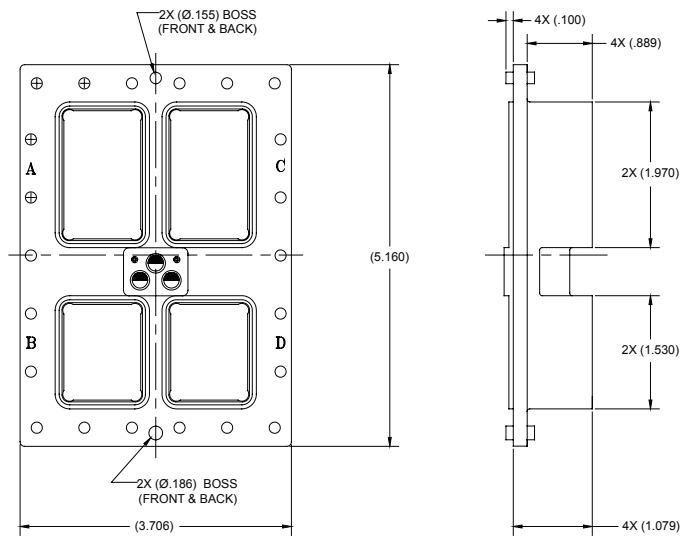
MIL-DTL-83527 Connectors

Receptacle Shell Sizes 2-4

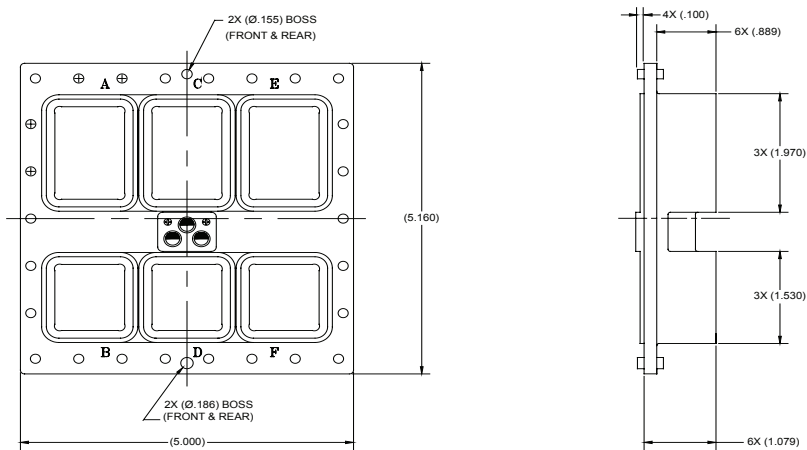
Shell Size 2 Receptacle



Shell Size 3 Receptacle



Shell Size 4 Receptacle



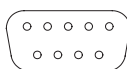


MIL-DTL-24308 D-Subminiature Connectors

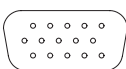


MIL-DTL-24308 D-Subminiature filter connectors are designed to meet or exceed all applicable requirements of the military specification. These connectors are intermateable and interchangeable with the standard non-filtered connectors. Sabritec also offers combo D-Sub arrangements for power coaxial and signal contacts mixed arrangements. These layouts include 5W5, 8W8, 17W2, 9W1 and 24W7.

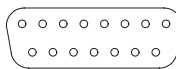
Insert Arrangements



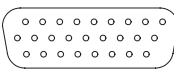
9 #20



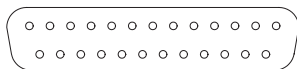
15 #22



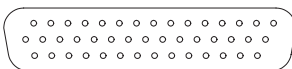
15 #20



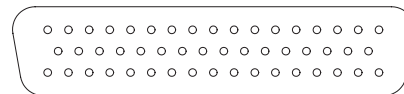
26 #22



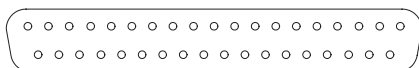
25 #20



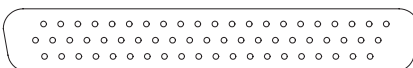
44 #22



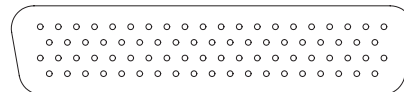
50 #20



37 #20



62 #22



78 #22

Consult Factory for Combo D-Sub Arrangements.

Material and Finishes	
Shell	Aluminum alloy/Steel/Composite
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Capacitor	Barium Titanate
Inductor	Ferrite bead

Part Number Description Code

P200 - 24308 - 25 - S - P - N

FILTER TYPE:

Pi, L, C

PREFIX:

CONTACT ARRANGEMENT:

Low Density

9, 15, 25, 37, 50

High Density

15HD, 26HD, 44HD, 62HD, 78HD

PLATING:

C - Cadmium (Yellow Chromate)

N - Electroless Nickel

CONTACT TERMINATION:

S - Solder Cup

P - PC Tail

C - Crimp

R - Right Angle

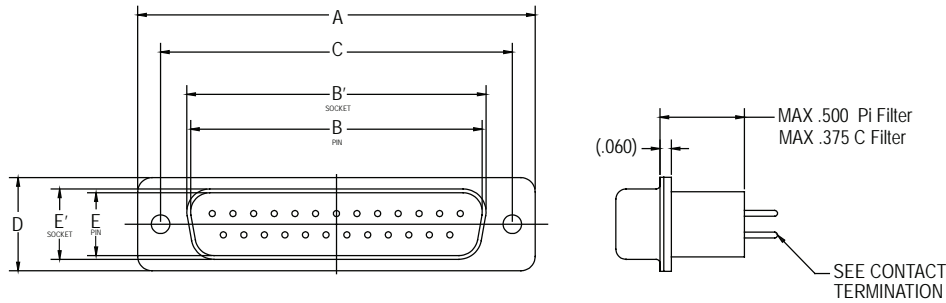
CONTACT TYPE:

P - Pin

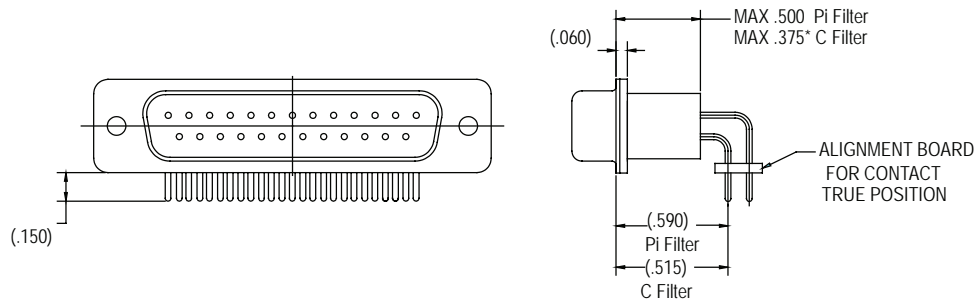
S - Socket

Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.

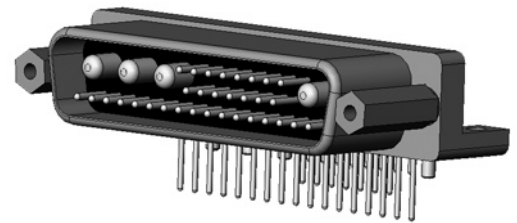
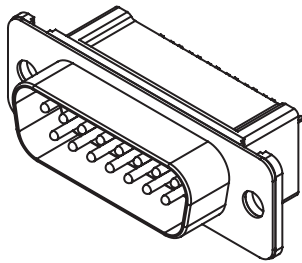
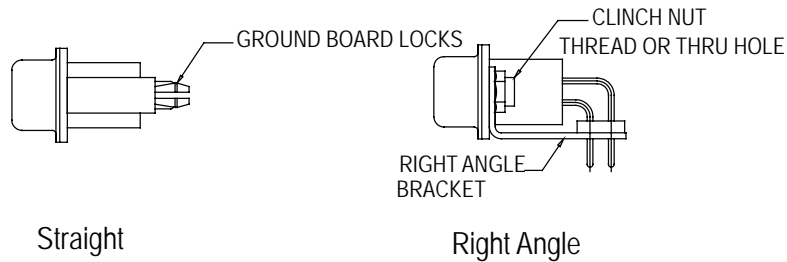
Straight D-Subminiature



Right Angle D-Subminiature



Optional Hardware



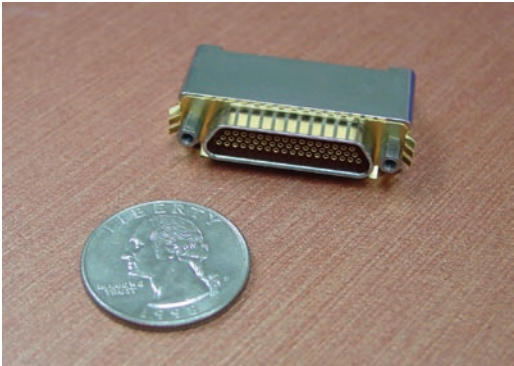
Dimensions								
Shell Size	Standard Layout Size 20	A ± 0.015	B (Pin) ± 0.005	B' (Socket) ± 0.005	C Basic	D ± 0.010	E (Pin) ± 0.005	E' (Socket) ± 0.005
E	9 Contact	1.213	.667	.642	.984	.494	.330	.310
A	15 Contact	1.541	.995	.970	1.312	.494	.330	.310
B	25 Contact	2.088	1.535	1.150	1.852	.494	.330	.310
C	37 Contact	2.729	2.183	2.158	2.500	.494	.330	.310
D	50 Contact	2.635	2.063	2.063	2.406	.605	.437	.422



MIL-DTL-83513 Microminiature D



MIL-DTL-83513 Micro-D filter connectors are designed to meet or exceed all applicable requirements of the military specification. These connectors are intermateable and interchangeable with the standard non-filtered connectors. Unique configurations are also available with customized shells and EMI ground springs.



Material and Finishes	
Shell	Aluminum alloy
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Capacitor	Barium Titanate
Inductor	Ferrite bead

Part Number Description Code

P38 - 83513 - 25 - S - P - N

FILTER TYPE:

Pi, L, C

PREFIX:

CONTACT ARRANGEMENT:

9, 15, 21, 25, 31, 37, 51, 100

PLATING:

C - Cadmium (Yellow Chromate)

N - Electroless Nickel

CONTACT TERMINATION:

S - Solder Cup

P - PC Tail

F - Flying Leads

R - Right Angle *

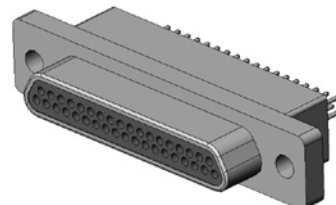
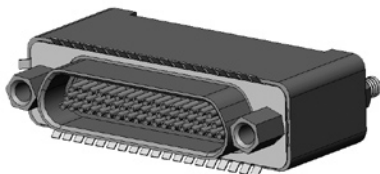
CONTACT TYPE:

P - Pin

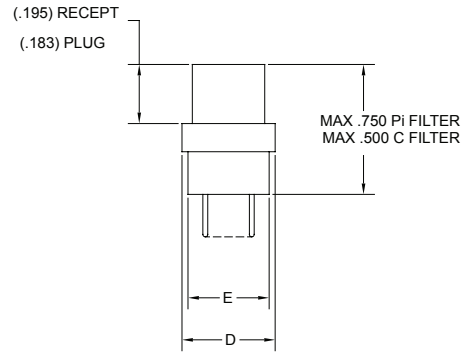
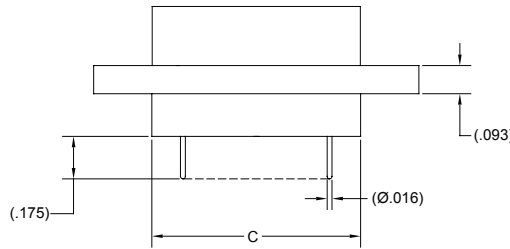
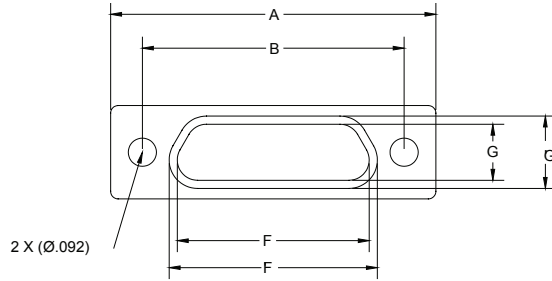
S - Socket

* Consult factory for alternate plating options

* Consult factory for footprint dimensions

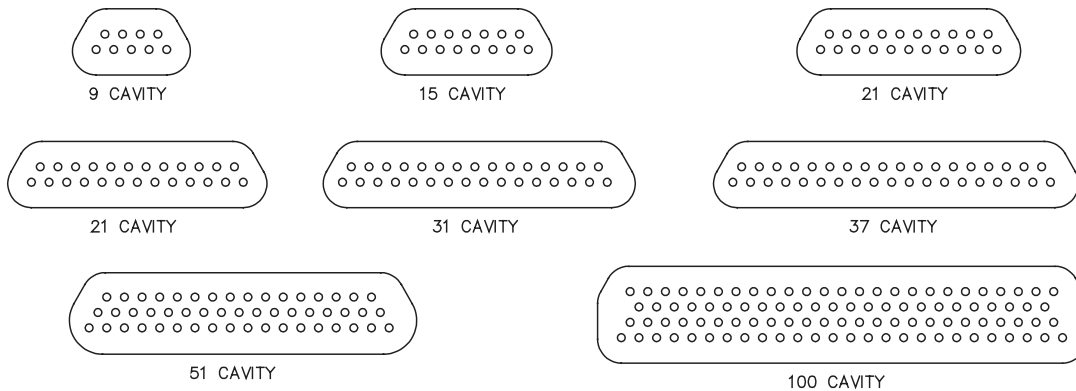


Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



Dimensions									
Cavity	A ± .010	B Basic	C + .010 -.018	D ± .010	E Max	F Basic Recept	F' Basic Plug	G Basic Recept	G' Basic Plug
9	.775	.565	.390	.298	.270	.3342	.338	.1852	.1848
15	.925	.715	.540	.298	.270	.4842	.4838	.1852	.1848
21	1.075	.865	.690	.298	.270	.6342	.6338	.1852	.1848
25	1.175	.956	.790	.298	.270	.7342	.7338	.1852	.1848
31	1.325	1.115	.940	.298	.270	.8842	.8838	.1852	.1848
37	1.475	1.265	1.090	.298	.270	1.0342	1.0338	.1852	.1848
51	1.425	1.215	1.040	.341	.310	.9842	.9838	.2282	.2278
100	2.160	1.800	1.432	.384	.360	1.3842	1.3838	.2712	.2708

Insert Arrangements



* Consult Factory For Additional or Custom Layouts



Filter D-Sub Connectors

High Power Filter Combo D-Subminiature Connectors

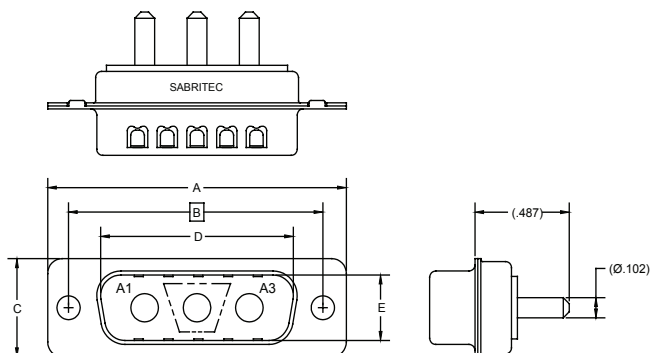


Combo D-Sub 3W3/3WK3 Filtered Power Connectors

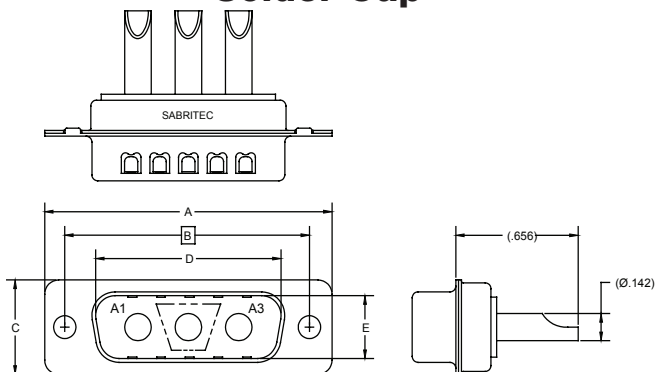
Sabritec offers a complete line of high powered EMI filtered D-Sub connectors including the single row size #8 power contacts (3W3, 3WK3, etc.). With the addition of Sabritec's in-house production of ceramic planar capacitors, we can easily achieve up to 47 nF per line on this series. The planar capacitor provides excellent attenuation as well as meeting the Bellcore requirements for 1000 VDC Dielectric Withstanding Voltage. The materials used in the construction meet the UL flammability requirements of 94V-0. Sabritec's filtered D-Sub connectors are intermateable with standard non-filter D-Sub connectors.

This series is available in PC tail, solder cup and solderless press-fit terminations into standard plated-thru holes. Sabritec also offers combo D-Sub arrangements for power coaxial and signal contacts mixed arrangements including layouts 5W5, 8W8, 17W2, 9W1 and 24W7.

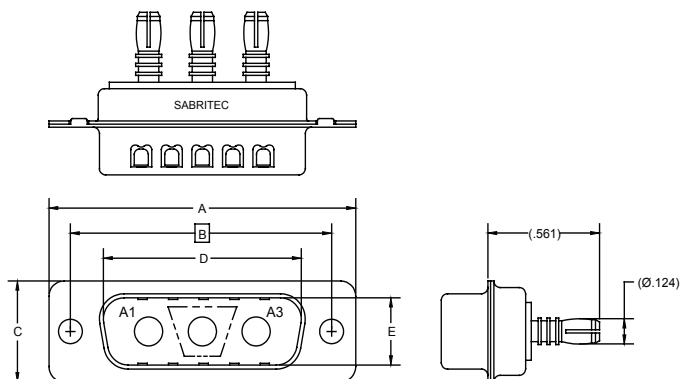
PC Tail



Solder Cup



Press-Fit



D-Sub High Power Plugs

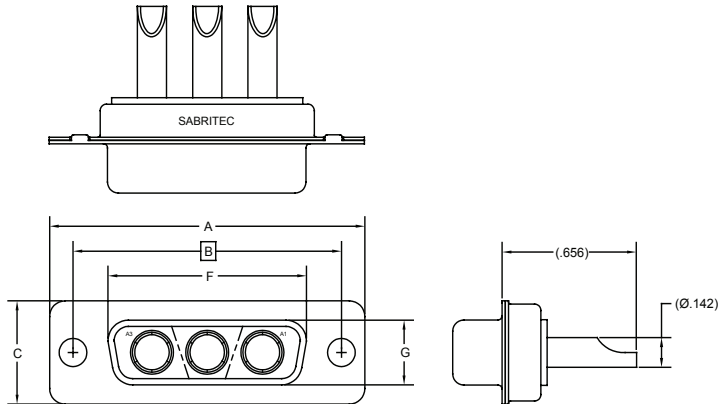
Sabritec Part Number	EMI Filter		Voltage Rating
	Cap Value	Layout	
310031-1000	1 nF	3W3	400 VDC
310032-1001	1 nF	3WK3	400 VDC
310031-1002	5 nF	3W3	400 VDC
310032-1003	5 nF	3WK3	400 VDC
310031-1004	47 nF	3W3	400 VDC
310032-1005	47 nF	3WK3	400 VDC

Sabritec Part Number	EMI Filter		Voltage Rating
	Cap Value	Layout	
310031-2000	1 nF	3W3	400 VDC
310032-2001	1 nF	3WK3	400 VDC
310031-2002	5 nF	3W3	400 VDC
310032-2003	5 nF	3WK3	400 VDC
310031-2004	47 nF	3W3	400 VDC
310032-2005	47 nF	3WK3	400 VDC

Sabritec Part Number	EMI Filter		Voltage Rating
	Cap Value	Layout	
310031-4000	1 nF	3W3	400 VDC
310032-4001	1 nF	3WK3	400 VDC
310031-4002	5 nF	3W3	400 VDC
310032-4003	5 nF	3WK3	400 VDC
310031-4004	47 nF	3W3	400 VDC
310032-4005	47 nF	3WK3	400 VDC

Dimensions	A	B	C	D	E	F	G
	±.010	Basic	±.010	±.004	±.004	±.004	±.004
	1.541	1.312	0.494	0.995	0.329	0.970	0.310

Solder Cup

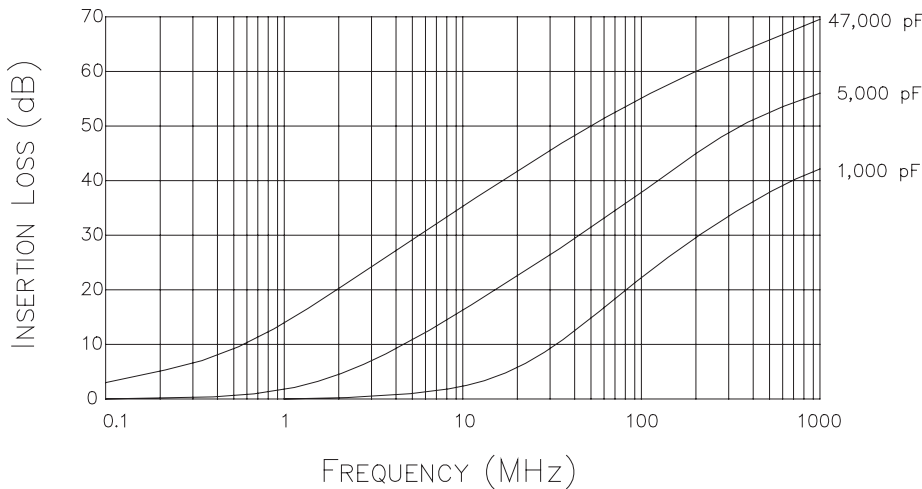


D-Sub High Power Receptacles

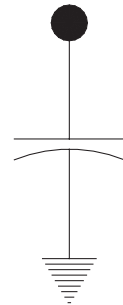
Sabritec Part Number	EMI Filter		Voltage Rating
	Cap Value	Layout	
310031-3000	1 nF	3W3	400 VDC
310032-3001	1 nF	3WK3	400 VDC
310031-3002	5 nF	3W3	400 VDC
310032-3003	5 nF	3WK3	400 VDC
310031-3004	47 nF	3W3	400 VDC
310032-3005	47 nF	3WK3	400 VDC

Dimensions	A	B	C	D	E	F	G
	± .010	Basic	±.010	±.004	±.004	±.004	±.004
	1.541	1.312	0.494	0.995	0.329	0.970	0.310

Insertion Loss Curves



"C" FILTER SCHEMATIC



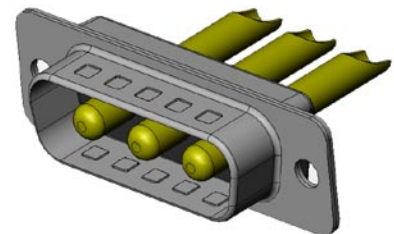
Insertion Loss Table			
Frequency (MHz)	C1 (1 nF)	C5 (5 nF)	C47 (47 nF)
1	0.1	1.4	15
10	4	16	34
100	22	36	52
1000	42	56	68

Materials and Finishes	
Shell	Tin plated steel
Insulator	Thermoplastic (UL 94V-Ø rated)
Contacts	Copper Alloy, Gold plate per ASTM-B488 over nickel plate per QQ-N-290
Filter Array	Monolithic Capacitor, X7R Material

Electrical Characteristics	
Operating Temperature	-55°C to +125°C
Voltage	1,000 VDC DWV 400 VDC Working
DC Current Rating	30 Amps max per contact
Surge Voltage	1,000 Volts, 1.2 x 50µ's Waveform (12 ohms) 1,000 Volts, 8 x 20µ's Waveform (2 ohms)
Insulation Resistance	5,000 Mega ohms @ 400 VDC
Capacitance	1 nF, 5 nF, 47 nF, (± 20%)
International Standard for EMC	Meets or exceeds EN 61000-4-5 IEC 1000-4-5

Terminations

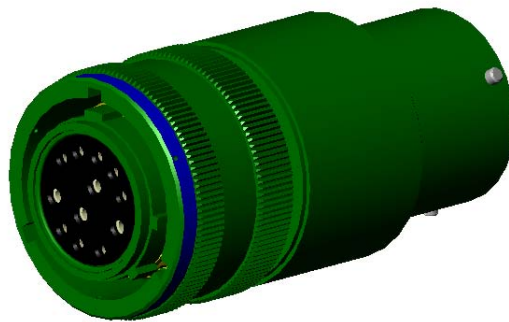
- PC Tail
- Solder Cup
- Press Fit





Non-filter applications can easily be upgraded to EMI/Transient protection without modification to the system with Sabritec's In-Line Filter Adapters. Filter adapters provide the system designer great flexibility in situations where the filtering or system requirements are subject to change. The adapters are designed to be installed between the existing plug and receptacle without having to re-wire or disassemble the system. Both in-line cable and bulkhead/panel mount versions are available. Adapters can be built for any connector series including MIL-DTL-38999, MIL-C-26482, MIL-DTL-83723, MIL-DTL-24308, MIL-DTL-83513, ARINC 404, and ARINC 600. Consult the factory for more information.

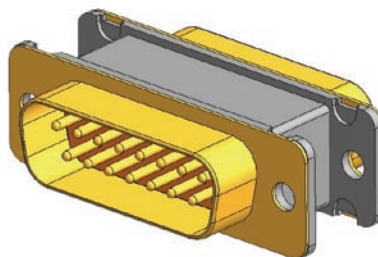
MIL-DTL-38999 Series I Adapter



MIL-DTL-38999 Series III Adapter



MIL-DTL-24308 D-Subminiature Adapter





Soldering Procedure Guidelines

RECOMMENDED GUIDELINES FOR CUSTOMER SOLDERING AND CLEANING OF SABRITEC EMI/EMP FILTERED CONNECTORS HAVING PC-TAIL OR SOLDER CUP TERMINATIONS

Sabritec's filter connectors are built to be rugged and able to withstand the environments they will be exposed to during their service life. However, since there are filter components inside the connectors, care should be taken during the processing of these types of products. The following is a brief overview of some general guidelines on how to handle the connectors during the soldering process.

Soldering Precautions

Preheating: It is always a good idea to preheat the connector prior to soldering to minimize subjecting the filter components to any thermal shock related to the soldering operation. We recommend preheating to 120°C - 132°C (250°F - 270°F) for five (5) minutes prior to soldering. This preheat is recommended for all soldering methods.

Hand Soldering: For solder cup arrays it is strongly recommended that the contacts be soldered in a "crisscross" pattern, alternating between central and peripheral locations as much as possible. The goal is to avoid a sustained buildup of heat in any one area of the filter assembly. Where permissible/applicable, the use of a suitable heat sink attached directly to the contact being soldered is recommended in order to reduce the amount of heat being applied to the filter assembly. In some cases there will be certain configurations and/or high-density arrays that may preclude the use of a heat sink.

Cleaning/Handling

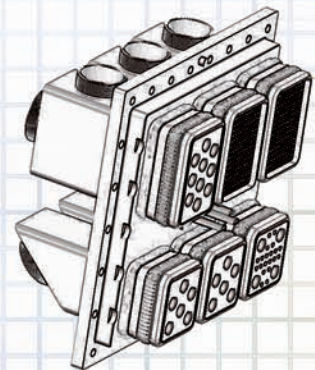
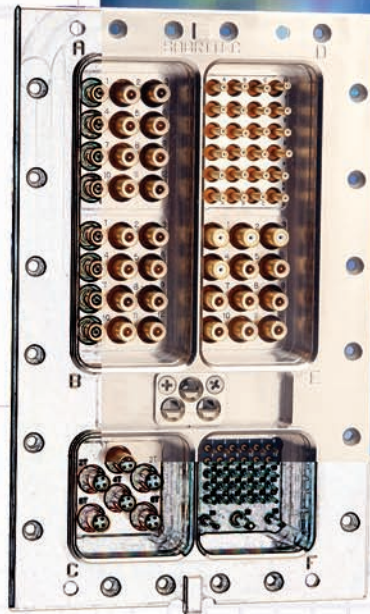
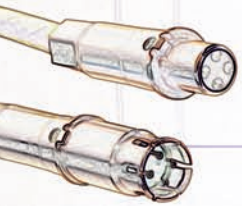
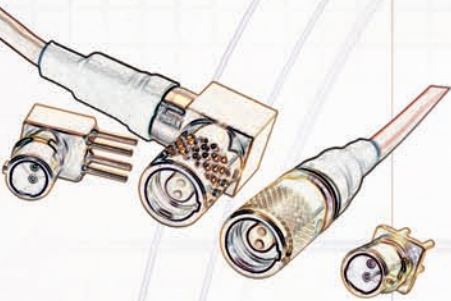
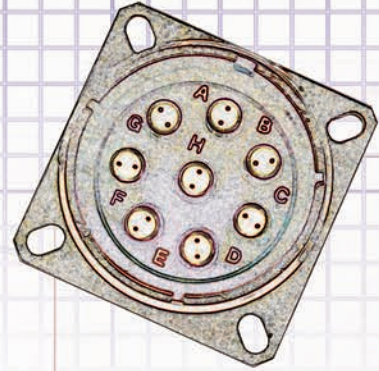
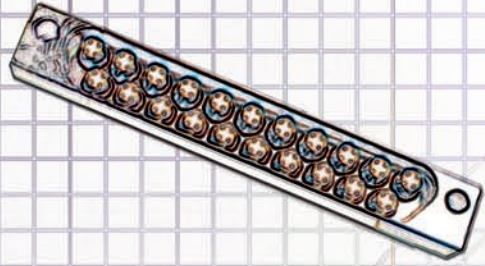
Hand Cleaning: Sabritec recommends that cleaning after soldering not be done by immersion in a cleaning solution. After soldering, solder joints may be brush cleaned with isopropyl alcohol, preferably while holding the connector with its soldered contact array facing downward at approximately a 45° angle. Allow the isopropyl alcohol to air dry at room temperature, followed by a 70°C (158°F) oven cure for approximately two (2) hours.

Immersion/Automated Cleaning: If immersion or "auto-wash" cleaning using an aqueous pressure jet system is required, care must be taken to prevent exposure of the front end (mating side) to cleaning solutions. Please contact Sabritec for further information for any questions related to cleaning our connectors with this type of system.

Handling: Avoid severe bending or flexing of the contact terminals at the point of exit from the connector backshell or epoxy/RTV seal.

Please contact us if you have any further questions regarding how to handle or process Sabritec EMI/EMP filter connectors.

HIGH SPEED CONNECTORS QUADRAX AND TWINAX





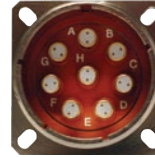
High Speed Interconnect Solutions

Overview

Sabritec offers a complete line of differential Twinax and Quadrax connectors, contacts and cable assemblies for high speed Ethernet, Firewire, and Fibre Channel applications. Differential pair quadrax and twinax connectors and cable assemblies offer superior performance in high speed matched impedance data-on-demand applications. The signal to signal and signal to shield characteristic impedance is maintained throughout the connector pair. A true twinaxial connector interface ensures signal integrity while minimizing jitter and data rate errors.

Sabritec manufactures connectors for the following protocols:

- Fibre Channel
- Ethernet: 10 Base-T, 100 Base-T, 1000 Base-T
- Firewire: IEEE 1394a and 1394b
- USB, DVI, and Infiniband



Quadrax Contacts

Sabritec has reverse gender inner contacts where the larger heat treated rigid socket contacts protrude in reverse gender configuration. These contacts are designed to provide a more reliable & rugged interconnect and better blind mate capability with less chance of bent inner pins.



Micro Quadrax

Micro quadrax connectors are designed for differential pair matched impedance applications utilizing quadrax cable consisting of four wires where the diagonal pair of conductors forms a differential twinax pair. These connectors have a low impedance ground shield and are ideal for Ethernet (100 and 1000 Base-T), IEEE 1394 Firewire, USB, DVI and Infiniband applications with 100 Ohm differential impedance.

Micro Twinax

The Micro Twinax line features matched impedance miniaturized connectors that provide the user with controlled impedance and tightly spaced PCB footprint spacing. These connectors are available in true differential twinax packages in NDL, SMA and Micro D size constraints.



Ruggedized D-Sub Quad/Twinax Connectors

Sabritec's rugged D-Sub connectors are designed to ground the outer shield of a twinax or quadrax contact directly to the shell of the connector. A multi-finger ground spring, fixed around the shell provides a multi-point contact engagement for superior EMI shielding. The result is an extremely low contact resistance when measured from the contact outer body to the connector flange. These connectors provide low RF noise and high durability of up to 1,000 mating cycles. Offered with 100 ohm quadrax and/or 100 and 150 ohm twinax contacts.

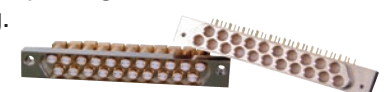


Micro-D Twinax Connectors (MDTX)

MDTX connectors consist of dual twinax blindmate assemblies permitting the transmit and receive signaling of high speed Ethernet data rates in one connector. This series allows for modularity in PCB routing of high speed signaling. Capable of 100 Ohm differential pair matched impedance, these connectors allow for maximum space utilization modularity and true signal integrity.

Backplane Connectors

Sabritec has taken the standard housing configuration of the P1 & P3 mounting dimensions while incorporating true differential pair contacts within the P1 & P3 dimensional constraints. Data sampling rates exceeding 2 Gbits/second can be driven via matched impedance differential pair interconnections for board-to-board high speed data transfer as well as blind mate I/O plug in modular applications. Sabritec's P1 connector housing contains 21 position true differential pair blind mate contacts allowing board designers to carry high density differential pair signals from the LRU via motherboard to daughter-card plug in module with a single connector P1 type housing.



MIL-DTL-38999
CONNECTORS Pg. 50

QUADSPLITTER
CONNECTORS Pg. 55

MIL-C-81659
ARINC 404 Pg. 58

ARINC 600
Pg. 61

MIL-DTL-83527
Pg. 64

RUGGED D-SUB
Pg. 67

BACKPLANE/PANEL MOUNT
CONNECTORS Pg. 71

MICRO QUADRAx/TWINAx
Pg. 75

MICRO-D TWINAx
(MDTX) Pg. 81

DURA SPEED DSQ/DST
Pg. 83

PCB & CABLE MOUNT
CONNECTORS Pg. 86

CABLE ORDERING
Pg. 87



High Speed Interconnects

SABRITEC Technical Specifications

Dura Speed Quadrax and Twinax (DSQ & DST)

These rugged low insertion force/high mating cycle precision contacts are capable of withstanding a minimum of 6,000 mating cycles. All Dura Speed Quadrax (DSQ) and Twinax (DST) contacts are designed to fit Sabritec's standard cavities for all existing connector formats for our high speed product lines which include MIL-DTL-38999, ARINC 600 and Rugged D-Subminiature.

Quadsplitter

Sabritec's has developed a patented technology called the Quadsplitter. Quadrax is a system where four conductors are located within a single conducting enclosure. The connection to two separate twinax cables is accomplished without disturbing the signal to signal or signal-to-shield impedances values. A complete series of connectors are available utilizing the Quadsplitter technology with MIL-DTL-38999 Series III connector types available in shell size 11 and shell size 25 housings.



ARINC 404 and ARINC 600 Connectors

These connectors can be routed with either high speed differential pair matched impedance contacts (150 Ohm and 100 Ohm) or with Ethernet based quad contacts 100 Ohm impedance assemblies. The ARINC 600 series can also include ruggedized expanded beam or butt-joint fiber optic contacts.

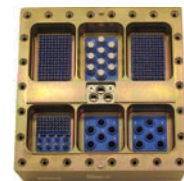


Mechanical & Environmental Specifications	
Temperature Rating	-65°C to + 125°C
Corrosion	MIL-STD-202 Method 101 Test Condition B
Shock	MIL-STD-202 Method 213 Test Condition B
Vibration	MIL-STD-202 Method 204 Test Condition B
Thermal Shock	MIL-STD-202 Method 107 Test Condition B
Durability	500 Mate/Unmate cycles min.
Electrical Specifications	
Dielectric Withstanding Voltage	500 VDC max
Insulation Resistance	5.000 Mega Ohms min. @ 200 VDC
Contact Current Rating	3.0 Amps max.
Bandwidth	Up to 3 Gigahertz.
Data Rates	Exceeding 2 Gbits/sec
Differential Pair Cable Impedance	150 Ohm ± 15 Ohm 100 Ohm ± 10 Ohms
Signal to Shield Cable Impedance	75 Ohm ± 10 Ohm 50 Ohm ± 7 Ohms
Material & Finishes	
Shells & Inner Contacts	Brass per ASTM-B16, Alloy UNS C36000 or BeCu per ASTM-B196, alloy UNS C17200, C17300 or Leaded Nickel Copper, alloy UNS C19500, C19600 Gold Plate per MIL-DTL-45204 Type II, Class 1
Insulators	PTFE per ASTM-D1710 or ULTERM 1000
Connector Plug/ Receptacle Shell	Aluminum per ASTM-B211/221, 6061-T6 Electroless Nickel plate per SAE AMS-C-26074 or Cadmium plate per SAE AMS QQ-P-416
Gasket/Seal	Silicone Rubber per A-A-59588

All specifications subject to change without notice.

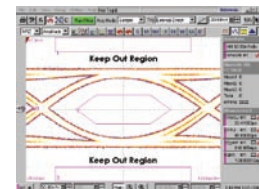
MIL-DTL-83527

These connectors come standard with anti-rotational keyed insert assemblies for High Speed Fibre Channel or Ethernet Twinax and Quadrax Contacts. MIL-DTL-83527 connectors are designed for extreme environmental concerns with very high levels of shock, vibration, and humidity.



Testing Capabilities

Sabritec can test eye-pattern, jitter, skew and insertion loss on differential pair 100 ohm and 150 ohm fibre channel and high speed Gigabit Ethernet applications with a wide variety of testing protocols. Our testing capabilities support wide bandwidth (DC to 50 GHz with up to 12.5 GHz Trigger). We utilize the Tektronix CSA8000 to measure the differential pair TDR impedance between twinax connectors, cable assemblies, and quad cable fibre channel interconnect systems. The CSA8000 ensures the most accurate acquired signal for high speed communications testing. CSA8000 testing features 20 GHz Bandwidth with 80E04 sampling module, 35 ps TDR Reflected Rise Time, Differential TDR and Crosstalk.



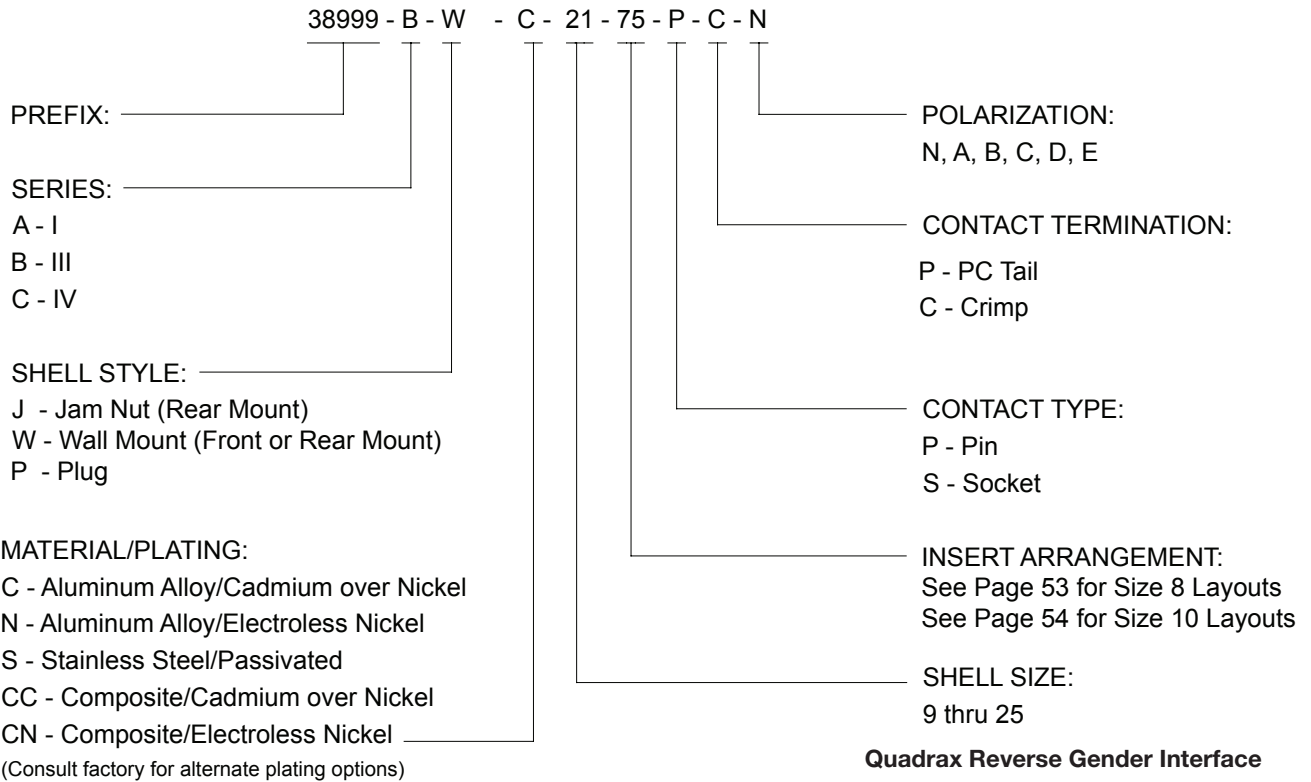
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



MIL-DTL-38999 High Speed Connectors

MIL-DTL-38999 Ordering Information

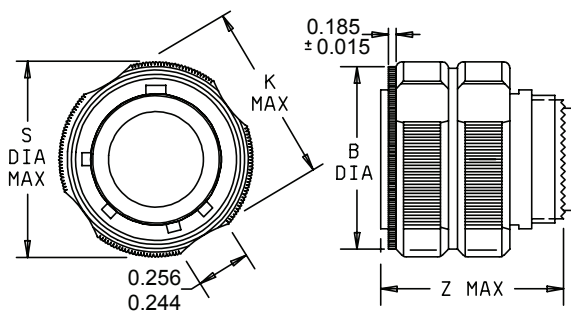
MIL-DTL-38999 Part Number Description Code



Note: Twinax/Quadrax Contacts are sold separately

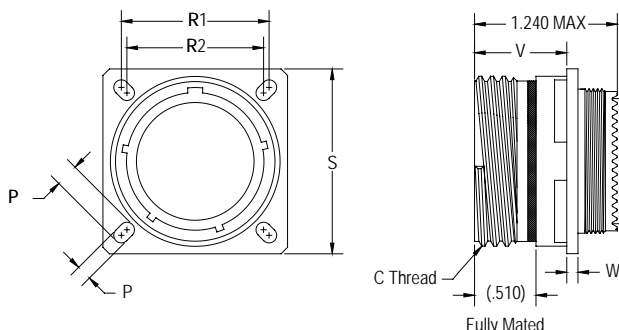
Sabritec's connectors are fully intermateable with all slash sheet part #'s. Sabritec does not; however, offer standard QPL slash sheet part #'s for mil-dtl circular and rack & panel connectors because of the application specific nature of Sabritec's product offerings.

MIL-DTL-38999 Twinax/Quadrax Plug



Shell Size	B Dia. +.008 -.0	K Max	S Dia. Max	Z Max
9	0.724	0.748	0.858	1.22
11	0.831	0.862	0.984	
13	1.000	1.028	1.157	
15	1.13	1.154	1.28	
17	1.268	1.291	1.406	
19	1.374	1.398	1.516	
21	1.5	1.524	1.642	
25	1.744	1.768	1.89	

MIL-DTL-38999 Twinax/Quadrax Receptacle



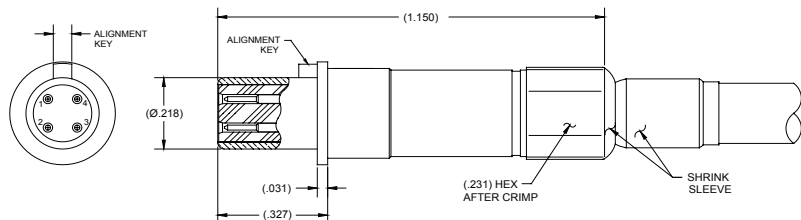
Shell Size	C Thread .1 Pitch .3 Lead	P ±.008	R1 BSC	R2 BSC	V Max +0.00 -.005	W Max	PP Max ±.008	S ±.012
9	0.625	0.128	0.719	0.594	0.820	0.098	0.216	0.937
11	0.75		0.812	0.719			0.194	1.031
13	0.875		0.906	0.812			0.173	1.126
15	1.000		0.969	0.906			0.173	1.220
17	1.188		1.062	0.969			0.194	1.311
19	1.25	0.154	1.156	1.062	0.790	0.126	0.194	1.437
21	1.375		1.250	1.156			1.563	
23	1.500		1.375	1.250			2.42	1.689
25	1.625		1.500	1.375			1.811	



MIL-DTL-38999 Quadrax Contacts

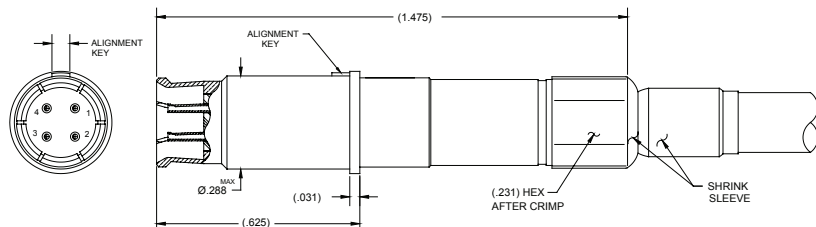
Size 8 Quadrax Contacts For MIL-DTL-38999 Series III

Size 8 Quadrax Pin Contact 100 Ohm



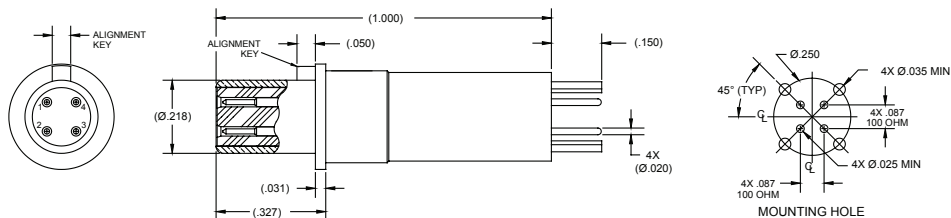
Part Number	Cable Type	Cable
019635-0001	Differential Quad	540-1183-000

Size 8 Quadrax Socket Contact 100 Ohm



Part Number	Cable Type	Cable
019535-0001	Differential Quad	540-1183-000

Size 8 Quadrax Pin Contact 100 Ohm PCB Mount



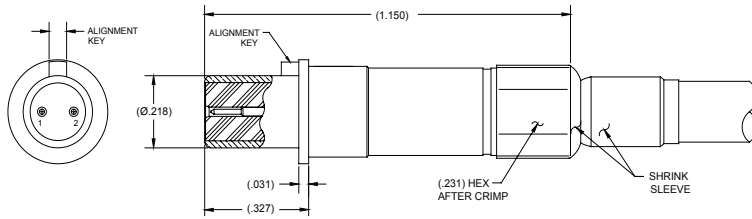
Part Number	Ohms
019617-0013	100



MIL-DTL-38999 Twinax Contacts

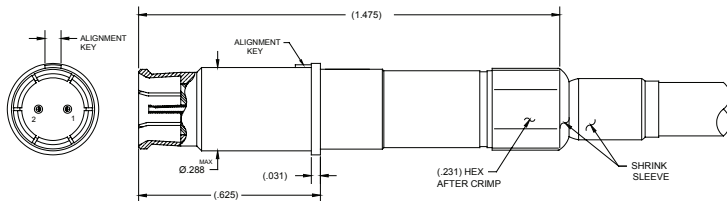
Size 8 Twinax Contacts for MIL-DTL-38999 Series III

Size 8 Twinax Pin Contact 100 and 150 Ohm



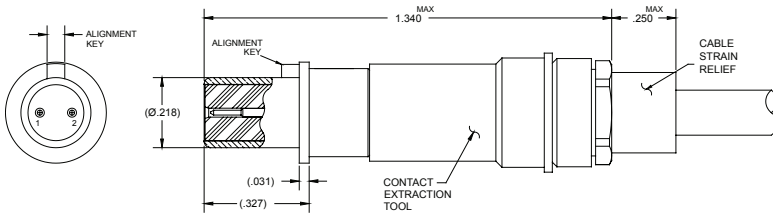
Part Number	Ohms	Cable Type	Cable
019634-0011	100	Differential Twinax	540-1167-000
019634-0012	100	Flexible Twinax	540-1161-000
019634-0013	100	Differential Twinax	540-1153-000
019634-0014	150	Differential Twinax	540-1099-000

Size 8 Twinax Socket Contact 100 and 150 Ohm



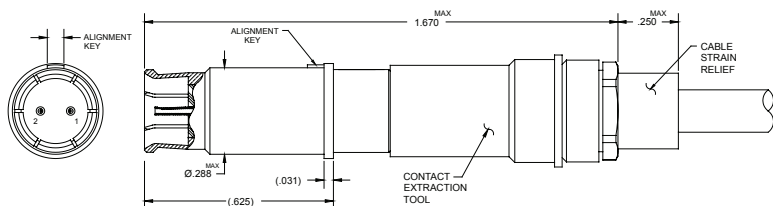
Part Number	Ohms	Cable Type	Cable
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019534-0012	100	Flexible Twinax	540-1161-000
019534-0013	100	Differential Twinax	540-1153-000
019534-0014	150	Differential Twinax	540-1099-000

Size 8 Twinax Pin Contact 150 Ohm



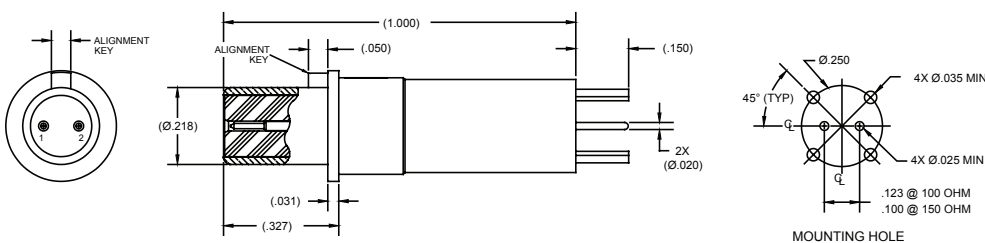
Part Number	Cable Type	Cable
019634-0015	Differential Twinax	540-1114-000

Size 8 Twinax Socket Contact 150 Ohm



Part Number	Cable Type	Cable
019534-0015	Differential Twinax	540-1114-000

Size 8 Twinax Pin Contact 100 and 150 Ohm PCB Mount

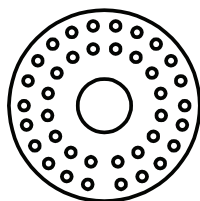


Part Number	Ohms
019617-0011	100
019617-0012	150

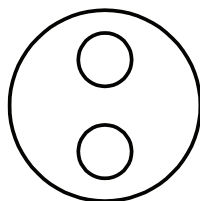


MIL-DTL-38999 Insert Arrangements

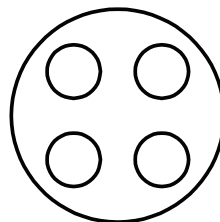
Quadrax and Twinax Contact Layouts



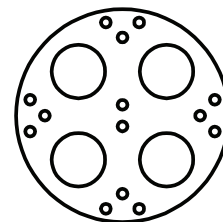
17-2 T/Q
1 #8
38 #22D



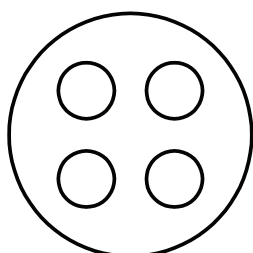
17-82 T/Q
2 #8



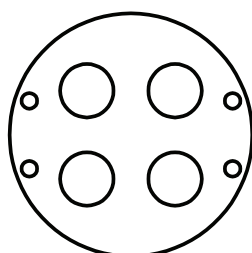
19-4 T/Q
4 #8



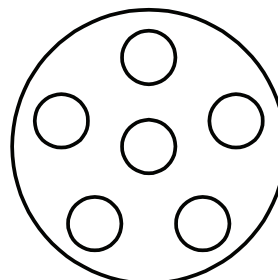
19-18 T/Q
4 #8
14 #22D



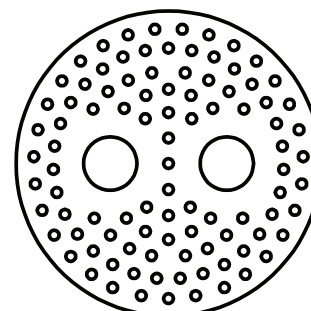
21-75 T/Q
4 #8



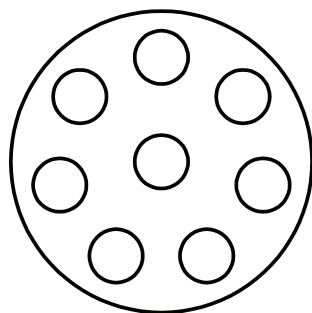
21-4T4 T/Q
4 #8
4 #22D



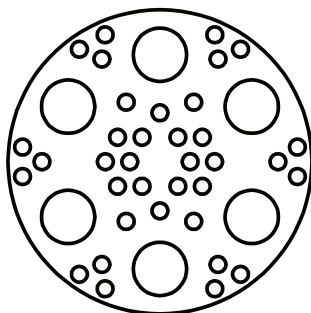
23-6 T/Q
6 #8



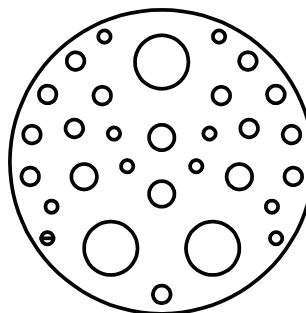
25-7 T/Q
2 #8
97 #22D



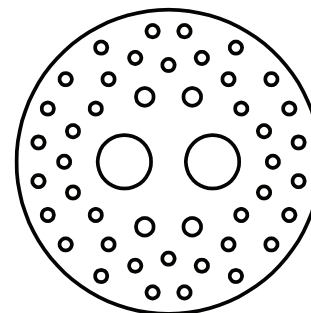
25-8 T/Q
8 #8



25-17 T/Q
6 #8
36 #22D



25-20 T/Q
3 #8 / 13 #16
4 #12 / 10 #20



25-46 T/Q
2 #8
4 #16
40 #20

Note 1: Size #8 Twinax/Quadrax (T/Q) Cavities are Anti-Rotational

Note 2: Size #8 Twinax/Quadrax contact cavities are common ground to the connector shell with a ground resistance of 10 milliohms maximum or insulated from common ground. Consult factory for details, please specify preference (common ground or insulated).

Note 3: Mixed signal and quad/twinax contacts are insulated from common ground. Consult factory for unique grounding and/or filtering requirements.

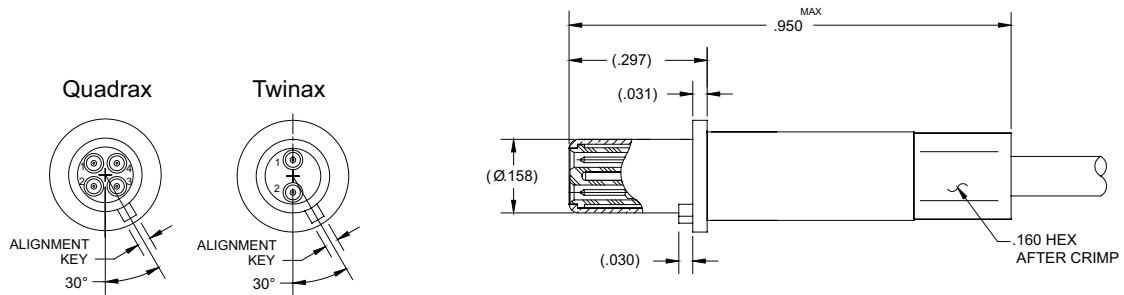
Note 4: Removable Size 8 Contacts use removal tool M81969/14-12



High Speed Size 10 Contacts

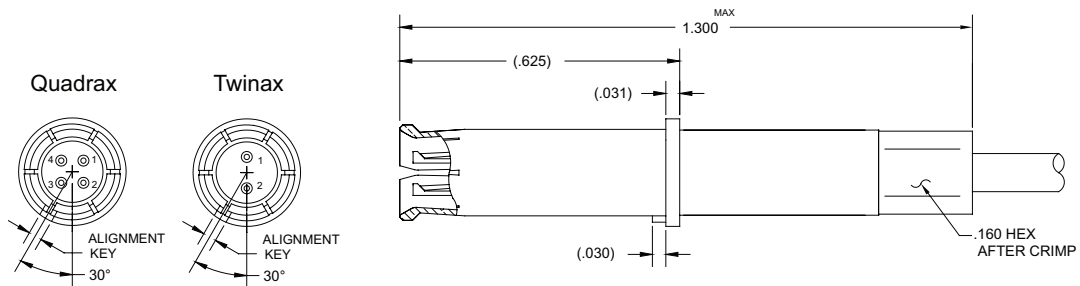
Size 10 Twinax/Quadrax Contacts and Layout Arrangements

Size 10 Twinax/Quadrax Pin Crimp Contact 100 Ohm



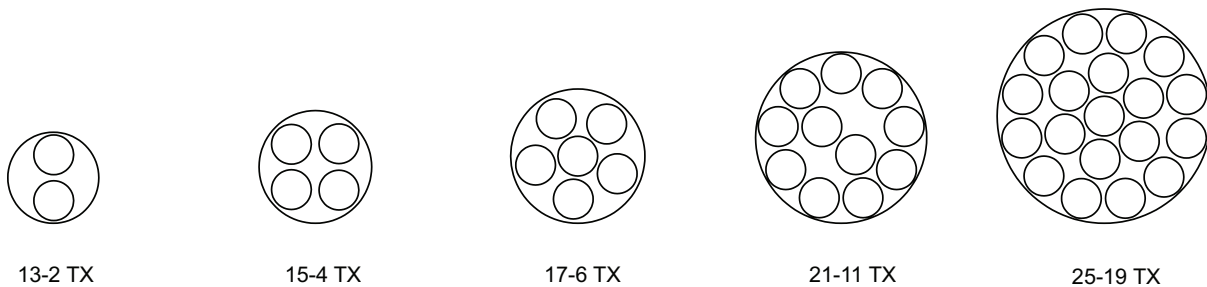
Part Number	Cable Type	Cable
018834-8001	Differential Twinax	540-1153-000
018835-8001	Differential Quadrax	540-1235-000

Size 10 Twinax/Quadrax Socket Crimp Contact 100 Ohm



Part Number	Cable Type	Cable
018934-8001	Differential Twinax	540-1153-000
018935-8001	Differential Quadrax	540-1235-000

Special Size 10T/QX Twinax/Quadrax Contact Layouts For Standard MIL-DTL-38999 Shells



Notes:

- Arrangements are unique Sabritc layouts designed for MIL-DTL-38999 connector formats
- Twinax/Quadrax contact cavities are common ground to the connector shell
- Size 10 Twinax/Quadrax (T/QX) cavities are anti-rotational
- Removable Size 10 Twinax/Quadrax Contacts use removable tool M81969/14-05



Quadsplitter Technology (Patent # 6,794,578)

High Speed Quad to Twinax Conversion

Currently high-speed data transference requires transmission systems that minimize reflections. This is achieved through controlled characteristic impedance from source to load. In microwave systems, this is accomplished with waveguide or coaxial transmission lines. In both cases, the line geometry is the determining factor along with dielectric and conductor materials. Steps, bends, protrusions etc. will invariably cause reflections with consequent loss of transmission efficiency. In 2-wire differential-mode transmissions this is acceptable at lower data rates, however, when data rates become higher, such as fibre channel (into microwave frequencies), the line characteristic impedances become much more critical.

In fibre channel systems the source and load differential impedances are usually high (100 -150 ohm). Achieving these high impedances in coaxial transmission lines and connectors is size prohibitive. As a result, a line configuration such as twinax where the signals carried between a pair of conductors (usually round) critically spaced from each other and surrounded by a conductive enclosure is used. In this "differential line" high impedances are easily obtained since the mutual capacitance between the conductors is minimized.

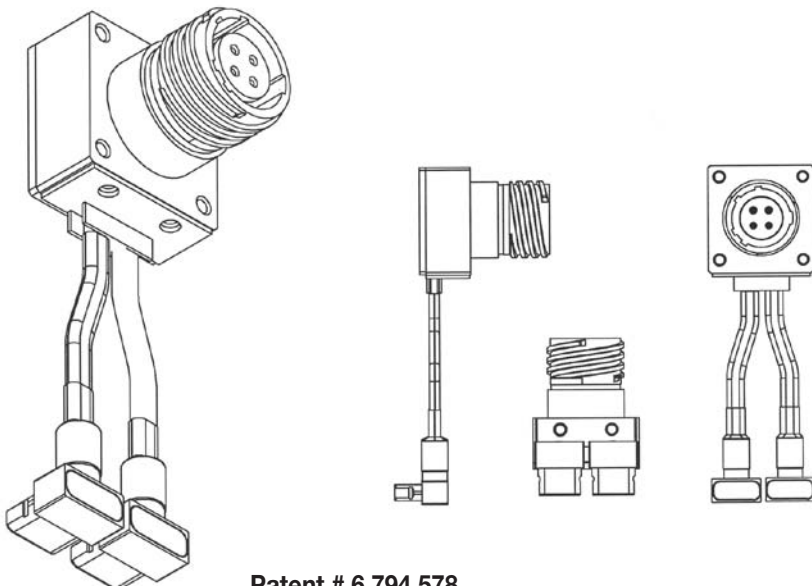
A more efficient development for fibre channel transmission is the "Quadrax", a single enclosure with four wires where a diagonal pair of conductors forms a twinax differential pair.

A problem arises when the Quadrax to Twinax conversion takes place and the channels must be physically separated. The diagonal pairs will cross over resulting in impedance disturbance and reflection with some crosstalk. At low frequencies or data rates, this is some-

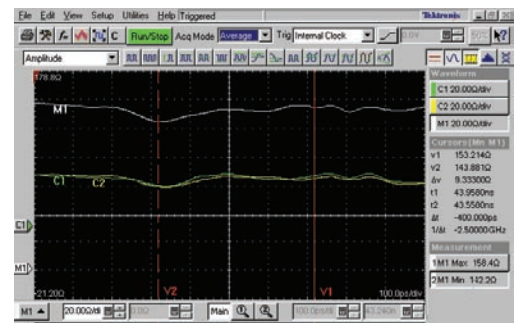
what manageable, however when data rates approach microwave frequencies the resulting system degradation becomes unacceptable. This problem is effectively overcome by employment of stripline or microstrip transmissions.

The unique feature of this method is the placement of the traces and ground planes within a stack of circuit boards where the lines from the quadrax input contact pins couple straight onto the stripline traces without crossing over or disturbing the relative positions of the selected diagonal pairs. This means the impedance is relatively consistent and therefore not frequency sensitive.

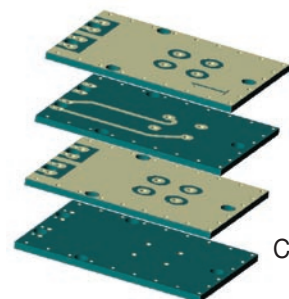
Referring to the assembly and circuit boards below, it can be seen that by locating a common ground plane between two trace layers, the signal pairs will be isolated and in the controlled impedance of effectively two separate transmission systems. In the above case, the separated pairs run to surface pads that, thru selected plated-thru holes, connect to the assigned embedded traces. Note the diagonal pairs from the Quadrax interface are attached to the pads on their assigned traces, while merely passing through the board with traces and pads belonging to the other diagonal pair. The paired traces are routed to the board edge case, and will be soldered to the separated twinax cables. The chart below is a differential TDR showing the impedance in the transition region.



Patent # 6,794,578



TDR Traces



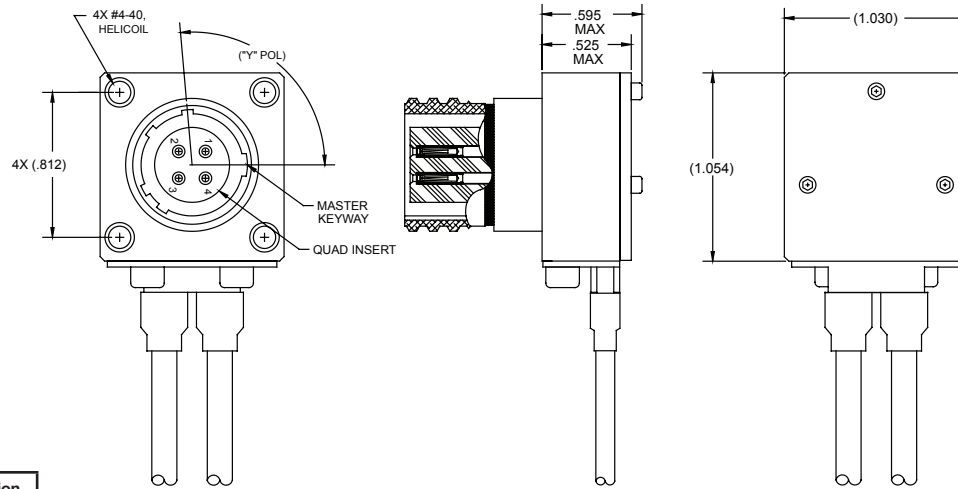
Circuit Boards



Quadsplitter Connectors

MIL-DTL-38999 Series III 150 Ohm Quad Twinax Assemblies

Size 11 Quad Receptacle to 2 Socket Insert Right Angle Twinax Cables to Open Lead



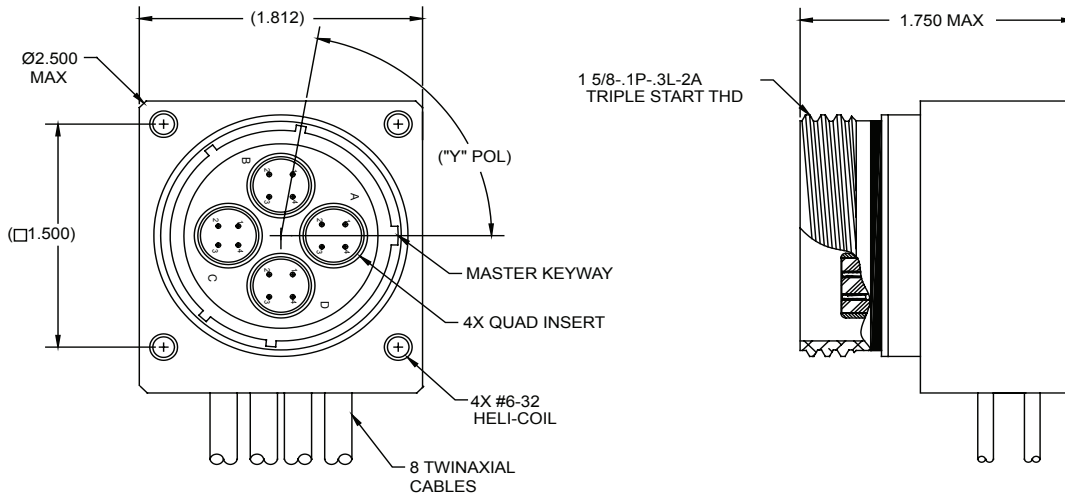
Y	Polarization
1	N
2	A
3	B
4	C
5	D
6	E

Part Number	Cable Type	Cable
02990Y-0100	Differential Twinax	540-1099-000

Y = Connector Polarization

Please specify cable length when ordering

Size 25 Four Way Quad Pin Insert Receptacle to 8 Right Angle Twinax Cables to Open Lead



Y	Polarization
1	N
2	A
3	B
4	C
5	D
6	E

Part Number	Cable Type	Cable
01370Y-3000	Differential Twinax	540-1099-000

Y = Connector Polarization

Please specify cable length when ordering

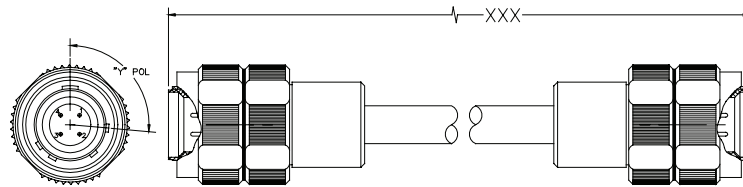


MIL-DTL-38999 Quadrax Connectors

MIL-DTL-38999/III Quad Insert Plug 150 Ohm

MIL-DTL-38999 Size 11 Pin Insert Quad Plug to Plug Cable Assembly

Y	Polarization
1	N
2	A
3	B
4	C
5	D
6	E

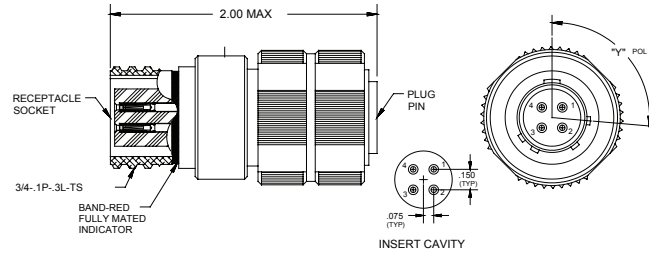


Y = Connector Polarization
XXX = Cable Length in Inches

Part Number	Cable Type	Cable
02990Y-2XXX	Differential Quad	540-1138-000
02990Y-3XXX	Differential Quad	540-1143-000

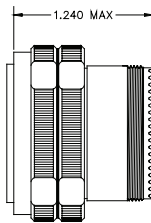
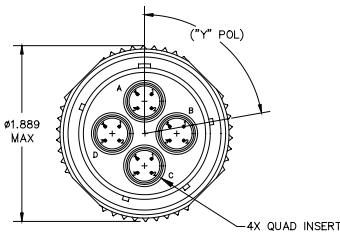
MIL-DTL-38999 Size 11-4 Connector Saver Quad Configuration

Part Number	Polarization
013500-4100	N
013500-4101	A
013500-4102	B
013500-4103	C
013500-4104	D
013500-4105	E



MIL-DTL-38999 Size 25 Four Way Socket Insert Quad Plug

Y	Polarization
1	N
2	A
3	B
4	C
5	D
6	E



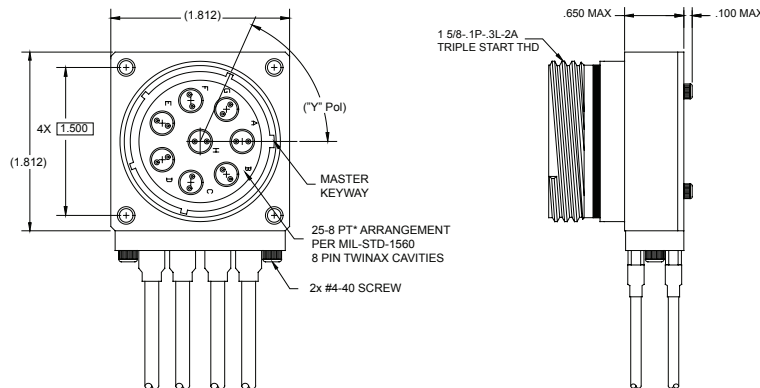
Part Number	Cable Type	Cable
01340Y-2000	Differential Quad	540-1138-000
01340Y-2001	Differential Quad	540-1143-000

Y = Connector Polarization

Please specify cable length when ordering

Box Mount Receptacle Pin Insert 25-8 PT* to 8 R/A Twinax Cables to Open Lead

Y	Polarization
1	N
2	A
3	B
4	C
5	D
6	E



Part Number	Cable Type	Cable
02370Y-1XXX	Differential Twinax	540-1099-000

Y = Connector Polarization
XXX = Cable Length in Inches

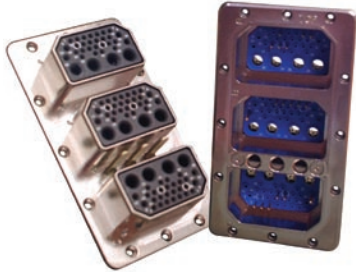
* Connector Receptacle is supplied fully loaded with twinax pin contacts terminated to differential pair twinax cable to open lead (all cavities included).

Please specify cable length when ordering



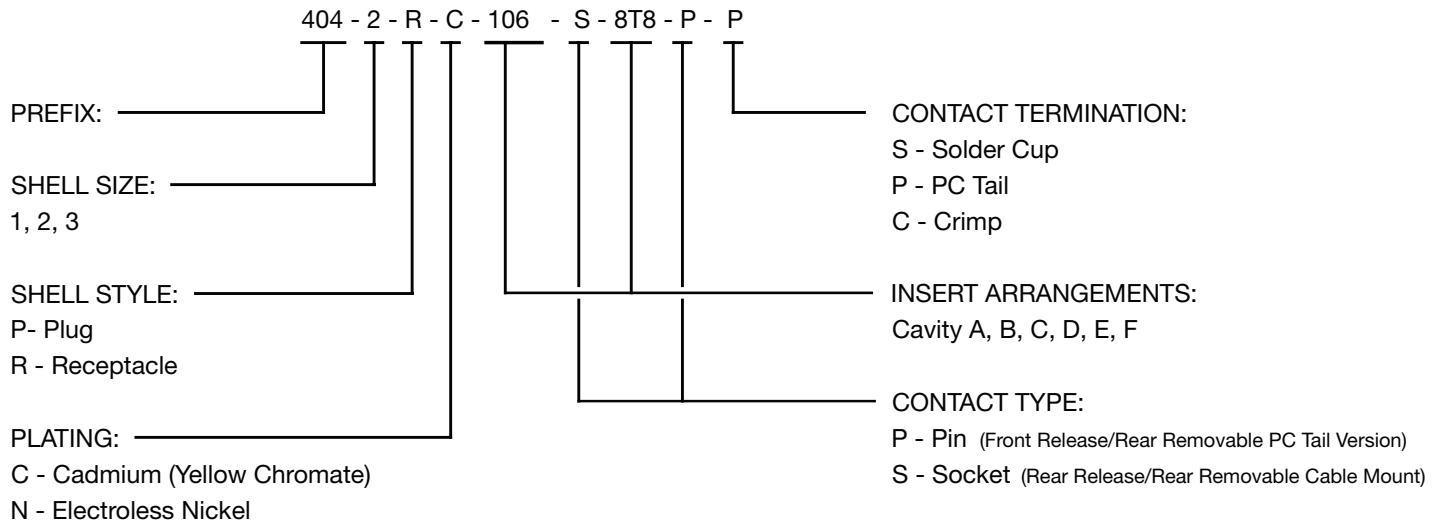
ARINC 404 Series Connectors

MIL-C-81659 Anti-Rotational Twinax Insert Arrangements

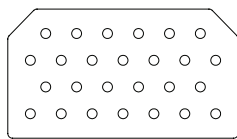


Sabritec's ARINC 404 connector series is available with high speed Fibre Channel and/or Ethernet Twinax and Quadrax contacts. These connectors come standard with anti-rotational keyed insert assemblies and high speed differential pair signaling. Designed for 1394 Firewire, Gigabit Ethernet, 100 Base-T Ethernet, high speed video Hot-Link, and Fibre Channel data links. Quadrax high speed Ethernet and matched impedance 150 Ohm differential pair insert assemblies are also available.

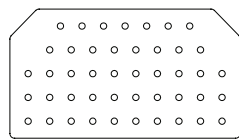
ARINC 404 Part Number Description Code



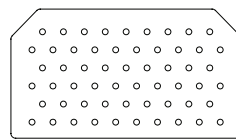
ARINC 404 Insert Arrangements



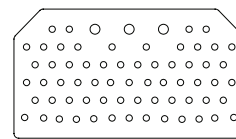
26 #16 CONTACTS
Insert Arrangement: 26



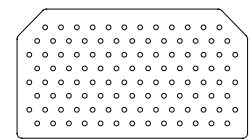
45 #20 CONTACTS
Insert Arrangement: 45



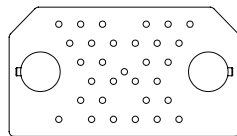
57 #20 CONTACTS
Insert Arrangement: 57



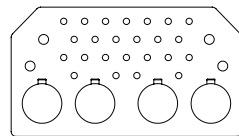
64 #20, 3 #16 CONTACTS
Insert Arrangement: 67



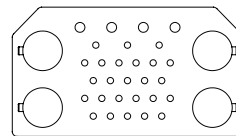
106 #22 CONTACTS
Insert Arrangement: 106



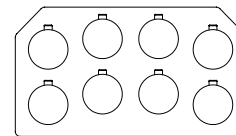
30 #20
2 #5 TWINAX/QUADRAX
Insert Arrangement: 32T2



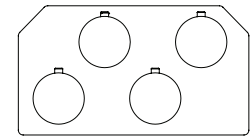
24 #20, 4 #16,
4 #5 TWINAX/QUADRAX
Insert Arrangement: 32T4



25 #20, 4 #16,
4 #5 TWINAX/QUADRAX
Insert Arrangement: 33T4



8 #5 TWINAX/QUADRAX
Insert Arrangement: 8T8



4 #1 QUAD CONTACT
Insert Arrangement: 4Q1
(For ARINC Size 1 Quadrax contact only)

Notes:

Size 5 Twinax and Quadrax Contact Cavities are anti-rotational
Size 1 Quadrax Contact Cavities are anti-rotational

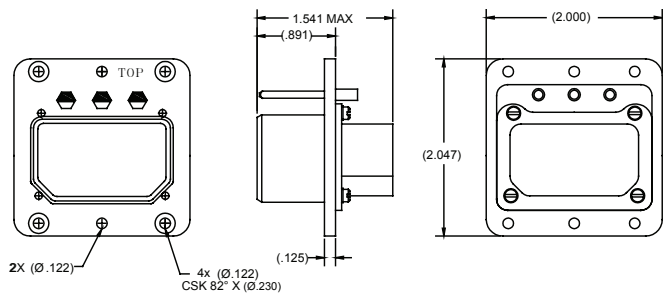
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



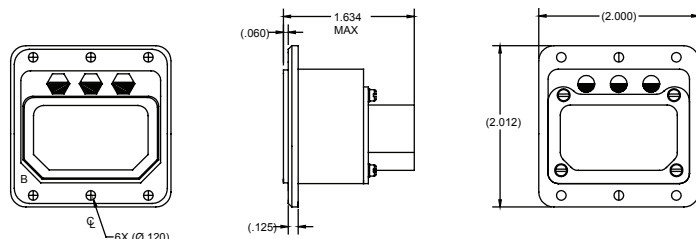
ARINC 404 Series Connectors

MIL-C-81659 Shell Size 1-4

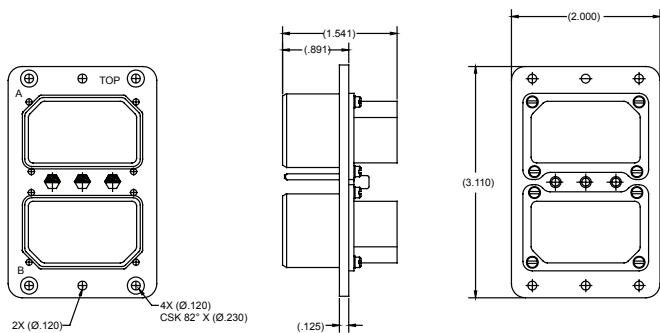
Shell Size 1 Plug



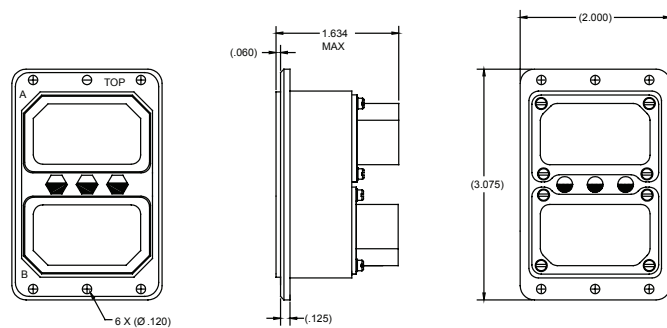
Shell Size 1 Receptacle



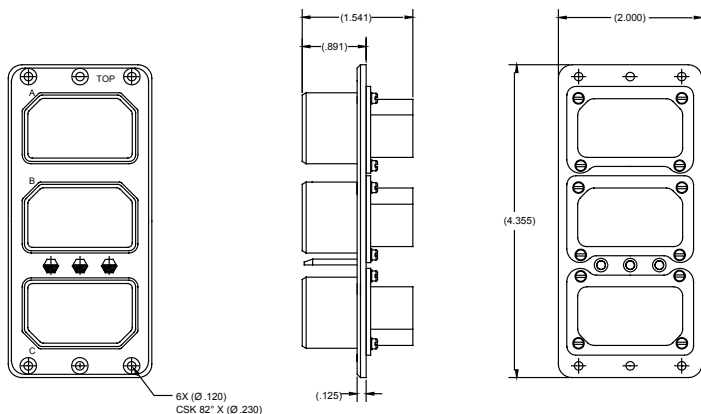
Shell Size 2 Plug



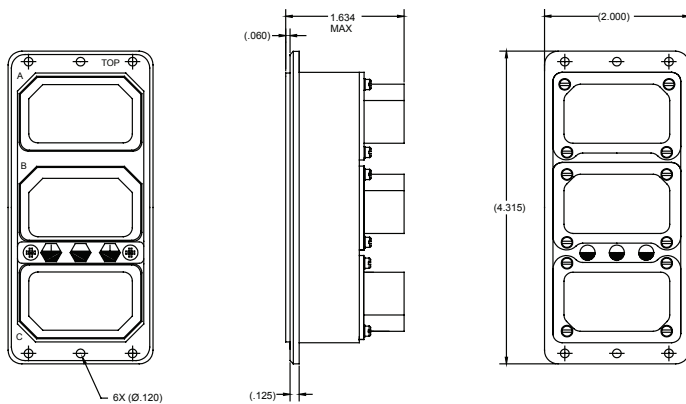
Shell Size 2 Receptacle



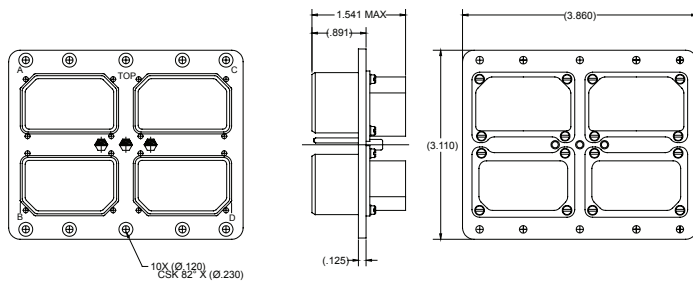
Shell Size 3 Plug



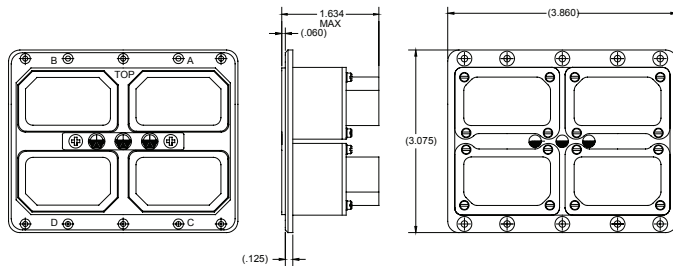
Shell Size 3 Receptacle



Shell Size 4 Plug



Shell Size 4 Receptacle

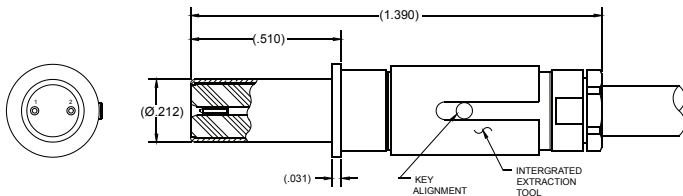




ARINC 404 Series Contacts

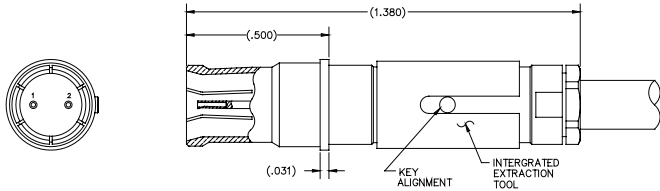
Twinax and Quadrax Contacts

ARINC 404 Size 5 Twinax Pin Contact 100 and 150 Ohm



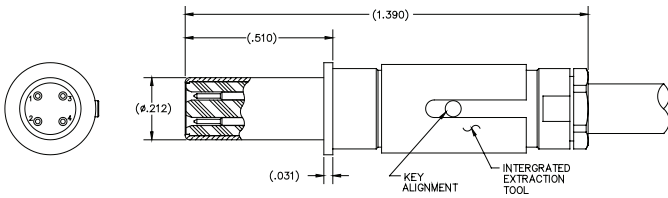
Part Number	Ohms	Cable Type	Cable
019434-8000	150	Differential Twinax	540-1099-000
019434-8001	150	Differential Twinax	540-1114-000
019434-8003	100	Flexible Twinax	540-1086-000
019434-8004	100	Differential Twinax	540-1153-000
019434-8005	100	Flexible Twinax	540-1161-000

ARINC 404 Size 5 Twinax Socket Contact 100 and 150 Ohm



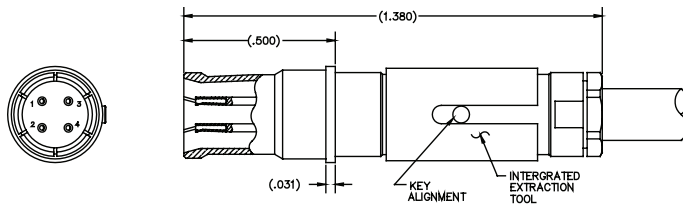
Part Number	Ohms	Cable Type	Cable
019334-8000	150	Differential Twinax	540-1099-000
019334-8001	150	Differential Twinax	540-1114-000
019334-8003	100	Flexible Twinax	540-1086-000
019334-8004	100	Differential Twinax	540-1153-000
019334-8005	100	Flexible Twinax	540-1161-000

ARINC 404 Size 5 Quadrax Pin Contact 100 Ohm



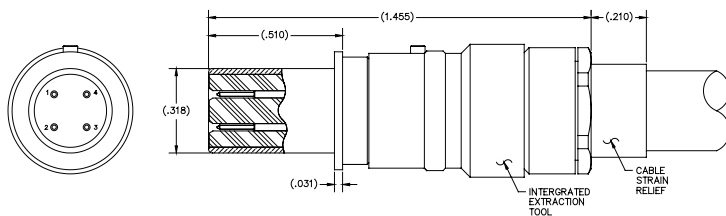
Part Number	Cable Type	Cable
019435-8002	Differential Quad	540-1183-000

ARINC 404 Size 5 Quadrax Socket Contact 100 Ohm



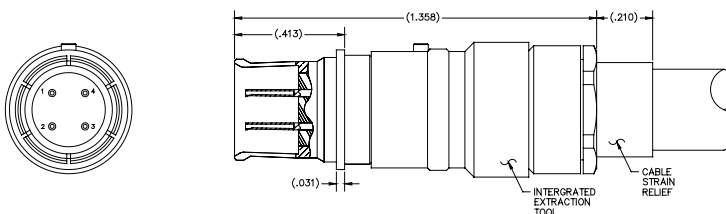
Part Number	Cable Type	Cable
019335-8001	Differential Quad	540-1183-000

ARINC 404 Size 1 Quadrax Pin Contact 150 Ohm



Part Number	Cable Type	Cable
012735-0000	Differential Quad	540-1138-000

ARINC 404 Size 1 Quadrax Socket Contact 150 Ohm



Part Number	Cable Type	Cable
012835-0000	Differential Quad	540-1138-000



ARINC 600 Connectors

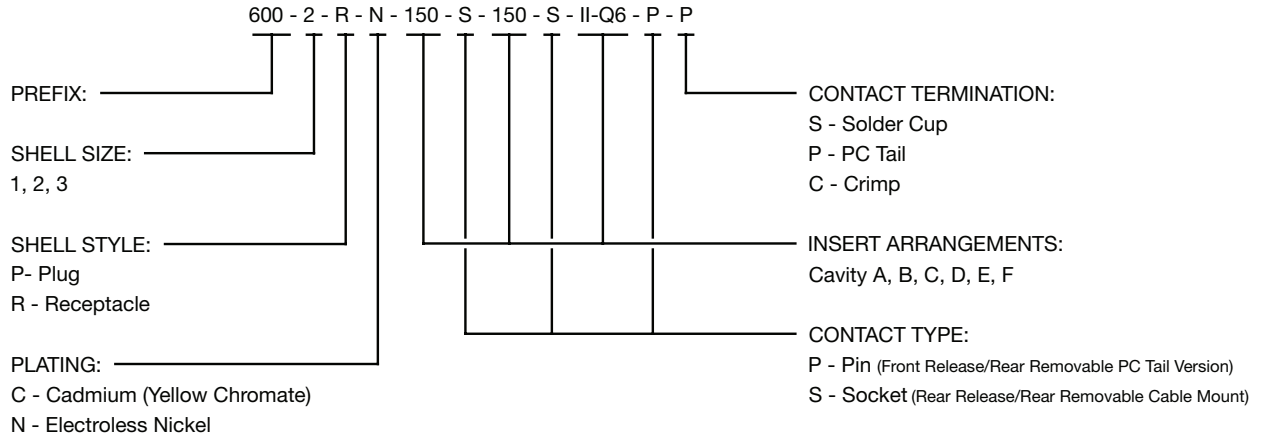
Part Number Description Code and Insert Arrangements



Sabritec's ARINC 600 connector series are designed for interconnect systems including 100 Base-T, Ethernet, and high speed video Hot-Link. These connectors can be fitted with Ethernet based Quad 100 Ohm contacts or differential pair 100 Ohm or 150 Ohm matched impedance contacts.

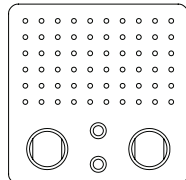
The ARINC 600 Series can also be routed with ruggedized expanded beam fiber optic contacts or concentric triaxial contacts designed for numerous low-loss twinaxial and concentric triax cables in a variety of impedance values.

ARINC 600 Part Number Description Code

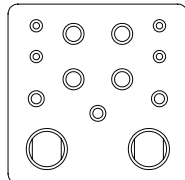


ARINC 600 Insert Arrangements

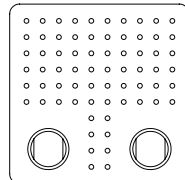
ARINC 600 Front Release/Front Removable Insert Layouts



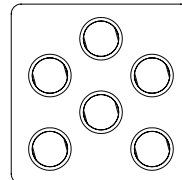
II - 62Q2
60 SIZE 22
2 SIZE 16
2 SIZE 8



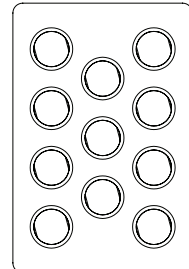
II - 11Q2
4 SIZE 20
3 SIZE 16
4 SIZE 12
2 SIZE 8



II - 68Q2
68 SIZE 22
2 SIZE 8

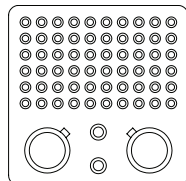


II - Q6
6 SIZE 8
METALLIC INSERT

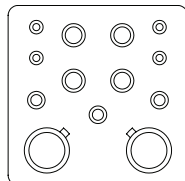


I - Q11
11 SIZE 8
METALLIC INSERT

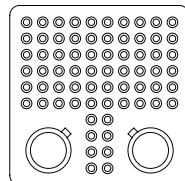
ARINC 600 Rear Release/Rear Removable Insert Layouts



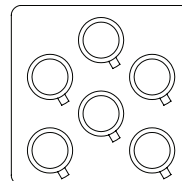
II - 62Q2
60 SIZE 22
2 SIZE 16
2 SIZE 8



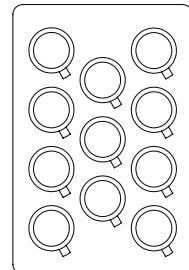
II - 11Q2
4 SIZE 20
3 SIZE 16
4 SIZE 12
2 SIZE 8



II - 68Q2
68 SIZE 22
2 SIZE 8



II - Q6
6 SIZE 8
METALLIC INSERT



I - Q11
11 SIZE 8
METALLIC INSERT

Note: Removable Size 8 Twinax and Quadrx Contacts use removal tool M81969/14-06

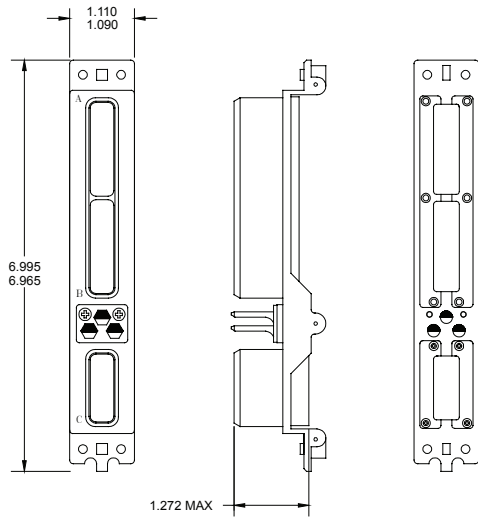
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



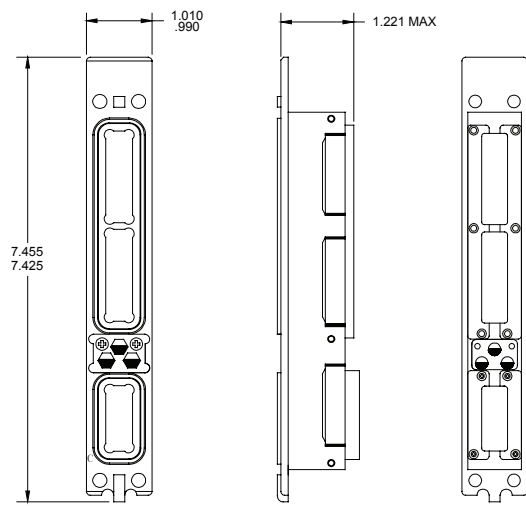
ARINC 600 Shell Housing

Shell Sizes 1 - 3

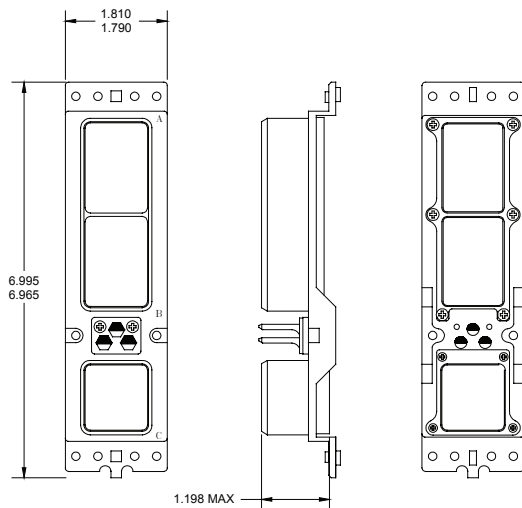
ARINC 600 Shell Size 1 Plug



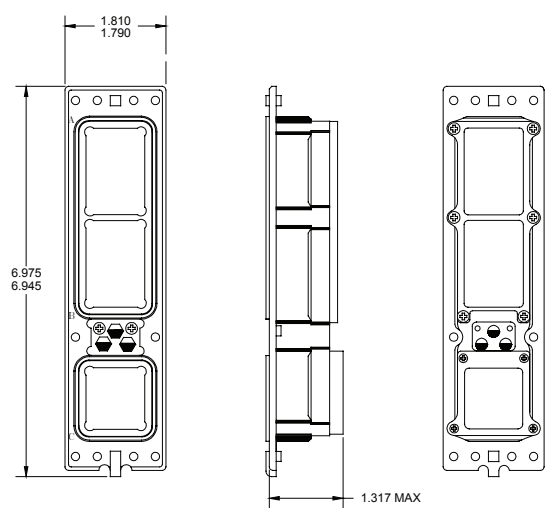
ARINC 600 Shell Size 1 Receptacle



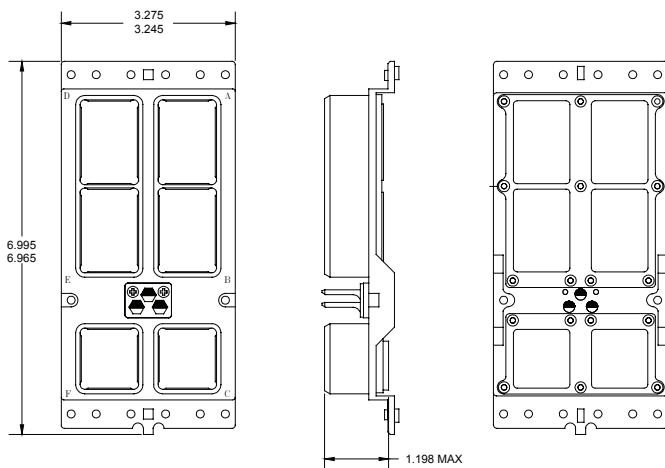
ARINC 600 Shell Size 2 Plug



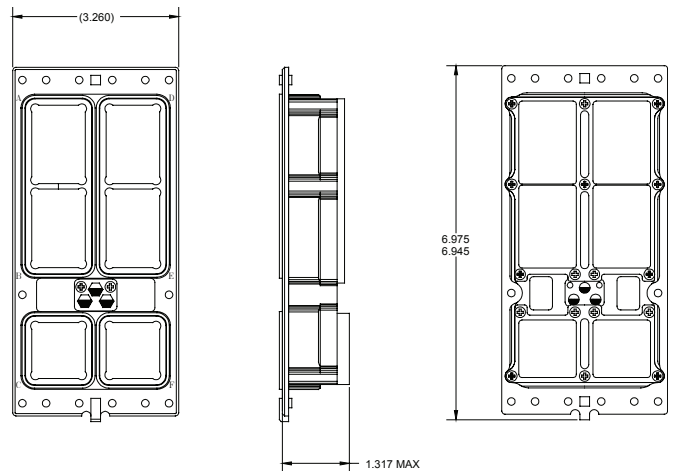
ARINC 600 Shell Size 2 Receptacle



ARINC 600 Shell Size 3 Plug



ARINC 600 Shell Size 3 Receptacle

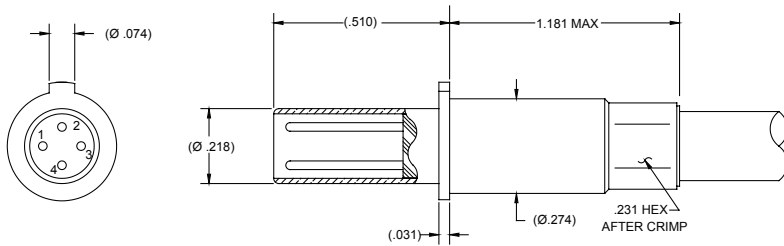




ARINC 600 Quadrax and Twinax Contacts

Size 8 Quadrax and Twinax 100 Ohm Contacts for ARINC 600

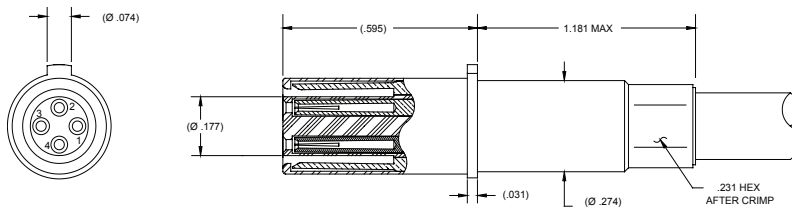
Size 8 Pin Quadrax Contact 100 Ohm



Part Number	Cable Type	Cable
019635-2031	Differential Quad	540-1183-000

Rear Release/Rear Removable

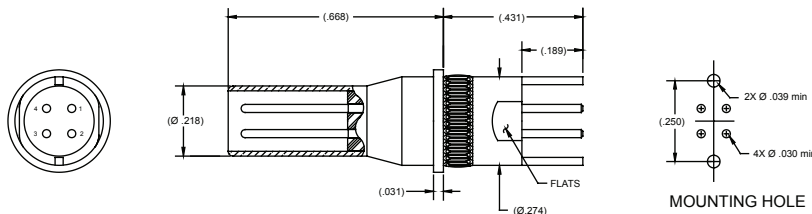
Size 8 Socket Quadrax Contact 100 Ohm



Part Number	Cable Type	Cable
019535-2031	Differential Quad	540-1183-000

Rear Release/Rear Removable

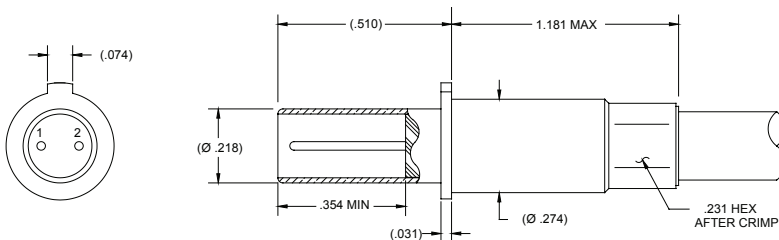
Size 8 Pin Quadrax Contact PCB Mount 100 Ohm



P/N 019617-2107

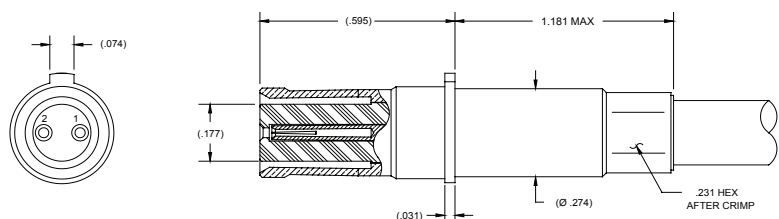
Front Release/Rear Removable

Size 8 Twinax Pin Contact 100 Ohm



Part Number	Cable Type	Cable
019634-8025	Differential Twinax	540-1167-000
019634-8026	Flexible Twinax	540-1161-000
019634-8027	Differential Twinax	540-1086-000

Size 8 Twinax Socket Contact 100 Ohm

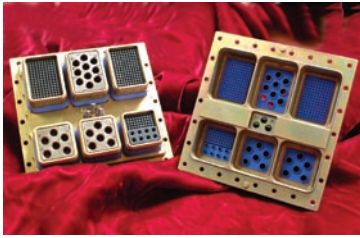


Part Number	Cable Type	Cable
019534-8025	Differential Twinax	540-1167-000
019534-8026	Flexible Twinax	540-1161-000
019534-8027	Differential Twinax	540-1086-000



MIL-DTL-83527 Series Connectors

Part Number Assignment and Backshells



Sabritec's MIL-DTL-83527 Rack and Panel style connectors meet or exceed the applicable requirements of the military specification and come in a wide variety of insert arrangements and shell sizes. Contact patterns include mixed Signal, Power, Coax, Triax, Fiber Optic (ARINC 801 and Expanded Beam Contacts) Twinax and Quadrax contacts for standard or custom insert arrangements. They can also incorporate EMI filtering and transient EMP protection to help maintain signal integrity.

Sabritec's Twinax and Quadrax contacts offer balanced and matched impedance performance for a wide variety of transmission systems and cable characteristics. Our contacts are designed to ensure optimum signal integrity even at the highest data rates.

Contacts are offered with crimp or solder termination with anti-rotational keyed insert assemblies for High-Speed Fibre Channel or Ethernet type applications. These connectors are designed for extreme environmental concerns including shock, vibration and humidity.

Features:

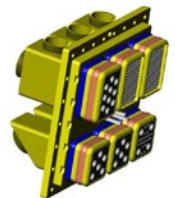
- Isolated cavities available for tempest applications
- EMI/RFI environmentally sealed backshells
- Single or Multiport exit termination points with standard MIL-DTL-38999 backshells.

Backshells

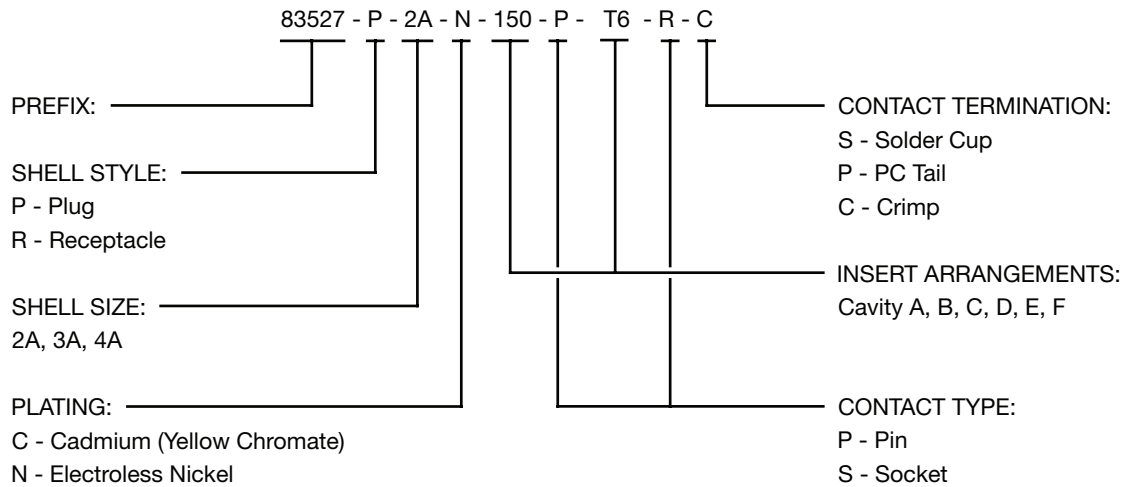
Sabritec's rugged EMI/RFI environmental backshells for MIL-DTL-83527 and ARINC 600 connectors offer many innovative features including accessory threads, optional cable entry locations as well as single or multi-cavity ports.

Features:

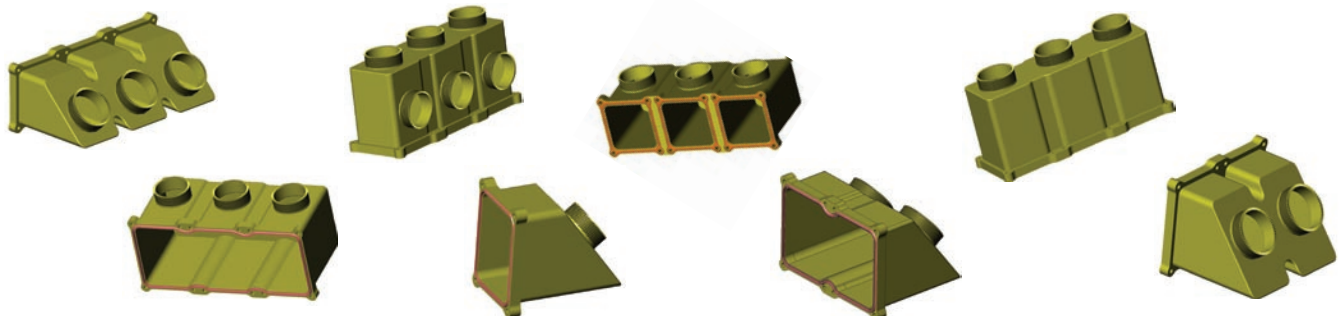
- EMI/RFI Environmentally sealed backshells
- Moisture, splash and dust proof
- Resilient gasket sealing from the rear of the connector shell to the backshell junction



MIL-DTL-83527 Part Number Description Code



Sample Backshells

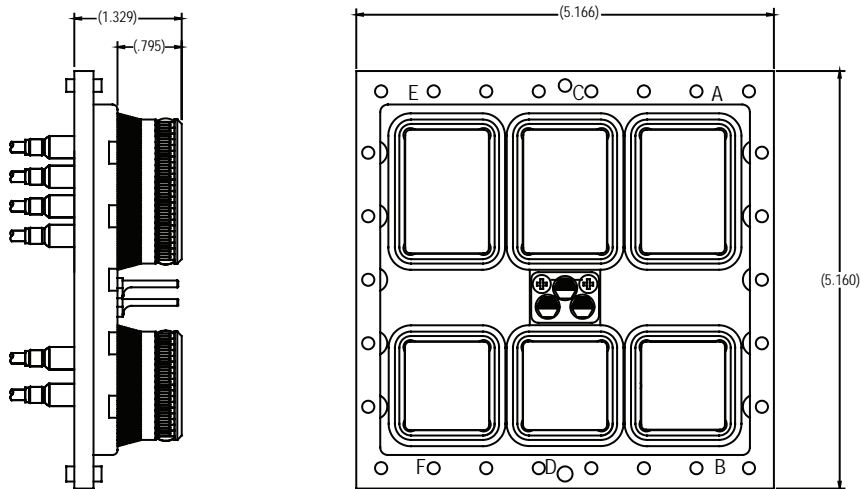




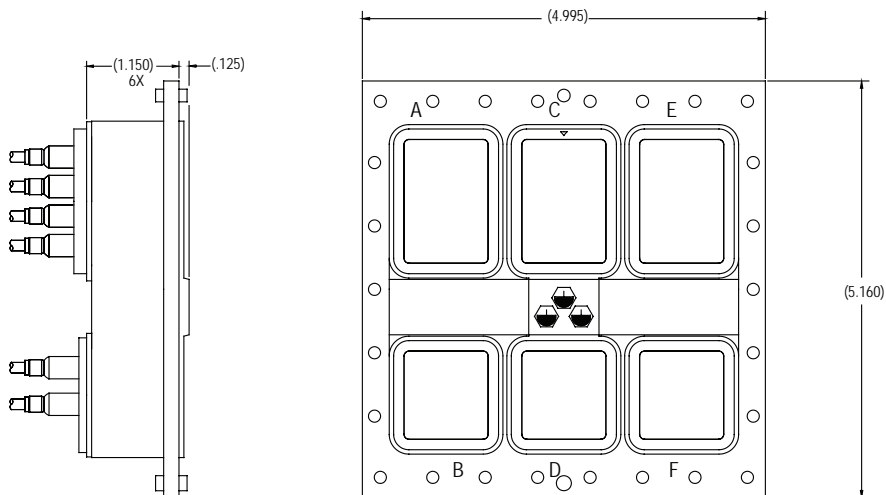
MIL-DTL-83527 Connectors

Shell Size 4A Plug and Receptacle and Insert Arrangements

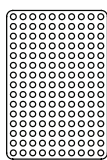
MIL-DTL-83527 Shell Size 4A Plug



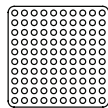
MIL-DTL-83527 Shell Size 4A Receptacle



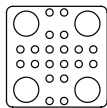
MIL-DTL-83527 Insert Arrangements



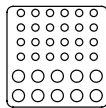
I-150
150 #22



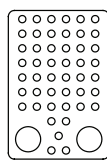
II-100
100 #22



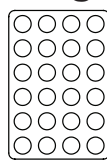
II-20T4
20 #20
4 #8 T/C



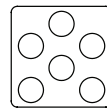
II-34
24 #20
10 #16



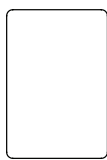
I-47T2
47 #20
2 #8 T/C



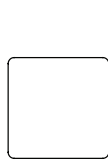
I-24
24 #12



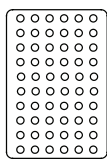
II-T6
6 #8 T/C



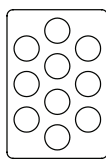
I-0
BLANK
CUSTOM



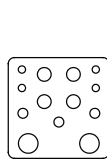
II-0
BLANK
CUSTOM



I-60
60 #20



10P10
10 #8 T/C



II-11C2
4 #20
3 #16
4 #12
2 #5

For Size 8 Contacts Please Spec
T = Twinax/Quadax Cavity (Anti-Rotational)
C = Coaxial/Triaxial Cavity

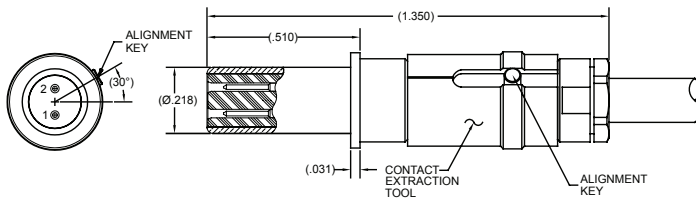
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



MIL-DTL-83527 Quadrax/Twinax Contacts

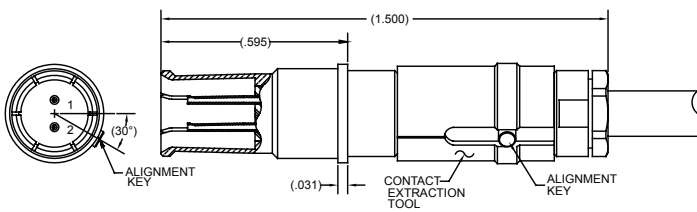
Size 8 Quadrax & Twinax 100 & 150 Ohm Contacts

Size 8 Twinax Pin Contact 100 and 150 Ohm



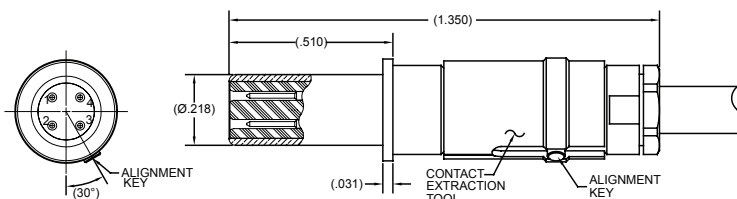
Part Number	Ohms	Cable Type	Cable
019634-0005	150	Differential Twinax	540-1099-000
019634-0006	150	Differential Twinax	540-1114-000
019634-0007	100	Differential Twinax	540-1086-000
019634-0008	100	Differential Twinax	540-1153-000
019634-0009	100	Flexible Twinax	540-1161-000

Size 8 Twinax Socket Contact 100 and 150 Ohm



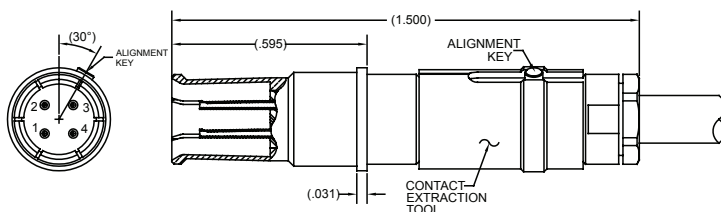
Part Number	Ohms	Cable Type	Cable
019534-0005	150	Differential Twinax	540-1099-000
019534-0006	150	Differential Twinax	540-1114-000
019534-0007	100	Differential Twinax	540-1086-000
019534-0008	100	Differential Twinax	540-1153-000
019534-0009	100	Flexible Twinax	540-1161-000

Size 8 Quadrax Pin Contact 100 Ohm



Part Number	Cable Type	Cable
019635-0000	Differential Quad	540-1183-000

Size 8 Quadrax Socket Contact 100 Ohm

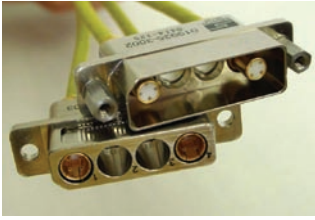


Part Number	Cable Type	Cable
019535-0000	Differential Quad	540-1183-000



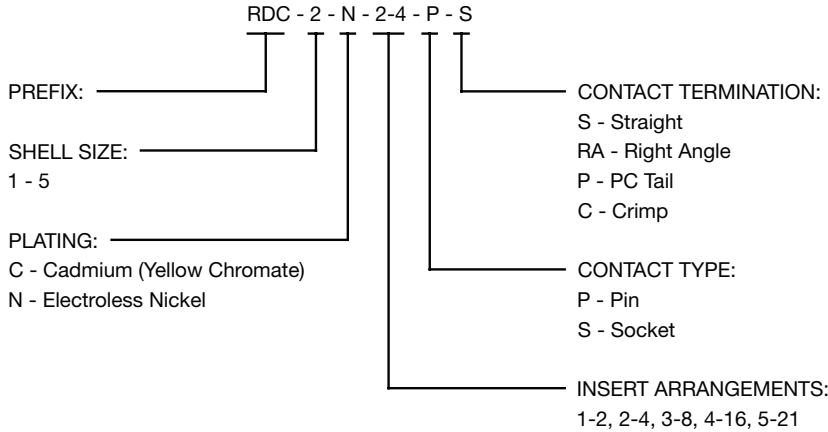
Rugged D-Subminiature Connectors

Rugged D-Sub Part Description and Insert Arrangements

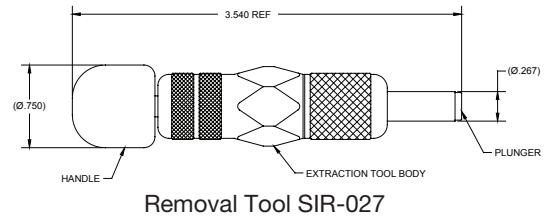


High impedance D-Sub connectors are designed to ground the outer shield of a twinax or quadrx contact directly to the shell of the connector. A multi-finger ground spring, fixed around the shell provides a multi-point contact engagement for superior EMI shielding. The result is an extremely low contact resistance when measured from the contact outer body to the connector flange. These connectors provide low RF noise and high durability of up to 1,000 mating cycles. Sabritec connectors meet or exceed all requirements of MIL-STD-202 for shock and vibration. Offered with 100 ohm quadrx and/or 100/150 ohm differential pair twinax contacts.

Rugged D-Sub Part Number Description Code

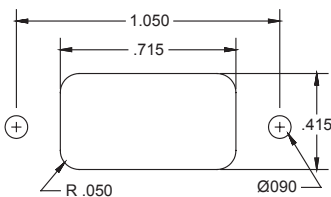
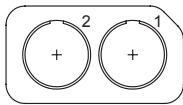


* Removable Quad/Twinax Contacts Require Removal Tool SIR-027 (ordered separately)

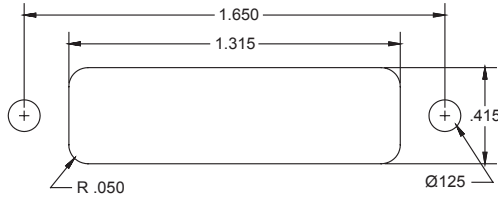
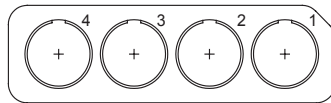


Rugged D-Sub Connector Shells & Insert Arrangements

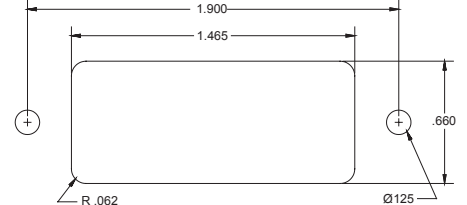
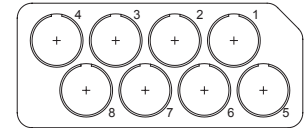
Shell Size 1
Arrangement 1-2
2 # 9 Quad/Twinax Contacts



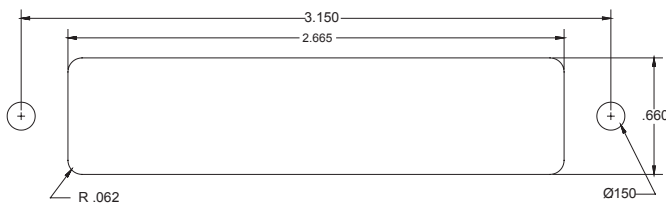
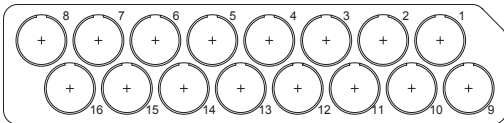
Shell Size 2
Arrangement 2-4
4 # 9 Quad/Twinax Contacts



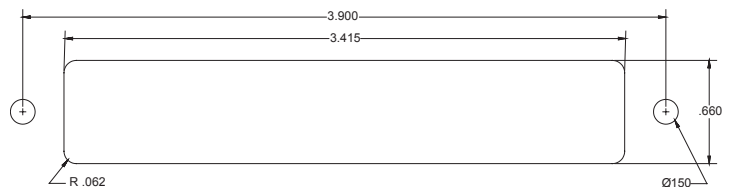
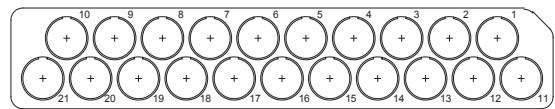
Shell Size 3
Arrangement 3-8
8 # 9 Quad/Twinax Contacts



Shell Size 4
Arrangement 4-16
16 # 9 Quad/Twinax Contacts



Shell Size 5
Arrangement 5-21
21 # 9 Quad/Twinax Contacts



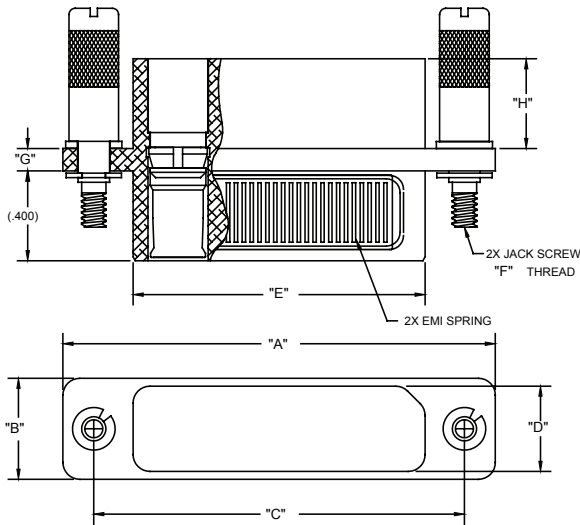
Please consult factory for environmentally sealed and backshell connectors.



Rugged D-Subminiature Connectors

Quadrax and Twinax Panel Mount D-Subminiature Connectors

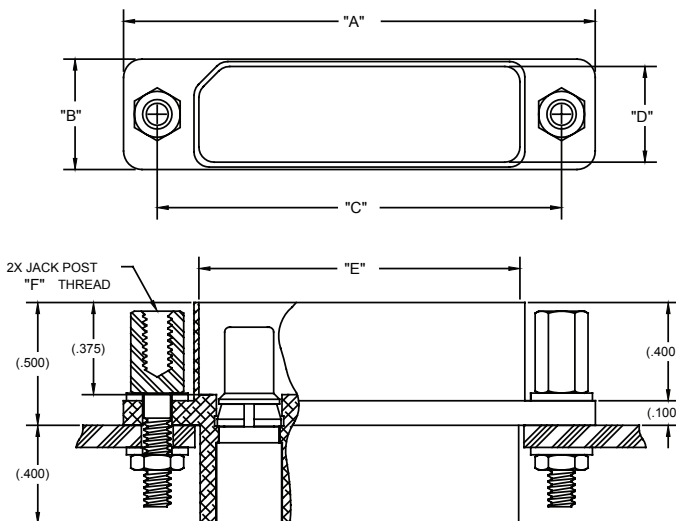
Quad/Twinax D-Sub Plug



Part Number	Contacts	A	B	C	D	E	F	G	H
012700-2002	2	1.325	.450	1.050	.380	.700	#2-56	.100	.400
012700-2003	4	1.925	.450	1.650	.380	1.300	#4-40	.100	.400
012700-2004	8	2.300	.750	1.900	.625	1.450	#4-40	.100	.400
012700-2005	16	3.600	.750	3.150	.625	2.650	#6-32	.150	.350
012700-2006	21	4.350	.750	3.900	.625	3.400	#6-32	.150	.350

Contacts are sold separately

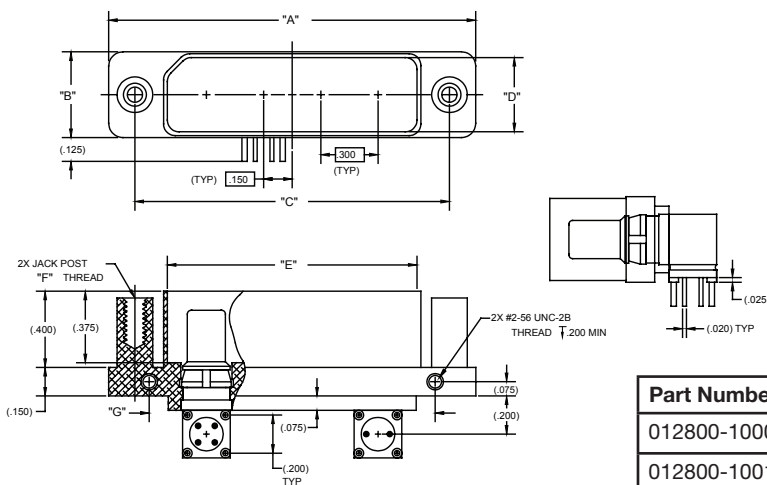
Quad/Twinax D-Sub Receptacle Cable Mount



Part Number	Contacts	A	B	C	D	E	F
012800-3002	2	1.325	.450	1.050	.390	.710	#2-56
012800-3003	4	1.925	.450	1.650	.390	1.310	#4-40
012800-3004	8	2.300	.750	1.900	.635	1.460	#4-40
012800-3005	16	3.600	.750	3.150	.635	2.660	#6-32
012800-3006	21	4.350	.750	3.900	.635	3.410	#6-32

Contacts are sold separately

Quad/Twinax D-Sub PC Tail Mount



Part Number	Contacts	A	B	C	D	E	F	G
012800-1000	2	1.325	.450	1.050	.390	.710	#2-56	.900
012800-1001	4	1.925	.450	1.650	.390	1.310	#4-40	1.500

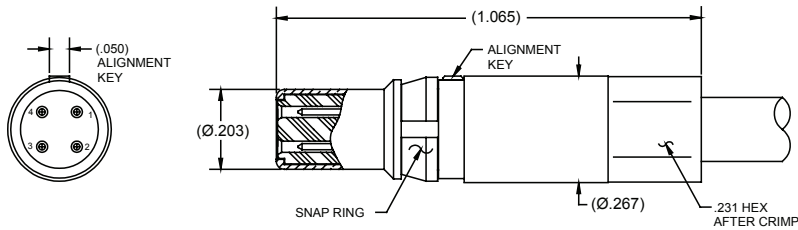
Contacts are sold separately



Rugged D-Sub Quadrax Contacts

Size 9 Quadrax Contacts 100 Ohm

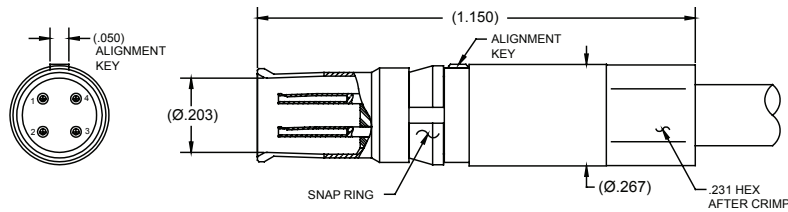
Size 9 Quadrax Pin Contact 100 Ohm



Part Number	Cable Type	Cable
019235-8000	Differential Quad	540-1183-000

For use in P/N: 012800-3002 thru 3006

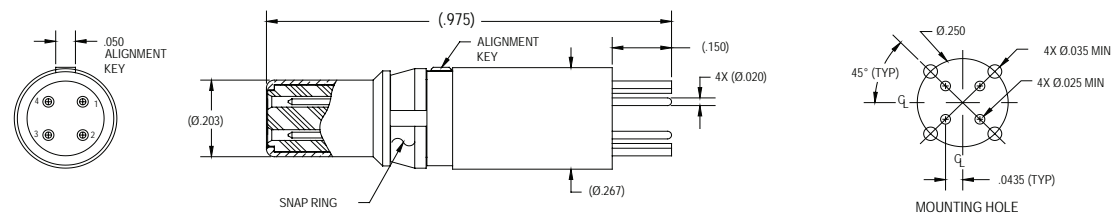
Size 9 Quadrax Socket Contact 100 Ohm



Part Number	Cable Type	Cable
019135-8000	Differential Quad	540-1183-000

For use in P/N: 012700-2002 thru 2006

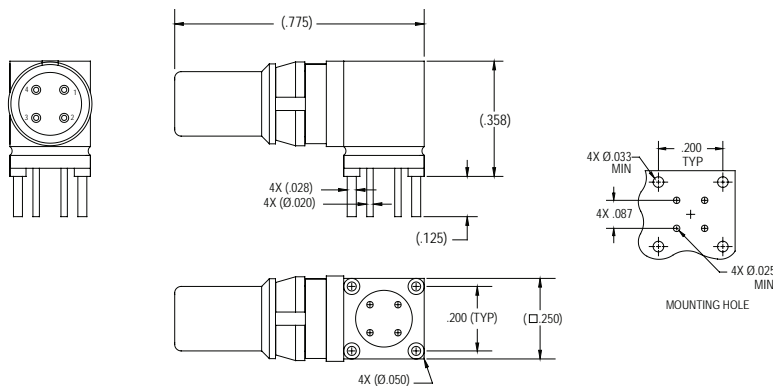
Size 9 Quadrax Pin Contact PCB Mount 100 Ohm



P/N: 019217-2006

For use in P/N: 012800-3002 thru 3006

Size 9 Right Angle PC Tail Quadrax Contact 100 Ohm



P/N: 019217-1001

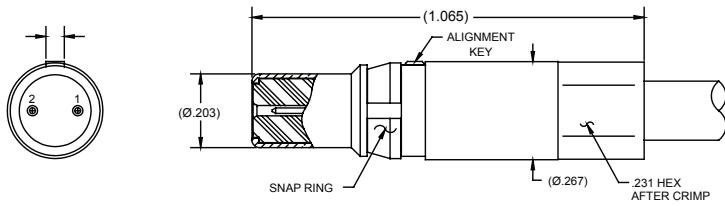
For use in P/N: 012800-1000 thru 1001



Rugged D-Sub Twinax Contacts

Size 9 Twinax Contacts 100 Ohm

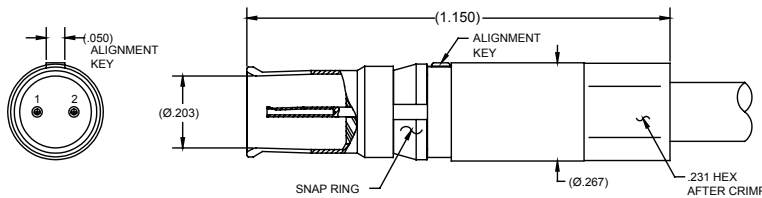
Size 9 Twinax Pin Contact 100 Ohm



Part Number	Cable Type	Cable
019234-2002	Differential Twinax	540-1167-000
019234-2017	Flexible Twinax	540-1161-000
019234-2018	Flexible Twinax	540-1086-000

For use in P/N: 012800-3002 thru 3006

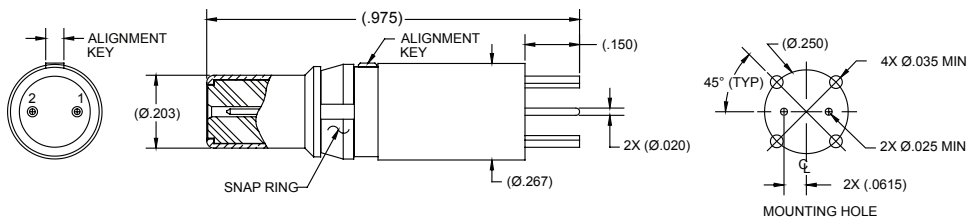
Size 9 Twinax Socket Contact 100 Ohm



Part Number	Cable Type	Cable
019134-2002	Differential Twinax	540-1167-000
019134-2017	Flexible Twinax	540-1161-000
019134-2018	Flexible Twinax	540-1086-000

For use in P/N: 012700-2002 thru 2006

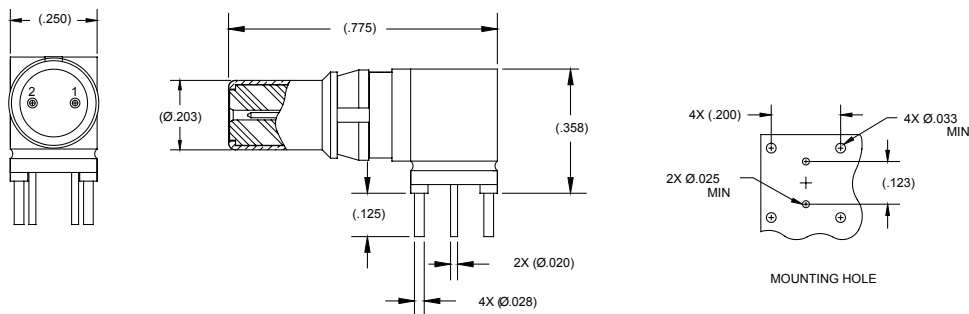
Size 9 Twinax Pin Contact PCB Mount 100 Ohm



P/N 019217-0000

For use in P/N: 012800-3002 thru 3006

Size 9 Right Angle PC Tail Twinax Contact 100 Ohm



P/N 019217-1000

For use in P/N: 012800-1000 thru 1001



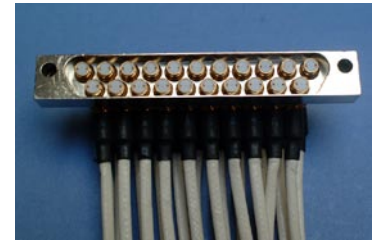
High Speed Back Plane Connectors

Twinax 21 Position Connectors 150 Ohm and 100 Ohm

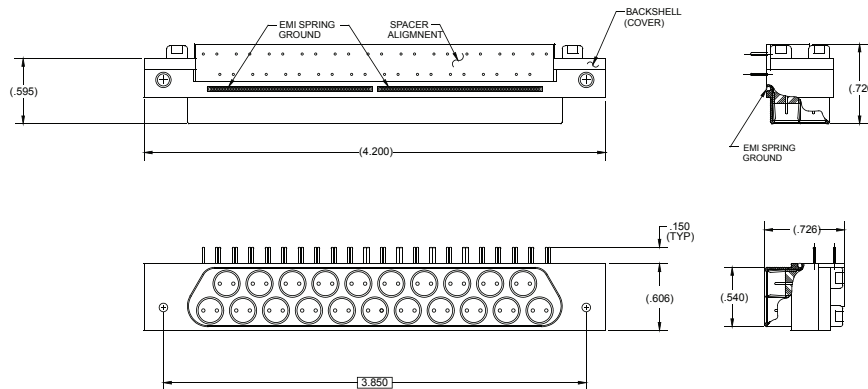
In standard VME cards for low data rate signaling, connectors are widely available to carry non-shielded signaling for the VME bus from the interface via motherboard to daughter card assembly designated as I/O plug-in modules. The industry standard defines these connectors typically as P1 and P3 connectors.

Sabritec has taken the standard housing configuration of the P1 & P3 mounting dimensions while incorporating true differential pair contacts within the P1 & P3 dimensional constraints. Data sampling rates exceeding 2 Gbits/second can be driven via matched impedance differential pair interconnections for board-to-board high speed data transfer as well as blind mate I/O plug in modular applications.

Sabritec's P1 connector housing contains 21 position true differential pair blind mate contacts allowing board designers to carry high density differential pair signals from the LRU via motherboard to daughter-card plug in modules with a single connector P1 type housing. This allows for the use of standard VME bus architecture cages for high speed fibre channel connection.



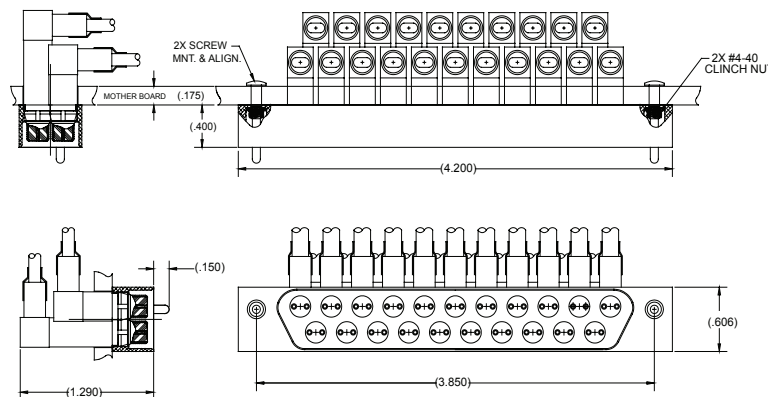
Right Angle Twinax Receptacle 21 Position (Blind Mate PCB Interconnects) 150 Ohm



P/N 029917-1015

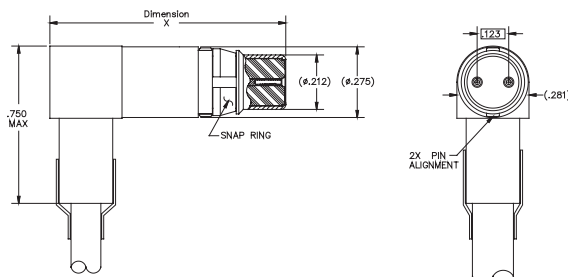
Mates with P/N: 029912-1015

Right Angle Twinax Plug Housing 21 Position (Blind Mate PCB Interconnects) 150 Ohm



P/N 029912-1015

Size 5 Right Angle Twinax Cable Pin Contact 150 Ohm



Part Number	Cable Type	Cable	Contacts	Dim X
019912-1103	Differential Twinax	540-1099-000	Near Row	0.905
019912-1305	Differential Twinax	540-1114-000	Near Row	0.905
019912-1102	Differential Twinax	540-1099-000	Far Row	1.230
019912-1304	Differential Twinax	540-1114-000	Far Row	1.230

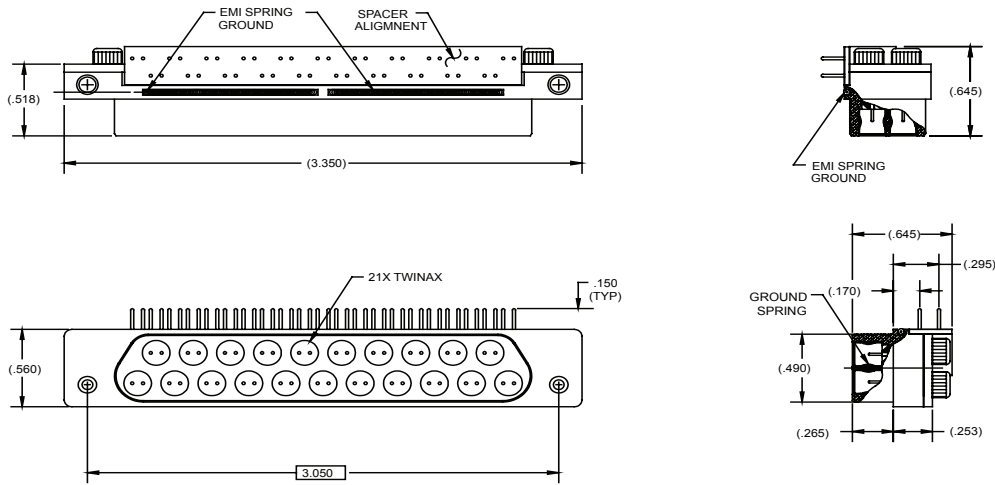
For use in 029912-1015



High Speed Back Plane Connectors

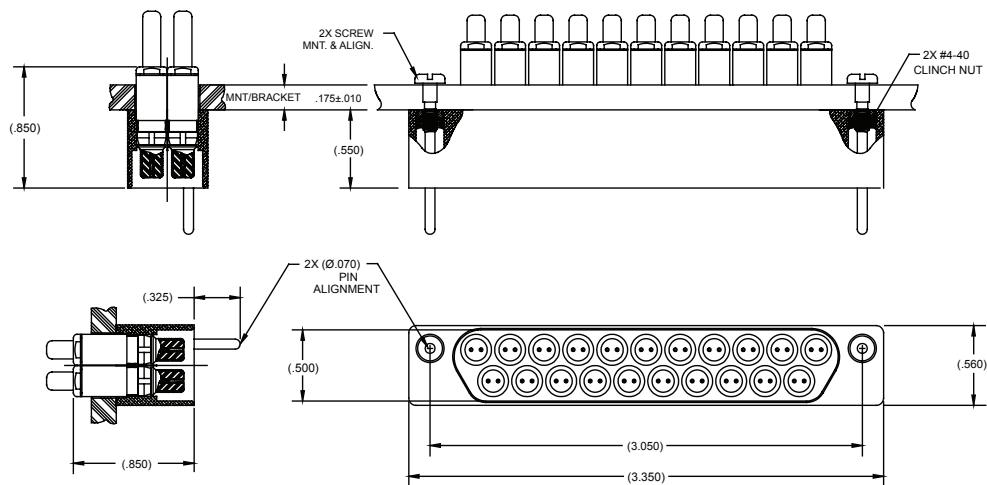
Twinax 21 Position Connectors 100 Ohm Ethernet

Right Angle Twinax Receptacle 21 Position (Blind Mate PCB Interconnects) 100 Ohm



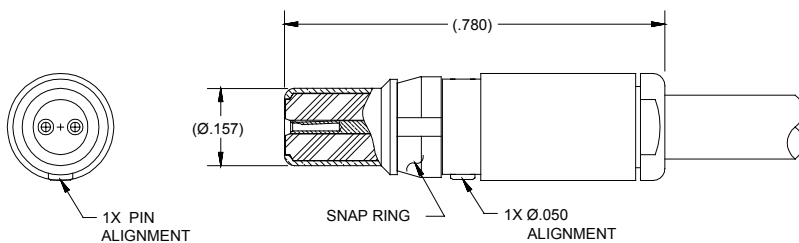
P/N 010017-1000

Straight Twinax Plug Housing 21 Position (Blind Mate PCB Interconnects) 100 Ohm



P/N 010034-0000

Size 10 Twinax Pin Contact 100 Ohm



Part Number	Cable Type	Cable
018834-0000	Differential Twinax	540-1153-000
018834-0001	Flexible Twinax	540-1161-000

For use in 010034-0000

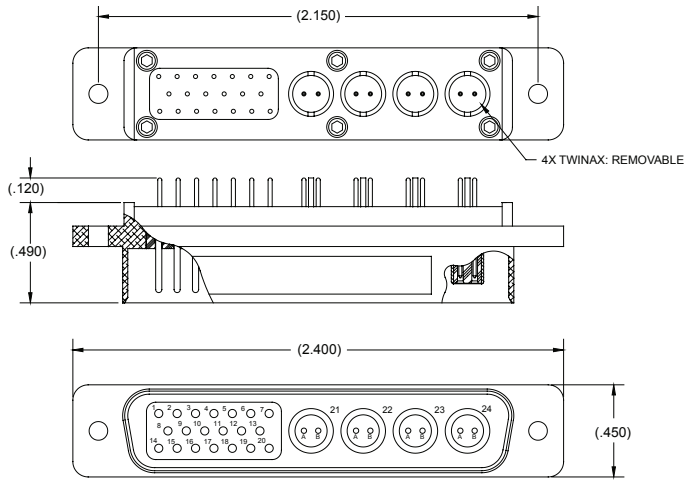
* Removable Size 10 Twinax Contact uses removal tool SIR-017



Rugged D-Sub and Firewire Connectors

Rugged D-Sub/Firewire 1394b Plug and Receptacle

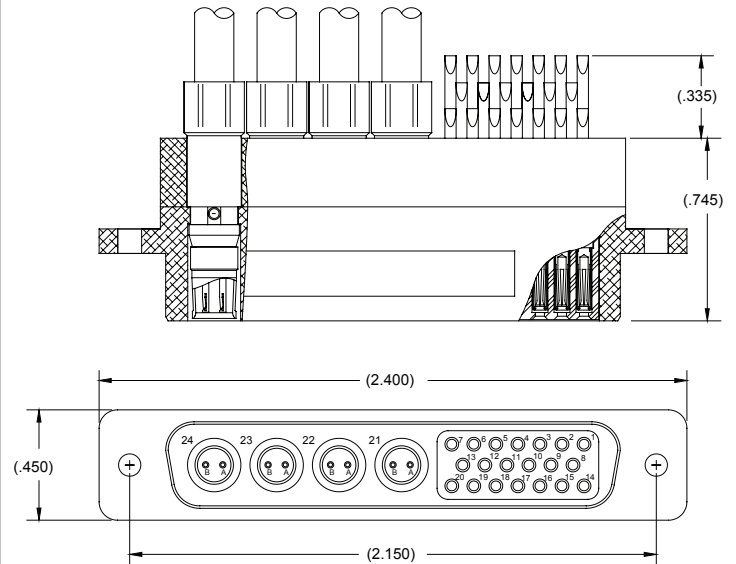
Rugged D-Sub Twinax/Signal PC Tail Receptacle



P/N 013317-3030

4 #10 Twinax Contacts
20 #22 Signal Contacts

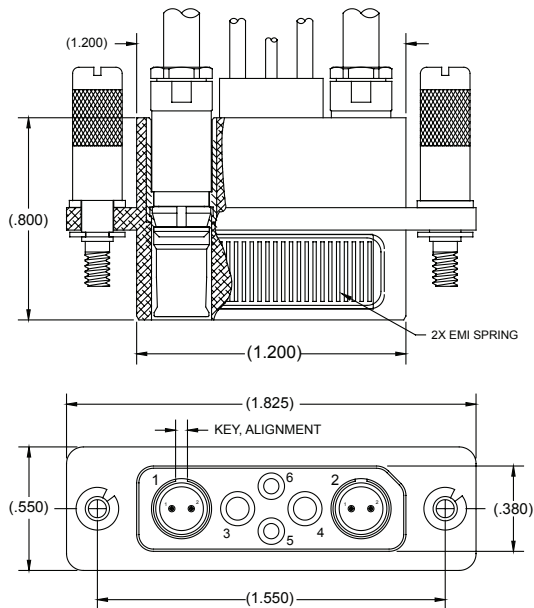
Rugged D-Sub Twinax/Signal Plug



P/N 013332-2012

4 #10 Twinax Contacts
20 #20 Signal Contacts

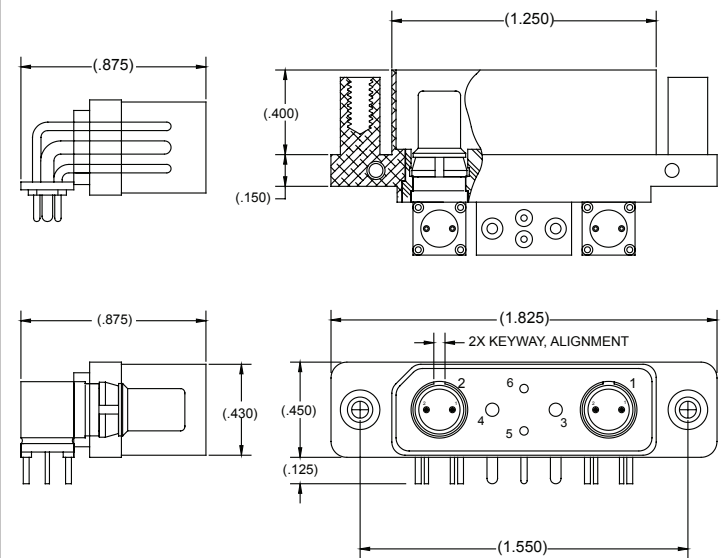
Firewire 1394b Straight Twinax Plug With Jackposts



P/N 012700-2007

2 #9 Twinax Contacts
2 #16 Power Contacts
2 #20 Signal Contacts

Firewire 1394b Right Angle Twinax Receptacle With Jackposts



P/N 012800-1002

2 #9 Twinax Contacts
2 #16 Power Contacts
2 #20 Signal Contacts

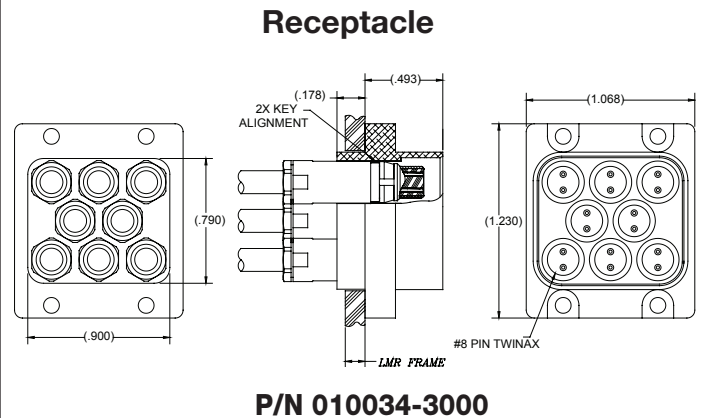
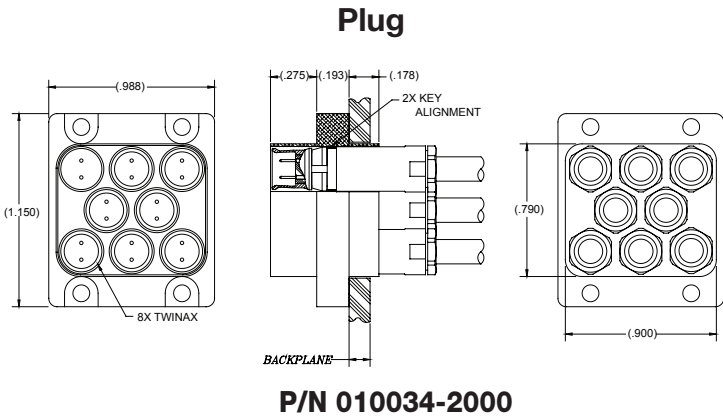
Please consult factory for environmentally sealed connectors and associated backshell accessories.



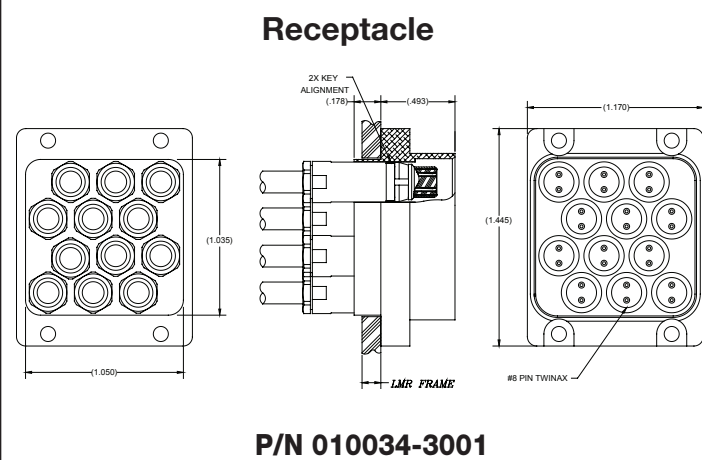
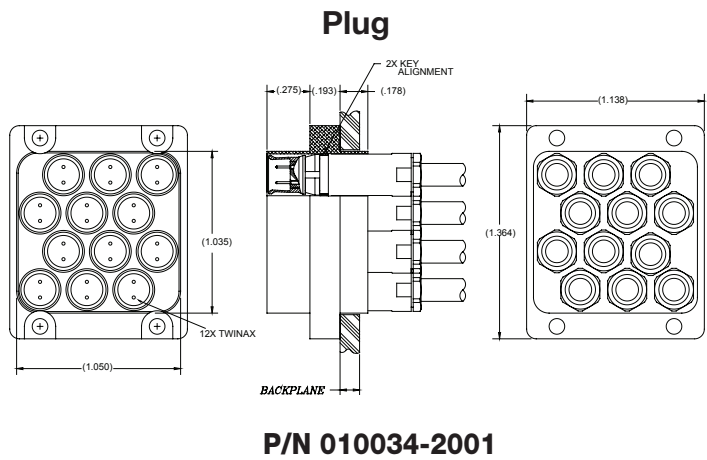
High Speed Panel Mount Connectors

Rectangular 8 Way Plug and Receptacle

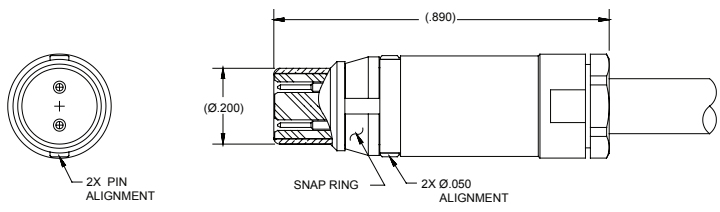
Straight 8 Way Twinax with Removable Twinax Contacts



Straight 12 Way Twinax with Removable Twinax Contacts

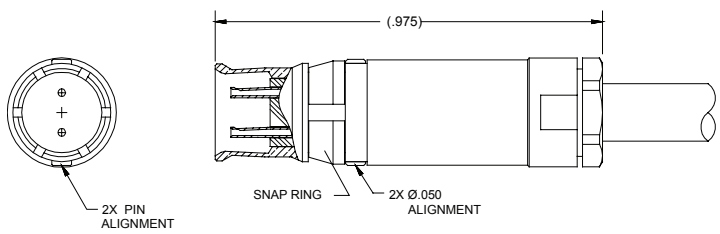


Size 8 Twinax Pin Contact 100 and 150 Ohm



Part Number	Ohms	Cable Type	Cable
019634-0001	100	Differential Twinax	540-1153-000
019634-0002	100	Flexible Twinax	540-1161-000
019634-0003	100	Flexible Twinax	540-1086-000
019634-0004	150	Differential Twinax	540-1099-000

Size 8 Twinax Socket Contact 100 and 150 Ohm



Part Number	Ohms	Cable Type	Cable
019534-0001	100	Differential Twinax	540-1153-000
019534-0002	100	Flexible Twinax	540-1161-000
019534-0003	100	Flexible Twinax	540-1086-000
019534-0004	150	Differential Twinax	540-1099-000



Micro Quadrax and Twinax Connectors

Micro Quadrax Connectors

Micro quadrax connectors are designed for differential pair matched impedance applications utilizing quadrax cable consisting of four wires where the diagonal pair of conductors forms a differential twinax pair. These connectors have a low impedance ground shield and are ideal for Ethernet (100 and 1000 Base-T), IEEE 1394 Firewire, USB, DVI and Infiniband applications with 100 Ohm differential impedance.

The micro quadrax connectors maintain the signal to shield impedance throughout the mated connector pair (quad configuration applications exceeding 1 Gbit/sec) and are available in threaded versions including straight and right angle cable mount and PCB mount configurations.

Micro Twinax Connectors

The Micro Twinax line features matched impedance miniaturized connectors that provide the user with controlled impedance and tightly spaced PCB footprint spacing. These connectors are available in true differential twinax packages with NDL, SMA, and Micro D size constraints.

The NDL Micro Twinax Series is offered in threaded and quick disconnect styles and are 25% smaller in diameter than SMA coaxial connectors. The quick disconnect version has a diameter of .250" max and the threaded version has .250" Hex coupling nut. These connectors replace the standard NDL Triax series for higher speed balanced Twinax applications.

These connectors are applicable for High-Speed Ethernet (100 and 1000 Base-T), Fibre Channel (>1 GBit/sec), IEEE 1394 Firewire, USB, DVI and Infiniband applications with 100 or 150 Ohm differential pair impedance.

Mechanical & Environmental Specifications	
Temperature Rating	-55°C to + 125°C
Corrosion	MIL-STD-202 Method 101 Test Condition B
Shock	MIL-STD-202 Method 213 Test Condition B
Vibration	MIL-STD-202 Method 204 Test Condition B
Thermal Shock	MIL-STD-202 Method 107 Test Condition B
Durability	500 Mate/Unmate cycles min.
Coupling Nut Torque (threaded) Recommended	2.3 in-lbs min.
Mating Torque (threaded)	2.5 in-lbs
Engagement/Disengagement Force (Quick Disconnect)	3 lbs max/3 to 5 lbs
Electrical Specifications	
Dielectric Withstanding Voltage	250 VDC max
Insulation Resistance	5,000 Mega-Ohms min. @ 100 VDC
Contact Current Rating	3.0 Amps max.
Data Rates	>1 Gbits/sec
Differential Pair Cable Impedance	150 Ohm ± 15 Ohm 100 Ohm ± 10 Ohms
Signal to Shield Cable Impedance	75 Ohm ± 10 Ohm 50 Ohm ± 7 Ohms
Material & Finishes	
Shell & Inner Contacts	Brass per ASTM-B16, alloy UNS C36000 or BeCu per ASTM-B196, alloy UNS C17200, C17300 303 CRES per ASTM-A582 Gold plate per MIL-DTL-45204, Type II, Class 1
Insulators	PTFE per ASTM-D1710 or ULTERM 1000
Gasket/Seal	Silicone Rubber per A-A-59588

All specifications subject to change without notice.



Micro Quadrax



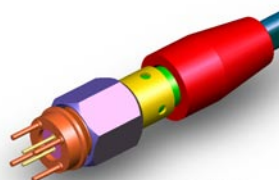
Twinax Micro-D Size



Twinax NDL Threaded and Quick Disconnect

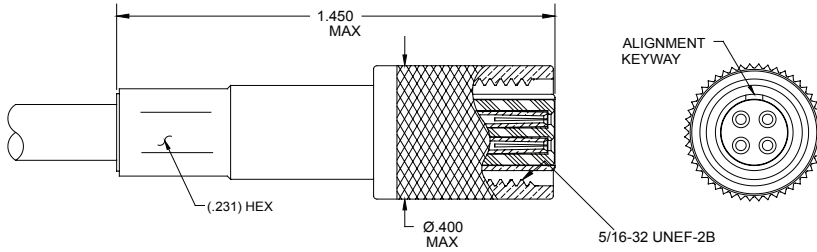


Micro Twinax NDL Quick Disconnect



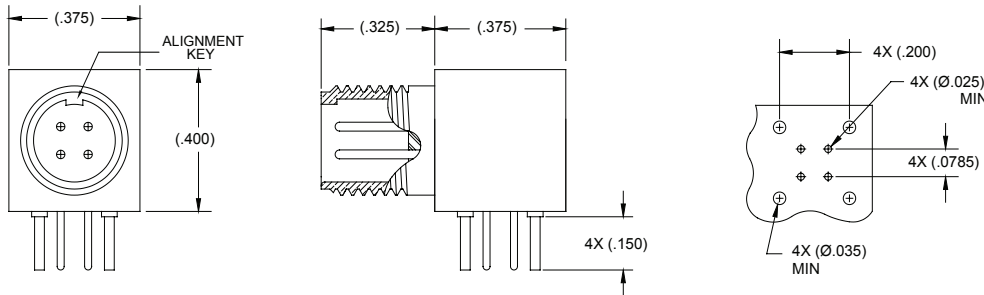
Micro Twinax NDL Threaded

Micro Quadrx Plug 100 Ohm



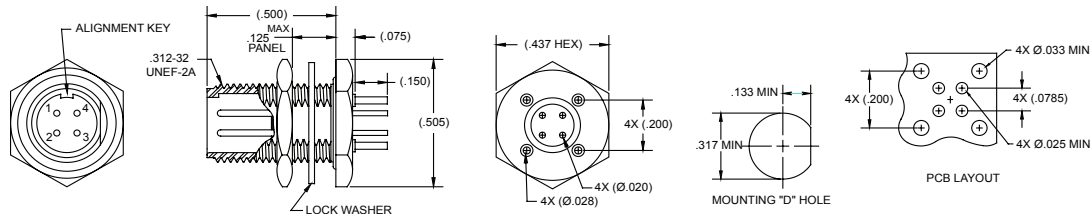
Part Number	Cable Type	Cable
012735-2013	Differential Quad	540-1183-000

Micro Quadrx Right Angle PCB Mount Receptacle 100 Ohm



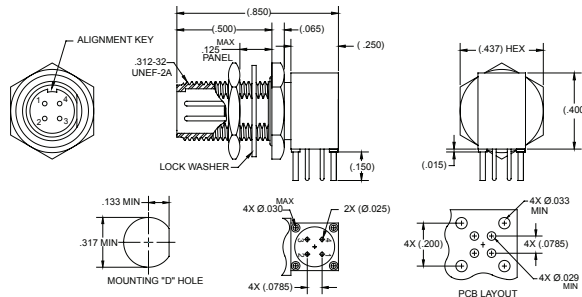
P/N 012817-1000

Micro Quadrx Straight Bulkhead Mount PCB Jack



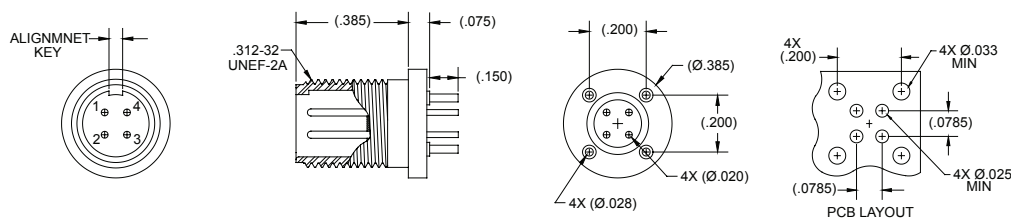
P/N 012817-5001

Micro Quadrx Right Angle Bulkhead Mount PCB Jack



P/N 012817-5003

Micro Quadrx Straight PCB Jack



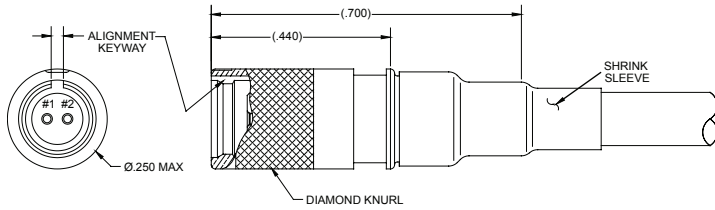
P/N 012817-2000



Micro Twinax Connectors

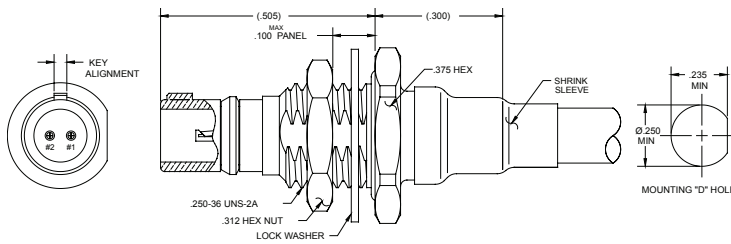
Quick Disconnect NDL Size Package

Quick Disconnect Micro Twinax NDL Plug 100 and 150 Ohm



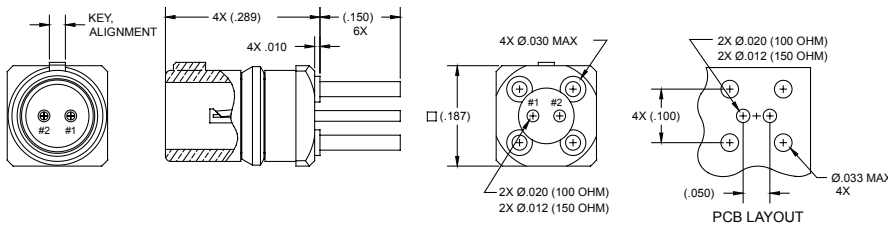
Part Number	Ohms	Cable Type	Cable
014034-2049	100	Differential Twinax	540-1153-000
014034-2050	100	Flexible Twinax	540-1161-000
014034-2051	100	Differential Twinax	540-1167-000
014034-2052	150	Differential Twinax	540-1099-000

Quick Disconnect Micro Twinax NDL Bulkhead Mount Jack 100 and 150 Ohm



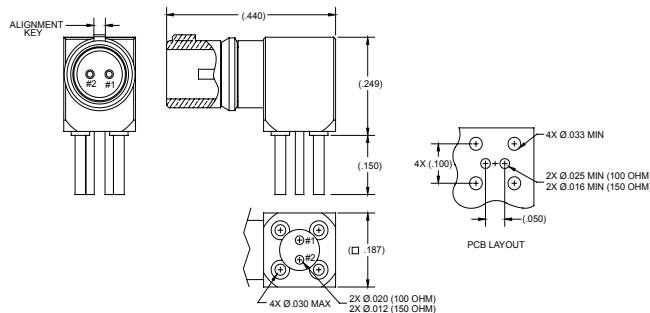
Part Number	Ohms	Cable Type	Cable
014134-5023	100	Differential Twinax	540-1153-000
014134-5024	100	Flexible Twinax	540-1161-000
014134-5025	100	Differential Twinax	540-1167-000
014134-5026	150	Differential Twinax	540-1099-000

Quick Disconnect Micro Twinax NDL Jack Straight PCB Mount 100 and 150 Ohm



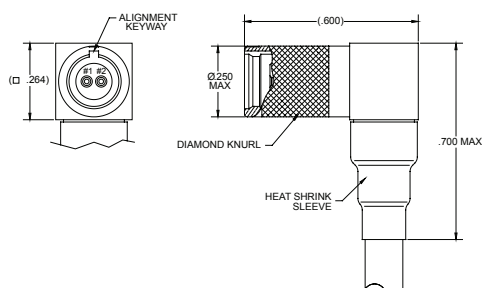
Part Number	Impedance
014117-2023	100 Ohms
014117-2024	150 Ohms

Quick Disconnect Micro Twinax NDL Right Angle PCB Mount 100 and 150 Ohm



Part Number	Impedance
014117-1037	100 Ohms
014117-1038	150 Ohms

Quick Disconnect Micro Twinax NDL Right Angle Plug 100 and 150 Ohm



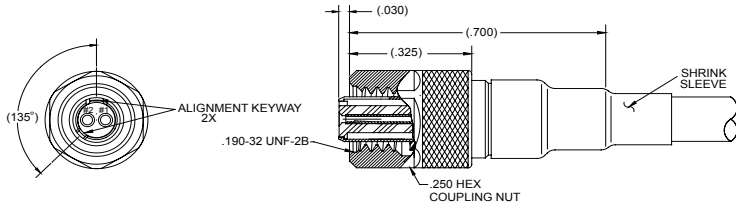
Part Number	Ohms	Cable Type	Cable
014034-1027	100	Differential Twinax	540-1153-000
014034-1028	100	Flexible Twinax	540-1161-000
014034-1029	100	Differential Twinax	540-1167-000
014034-1030	159	Differential Twinax	540-1099-000



Micro Twinax Connectors

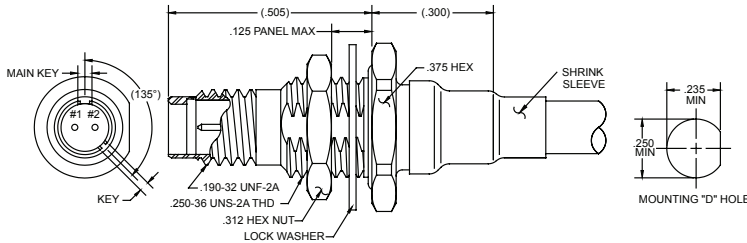
Threaded NDL Size Package

Threaded Micro Twinax NDL Straight Cable Plug 100 and 150 Ohm



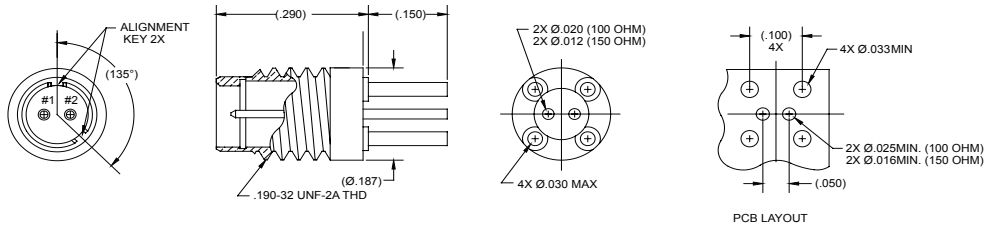
Part Number	Ohms	Cable Type	Cable
014034-2045	100	Differential Twinax	540-1153-000
014034-2046	100	Flexible Twinax	540-1161-000
014304-2047	100	Differential Twinax	540-1167-000
014034-2048	150	Differential Twinax	540-1099-000

Threaded Micro Twinax NDL Bulkhead Mount Jack 100 and 150 Ohm



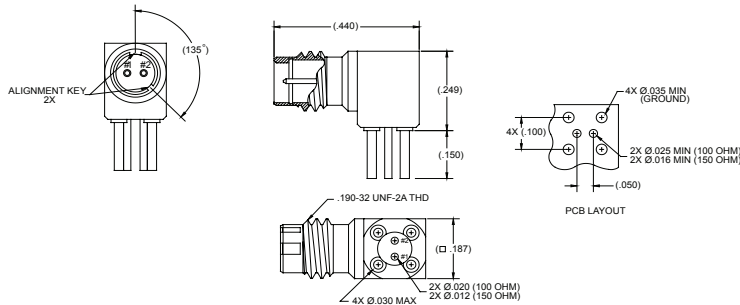
Part Number	Ohms	Cable Type	Cable
014134-5018	100	Differential Twinax	540-1153-000
014134-5019	100	Flexible Twinax	540-1161-000
014134-5020	100	Differential Twinax	540-1167-000
014134-5021	150	Differential Twinax	540-1099-000

Threaded Micro Twinax NDL Straight Jack 100 and 150 Ohm PCB Mount



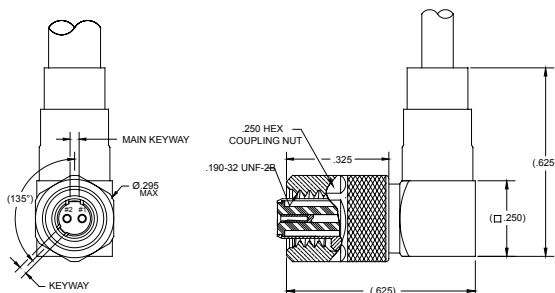
Part Number	Impedance
014117-2020	100 Ohms
014117-2021	150 Ohms

Threaded Micro Twinax NDL Right Angle Jack 100 and 150 Ohm PCB Mount



Part Number	Impedance
014117-1030	100 Ohms
014117-1031	150 Ohms

Threaded Micro Twinax NDL Right Angle Plug 100 and 150 Ohm



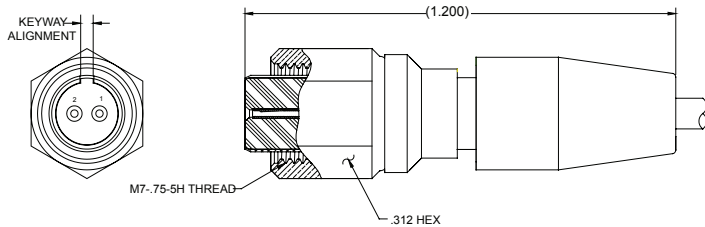
Part Number	Ohms	Cable Type	Cable
014034-1020	100	Differential Twinax	540-1153-000
014034-1021	100	Flexible Twinax	540-1161-000
014034-1022	100	Differential Twinax	540-1167-000
014034-1023	150	Differential Twinax	540-1099-000



Micro Twinax Connectors

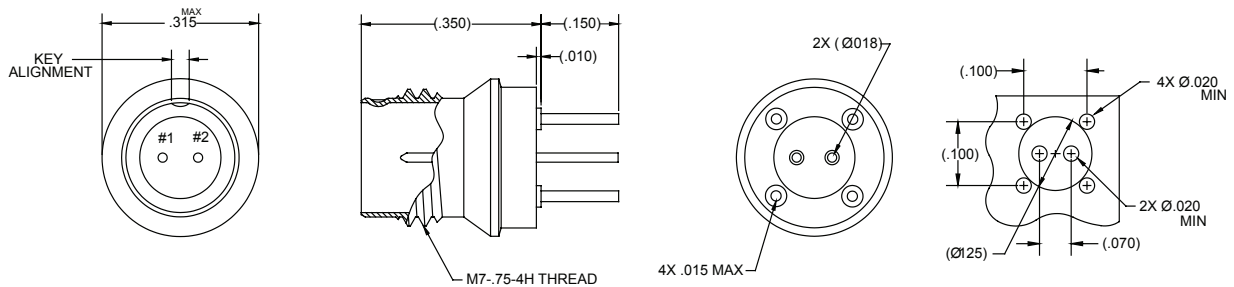
SMA Size Twinax Connectors 100 and 150 Ohm

Micro Twinax SMA Size Plug 100 or 150 Ohm Matched Impedance



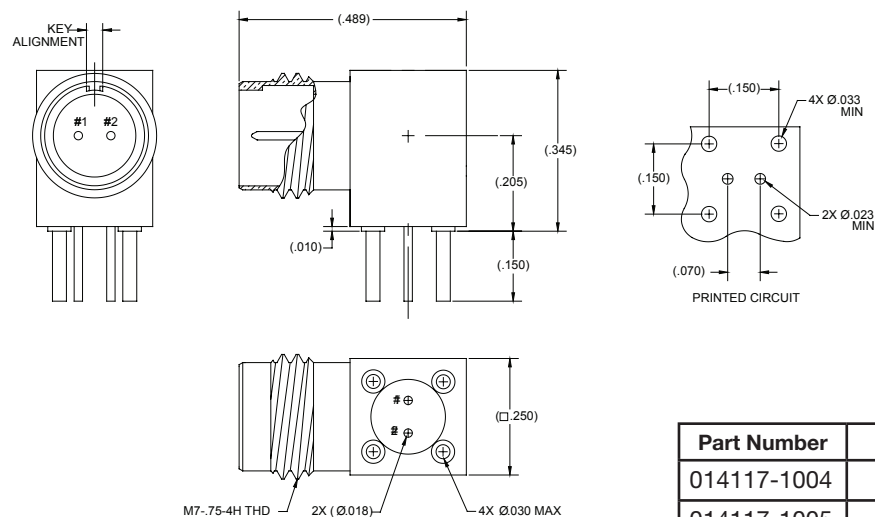
Part Number	Ohms	Cable Type	Cable
014034-2004	100	Differential Twinax	540-1153-000
014034-2010	100	Flexible Twinax	540-1161-000
014034-2015	100	Flexible Twinax	540-1086-000
014034-2003	150	Differential Twinax	540-1099-000
014034-2009	150	Differential Twinax	540-1114-000

Micro Twinax SMA Size Straight Jack 100 or 150 Ohm Matched Impedance



Part Number	Impedance
014117-2003	100 Ohms
014117-2002	150 Ohms

Micro Twinax SMA Right Angle Jack Straight PCB Mount 100 or 150 Ohm Matched Impedance



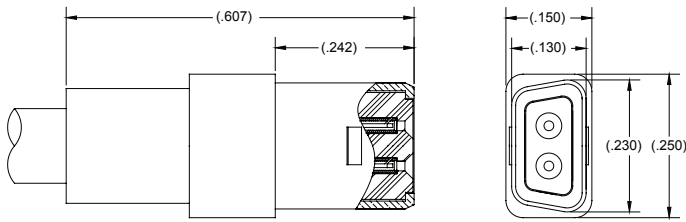
Part Number	Impedance
014117-1004	100 Ohms
014117-1005	150 Ohms



Micro Twinax Connectors

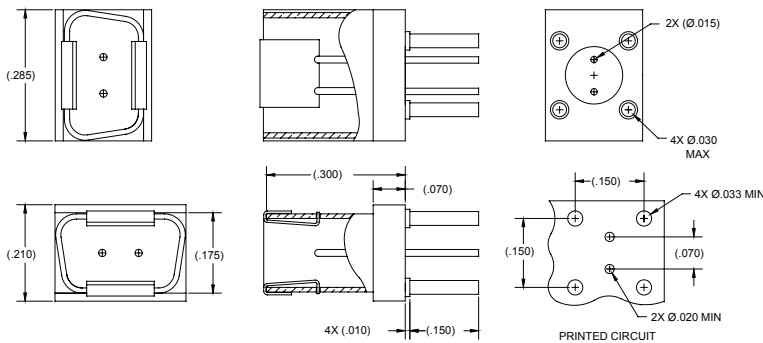
Micro-D Size Twinax Connectors 100 and 150 Ohm

Micro-D Twinax Straight Plug 100 or 150 Ohm Matched Impedance



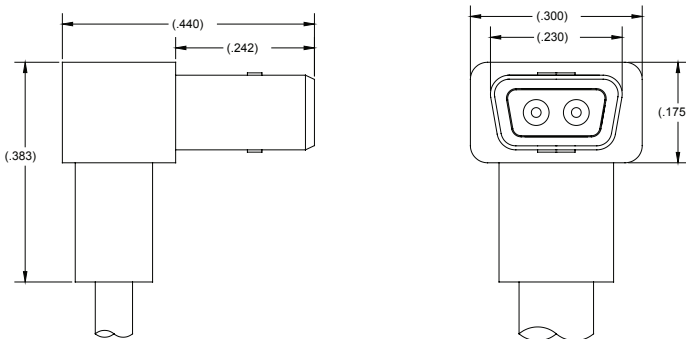
Part Number	Ohms	Cable Type	Cable
014034-2006	100	Differential Twinax	540-1153-000
014034-2005	150	Differential Twinax	540-1099-000

Micro-D Twinax Straight Jack PCB 100 or 150 Ohm Matched Impedance



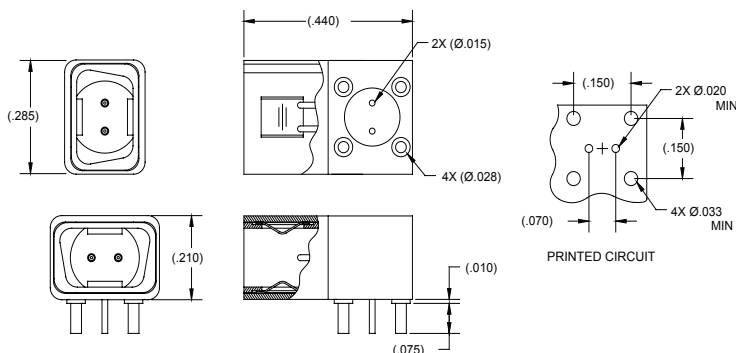
Part Number	Impedance
014117-2005	100 Ohms
014117-2004	150 Ohms

Micro-D Twinax Right Angle Plug 100 or 150 Ohm Matched Impedance



Part Number	Ohms	Cable Type	Cable
014034-1002	100	Differential Twinax	540-1153-000
014034-1001	150	Differential Twinax	540-1099-000

Micro-D Twinax Right Angle Jack PCB Mount 100 or 150 Ohm Matched Impedance



Part Number	Impedance
014117-1003	100 Ohms
014117-1002	150 Ohms

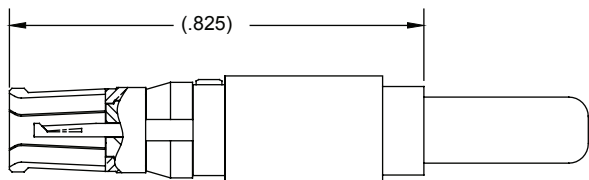


Micro-D Twinax Connectors (MDTX)

Size 10 Twinax Contacts 100 Ohm /Ordering Information

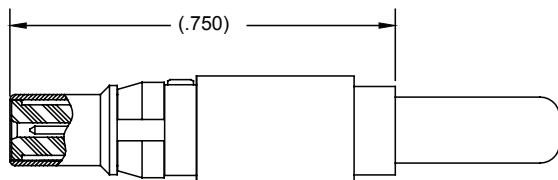
Sabritec's Micro-D Twinax Connectors (MDTX) offer twinax blindmate assemblies fitted into a low-profile metalized Micro-D style shell. This series allows for modularity of PCB routing of high speed signaling capable of 100 Ohm differential pair matched impedance for IEEE 1394b firewire and gigabit Ethernet applications in a size 10 twinax contact. These connectors allow for maximum space utilization, ultra miniature size, high vibration capability and are extremely light weight and modular with true signal integrity. Insert arrangements are available in 2, 4, 6 and 8 way twinax assemblies with mixed signal and power contacts available in hybrid layouts. These connectors are available with locking post mechanisms or blind mate features. Please consult Sabritec's applications engineering department for unique hybrid layouts and custom shell configurations.

Size 10 Twinax Socket Contact 100 Ohm for MDTX Cable Mount Plug



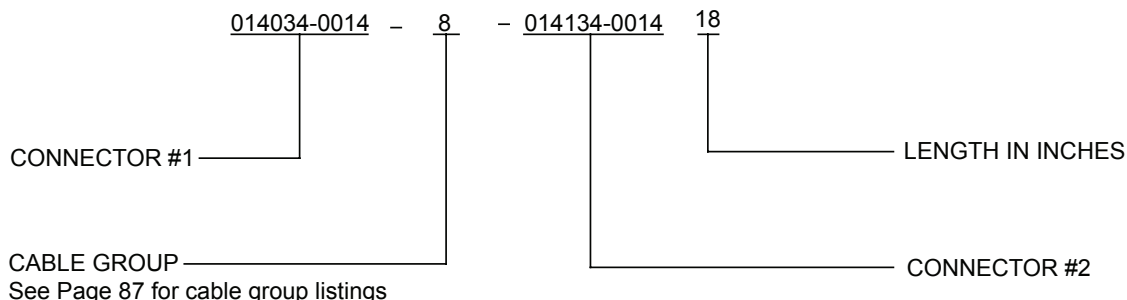
Part Number	Cable Type	Cable
018934-0002	Differential Twinax	540-1153-000
018934-0003	Flexible Twinax	540-1161-000
018934-0004	Differential Twinax	540-1167-000

Size 10 Twinax Pin Contact 100 Ohm for MDTX Cable Mount Receptacle



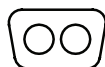
Part Number	Cable Type	Cable
018834-0002	Differential Twinax	540-1153-000
018834-0003	Flexible Twinax	540-1161-000
018834-0004	Differential Twinax	540-1167-000

Cable Assembly Ordering Information

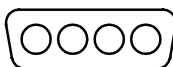


Insert Arrangements

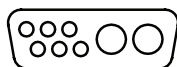
SHELL SIZE 1



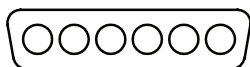
SHELL SIZE 2



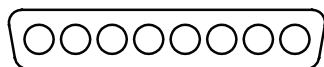
CUSTOM



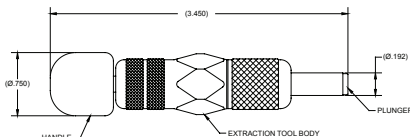
SHELL SIZE 3



SHELL SIZE 4



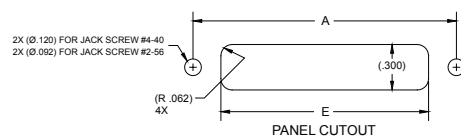
* Removable Twinax Contacts
Require Removal Tool SIR-035
(ordered separately)



Removal Tool SIR-035

Shell Dimensions

Shell Size	Contacts	A	B	C	D	E
1	2	.845	1.070	.600	#2-56	.955
2	4	1.285	1.510	1.040	#2-56	1.395
3	6	1.765	2.040	1.480	#4-40	1.420
4	8	2.205	2.480	1.920	#4-40	1.860

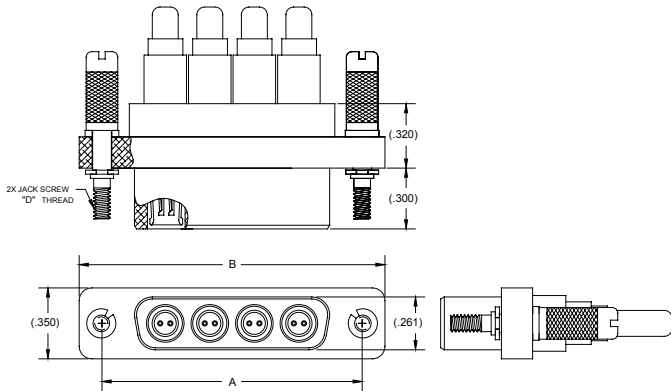




Micro-D Twinax Connectors (MDTX)

100 Ohm Twinax Plug & Receptacle

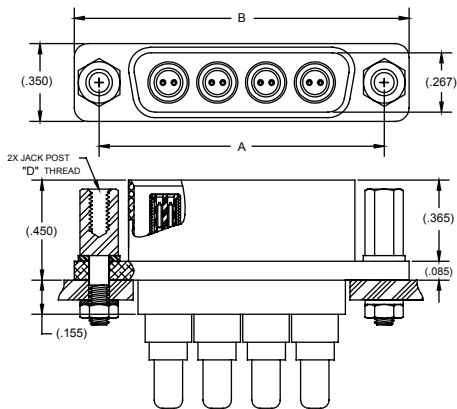
MDTX Cable Mount Plug



Part Number	Contacts
014034-0012	2
014034-0014	4
014034-0016	6
014034-0018	8

*Cable Mount Twinax Contacts Sold Separately

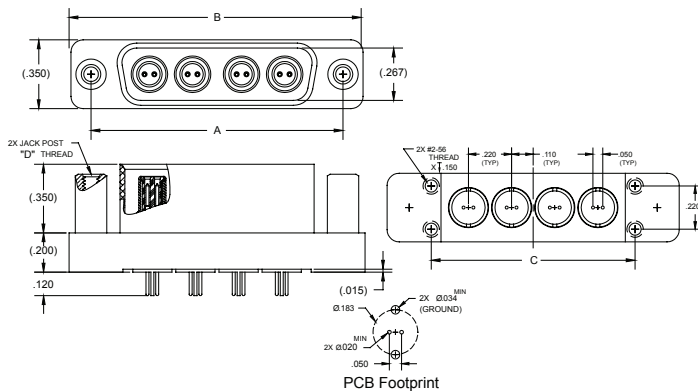
MDTX Cable Mount Receptacle



Part Number	Contacts
014134-0012	2
014134-0014	4
014134-0016	6
014134-0018	8

*Cable Mount Twinax Contacts Sold Separately

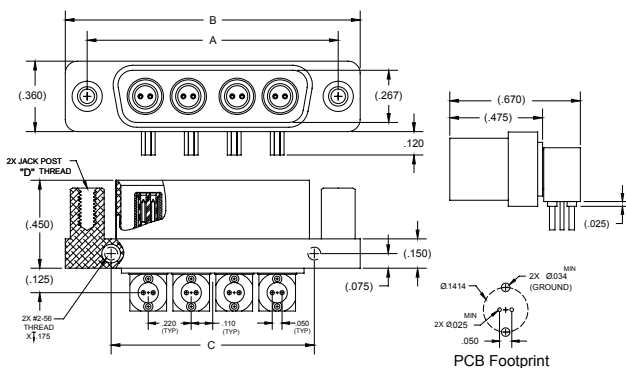
MDTX Receptacle With Straight PC Tail Twinax Pin Contact



Part Number	Contacts
014117-0012	2
014117-0014	4
014117-0016	6
014117-0018	8

*PC Tail Twinax Contacts included

MDTX Receptacle With R/A PC Tail Twinax Pin Contact



Part Number	Contacts
014117-1112	2
014117-1114	4
014117-1116	6
014117-1118	8

*R/A PC Tail Twinax Contacts included



Dura Speed Quadrax and Twinax (DSQ/DST)

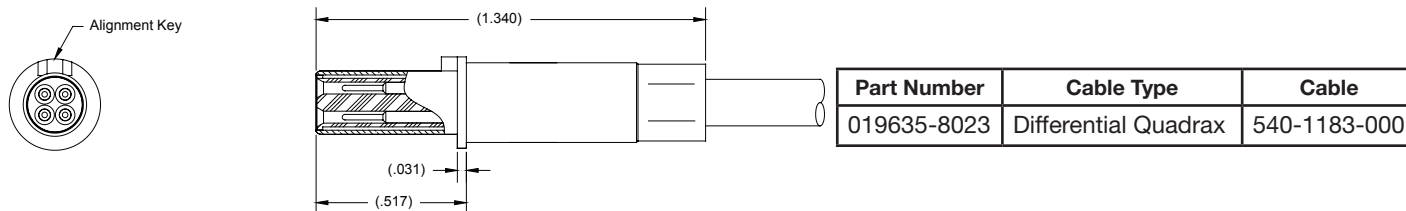
Size 8 DSQ and DST Contacts for MIL-DTL-38999

Sabritec's Dura Speed line offers true differential pair matched impedance Twinax and Quadrax contacts where the differential pair and signal to shield impedance is maintained throughout the connector pair. These rugged low insertion force/high mating cycle precision contacts are capable of withstanding a minimum of 6,000 mating cycles. All Dura Speed Quadrax (DSQ) and Twinax (DST) contacts are designed to fit Sabritec's standard cavities of existing connector formats for our high speed product lines which include MIL-DTL-38999, ARINC 600 and Rugged D-Subminiature.

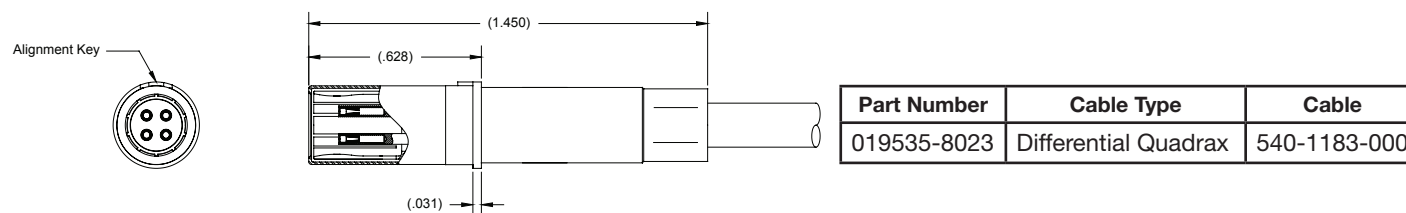


The innovative new line of ruggedized Twinax and Quadrax contacts are ideal for blind mate I/O plug in modular applications, board to board high speed data transfer applications exceeding 2 Gbits/second, as well as circular and rack and panel connector applications. For applications requiring a minimum of 10,000 mating cycles, Hypertac's Hyperboloid® contacts are used for the center signal and outer body contacts for all Quadrax and Twinax contacts. Please consult Sabritec's applications engineering department for details.

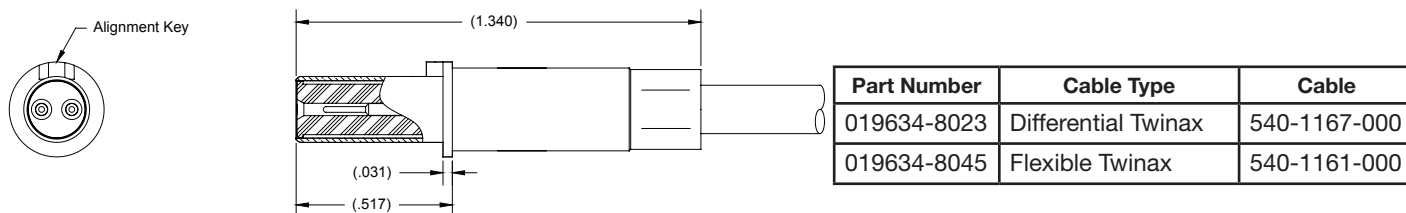
MIL-DTL-38999 DSQ Size 8 Quadrax Pin Contact



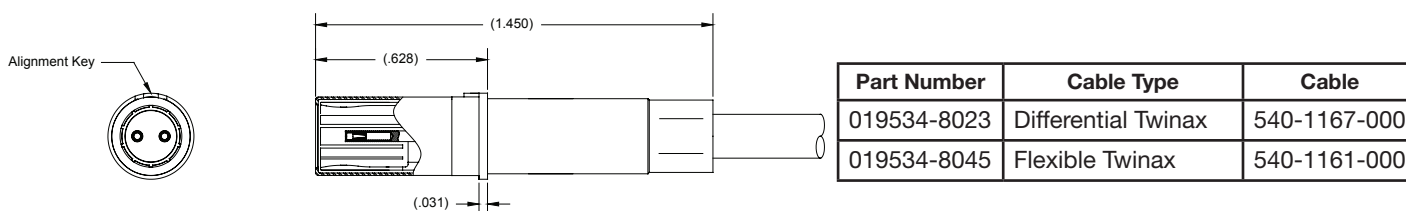
MIL-DTL-38999 DSQ Size 8 Quadrax Socket Contact



MIL-DTL-38999 DST Size 8 Twinax Pin Contact



MIL-DTL-38999 DST Size 8 Twinax Socket Contact



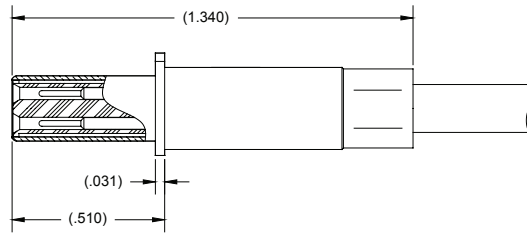
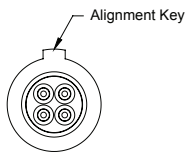
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



ARINC 600 Dura Speed Contacts

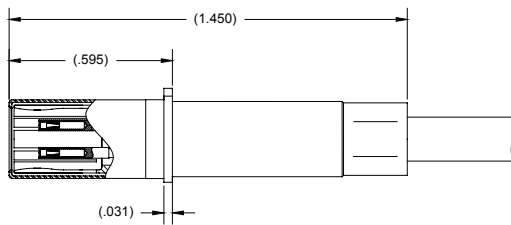
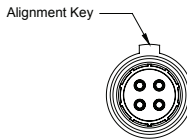
Size 8 DSQ and DST Contacts for ARINC 600

ARINC 600 DSQ Size 8 Quadrax Pin Contact



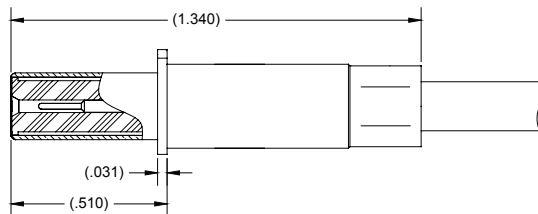
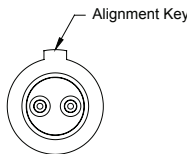
Part Number	Cable Type	Cable
019635-8041	Differential Quadrax	540-1183-000

ARINC 600 DSQ Size 8 Quadrax Socket Contact



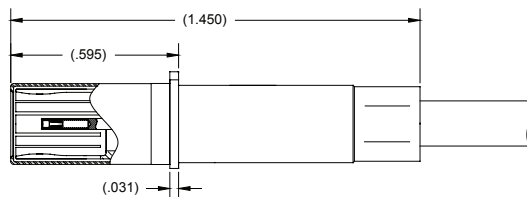
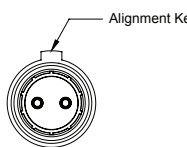
Part Number	Cable Type	Cable
019535-8041	Differential Quadrax	540-1183-000

ARINC 600 DST Size 8 Twinax Pin Contact



Part Number	Cable Type	Cable
019634-8041	Differential Twinax	540-1167-000
019634-8044	Flexible Twinax	540-1161-000

ARINC 600 DST Size 8 Twinax Socket Contact



Part Number	Cable Type	Cable
019534-8041	Differential Twinax	540-1167-000
019534-8044	Flexible Twinax	540-1161-000

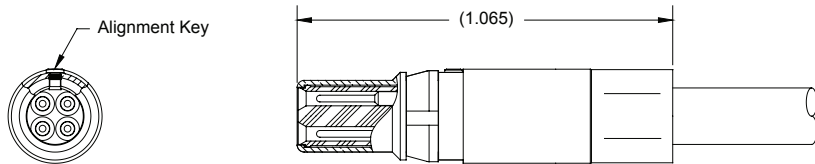
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



Rugged D-Sub Dura Speed Contacts

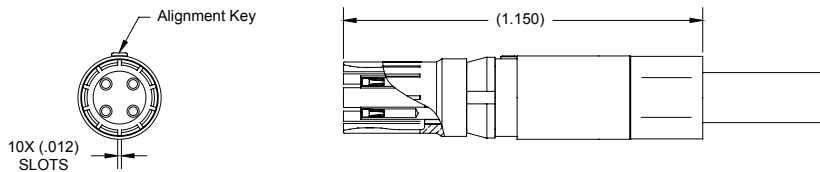
Size 9 DSQ and DST Contacts for Rugged D-Sub Connectors

Rugged D-Sub DSQ Size 9 Quadrax Pin Contact



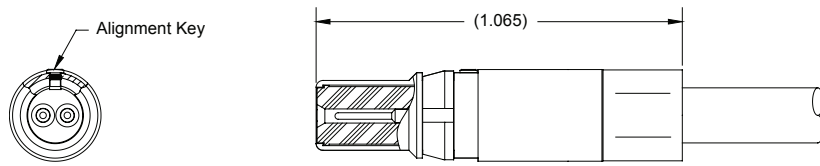
Part Number	Cable Type	Cable
019235-8043	Differential Quadrax	540-1183-000

Rugged D-Sub DSQ Size 9 Quadrax Socket Contact



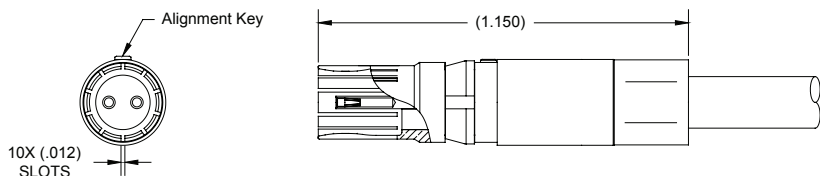
Part Number	Cable Type	Cable
019135-8043	Differential Quadrax	540-1183-000

Rugged D-Sub DST Size 9 Twinax Pin Contact



Part Number	Cable Type	Cable
019234-8043	Differential Twinax	540-1167-000
019234-8044	Flexible Twinax	540-1161-000

Rugged D-Sub DST Size 9 Twinax Socket Contact



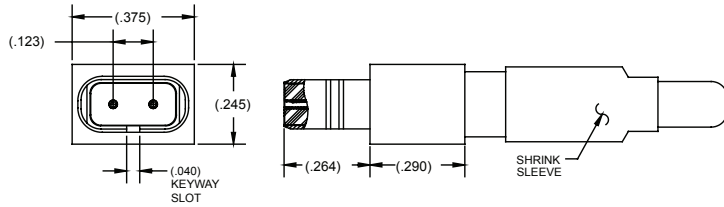
Part Number	Cable Type	Cable
019134-8043	Differential Twinax	540-1167-000
019134-8044	Flexible Twinax	540-1161-000



Fibre Channel/Ethernet Connectors

PCB and Cable Mount Twinax Connectors 150 Ohm

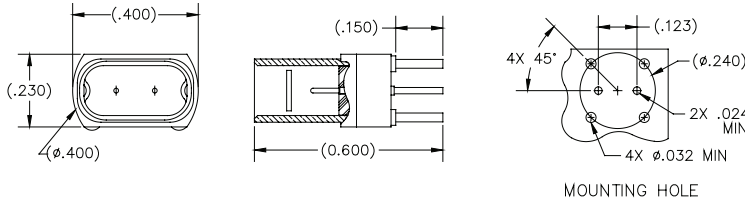
Straight Fibre Channel Twinax Cable Connector 150 Ohm



Part Number	Cable Type	Cable
014034-8000	Differential Twinax	540-1099-000
014034-8001	Differential Twinax	540-1114-000

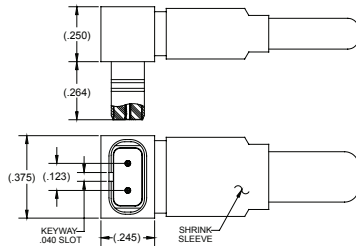
Mates with 014117- 2008 and 014117-1012

Straight Fibre Channel Twinax PCB Mount Connector 150 Ohm



P/N 014117-2008

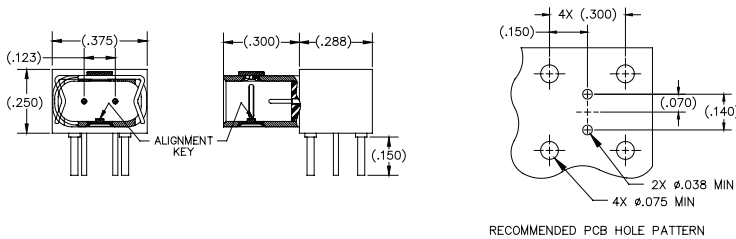
Right Angle Micro-Miniature D-Sub Twinax Cable Connector 150 Ohm



Part Number	Cable Type	Cable
014034-1009	Differential Twinax	540-1099-000
014034-1010	Differential Twinax	540-1114-000

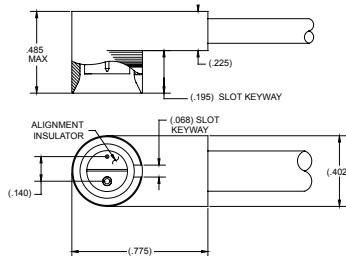
Mates with 014117- 2008 and 014117-1012

Right Angle Micro-Miniature D-Sub Twinax PCB Mount Connector 150 Ohm



P/N 014117-1012

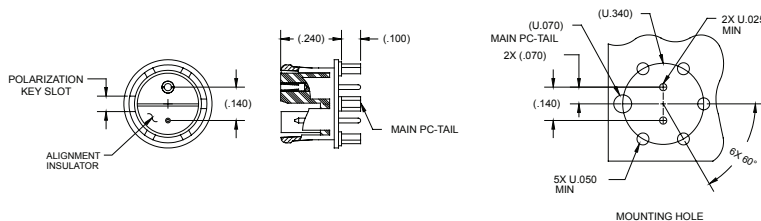
Quick Disconnect Twinax Receptacle Right Angle Cable Mount Connector 150 Ohm



Part Number	Cable Type	Cable
019912-1306	Differential Twinax	540-1099-000
019912-1017	Differential Twinax	540-1114-000

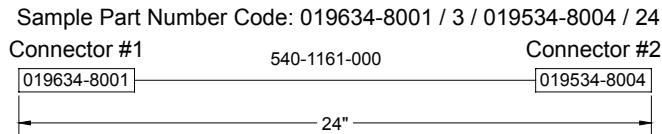
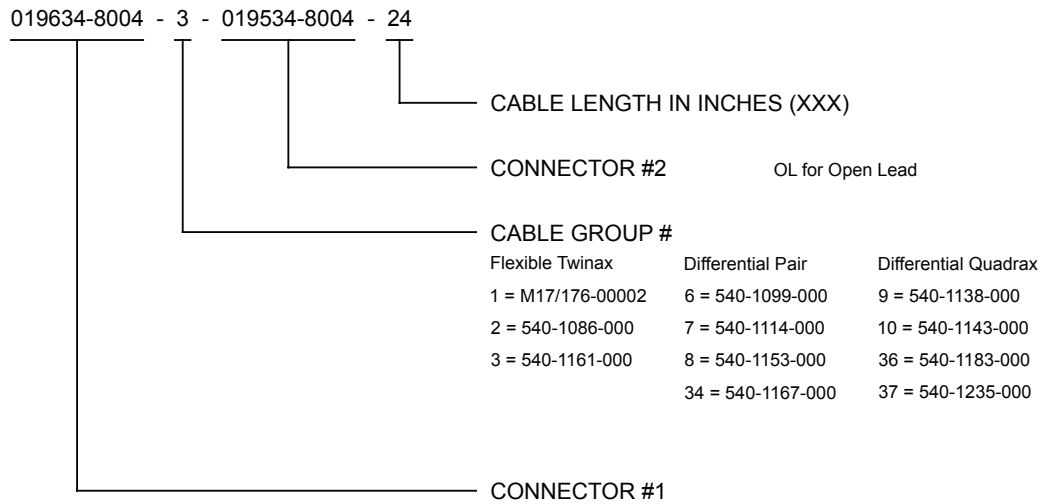
Mates with 019917-2040


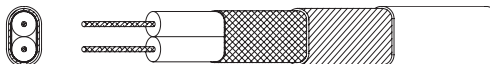

Quick Disconnect Twinax PCB Mount Connector 150 Ohm



P/N 019917-2040

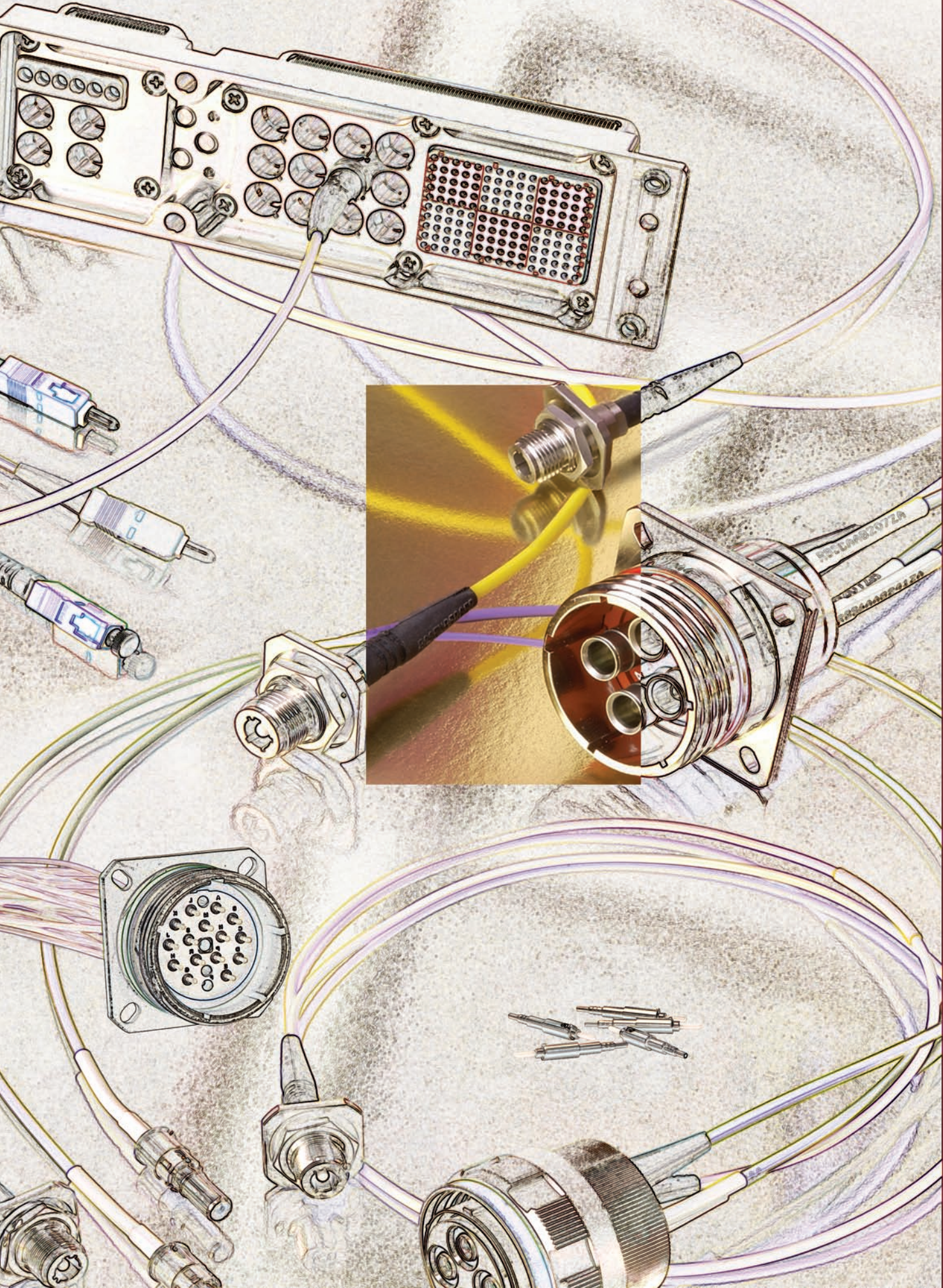
Part Number Description Code



Flexible Twinax Cables				
				
Cable Group	Cable Designation	Impedance (Ohms)	Jacket	Conductor (DIA)
1	M17/176-00002	77	0.129"	0.024"
2	540-1086-000	98	0.143"	0.019"
3	540-1161-000	100	0.130"	0.024"
Differential Pair Twinax Cables				
				
6	540-1099-000	Differential: 150 Sig. to Shield: 75	0.097" x 0.160"	0.014" Stranded
7	540-1114-000	Differential: 150 Sig. to Shield: 75	0.138" x 0.224"	0.020" Solid
8	540-1153-000	Differential: 100 Sig. to Shield: 50	0.085" x 0.130"	0.019" Stranded
34	540-1167-000	Differential: 100 Sig. to Shield: 50	0.117" x 0.160"	0.0233" Stranded
Differential Quad Cables				
				
9	540-1138-000	Differential: 150 Sig. to Shield: 75	0.290"	0.032"
10	540-1143-000	Differential: 150 Sig. to Shield: 75	0.190"	0.020"
36	540-1183-000	Differential: 100 Sig. to Shield: 50	0.160"	0.024"
37	540-1235-000	Differential: 100 Sig. to Shield: 50	0.108"	0.012"



FIBER OPTIC CONNECTORS AND CONTACTS



FIBER OPTIC CONNECTORS AND CONTACTS



Fiber Optic Connectors/Contacts

Overview

Sabritec offers rugged connectors such as MIL-DTL-38999 to house fiber optic contacts in size 5 and 12 expanded beam, size 16 butt-joint, DIN style and ARINC 801 termini. These technologies are capable of supporting wide bandwidth applications. All fiber optic connectors and contacts are offered fully terminated and tested ensuring signal integrity for ruggedized application environments.

When specifying these rugged connectors, Sabritec also offers a complete line of fiber optic connectors to terminate to the other end of the cables. These include Ruggedized Single Channel (RSC), FC, ST, LC Duplex/Simplex, MTP, MT-RJ, and Ruggedized SC connectors. Please consult factory for cabling options.

ARINC 801 Terminus

- Single terminus design for all connector formats
- Pull-proof design (no strain relief backshell needed)
- Optical disconnect style available
- Hermaphroditic design (same contact on both sides of the connector)
- PC ferrule end face
- Polarization key allows APC polish for better return loss performance
- Compatible with multi-mode and single-mode fiber
- Standard 1.25 mm LC ferrule and termination process
- Cable termination identical to LC connector process
- Insertion loss: -0.25dB (typical) mated pair



ARINC 801 TERMINUS
Pg. 91

MIL-DTL-38999
Pg. 93

EXPANDED BEAM
CONTACTS Pg. 93

BUTT-JOINT CONTACTS
Pg. 95

DIN & RUGGEDIZED
SINGLE CHANNEL Pg. 96

Size 5 Expanded Beam Contacts

- Robust pin & socket versions
- Multimode applications 62.5/125 and 50/125 μm
- Available for ARINC or MIL-DTL-38999 applications
- Reduced influence from alignment errors
- Increased protection for fiber
- Reduced influence from dirt and debris
- Simple cleaning
- Insertion loss: -0.8 dB (typical) mated pair



Ruggedized Single Channel Connectors

- Ruggedized construction
- Multimode applications
- Anti-vibration coupling mechanism on plug
- Jam nut receptacle
- 4 Keyway orientation options
- Precision ceramic ferrule
- Fiber end faces accessible for cleaning
- Low insertion loss: -0.4 dB (typical)



Size 12 Expanded Beam Contacts

- Fits standard size 12 contact cavities for MIL-DTL-38999 (dimensionally identical to size 12 electrical contacts per M39029/56-353 and M39029/58-365)
- Multimode applications 50/125 and 62.5/125 μm
- Insertion loss: -1.0 dB (Typical) mated pair
- Increased protection for fiber face
- Reduced influence from dirt, debris and vibration
- Simple cleaning
- Insert arrangements for MIL-DTL-38999 include: 13-2, 15-4, 17-6, 21-11 and 25-19 (other custom arrangements available, consult factory)



Size 16 Butt-Joint Contacts

- Robust pin and socket design
- Singlemode and Multimode applications 62.5/125 and 50/125 μm
- Connector formats for MIL-DTL-38999, ARINC 600
- Excellent optical performance
- Fewer parts, easy termination process
- Physical contact polish provides low insertion loss and low back reflection
- Meets or exceeds all applicable requirements of MIL-T-29504
- Insertion loss: -0.25dB (typical) mated pair



DIN Contacts

- Twist protection pin
- Multimode applications
- Screw lock mechanism
- Low insertion loss: -0.20 dB (typical)



Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



ARINC 801 Terminus

Part Numbering Scheme for ARINC 600 and MIL-DTL-38999

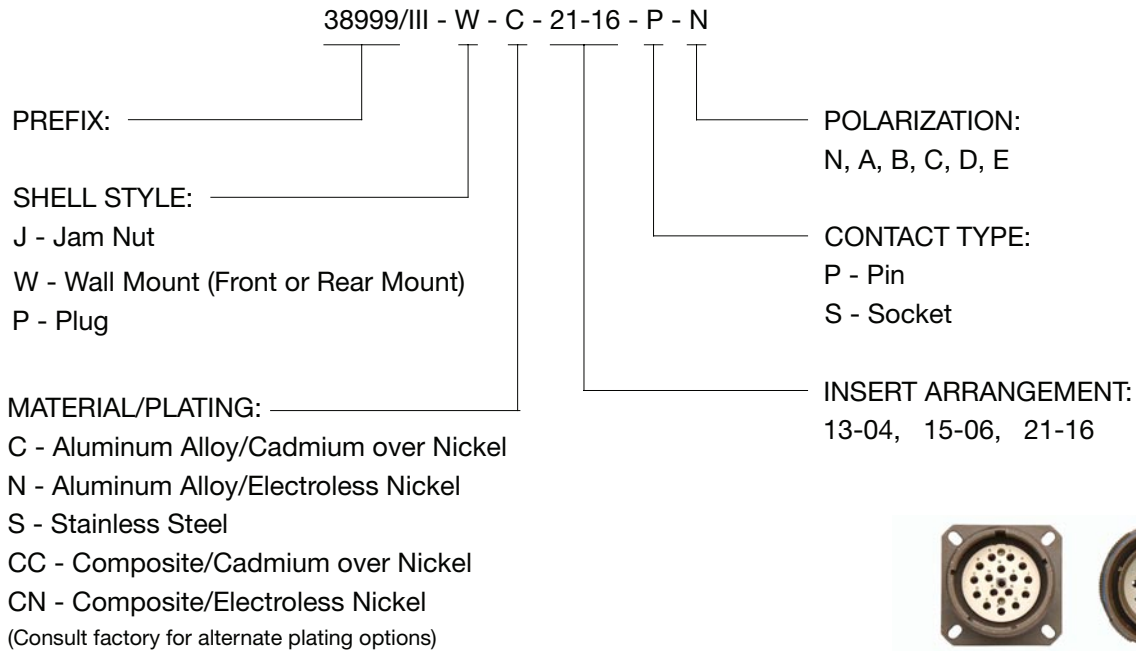
The ARINC 801 fiber optic terminus is the next generation of butt-joint interconnect technology allowing for higher density multichannel connectors to be achieved. With its standard 1.25 mm ferrule and sleeve, the ARINC 801 terminus is designed for both multimode and single-mode applications and is compatible with standard LC termination processes. The terminus is available both as a pull-proof design and a general use design for tight jacketed cable.



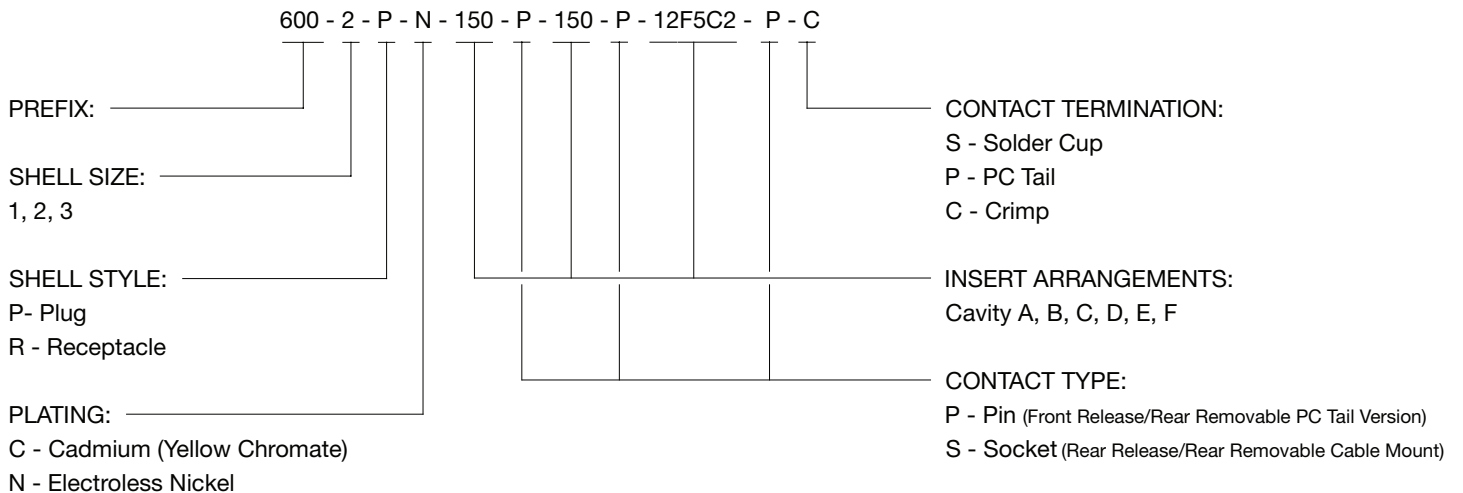
For the pull-proof design, the cable jacket is crimped on an external body and a floating mechanism avoids any loss of performance when pulling on the cable. This feature allows for the use of the connector without a backshell. Standard connector formats include MIL-DTL-38999 Series III type, MIL-DTL-83527 type, ARINC 600 and ARINC 781.

Sabritec has successfully passed qualification testing of its Size 16 ARINC 801 terminus for single and multimode applications. Qualification test results show that Sabritec's ARINC 801 terminus maintains its low loss while being intermateable/interoperable with qualified termini and connectors. For complete qualification test results visit our website.

MIL-DTL-38999 Part Number Description Code for ARINC 801



ARINC 600 Part Number Description Code for ARINC 801



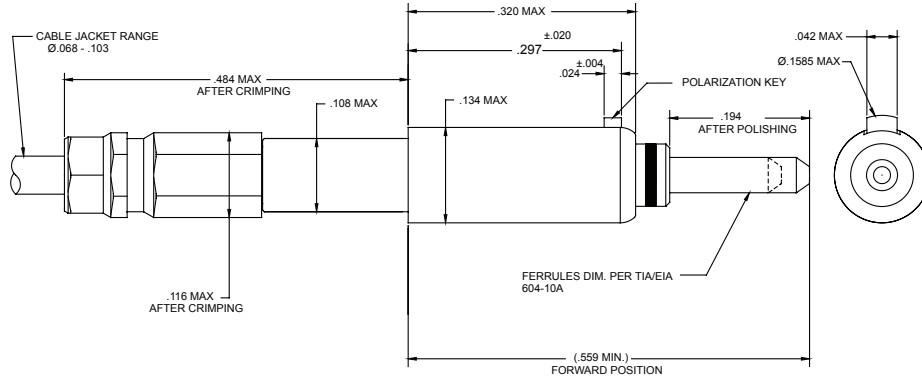
Please consult factory for Cabling Options



ARINC 801 Terminus

Size 16 ARINC 801 Contact/Insert Arrangements

Size 16 ARINC 801 Terminus

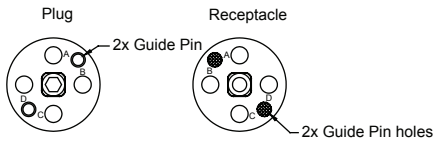


Part Number	Mode	Style	Polish
238500-8000	Multi	Pull Proof Loose Jacket	PC
238500-8001	Multi	Tight Jacket	PC
238500-8002	Single	Pull Proof Loose Jacket	PC
238500-8003	Single	Pull Proof Loose Jacket	APC
238500-8004	Single	Tight Jacket	PC
238500-8005	Single	Tight Jacket	APC

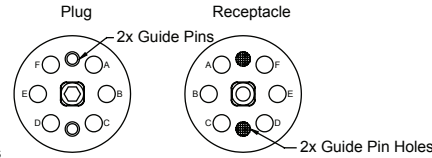


MIL-DTL-38999 Insert Arrangement for ARINC 801

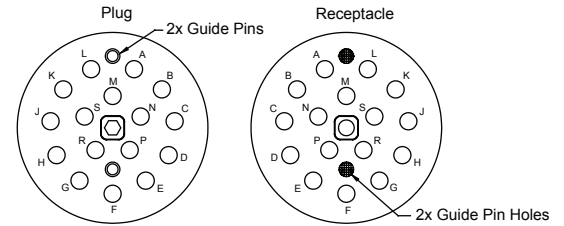
ARRANGEMENT 13-04



ARRANGEMENT 15-06

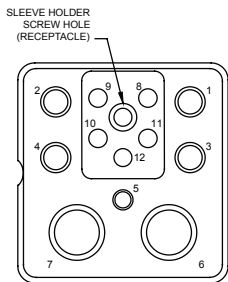


ARRANGEMENT 21-16



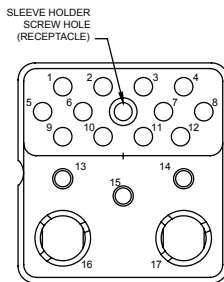
ARINC 600 Insert Arrangement for ARINC 801

ARRANGEMENT 12F5C2



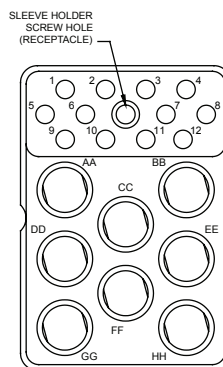
QTY	CONTACT SIZE	CAVITY I.D.
4	12 (ELECTRICAL)	1 THRU 4
1	16 (ELECTRICAL)	5
2	5 (QUADRAX)	6 THRU 7
5	16 (OPTICAL TERMINI)	8 THRU 12

ARRANGEMENT 17F12Q2



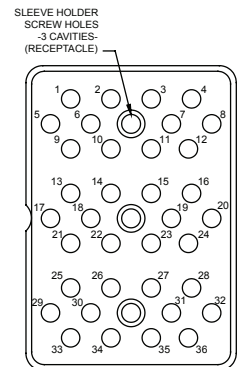
QTY	CONTACT SIZE	CAVITY I.D.
12	16 (OPTICAL TERMINI)	1 THRU 12
3	16 (ELECTRICAL)	13 THRU 15
2	8 (QUADRAX)	16 THRU 17

ARRANGEMENT 20F12T8/20F12Q8



QTY	CONTACT SIZE	CAVITY I.D.
12	16 (OPTICAL TERMINI)	1 THRU 12
8	8 (TWINAX/QUADRAX)	AA THRU HH

ARRANGEMENT 36F36



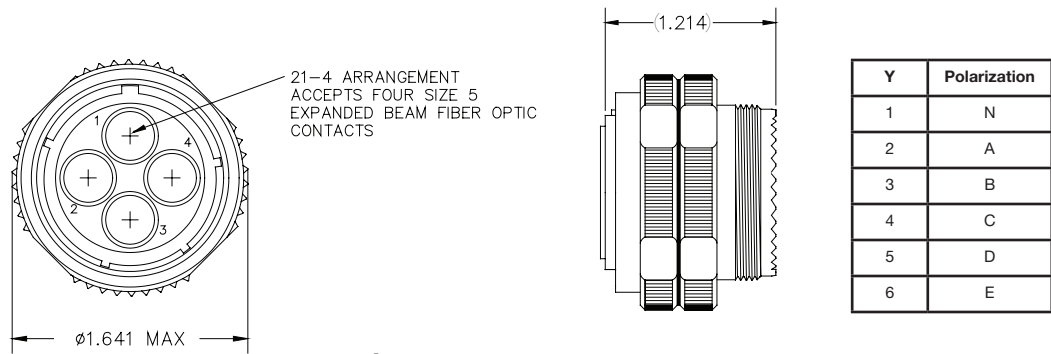
QTY	CONTACT SIZE	CAVITY I.D.
36	16 (OPTICAL TERMINI)	1 THRU 36



MIL-DTL-38999 Fiber Optic Connectors

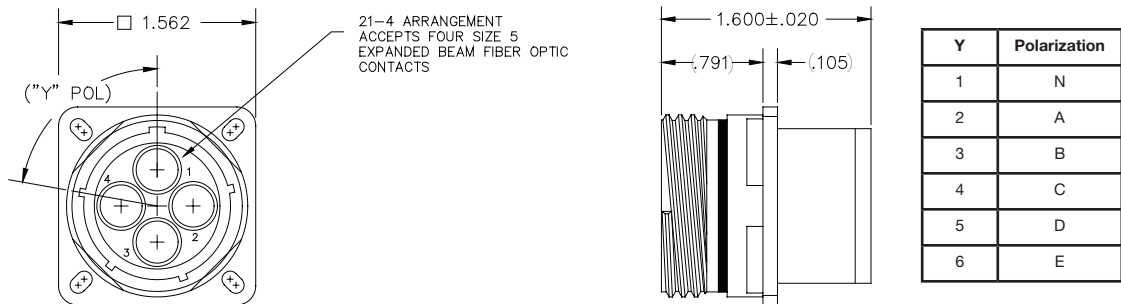
Size 5 Expanded Beam Fiber Optic Insert Cavities

MIL-DTL-38999 Size 21-4 Fiber Optic Plug



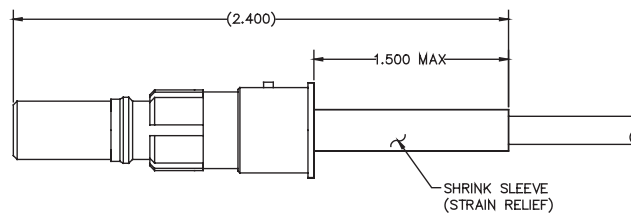
P/N 23640Y-2000

MIL-DTL-38999 Size 21-4 Fiber Optic Receptacle



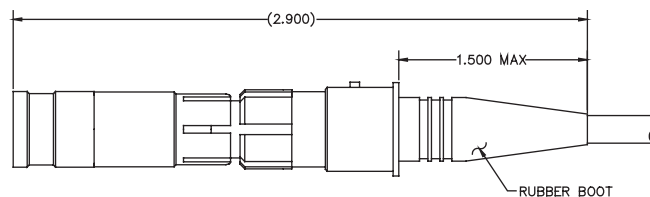
P/N 23640Y-3000

Size 5 Expanded Beam Lens Pin Contact



P/N 239433-8000

Size 5 Expanded Beam Lens Socket Contact



P/N 239333-8000

Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



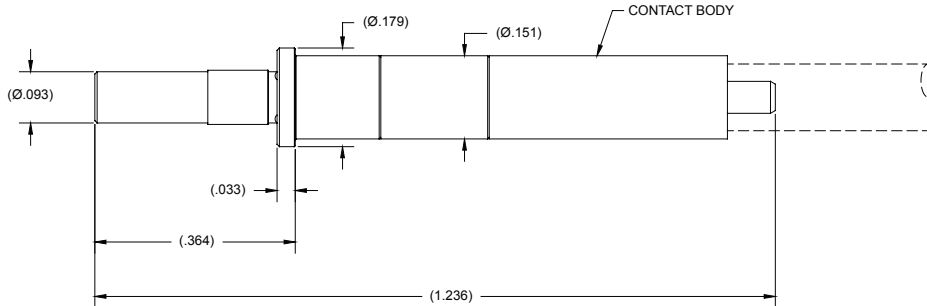
Size 12 Expanded Beam Contacts

Pin and Socket Contacts for MIL-DTL-38999

Sabritec's Expanded Beam Fiber Optic Contact technology is specifically designed to fit into standard size 12 cavities of MIL-DTL-38999 Series I, III and IV connectors. The size 12 contact provides a robust fiber optic interconnection with low susceptibility to contamination and fits a variety of cable types with diameters from 1.6 to 2.2 mm with additional versions available upon request. The contacts are rear release/rear removable with standard size 12 removal tools.

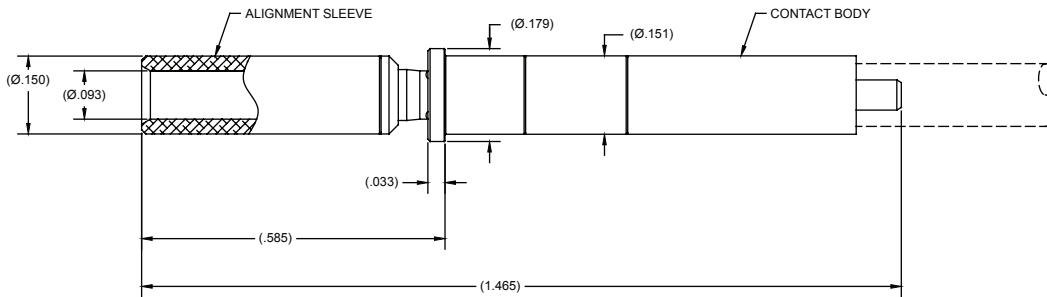


Size 12 Expanded Beam Pin Contact



PN: 238633-8000

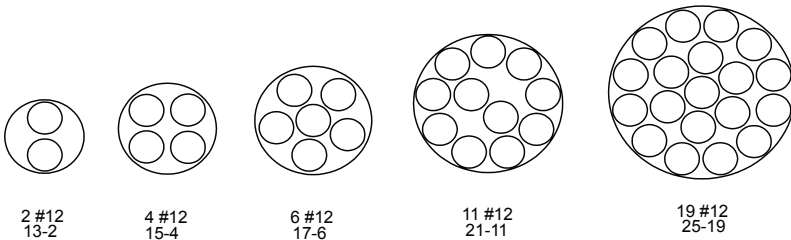
Size 12 Expanded Beam Socket Contact



PN: 238733-8000

Sample Size 12 Insert Arrangements

Standard Insert Arrangements for MIL-STD-1560



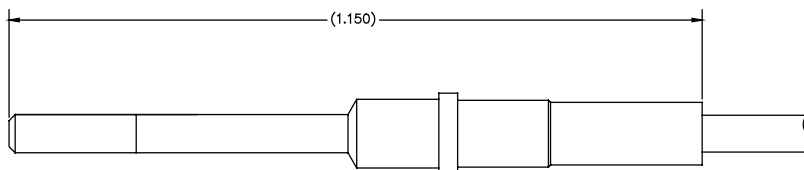
Specifications	
Operating Temperature	-40°C to + 85°C
Fiber Types	Multimode: 50/125 µm 62.5/125 µm
Insertion Loss	1.0 dB (Typical)
Cable Diameter	1.6mm to Ø2.2mm
Ferrules	Zirconia Ceramic
Contact Body	ARCAP
Alignment Sleeve	Stainless Steel



Size 16 Butt-Joint Contacts

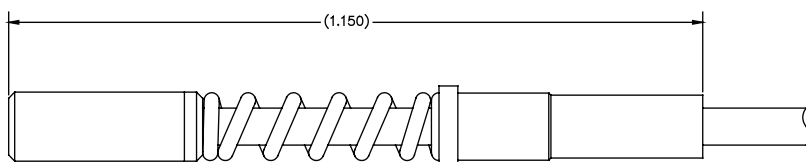
ARINC 404 Size 16 Butt-Joint Contacts

ARINC 404 Size 16 Butt-Joint Pin Contact Conforming to M29504/6



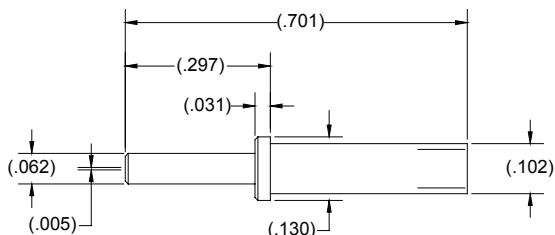
P/N 238533-8000

ARINC 404 Size 16 Butt-Joint Socket Contact Conforming to M29504/7



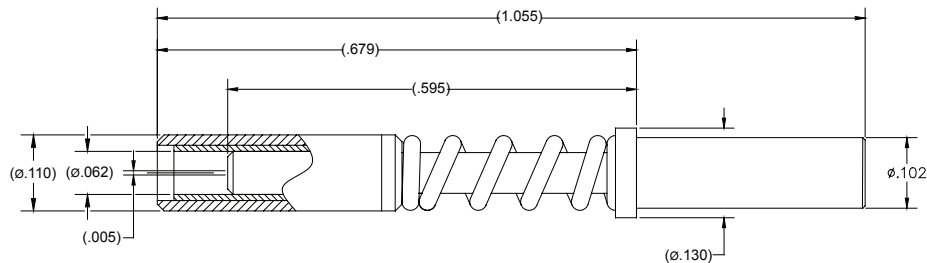
P/N 238433-8000

MIL-DTL-38999 Size 16 Butt-Joint Pin Contact Conforming to M29504/4



P/N 238533-8004

MIL-DTL-38999 Size 16 Butt-Joint Socket Contact Conforming to M29504/5



P/N 238433-8004

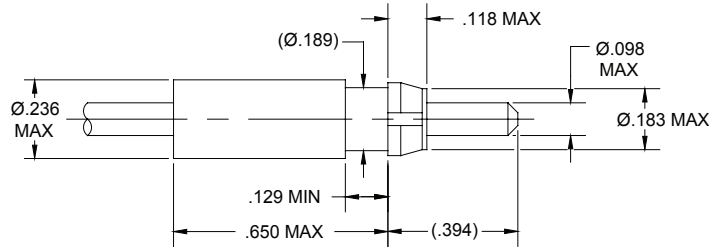
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



Fiber Optic Contacts and Connectors

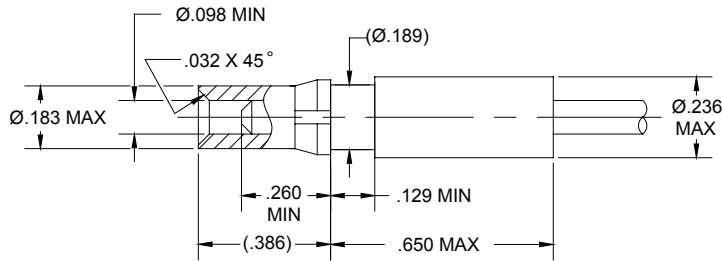
DIN Contacts and Ruggedized Single Channel Connectors

Fiber Optic Pin Contact Per DIN 41626-3



P/N 239933-8000

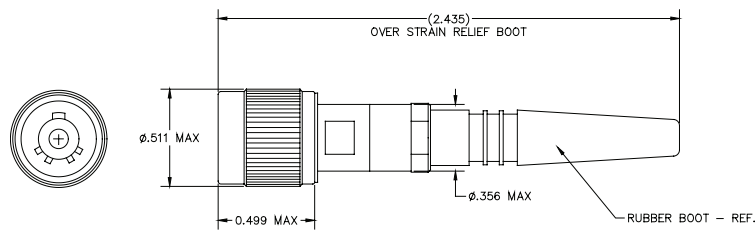
Fiber Optic Socket Contact Per DIN 41626-3



P/N 239933-8004

Fiber Optic Ruggedized Single Channel Plug

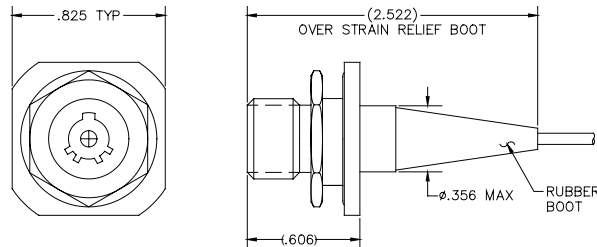
Y	Polarization
1	N
2	A
3	B
4	C
5	D
6	E



P/N 230533-200Y

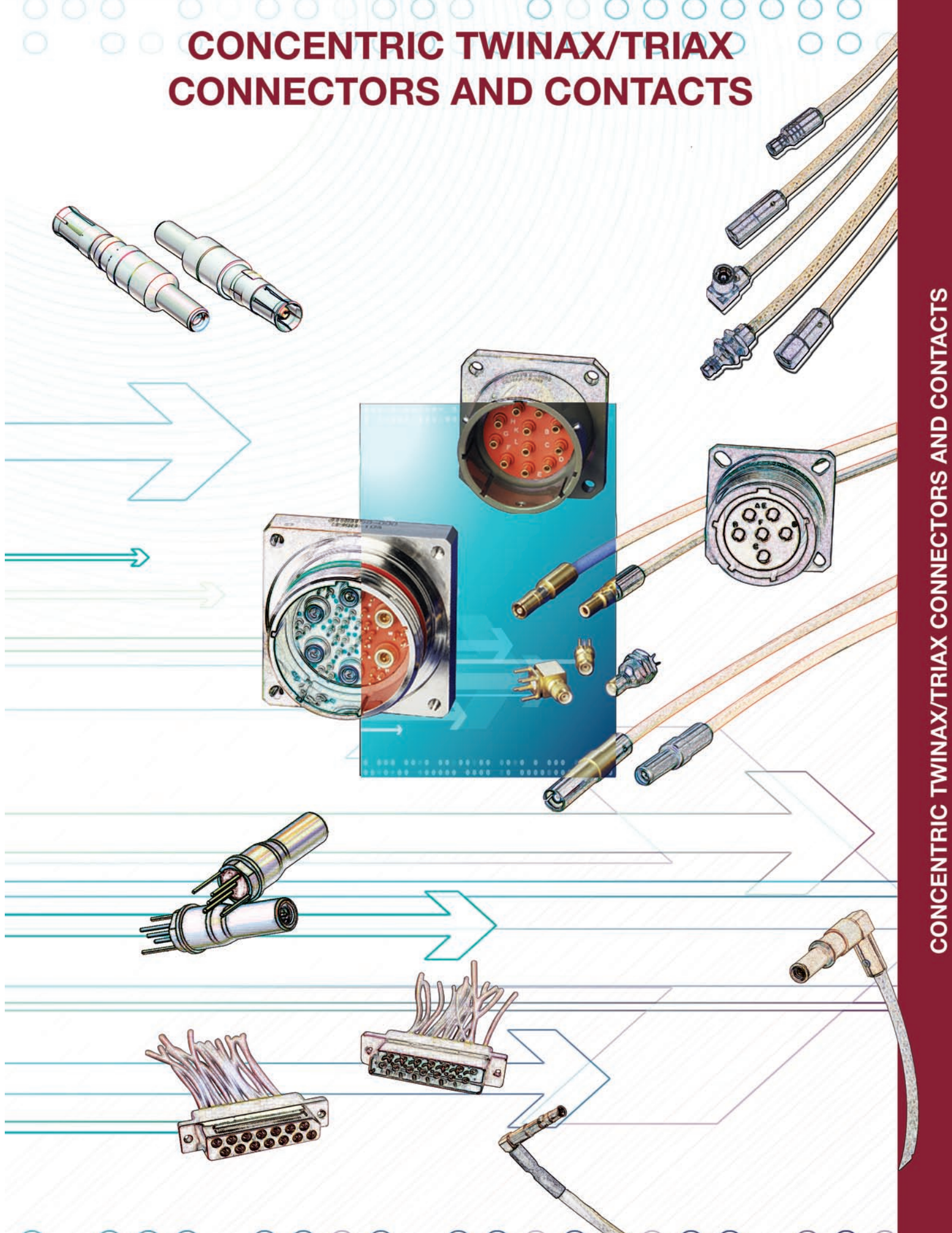
Fiber Optic Ruggedized Single Channel Jam Nut Receptacle

Y	Polarization
1	N
2	A
3	B
4	C
5	D
6	E



P/N 230633-300Y

CONCENTRIC TWINAX/TRIAX CONNECTORS AND CONTACTS





Triaxial Connectors and Contacts

Overview

Sabritec offers a full line of triaxial interconnect products including concentric twinax/triax connectors, contacts and cable assemblies.

NDL Connectors

The triax connector line features our ultraminiature NDL connector in both the NDL-T, threaded, and the NDL-Q, quick disconnect. The series includes straight and right angle cable mount and PCB mount connectors, in-series and between series adapters, as well as coax/triax transitional adapters, bulkhead receptacles and cable-bus terminators. The cable mount connectors are designed for numerous Sabritec low-loss twinaxial cables and concentric triaxial cables available in a variety of impedance values. These cables are designed for all types of data-bus and video interconnect systems including MIL-STD-1553B, ARINC 429, 100 Base-T Ethernet, high speed video hot-link and Fibre Channel data links.



NDL Triaxial Connectors

Concentric Twinax/Triax Contacts

Sabritec's extensive triax contact series fit standard MIL-DTL-38999 series size 8, 10, & 12 contact cavities, d-sub size 8, and ARINC size 1, 5, 8, 9 & 12 standard rack & panel connector cavities and MIL-DTL-83527 size 8 cavities. Sabritec offers Qualified Product List (QPL) triax contacts under specifications MIL-C-39029/90-529 and MIL-C-39029/91-530. These rugged, blind mate triaxial contacts have the same outline dimensions as standard coax and power contacts and fit in the same cavities of standard connector types and insert arrangements. Sabritec's triaxial contact line also includes a high speed differential impedance size 8 concentric triax contact for MIL-DTL-38999 and ARINC 600 connectors.



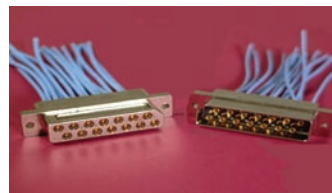
Triaxial Contacts

High Differential Pair Impedance Contacts

Sabritec's high differential impedance triax contacts are designed for ARINC 600 and MIL-DTL-38999 connectors. These contacts are available in 60, 75 and 85 ohm differential pair characteristic impedance for ARINC 600 and 60 ohm differential pair characteristic impedance for MIL-DTL-38999 connectors.

Rugged Multiway D-Sub Connectors

Sabritec's rugged d-subminiature connectors are designed to ground the outer shield of a triax contact directly to the shell of the connector. A multi-finger ground spring, fixed around the triax shell, provides a multi-point contact engagement for superior EMI shielding resulting in extremely low contact resistance when measured from the triax contact outer body to the connector flange.



Multiway D-Sub

Triaxial Cable Assemblies

Sabritec manufactures complete triaxial cable assemblies and data-bus harness networks. Cables, connectors and contacts can be combined into a variety of configurations for today's data-bus networking or high-speed video interconnect requirements.

TRIAx CONNECTORS
QUICK RELEASE
NDL-Q

Pg. 101

TRIAx CONNECTORS
THREADED
NDL-T

Pg. 106

TRIAx CONTACTS
MIL-DTL-38999

Pg 114

TRIAx CONTACTS
MIL-DTL-24308

Pg 116

TRIAx CONTACTS
ARINC 600

Pg 118

TRIAx CONTACTS
MIL-DTL-83527 &
ARINC 404

Pg 120

PC TAIL CONTACTS

Pg 121

HIGH DIFFERENTIAL
IMPEDANCE
CONTACTS

Pg 122

MULTI-WAY TRIAX
CONNECTORS

Pg 125

BLINDMATE & PCB
MOUNT CONNECTORS

Pg 129

CABLE ASSEMBLY
ORDERING

Pg 130

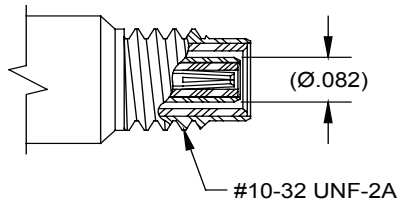
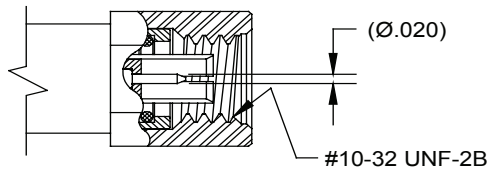
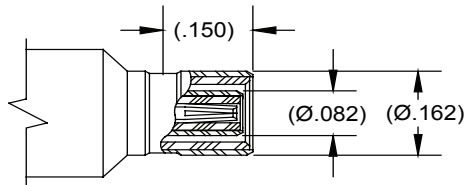
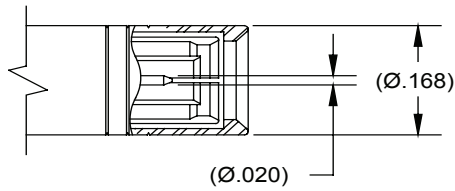
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



NDL Ultraminiature Triaxial Connectors

Connector Specifications

INTERFACE DIMENSIONS

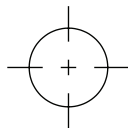


CONNECTOR TYPES Actual O.D. Size

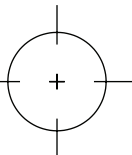
NDL



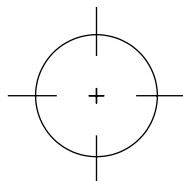
TTM/TRS



TRT/TRB



TRC/TTC



Mechanical & Environmental Specifications

Temperature Rating	-65°C to + 165°C
Corrosion	MIL-STD-202 Method 101, Test Condition B
Shock	MIL-STD-202 Method 213, Test Condition B
Vibration	MIL-STD-202 Method 204, Test Condition B
Thermal Shock	MIL-STD-202 Method 107, Test Condition B
Durability	1000 Mate/Unmate cycles min.
Coupling Nut Torque (NDL-T) Recommended Proof Torque	2.3 in-lbs min 7.0 in-lbs
Jam Nut Recommended Torque	4-5 in-lbs
Mating Torque (NDL-T)	2.5 in-lbs
Engagement Disengagement Force (NDL-Q)	3.0 lbs min

Electrical Specifications

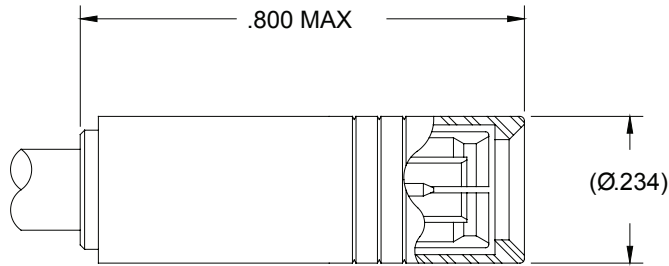
Dielectric Withstanding Voltage	Center contact to intermediate contact: 1000 Vrms min Intermediate contact to outer contact: 400 Vrms min.
Insulation Resistance	5.000 Mega-Ohms min. Center contact to intermediate contact: 250 VDC Intermediate contact to outer contact: 125 VDC
Contact Current Rating	2.0 Amps max.
RF Hi Potential Withstanding Voltage	Center contact to intermediate contact: 500 vrms @ 5MHz Intermediate contact to outer contact: 125 vrms @ 5 MHz
Corona Level @ 70,000 ft	Center contact to intermediate contact: 125 VAC
Permeability	2.0 max.
Risetime Degradation (Mated Pair)	800 ps @ 1MHz

Material & Finishes

Shell & Center/ Intermediate Contacts	Brass per ASTM-B16, Alloy UNS C36000 or BeCu per ASTM-B196, Alloy UNS C17200, C17300 Gold plate per MIL-DTL-45204, Type II, Class 1
Insulators	PTFE per ASTM-D 1710
O-Ring (NDL-T)	Silicone rubber per A-A-59588

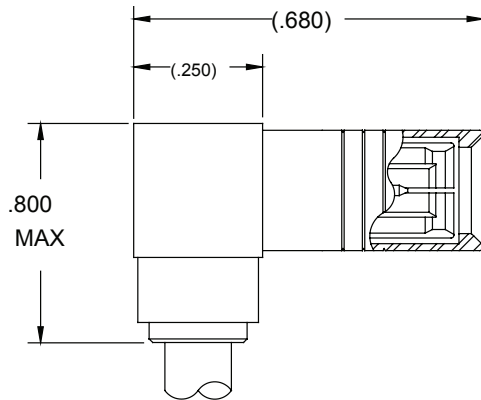
All specifications subject to change without notice.

NDL-Q Cable Plug



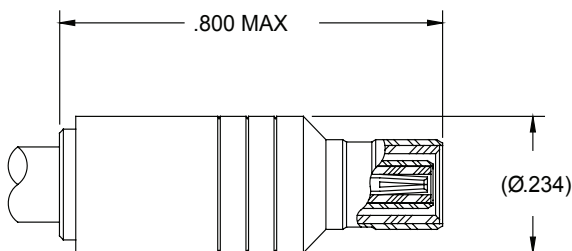
Part Number	Cable Type	Cable
016028-2001	Flexible Twinax	M17/176-00002
016028-2012	Flexible Twinax	540-1086-000
016028-2013	Flexible Triax	RG-403
016028-2014	Flexible Triax	540-1050-000
016028-2031	Flexible Triax	540-1081-000

NDL-Q Right Angle Cable Plug



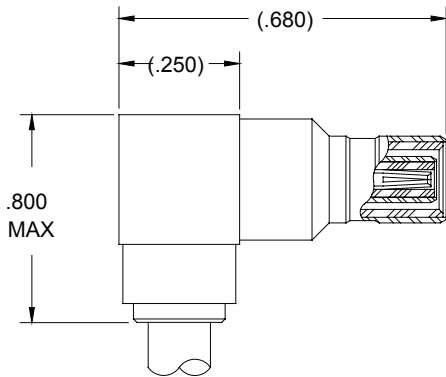
Part Number	Cable Type	Cable
016028-1001	Flexible Twinax	M17/176-00002
016028-1012	Flexible Twinax	540-1086-000
016028-1013	Flexible Triax	RG-403
016028-1014	Flexible Triax	540-1050-000
016028-1031	Flexible Triax	540-1081-000

NDL-Q Cable Jack



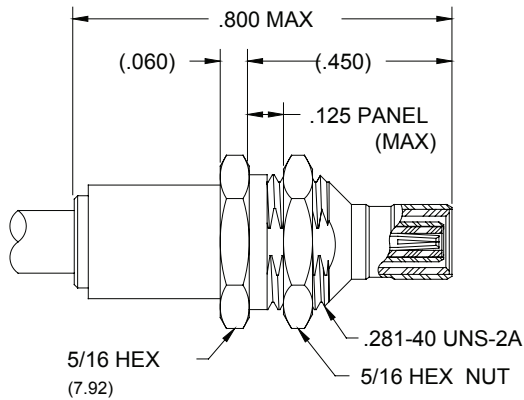
Part Number	Cable Type	Cable
016128-2001	Flexible Twinax	M17/176-00002
016128-2012	Flexible Twinax	540-1086-000
016128-2013	Flexible Triax	RG-403
016128-2014	Flexible Triax	540-1050-000
016128-2031	Flexible Triax	540-1081-000

NDL-Q Right Angle Cable Jack



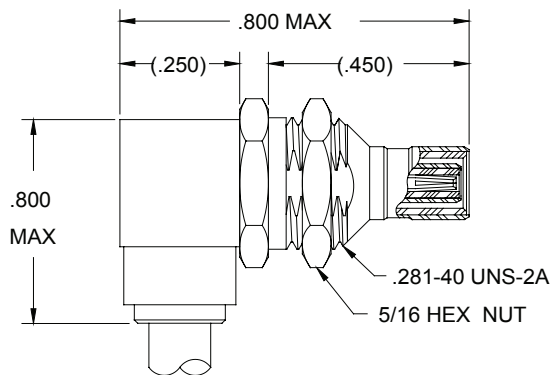
Part Number	Cable Type	Cable
016128-1001	Flexible Twinax	M17/176-00002
016128-1002	Flexible Twinax	540-1086-000
016128-1003	Flexible Triax	RG-403
016128-1004	Flexible Triax	540-1050-000
016128-1031	Flexible Triax	540-1081-000

NDL-Q Bulkhead Cable Jack



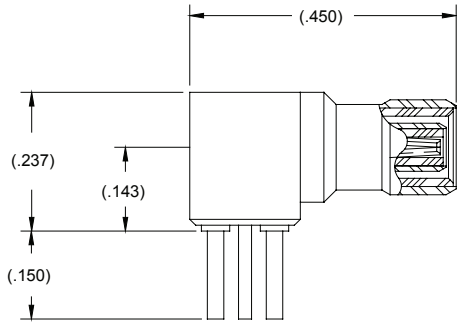
Part Number	Cable Type	Cable
016128-5000	Flexible Twinax	M17/176-00002
016128-5012	Flexible Twinax	540-1086-000
016128-5013	Flexible Triax	RG-403
016128-5014	Flexible Triax	540-1050-000
016128-5031	Flexible Triax	540-1081-000

NDL-Q Right Angle Bulkhead Cable Jack



Part Number	Cable Type	Cable
016128-1101	Flexible Twinax	M17/176-00002
016128-1102	Flexible Twinax	540-1086-000
016128-1103	Flexible Triax	RG-403
016128-1104	Flexible Triax	540-1050-000
016128-1131	Flexible Triax	540-1081-000

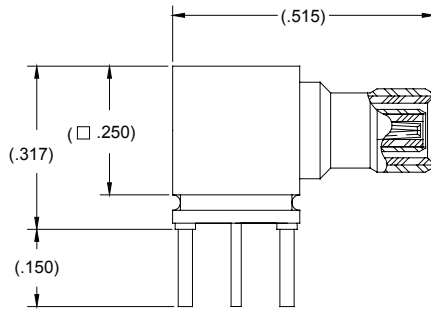
NDL-Q Right Angle PCB Jack



P/N 016100-1001

Mounting for .100 Centers

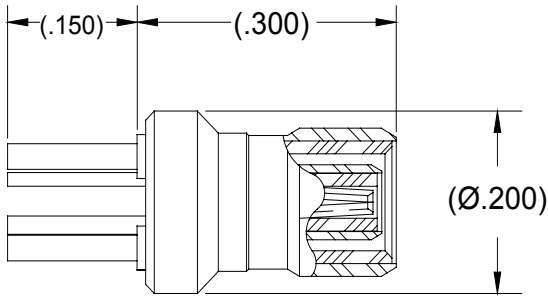
NDL-Q Right Angle PCB Jack



P/N 016100-1002

Mounting for .200 Centers

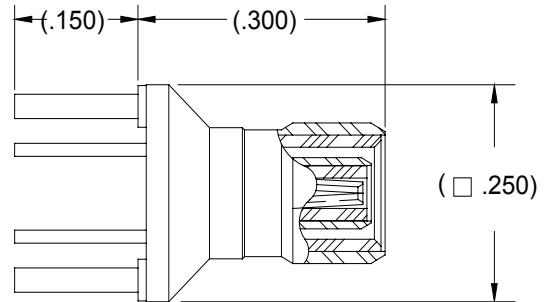
NDL-Q Straight PCB Jack



P/N 016100-3000

Mounting for .100 Centers

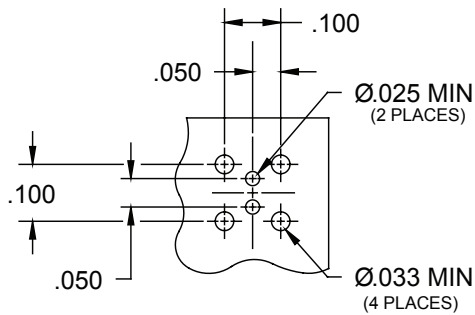
NDL-Q Straight PCB Jack



P/N 016100-3002

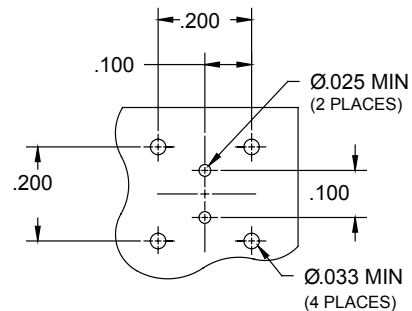
Mounting for .200 Centers

Mounting for PCB Connectors



PCB Pattern for .100 Centers

Mounting for PCB Connectors



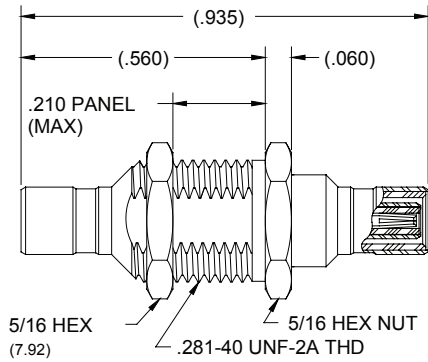
PCB Pattern for .200 Centers



NDL-Q

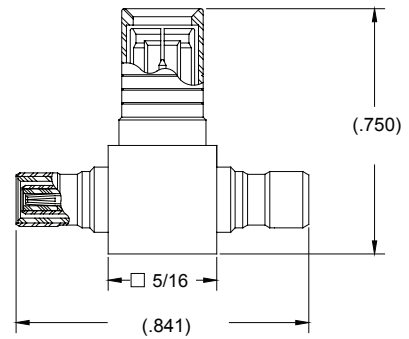
IN-SERIES ADAPTERS

NDL-Q Feed-Thru Jack Adapter



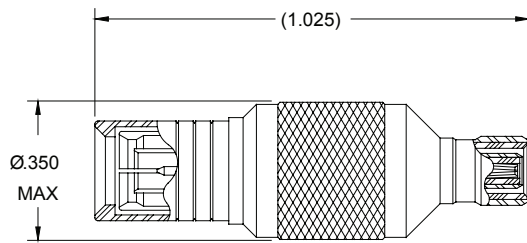
P/N 016100-5004

NDL-Q "Tee" Adapter



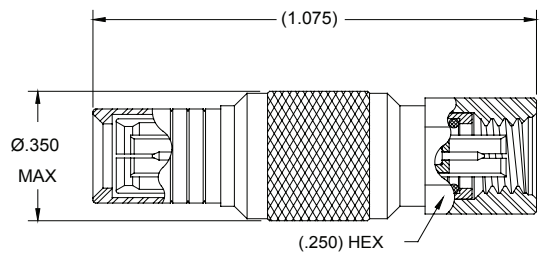
P/N 016000-4000

NDL-Q Plug to NDL-Q Jack



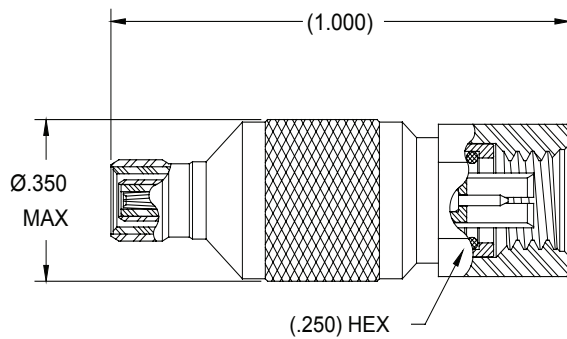
P/N 016000-4001

NDL-Q Plug to NDL-T Plug



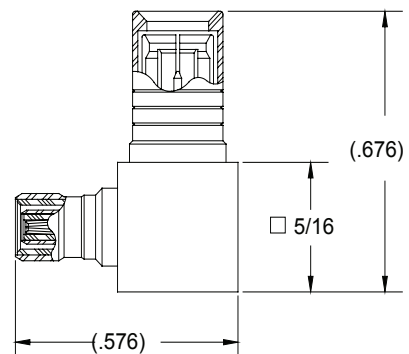
P/N 016000-4007

NDL-Q Jack to NDL-T Plug



P/N 016100-4001

NDL-Q Right Angle Plug to NDL-Q Jack



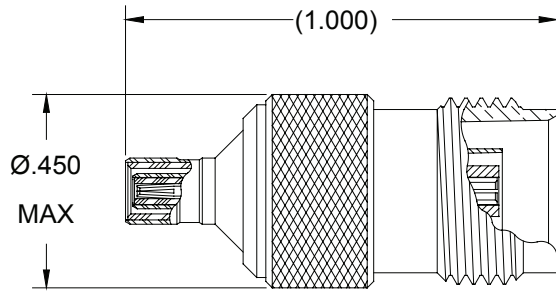
P/N 016000-1000



NDL-Q

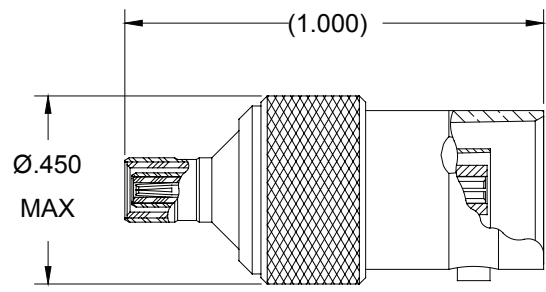
Between Series Adapters

NDL-Q Jack to TRT Jack



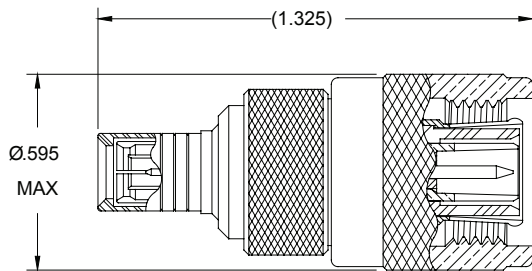
P/N 016100-4002

NDL-Q Jack to TRB Jack



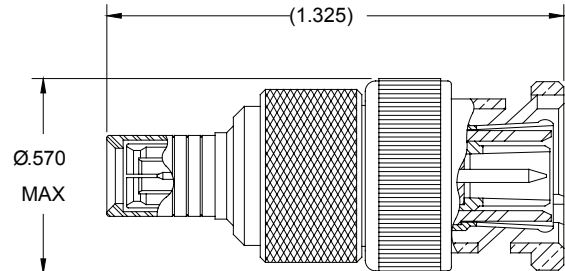
P/N 016100-4003

NDL-Q Plug to TRT Plug



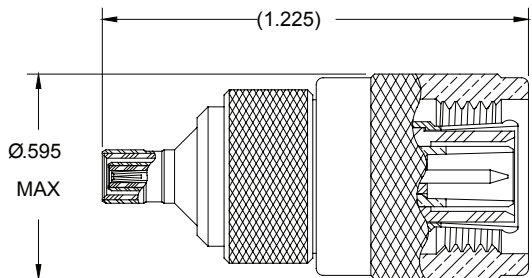
P/N 016000-4003

NDL-Q Plug to TRB Plug



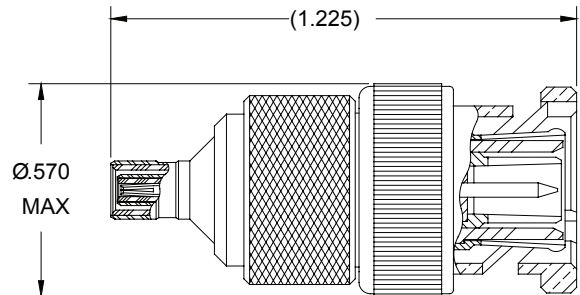
P/N 016000-4004

NDL-Q Jack to TRT Plug



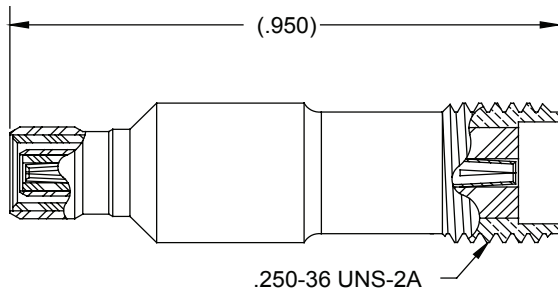
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NDL-Q Jack to TRB Plug



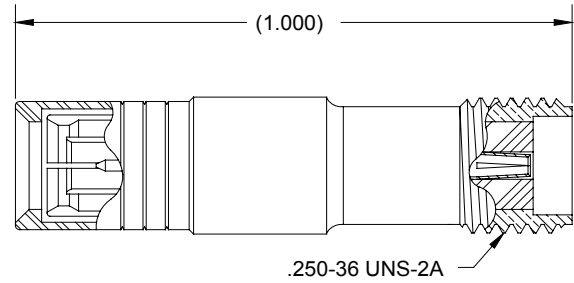
P/N 016100-4005

NDL-Q Jack to SMA Jack



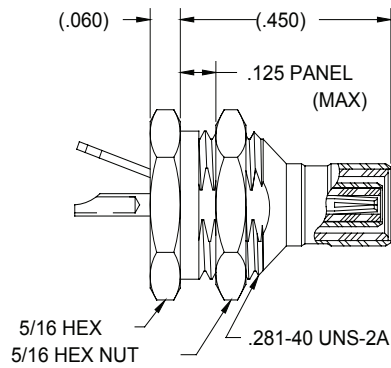
P/N 016100-4010

NDL-Q Plug to SMA Jack



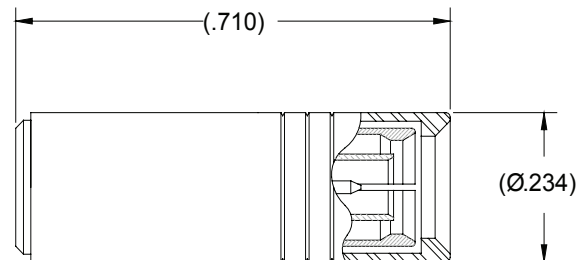
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NDL-Q Bulkhead Jack



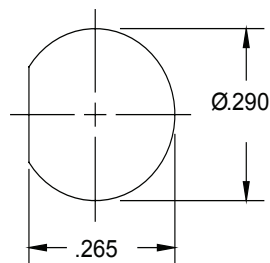
P/N 016100-5001

NDL-Q 75 Ohm Terminator

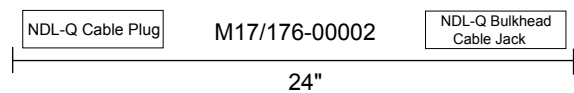
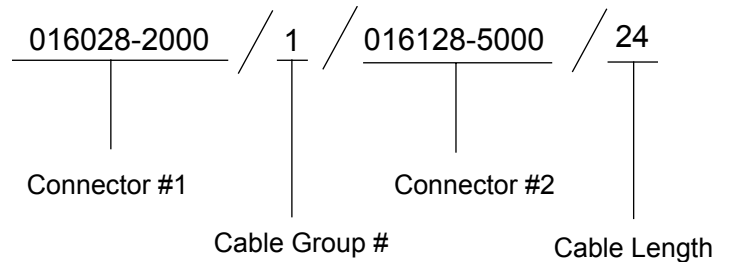


P/N 016000-0000

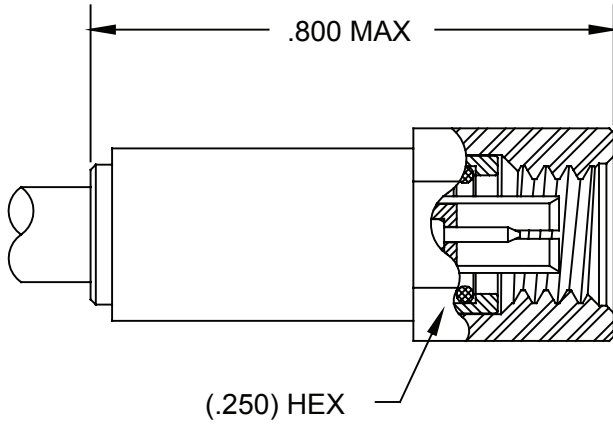
Mounting D-Hole Configuration



NDL-Q CABLE ASSEMBLY ORDERING INFORMATION

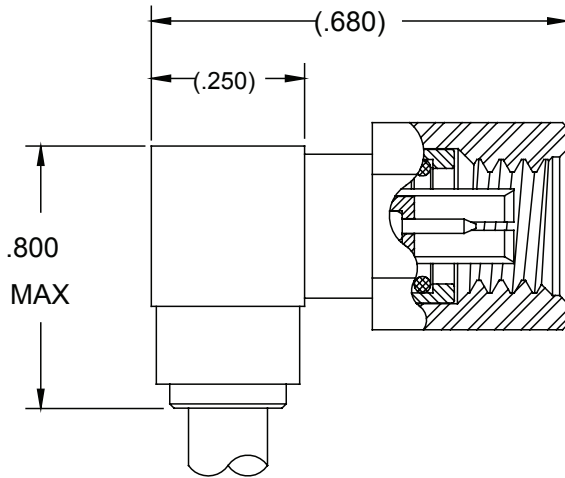


NDL-T Cable Plug



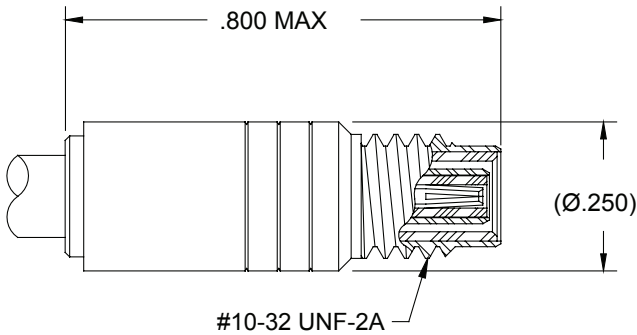
Part Number	Cable Type	Cable
015028-2000	Flexible Twinax	M17/176-00002
015028-2012	Flexible Twinax	540-1086-000
015028-2013	Flexible Triax	RG-403
015028-2014	Flexible Triax	540-1050-000
015028-2031	Flexible Triax	540-1081-000

NDL-T Right Angle Cable Plug



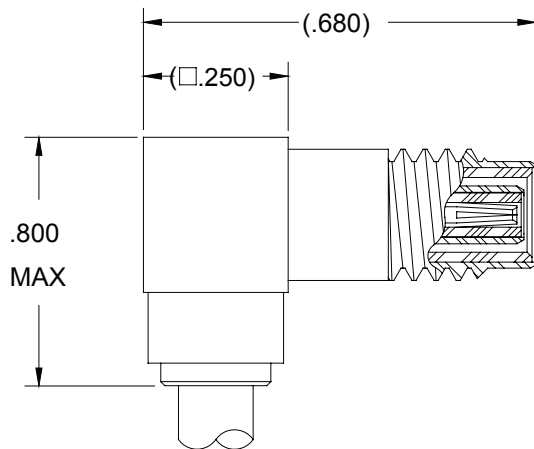
Part Number	Cable Type	Cable
015028-1001	Flexible Twinax	M17/176-00002
015028-1012	Flexible Twinax	540-1086-000
015028-1013	Flexible Triax	RG-403
015028-1014	Flexible Triax	540-1050-000
015028-1031	Flexible Triax	540-1081-000

NDL-T Cable Jack



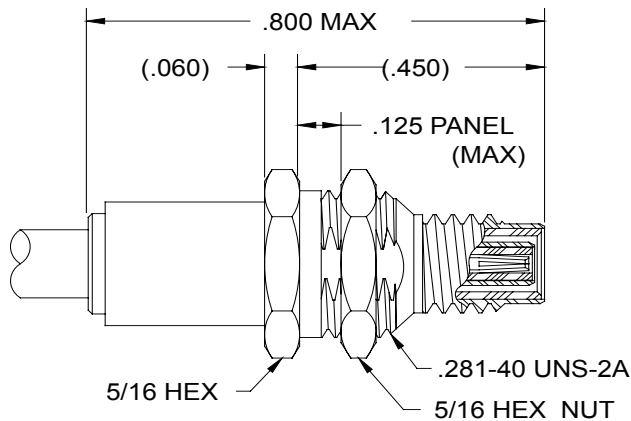
Part Number	Cable Type	Cable
015112-2001	Flexible Twinax	M17/176-00002
015112-2012	Flexible Twinax	540-1086-000
015112-2013	Flexible Triax	RG-403
015112-2014	Flexible Triax	540-1050-000
015112-2031	Flexible Triax	540-1081-000

NDL-T Right Angle Cable Jack



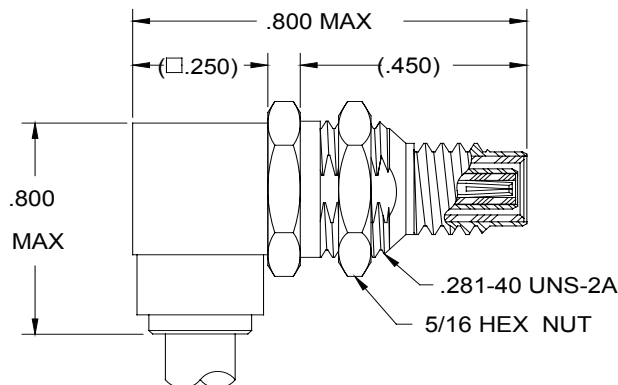
Part Number	Cable Type	Cable
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015112-1012	Flexible Twinax	540-1086-000
015112-1013	Flexible Triax	RG-403
015112-1014	Flexible Triax	540-1050-000
015112-1031	Flexible Triax	540-1081-000

NDL-T Bulkhead Cable Jack



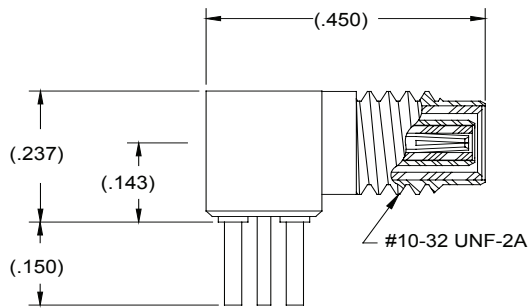
Part Number	Cable Type	Cable
015112-5000	Flexible Twinax	M17/176-00002
015112-5012	Flexible Twinax	540-1086-000
015112-5013	Flexible Triax	RG-403
015112-5014	Flexible Triax	540-1050-000
015112-5031	Flexible Triax	540-1081-000

NDL-T Right Angle Bulkhead Cable Jack



Part Number	Cable Type	Cable
015112-1101	Flexible Twinax	M17/176-00002
015112-1102	Flexible Twinax	540-1086-000
015112-1103	Flexible Triax	RG-403
015112-1104	Flexible Triax	540-1050-000
015112-1131	Flexible Triax	540-1081-000

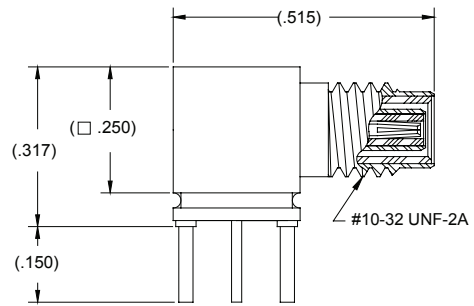
NDL-T Right Angle PCB Jack



P/N 015100-1011

Mounting for .100 Centers

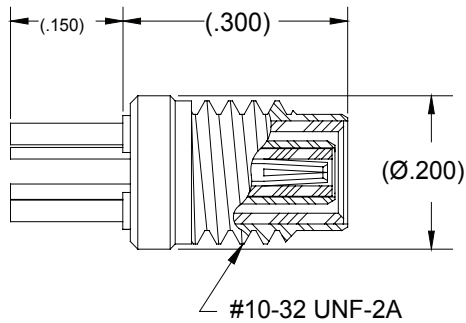
NDL-T Right Angle PCB Jack



P/N 015100-1012

Mounting for .200 Centers

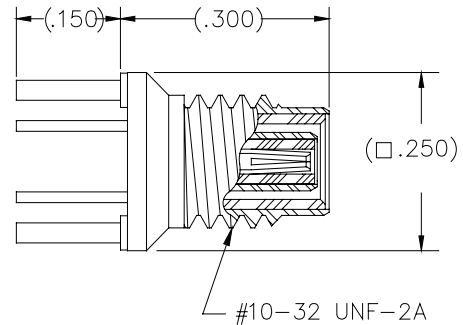
NDL-T Straight PCB Jack



P/N 015100-3010

Mounting for .100 Centers

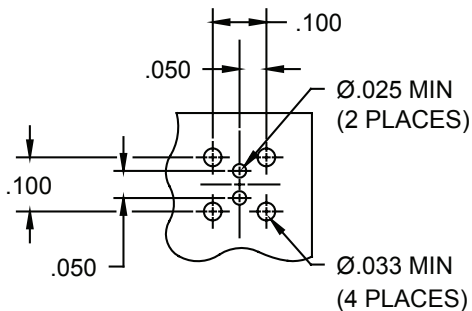
NDL-T Straight PCB Jack



P/N 015100-3012

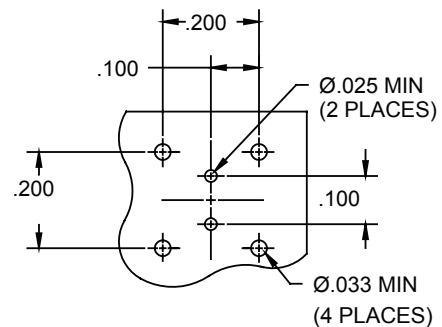
Mounting for .200 Centers

Mounting for PCB Connectors



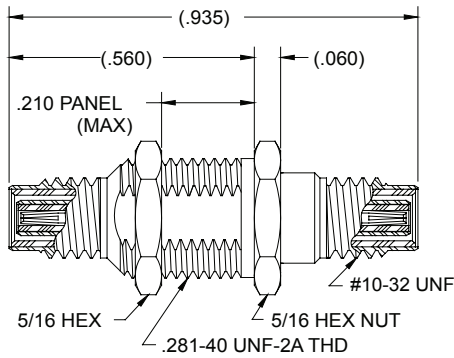
PCB Pattern for .100 Centers

Mounting for PCB Connectors



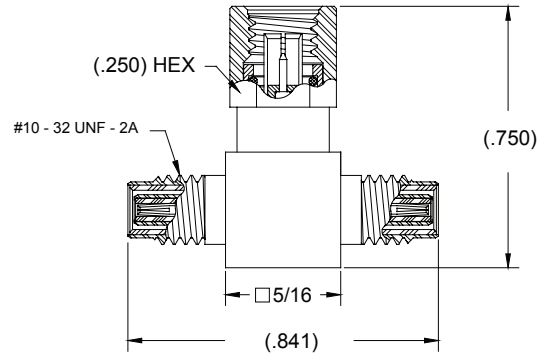
PCB Pattern for .200 Centers

NDL-T Feed-Thru Jack Adapter



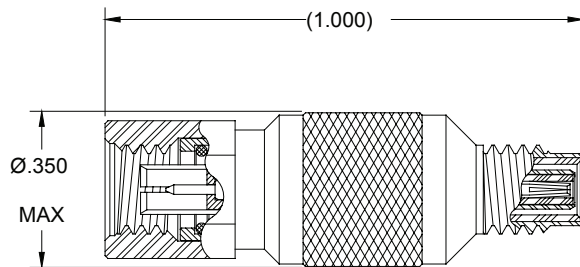
P/N 015100-5024

NDL-T "Tee" Adapter



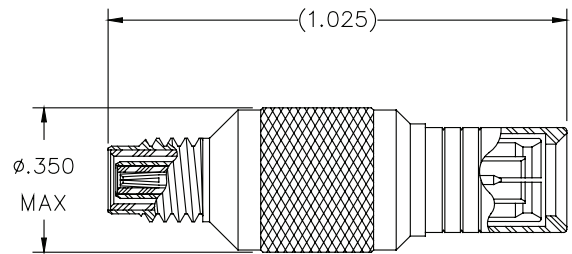
P/N 015000-4020

NDL-T Plug to NDL-T Jack



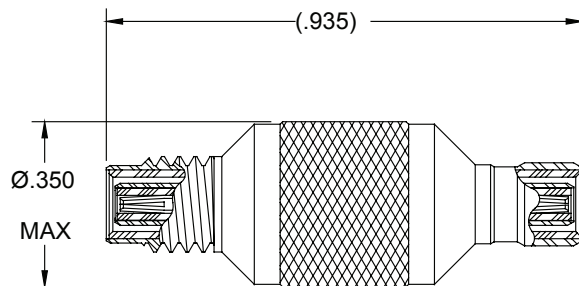
P/N 015000-4023

NDL-T Jack to NDL-Q Plug



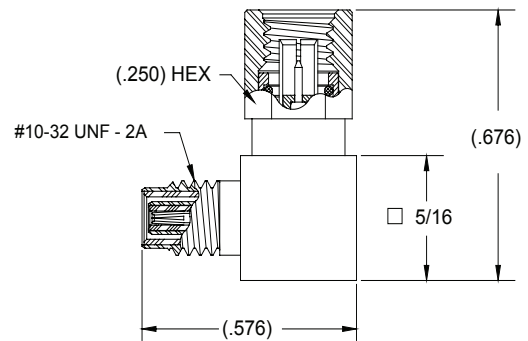
P/N 015100-4015

NDL-T Jack to NDL-Q Jack



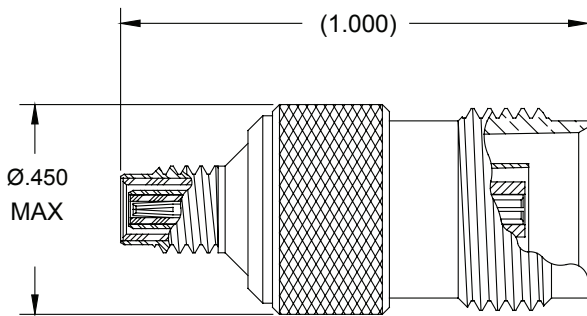
P/N 015100-4016

NDL-T Right Angle Plug to NDL-T Jack



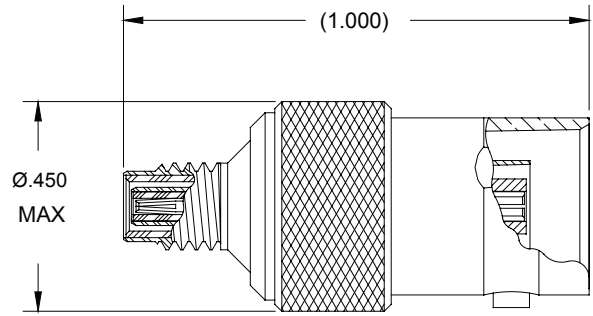
P/N 015000-1001

NDL-T Jack to TRT Jack



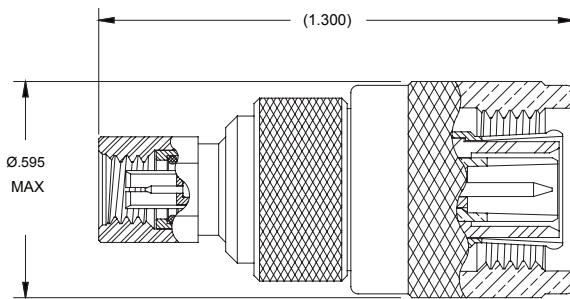
P/N 015100-4011

NDL-T Jack to TRB Jack



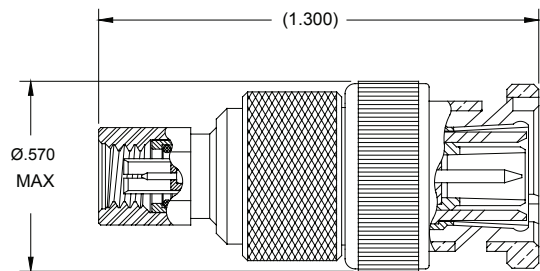
P/N 015100-4012

NDL-T Plug to TRT Plug



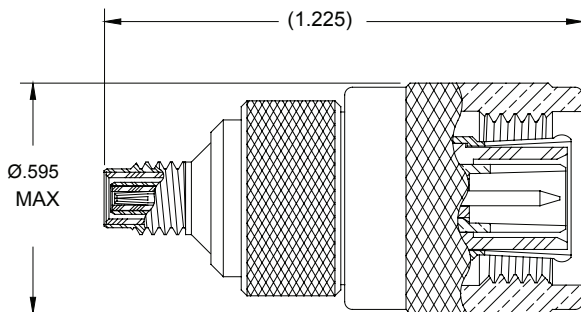
P/N 015000-4004

NDL-T Plug to TRB Plug



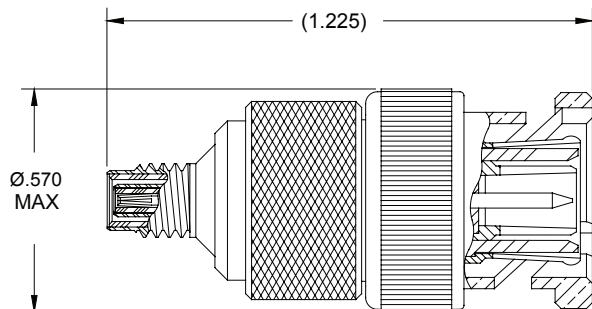
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NDL-T Jack to TRT Plug



P/N 015100-4013

NDL-T Jack to TRB Plug



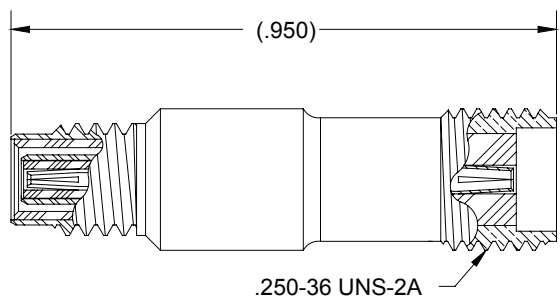
P/N 015100-4014



NDL-T

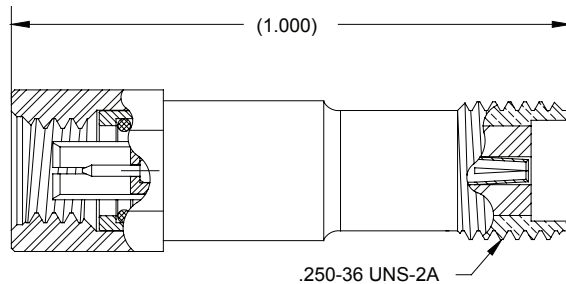
Ultraminiature Triaxial Connectors

NDL-T Jack to SMA Jack



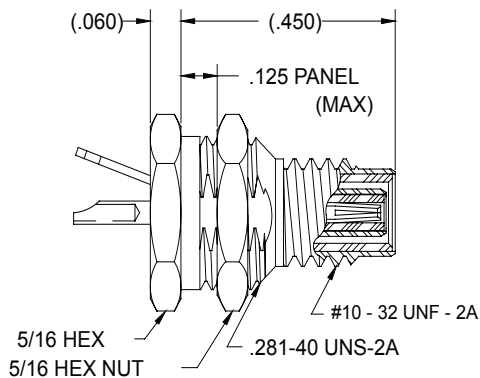
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NDL-T Plug to SMA Jack



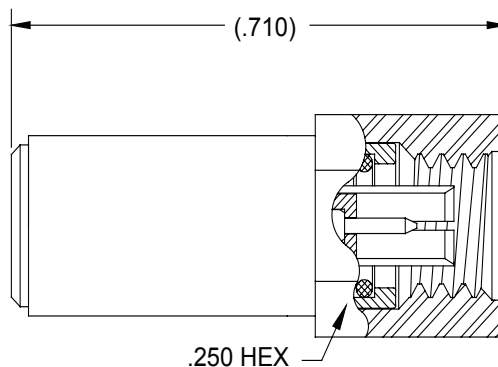
P/N 015000-4010

NDL-T Bulkhead Jack



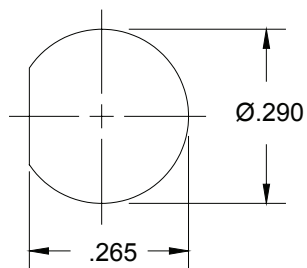
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NDL-T 75 Ohm Terminator

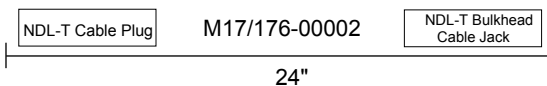
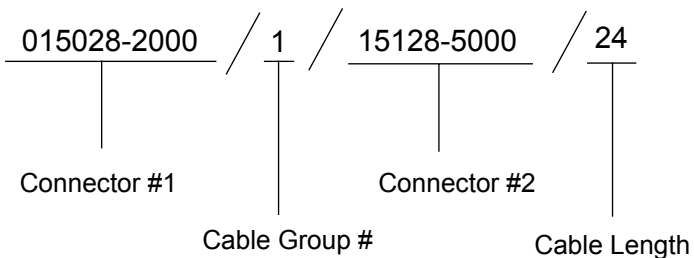


P/N 015000-0000

Mounting D-Hole Configuration



NDL-T CABLE ASSEMBLY ORDERING INFORMATION





Triaxial Contact Series

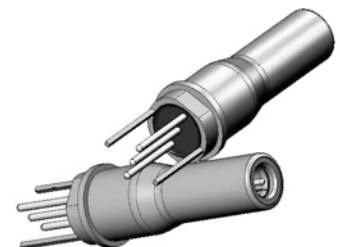
Sabritec's concentric twinax/triax contacts provide flexibility in the design of high speed data systems. The contacts, including the unique sizes 10 and 12, have the same outline dimensions as traditional coax and power contacts and fit various insert arrangements for d-sub, circular, and rack and panel connectors. The triaxial cable type connectors and contacts are designed for low-loss concentric 50, 75 and 95 ohm cable types.

An innovative design of triax/twinax contacts opens a whole new world of design options. These small, rugged contacts fit standard connector contact cavities for MIL-DTL-38999, MIL-DTL-83527, ARINC, and d-sub connector types.

Sabritec also manufactures a complete line of stand-alone triax connectors including the ultraminiature NDL connector series as well as other specific application configurations.

FEATURES

- Fits standard MIL-DTL-38999 size 8, 10 & 12 contact cavities, MIL-DTL-83527 size 8, d-sub size 8, and ARINC size 1, 5, 8, 9 & 12 standard rack & panel connector cavities.
- Designed for MIL-C-17/176 Data Bus networks and high speed Ethernet and Fibre Channel system
- Suitable for high speed video applications, 50, 75 & 95 ohm impedances
- Upgrade coax harnesses to triax capability
- Small size for high density packaging
- Includes high speed Fibre Channel hot-link product line series

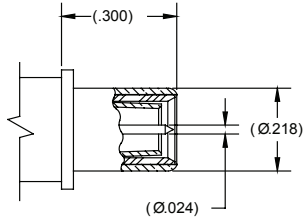
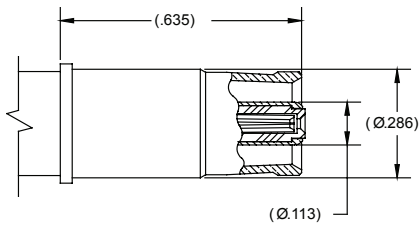




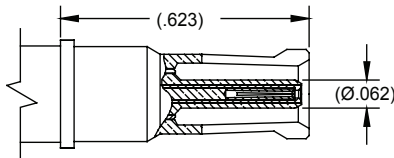
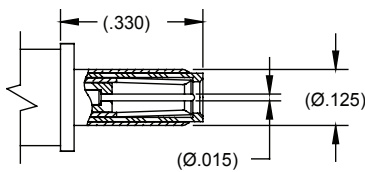
Concentric Twinax/Triax Contacts

Contact Specifications

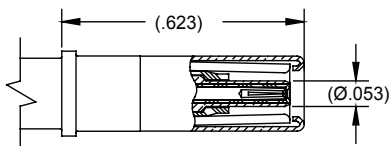
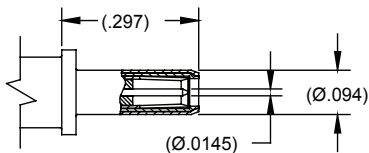
INTERFACE DIMENSIONS



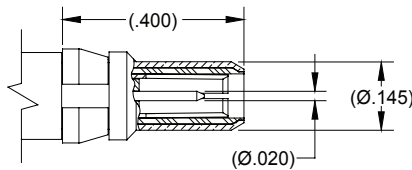
SIZE 8, MIL-C-39029/90 & /91



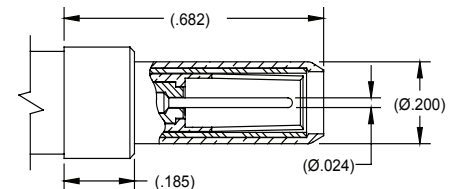
SIZE 10, MIL-DTL-38999



SIZE 12, MIL-DTL-38999



SIZE 8, MIL-PRF-24308



SIZE 9, MIL-C-81659 (ARINC 404)

Mechanical & Environmental Specifications	
Temperature Rating	-65°C to + 165°C
Corrosion	MIL-STD-202 Method 101, Test Condition B
Shock	MIL-STD-202 Method 213, Test Condition B
Vibration	MIL-STD-202 Method 204, Test Condition B
Thermal Shock	MIL-STD-202 Method 107, Test Condition B
Durability	1000 Mate/Unmate cycles min.
Electrical Specifications	
Dielectric Withstanding Voltage	Center contact to intermediate contact: 1000 Vrms min. Size 12: 500 Vrms min. Intermediate contact to outer contact: 400 Vrms min. Size 12: 200 Vrms min
Insulation Resistance	5000 Mega-Ohms min. @ 200 VDC
Contact Current Rating	3.0 Amps D.C. max.: Size 12: 1.5 Amps D.C. max.
Voltage Rating	500 Vrms @ sea level: Size 12: 200 Vrms @ sea level
Material & Finishes	
Shell & Center/Intermediate Contacts	Brass per ASTM-B16, Alloy UNS C36000 or BeCu per ASTM-B196, Alloy UNS C17200, C17300 or Leaded Nickel Copper, Alloy UNS C19500, C19600 Gold plate per MIL-DTL-45204, Type II, Class 1
Insulators	PTFE per ASTM-D 1710 or equivalent
Hood	305 CRES per ASTM-A240, passivated per ASTM-A967

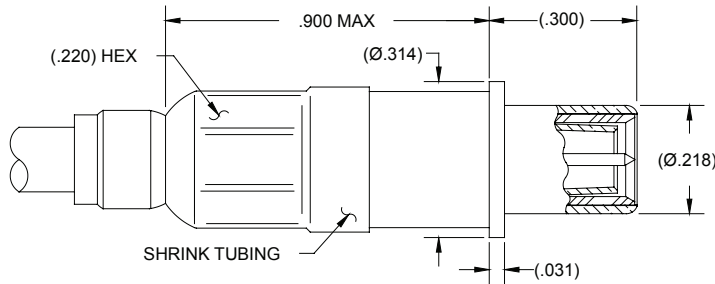
All specifications subject to change without notice.



Concentric Twinax/Triax Contacts

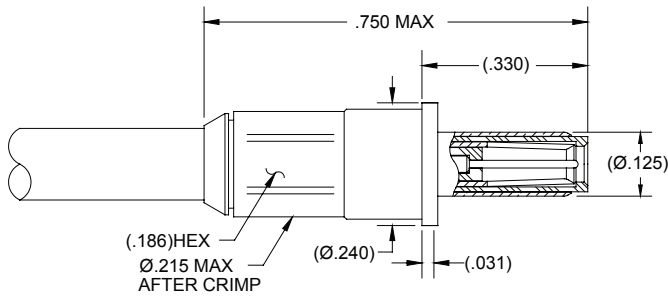
MIL-DTL-38999 Pin Contacts

Size 8 MIL-C-39029/90 Twinax/Triax Pin Contact



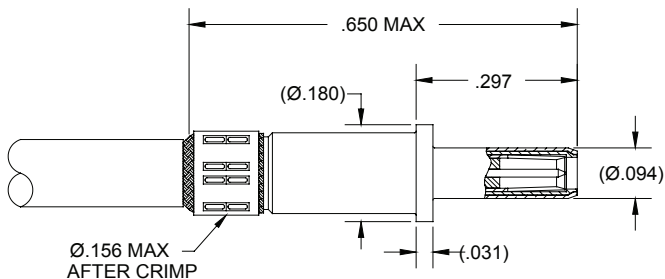
Part Number	Cable Type	Cable
019612-2001	Flexible Twinax	M17/176-00002
019612-2002	Flexible Twinax	540-1086-000
019612-2003	Flexible Triax	RG-403
019612-2004	Flexible Triax	540-1050-000
019612-2031	Flexible Triax	540-1081-000

Size 10 MIL-DTL-38999 Twinax/Triax Pin Contact



Part Number	Cable Type	Cable
018812-2001	Flexible Twinax	M17/176-00002
018812-2002	Flexible Twinax	540-1086-000
018812-2003	Flexible Triax	RG-403
018812-2004	Flexible Triax	540-1050-000
018812-2031	Flexible Triax	540-1081-000

Size 12 MIL-DTL-38999 Twinax/Triax Pin Contact



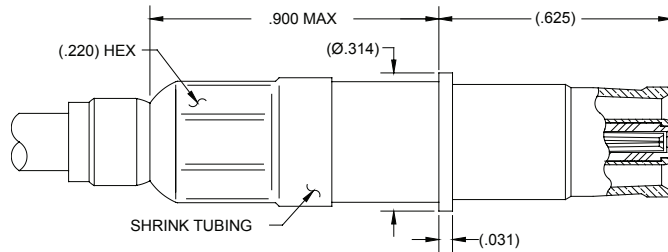
Part Number	Cable Type	Cable
018612-2001	Flexible Twinax	M17/176-00002
018612-2002	Flexible Twinax	540-1086-000
018612-2003	Flexible Triax	RG-403
018612-2004	Flexible Triax	540-1050-000
018612-2041	Flexible Triax	540-1081-000



Concentric Twinax/Triax Contacts

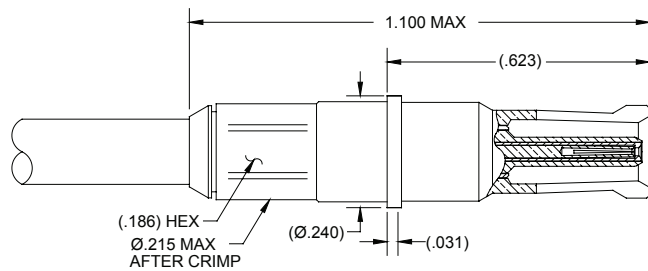
MIL-DTL-38999 Socket Contacts

Size 8 MIL-C-39029/91 Twinax/Triax Socket Contact



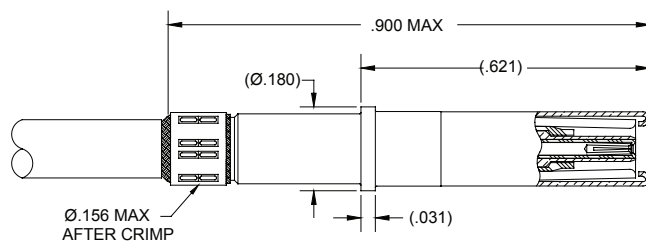
Part Number	Cable Type	Cable
019512-2001	Flexible Twinax	M17/176-00002
019512-2002	Flexible Twinax	540-1086-000
019512-2003	Flexible Triax	RG-403
019512-2004	Flexible Triax	540-1050-000
019512-2031	Flexible Triax	540-1081-000

Size 10 MIL-DTL-38999 Twinax/Triax Socket Contact



Part Number	Cable Type	Cable
018912-2001	Flexible Twinax	M17/176-00002
018912-2002	Flexible Twinax	540-1086-000
018912-2003	Flexible Triax	RG-403
018912-2004	Flexible Triax	540-1050-000
018912-2031	Flexible Triax	540-1081-000

Size 12 MIL-DTL-38999 Twinax/Triax Socket Contact



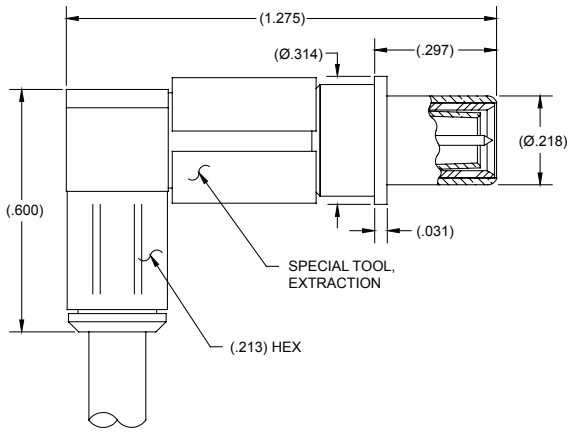
Part Number	Cable Type	Cable
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018712-2002	Flexible Twinax	540-1086-000
018712-2003	Flexible Triax	RG-403
018712-2004	Flexible Triax	540-1050-000
018712-2041	Flexible Triax	540-1081-000



Concentric Twinax/Triax Contacts

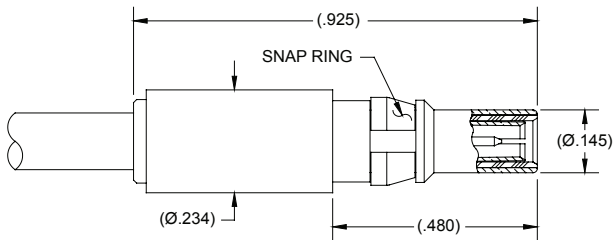
MIL-DTL-38999/MIL-PRF-24308 Twinax/Triax Pin Contacts

Size 8 MIL-C-39029/90 Twinax/Triax Right Angle Pin Contact



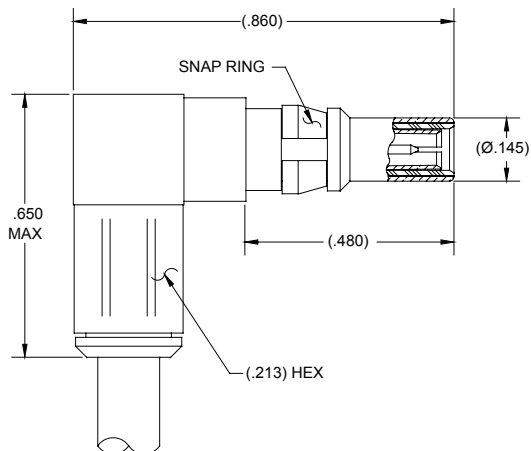
Part Number	Cable Type	Cable
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019612-1011	Flexible Twinax	540-1086-000
019612-1012	Flexible Triax	RG-403
019612-1013	Flexible Triax	540-1050-000
019612-1016	Flexible Triax	540-1081-000

Size 8 MIL-PRF-24308 Twinax/Triax Pin Contact



Part Number	Cable Type	Cable
019812-2001	Flexible Twinax	M17/176-00002
019812-2002	Flexible Twinax	540-1086-000
019812-2003	Flexible Triax	RG-403
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Size 8 MIL-PRF-24308 Twinax/Triax Right Angle Pin Contact



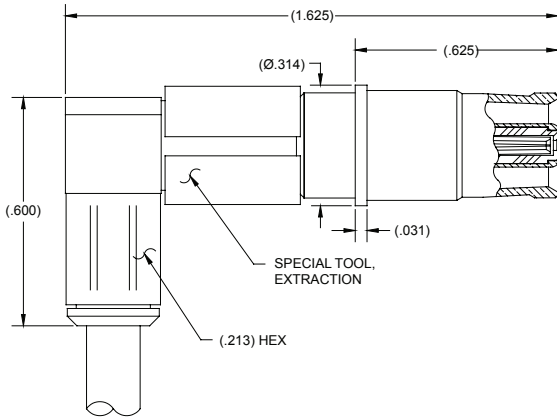
Part Number	Cable Type	Cable
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019812-1011	Flexible Twinax	540-1086-000
019812-1012	Flexible Triax	RG-403
019812-1013	Flexible Triax	540-1050-000
019812-1016	Flexible Triax	540-1081-000



Concentric Twinax/Triax Contacts

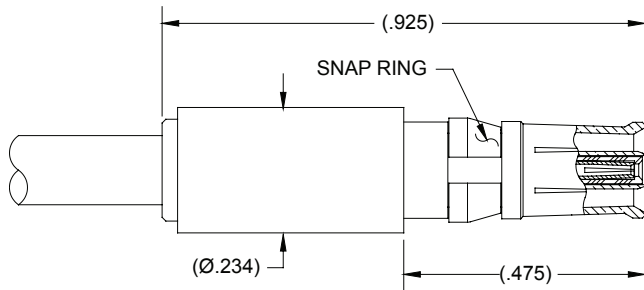
MIL-DTL-38999/MIL-PRF-24308 Twinax/Triax Socket Contacts

Size 8 MIL-C-39029/91 Twinax/Triax Right Angle Socket Contact



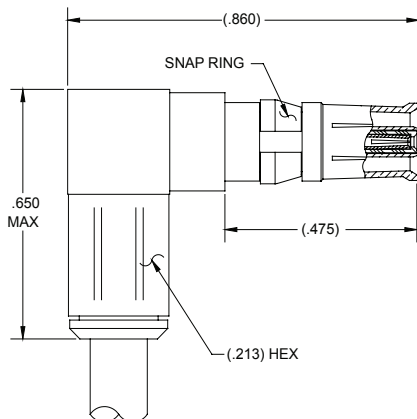
Part Number	Cable Type	Cable
019512-1010	Flexible Twinax	M17/176-00002
019512-1011	Flexible Twinax	540-1086-000
019512-1012	Flexible Triax	RG-403
019512-1013	Flexible Triax	540-1050-000
019512-1016	Flexible Triax	540-1081-000

Size 8 MIL-PRF-24308 Twinax/Triax Socket Contact



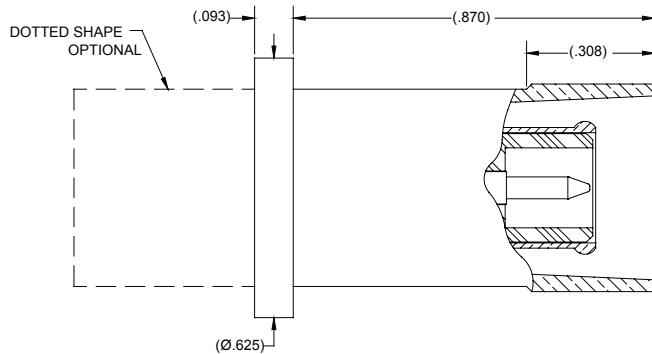
Part Number	Cable Type	Cable
019712-2001	Flexible Twinax	M17/176-00002
019712-2002	Flexible Twinax	540-1086-000
019712-2003	Flexible Triax	RG-403
019712-2004	Flexible Triax	540-1050-000
019712-2031	Flexible Triax	540-1081-000

Size 8 MIL-PRF-24308 Twinax/Triax Right Angle Socket Contact



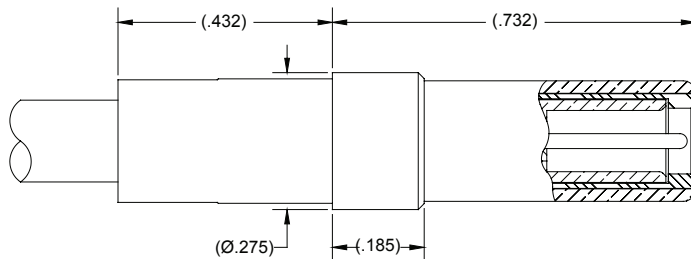
Part Number	Cable Type	Cable
019712-1010	Flexible Twinax	M17/176-00002
019712-1011	Flexible Twinax	540-1086-000
019712-1012	Flexible Triax	RG-403
019712-1013	Flexible Triax	540-1050-000
019712-1016	Flexible Triax	540-1081-000

Size 1 ARINC 600 Twinax/Triax Pin Contact



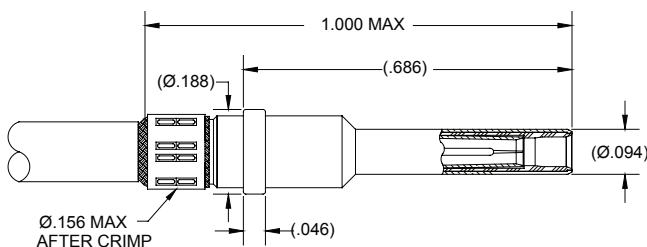
Part Number	Cable Type	Cable
018012-2110	Flexible Twinax	M17/176-00002
018012-2111	Flexible Twinax	540-1086-000
018012-2112	Flexible Triax	RG-403
018012-2113	Flexible Triax	540-1050-000
018012-2114	Flexible Triax	540-1081-000

Size 5 ARINC 600 Twinax/Triax Pin Contact



Part Number	Cable Type	Cable
019412-2110	Flexible Twinax	M17/176-00002
019412-2111	Flexible Twinax	540-1086-000
019412-2112	Flexible Triax	RG-403
019412-2113	Flexible Triax	540-1050-000
019412-2116	Flexible Triax	540-1081-000

Size 12 ARINC 600 Twinax/Triax Pin Contact



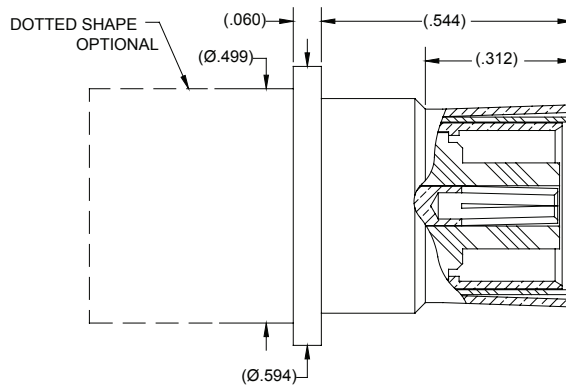
Part Number	Cable Type	Cable
018612-2110	Flexible Twinax	M17/176-00002
018612-2111	Flexible Twinax	540-1086-000
018612-2112	Flexible Triax	RG-403
018612-2113	Flexible Triax	540-1050-000
018612-2116	Flexible Triax	540-1081-000



Concentric Twinax/Triax Contacts

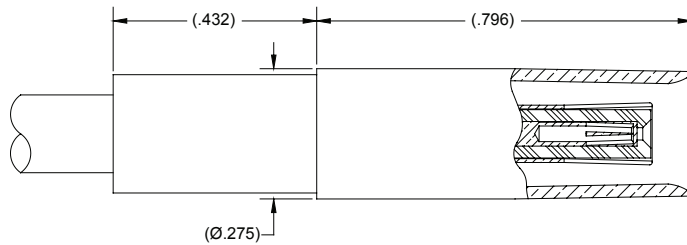
ARINC 600 Socket Contacts

Size 1 ARINC 600 Twinax/Triax Socket Contact



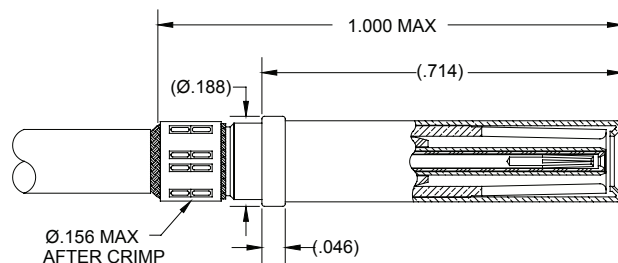
Part Number	Cable Type	Cable
018112-2110	Flexible Twinax	M17/176-00002
018112-2111	Flexible Twinax	540-1086-000
018112-2112	Flexible Triax	RG-403
018112-2113	Flexible Triax	540-1050-000
018112-2114	Flexible Triax	540-1081-000

Size 5 ARINC 600 Twinax/Triax Socket Contact



Part Number	Cable Type	Cable
019312-2110	Flexible Twinax	M17/176-00002
019312-2111	Flexible Twinax	540-1086-000
019312-2112	Flexible Triax	RG-403
019312-2113	Flexible Triax	540-1050-000
019312-2116	Flexible Triax	540-1081-000

Size 12 ARINC 600 Twinax/Triax Socket Contact



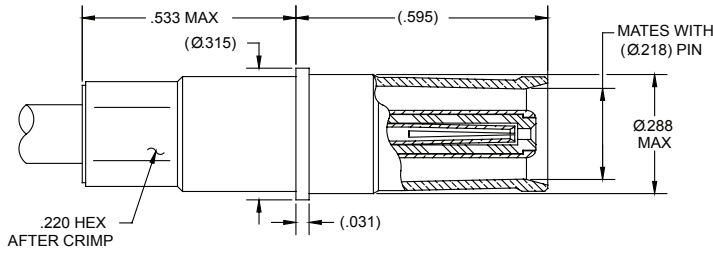
Part Number	Cable Type	Cable
018712-2110	Flexible Twinax	M17/176-00002
018712-2111	Flexible Twinax	540-1086-000
018712-2112	Flexible Triax	RG-403
018712-2113	Flexible Triax	540-1050-000
018712-2116	Flexible Triax	540-1081-000



Concentric Twinax/Triax Contacts

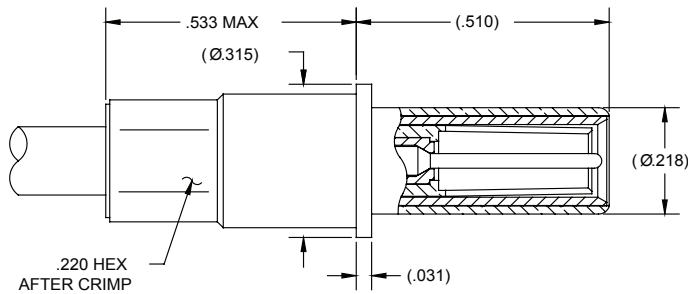
MIL-DTL-83527/ARINC 404 Contacts

Size 8 MIL-DTL-83527 Twinax/Triax Socket Contact



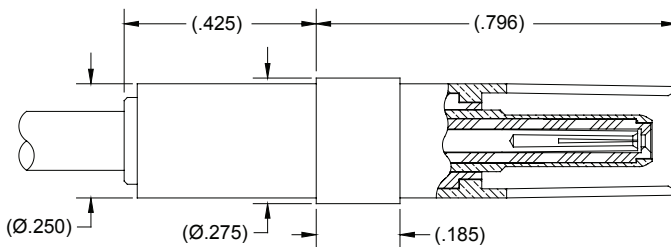
Part Number	Cable Type	Cable
019512-2123	Flexible Twinax	M17/176-00002
019512-2124	Flexible Twinax	540-1161-000
019512-2125	Flexible Twinax	540-1086-000

Size 8 MIL-DTL-83527 Twinax/Triax Pin Contact



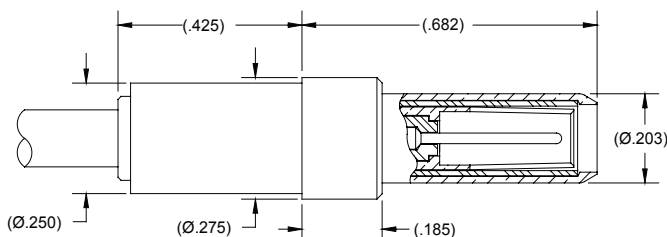
Part Number	Cable Type	Cable
019612-2125	Flexible Twinax	M17/176-00002
019612-2126	Flexible Twinax	540-1161-000
019612-2127	Flexible Twinax	540-1086-000

Size 9 ARINC 404 Twinax/Triax Socket Contact



Part Number	Cable Type	Cable
019112-2001	Flexible Twinax	M17/176-00002
019112-2002	Flexible Twinax	540-1086-000
019112-2003	Flexible Triax	RG-403
019112-2004	Flexible Triax	540-1050-000
019112-2031	Flexible Triax	540-1081-000

Size 9 ARINC 404 Twinax/Triax Pin Contact



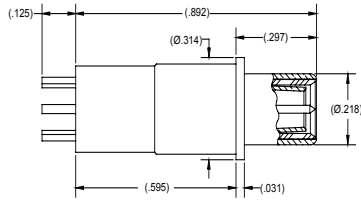
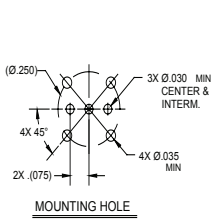
Part Number	Cable Type	Cable
019212-2001	Flexible Twinax	M17/176-00002
019212-2002	Flexible Twinax	540-1086-000
019212-2003	Flexible Triax	RG-403
019212-2004	Flexible Triax	540-1050-000
019212-2031	Flexible Triax	540-1081-000



MIL-DTL-38999 PC Tail Triax Contacts

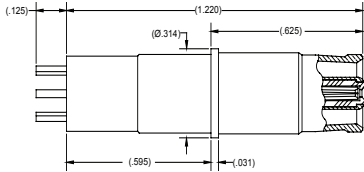
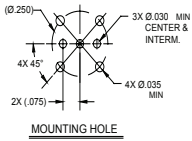
Size 8, 10 and 12 Twinax/Triax PC Tail Contacts

Size 8 MIL-C-39029/90 PC Tail Twinax/Triax Pin Contact



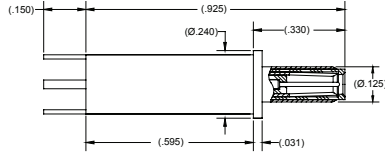
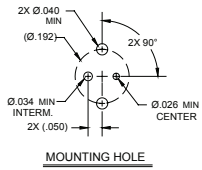
P/N 019617-2100

Size 8 MIL-C-39029/91 PC Tail Twinax/Triax Socket Contact



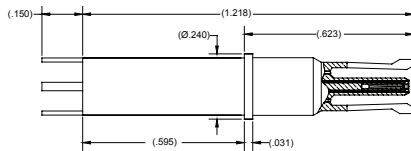
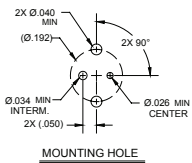
P/N 019517-2100

Size 10 MIL-DTL-38999 PC Tail Twinax/Triax Pin Contact



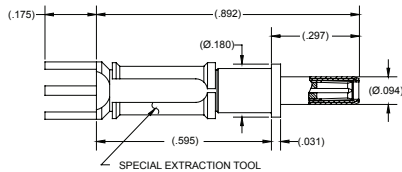
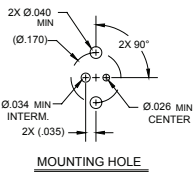
P/N 018817-2100

Size 10 MIL-DTL-38999 PC Tail Twinax/Triax Socket Contact



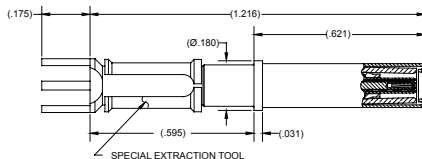
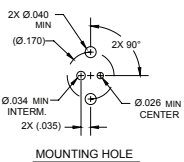
P/N 018917-2100

Size 12 MIL-DTL-38999 PC Tail Twinax/Triax Pin Contact



P/N 018617-2100

Size 12 MIL-DTL-38999 PC Tail Twinax/Triax Socket Contact



P/N 018717-2100

Note:

Sabritec Twinax/Triax PC Tail Contacts are only available installed into an applicable Sabritec connector. These items are not sold separately.



High Differential Impedance Triax Contacts

Connector Specifications

Sabritec's high differential impedance triax contacts are designed for ARINC 600 and MIL-DTL-38999 connectors. These contacts are available in 60, 75 and 85 ohm differential pair characteristic impedance for ARINC 600 and 60 ohm differential pair characteristic impedance for MIL-DTL-38999 connectors.

Size 8 concentric twinax/triax contacts have the same outline dimensions as standard coax and power contacts for both MIL-DTL-38999 and ARINC 600 connectors with 60 ohm differential pair impedance. For high data rate applications such as 1000 Base Tx, Sabritec offers a special ARINC 600 size 8 triax pin and socket contact that is designed to fit into a special insulator cavity for ARINC 600.

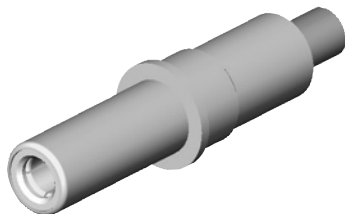
These special high differential pair impedance contacts are also available in 75 ohm and 85 ohm impedance values.

High differential pair impedance contacts have special interfaces that are radically optimized for a balanced characteristic impedance to the outer shell while providing maximum differential impedance between middle and center conductors. Polarization is not required since the triax interface has concentric conductors. This also allows free rotation of cable entry for multi-directional routing of cable.

High speed Ethernet data signals can be routed through triaxial interface interconnects, thus eliminating the need for anti-rotational quad and twinax connector and contact types. Triaxial contacts are ideal for blindmate rack and panel and circular interconnect requirements.

Mechanical & Environmental Specifications	
Temperature Rating	-65°C to + 165°C
Corrosion	MIL-STD-202 Method 101, Test Condition B
Shock	MIL-STD-202 Method 213, Test Condition B
Vibration	MIL-STD-202 Method 204, Test Condition B
Thermal Shock	MIL-STD-202 Method 107, Test Condition B
Durability	1000 Mate/Unmate cycles min.
Mating/Unmating Force	1 lb. min.
Float Mount Constraints	0.15" full radial & axial misalignment max.
Electrical Specifications	
Dielectric Withstanding Voltage	500 Vrms @ sea level with 70% relative humidity
Insulation Resistance	5000 Mega-Ohms min. @ 200 VDC
Contact Current Rating	1.5 Amps D.C. max.
Characteristic Impedance	60 Ohms, 75 Ohms or 85 Ohms
Material & Finishes	
Shell & Center/Intermediate Contacts	Brass per ASTM-B16, alloy UNS C36000 or BeCu per ASTM-B196, alloy UNS C17200, C17300 or Leaded Nickel Copper, alloy UNS C19500, C19600 Gold plate per MIL-DTL-45204, Type II, Class 1
Insulators	PTFE per ASTM-D1710 or equivalent
Hood	305 CRES per ASM-A240, passivated per ASTM-A967

All specifications subject to change without notice.



#8 Triaxial Socket Contact



#8 Triaxial Pin Contact

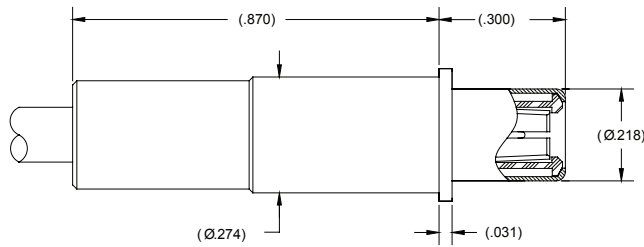
Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



High Differential Impedance Triax Contacts

MIL-DTL-38999/ARINC 600 Contacts

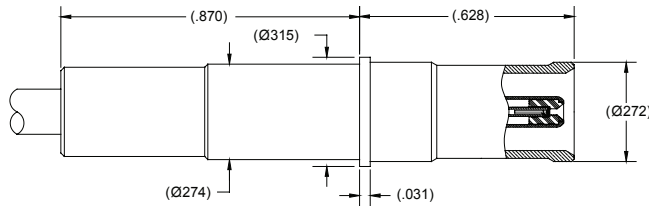
Size 8 MIL-DTL-38999 Twinax/Triax Pin Contact 60 Ohms



Part Number	Cable Type	Cable
019612-2115	Flexible Twinax	540-1161-000
019612-2116	Flexible Twinax	540-1086-000

Intermountable In Standard Size 8 MIL-DTL-38999 Cavities

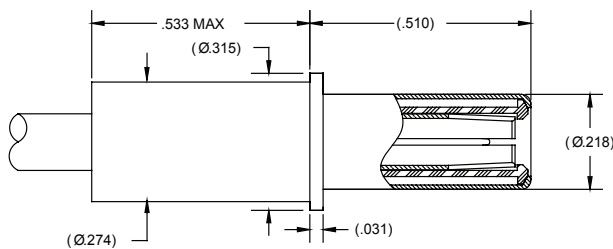
Size 8 MIL-DTL-38999 Twinax/Triax Socket Contact 60 Ohm



Part Number	Cable Type	Cable
019512-2115	Flexible Twinax	540-1161-000
019512-2116	Flexible Twinax	540-1086-000

Intermountable In Standard Size 8 MIL-DTL-38999 Cavities

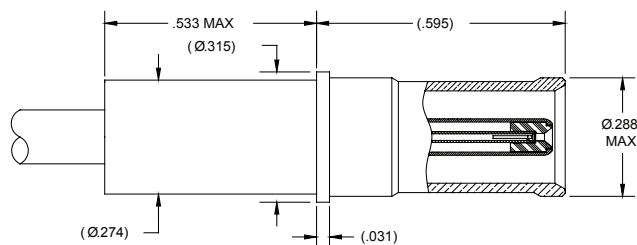
Size 8 ARINC 600 Twinax/Triax Pin Contact 60 Ohms



Part Number	Cable Type	Cable
019612-2119	Flexible Twinax	540-1161-000
019612-2120	Flexible Twinax	540-1086-000

Intermountable In Standard Size 8 ARINC 600 Cavities

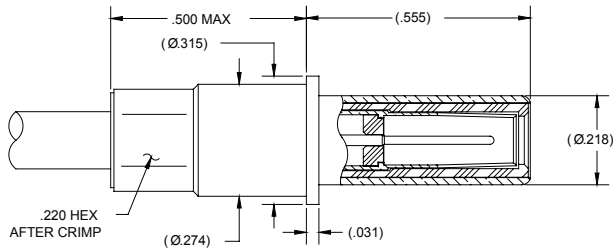
Size 8 ARINC 600 Twinax/Triax Socket Contact 60 Ohms



Part Number	Cable Type	Cable
019512-2119	Flexible Twinax	540-1161-000
019512-2120	Flexible Twinax	540-1086-000

Intermountable In Standard Size 8 ARINC 600 Cavities

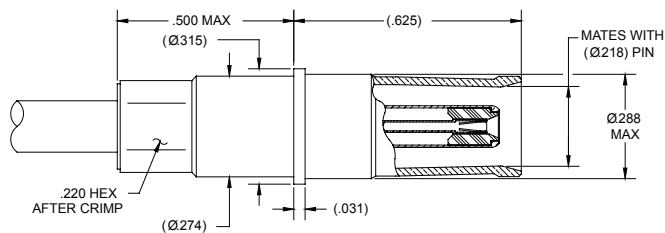
Size 8 ARINC 600 Twinax/Triax Pin Contact 75 Ohms



Part Number	Cable Type	Cable
019612-2117	Flexible Twinax	540-1050-000

Intermountable In Standard Size 8 ARINC 600 Cavities

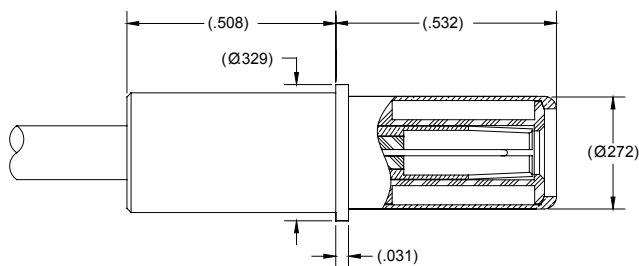
Size 8 ARINC 600 Twinax/Triax Socket Contact 75 Ohms



Part Number	Cable Type	Cable
019512-2117	Flexible Twinax	540-1050-000

Intermountable In Standard Size 8 ARINC 600 Cavities

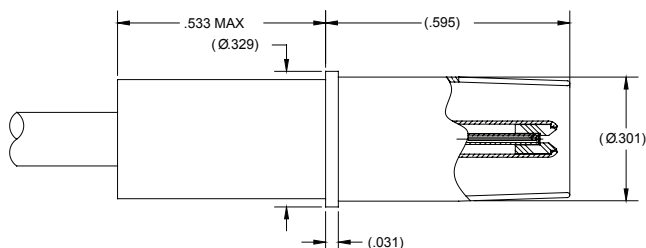
Size 8 ARINC 600 Twinax/Triax Pin Contact Special 85 Ohms



Part Number	Cable Type	Cable
019612-2121	Flexible Twinax	540-1161-000

Contacts Fit Into Special Size 8 ARINC 600 Cavities

Size 8 ARINC 600 Twinax/Triax Socket Contact Special 85 Ohms



Part Number	Cable Type	Cable
019512-2121	Flexible Twinax	540-1161-000

Intermountable In Standard Size 8 ARINC 600 Cavities



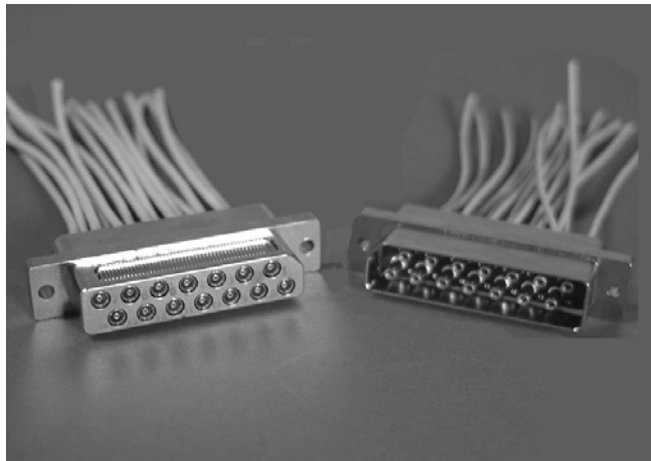
Size 10 D-Subminiature Connectors

Size 10 Triax Connectors and Contacts

Sabritec's rugged d-subminiature multiway connectors are designed to ground the outer shield of a triax contact directly to the shell of the connector. A multi-finger ground spring, fixed around the triax shell, provides a multi-point contact engagement for superior EMI shielding. The result is an extremely low contact resistance when measured from the triax contact outer body to the connector flange.

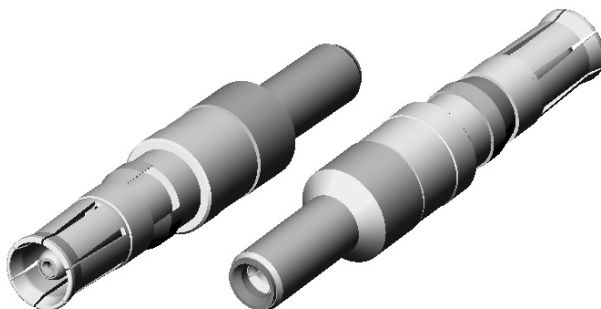
Up to the present day, the transmission of data in satellite applications has sufficed with the use of 50 ohm coax cable and connector interfaces. However, digital signal processors now used in commercial and military satellite installations require data to be transmitted for 100 Base-T and higher data rate formats. This makes the use of standard 50 ohm coax incompatible.

Sabritec's solution to this problem is a size 10 triax interface to transmit data at 100 ohms differential pair impedance packaged in a compact rugged connector. We took the design for the triax and manufactured a suitable package to be able to mate up to fourteen (14) of these contacts in a single connector interface. We added features such as a polarizing shell to prevent any mismatching and a scoop proof concentric triax interface that allows the repeatability and durability of mating the fourteen (14) Triax contacts.



Material & Finishes	
Shell & Center/Intermediate Contacts	Brass per ASTM-B16, alloy UNS C36000 or BeCu per ASTM-B196, alloy UNS C17200, C17300 or Leaded Nickel Copper, alloy UNS C19500, C19600 Gold Plate per MIL-DTL-45204, Type II, Class 1
Ground Spring	BeCu per ASTM-B194, alloy UNS C17200 Gold Plate per MIL-DTL-45204, Type II, Class 1 or Nickel Plate per SAE AMS-QQ-N-290
Snap Ring	BeCu per ASTM-B196, alloy UNS C17200, C17300 Nickel Plate per SAE AMS-QQ-N-290
Insulators	PTFE per ASTM-D1710 or ULTERM 1000
Connector Plug/Receptacle Shell	Aluminum per ASTM-B211/221, 6061-T6 Electroless Nickel plate per SAE AMS-C-26074
Data Rate	Up to 500 Mbits/second

All specifications subject to change without notice.



Size 10 Triaxial Pin to Socket Adapter and Triaxial Socket Contact

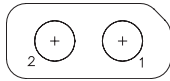


Multi-Way Triax Insert Arrangements

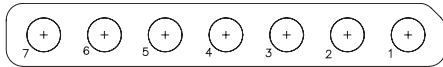
Adapters/Plugs/Receptacles

Insert Arrangements

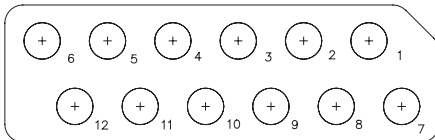
Shell Size 1
Arrangement 1-2
2 # 10 Triax/Twinax Contacts



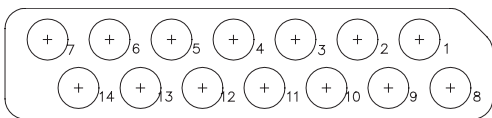
Shell Size 2
Arrangement 2-7
7 # 10 Triax/Twinax Contacts



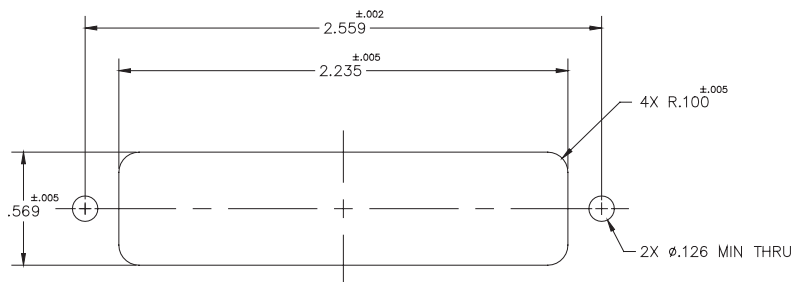
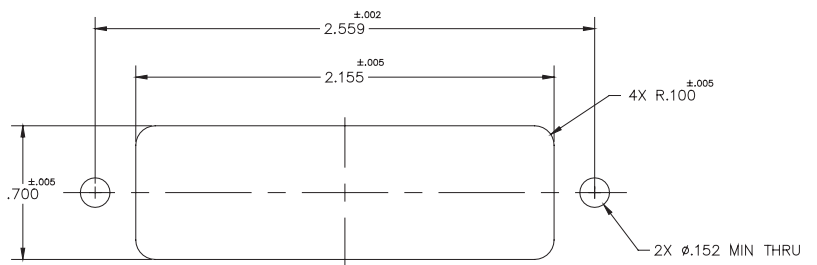
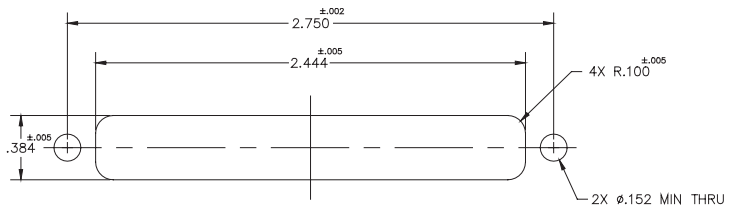
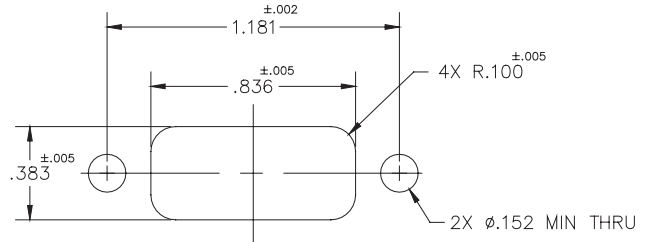
Shell Size 3
Arrangement 3-12
12 # 10 Triax/Twinax Contacts



Shell Size 4
Arrangement 4-14
14 # 10 Triax/Twinax Contacts



Panel Cut-Out For Multiway Connector Assemblies

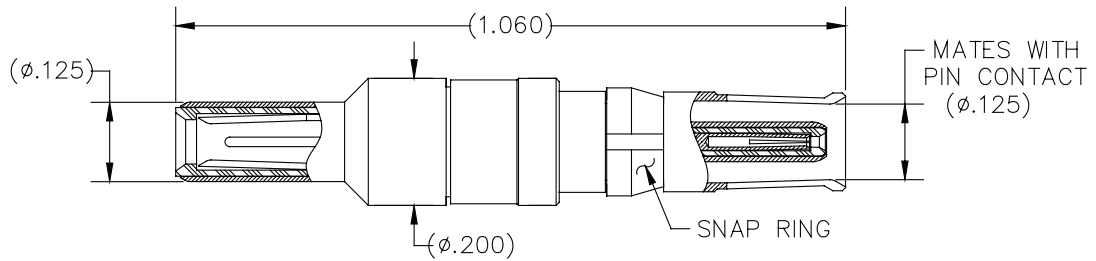




Multiway Triax/Twinax Contacts

Size 10 Triax/Twinax Contacts

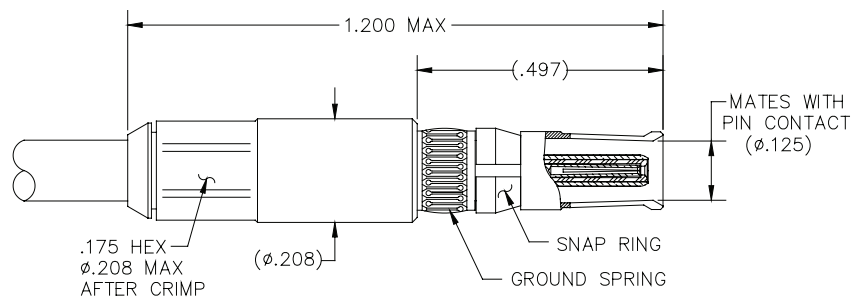
Size 10 Triaxial Pin to Socket Contact



P/N: 018800-4003

Contact Fits Sabritec Rugged D-Subminiature Adapter P/N: 012900-4005 Thru 012900-4008

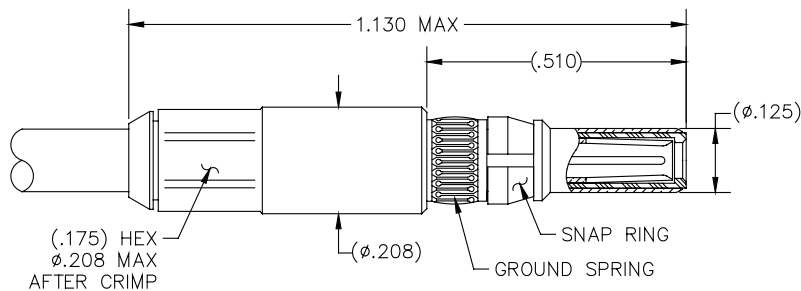
Size 10 Triaxial Socket Contact



Part Number	Cable Type	Cable
018912-2033	Flexible Twinax	540-1172-000

Contact Fits Sabritec Rugged D-Subminiature Plug P/N: 012900-2027 Thru 012900-2030

Size 10 Triaxial Pin Contact



Part Number	Cable Type	Cable
018812-2034	Flexible Twinax	540-1172-000

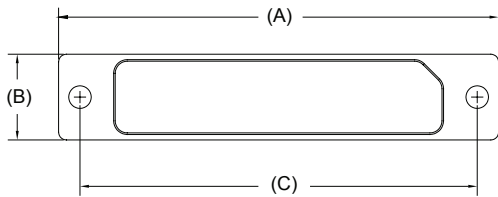
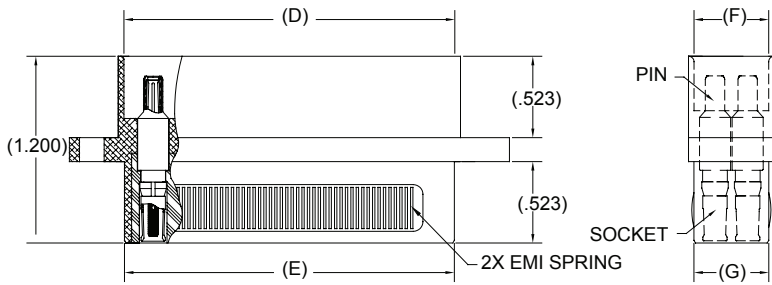
Contact Fits Sabritec Rugged D-Subminiature Receptacle P/N: 012900-3002 Thru 012900-3005



Multiway Triax/Twinax Connectors (MTC)

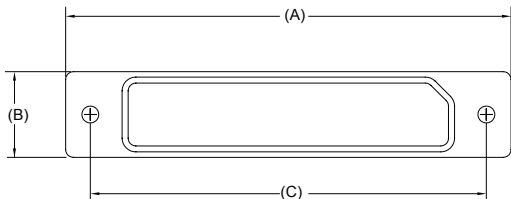
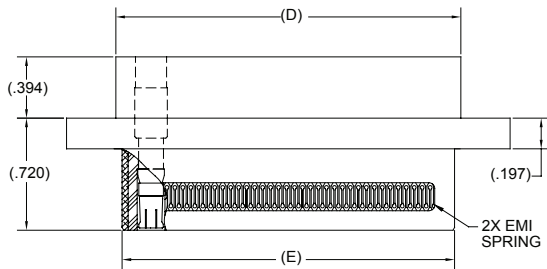
Adapters/Plugs/Receptacles

Rugged Multi-Way Triax/Twinax Adapter



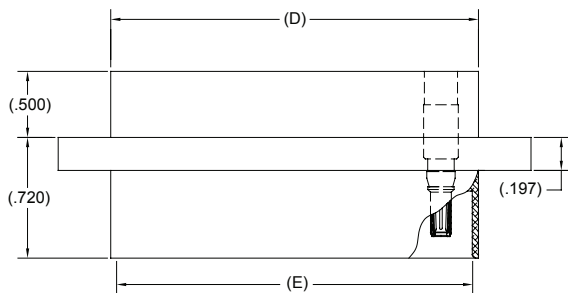
Part Number	Contacts	A	B	C	D	E	F	G
012900-4008	2	1.575	0.383	1.181	0.738	0.728	0.341	0.331
012900-4007	7	3.050	0.384	2.750	2.325	2.315	0.341	0.331
012900-4006	12	2.834	0.741	2.559	2.165	2.125	0.681	0.671
012900-4005	14	2.834	0.551	2.559	2.135	2.125	0.491	0.481

Rugged Multi-Way Triax/Twinax Plug



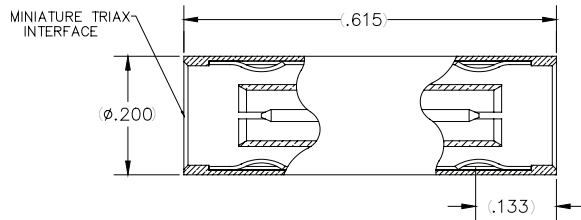
Part Number	Contacts	A	B	C	D	E	F	G
012900-2030	2	1.575	0.472	1.181	0.807	0.728	0.354	0.331
012900-2029	7	3.050	0.400	2.750	2.415	2.315	0.355	0.331
012900-2028	12	2.834	0.741	2.559	2.125	2.125	0.671	0.671
012900-2027	14	2.834	0.551	2.559	2.205	2.125	0.540	0.481

Rugged Multi-Way Triax/Twinax Receptacle



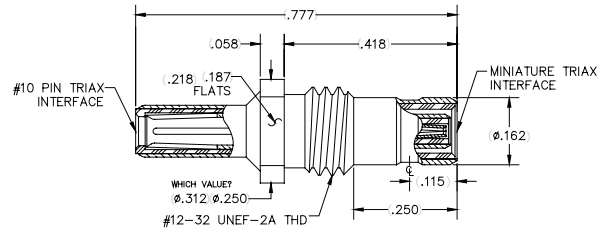
Part Number	Contacts	A	B	C	D	E	F	G
012900-3005	2	1.575	0.472	1.181	0.807	0.738	0.354	0.341
012900-3004	7	3.050	0.400	2.750	2.415	2.325	0.355	0.341
012900-3003	12	2.834	0.741	2.559	2.125	2.135	0.671	0.681
012900-3002	14	2.834	0.551	2.559	2.205	2.135	0.540	0.491

Miniature Triax Blind Mate Plug



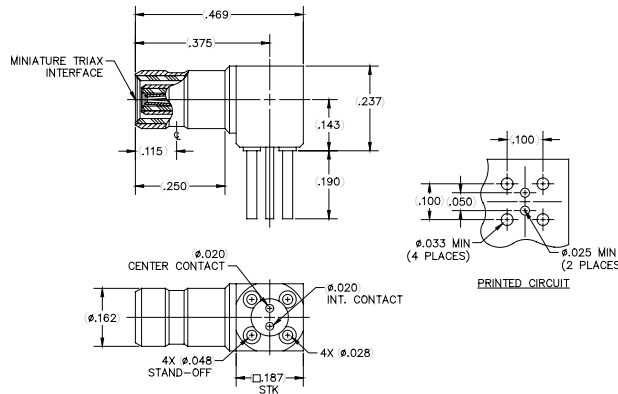
P/N: 014500-4001

Miniature Triax Receptacle to #10 Triax Pin



P/N: 014500-4002

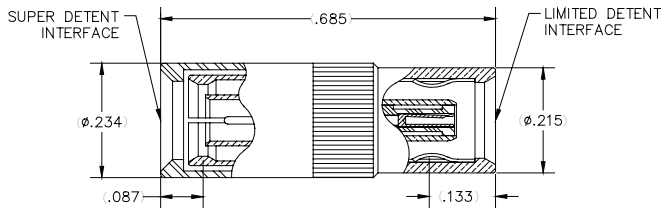
Miniature Triaxial Right Angle Receptacle PCB Mount



P/N: 014517-1001

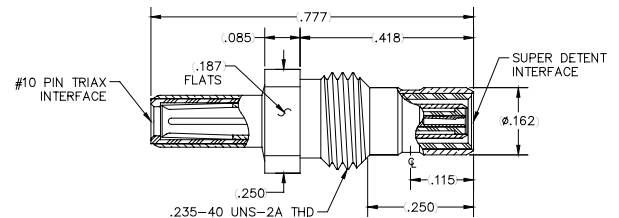
PCB Mount Triax Connectors

Triax Blindmate Plug Full to Limited Detent



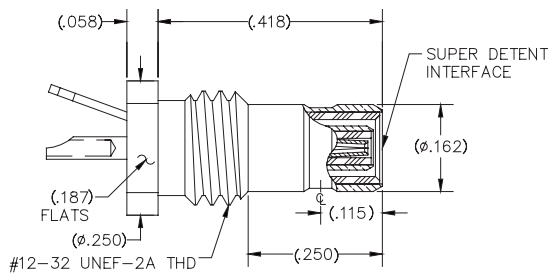
P/N: 014500-4003

Triax Receptacle Full Detent to #10 Pin



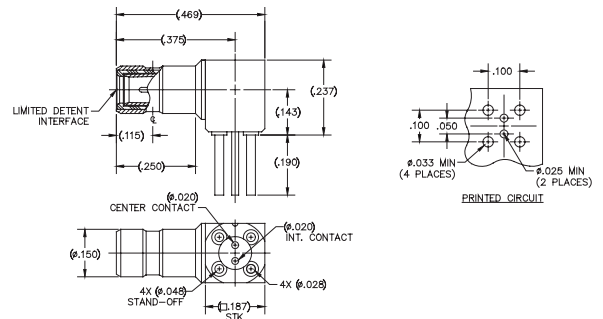
P/N: 014500-4004

Triax Bulkhead Mount Solder Tab Detent



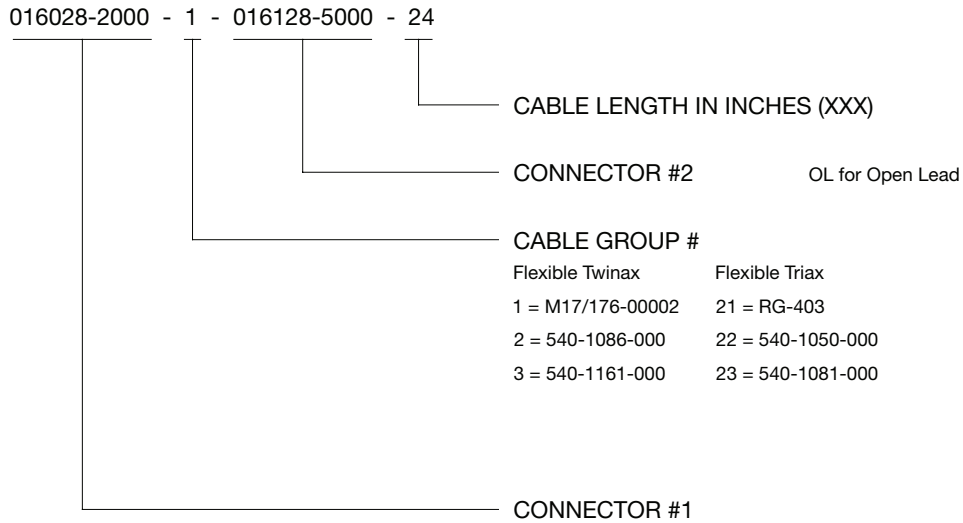
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Limited Detent R/A Receptacle PCB Mount

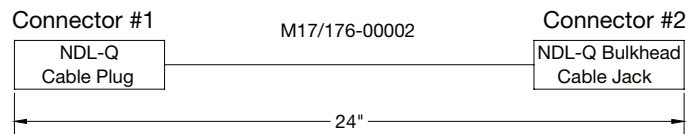


P/N: 014517-1002

Cable Part Number Description Table



Sample Part Number Code: 016028-2000 / 1 / 016128-5000 / 24



Flexible Twinax Cables

Cable Group	Cable Designation	Manufacturer	Impedance (Ohms)	Jacket	Conductor (DIA)
1	M17/176-00002	Mil-Spec	77	0.129"	0.024"
2	540-1086-000	Sabritec	98	0.143"	0.019"
3	540-1161-000	Sabritec	100	0.130"	0.024"



Flexible Triax Cables

Cable Group	Cable Designation	Manufacturer	Impedance (Ohms)	Jacket	Conductor (DIA)
21	RG-403	Mil-Spec	50	0.116"	0.012"
22	540-1050-000	Sabritec	75	0.125"	0.012"
23	540-1081-000	Sabritec	95	0.125"	0.008"

COAXIAL CONNECTORS AND CONTACTS



COAXIAL CONNECTORS AND CONTACTS



Coaxial Connectors

Overview

Sabritec offers a complete line of RF coaxial connectors and contacts in PCB Mount and cable assemblies. The product line features our MDHC, MDCX, SCX, SMP and SMPM connectors. Contacts include our high frequency MHC as well as standard MIL-DTL-38999, ARINC 404 and 600 contacts.

SCX Coaxial Connectors

The SCX connector series is the optimal ultraminiature RF solution for the designer. The product series offers the utmost savings in space utilization without compromising rugged mechanical performance and superior RF high frequency electrical performance. The SCX series features a .145" maximum overall diameter with a .375" overall length for the mated connector pair.



A revolutionary designed air dielectric interface is integrated into the SCX series resulting in exceptional RF performance with a 50 ohm characteristic impedance maintained throughout the mated connector pair. The result is an extremely small and rugged high frequency RF connector series with exceptionally low VSWR (1.25:1) from DC to 20 GHz. This connector series is ideal for low profile board to board stacking arrangements.

MDCX Coaxial Connectors

The MDCX coaxial contacts have a constant 50 ohm airline impedance interface and are 30% smaller than Sabritec's standard SCX coax connectors. Each coax contact has a maximum overall diameter of 0.125" fitted into a low-profile metalized housing.



MDHC Coaxial Connectors

MDHC high frequency coaxial contacts are a drop in replacement to Sabritec's MDCX RF contacts with an increased frequency range from 10 GHz to 40 GHz.

Multi-Pin High Frequency MHC Contacts

Sabritec's High Frequency Coax Contacts offer exceptional RF performance up to 26.5 GHz for Size 8 and 40 GHz for Size 12 contacts in multi-pin connector applications. Engineered with a "float mount" design, these contacts ensure low VSWR at microwave frequencies by preventing air gaps at the mating interface. These contacts are designed to be terminated to .086 diameter flexible cables (RG-405 equivalent).



Precision PCB Terminators

Cable terminators are available for direct terminations of the cable to the PCB eliminating the need for pigtail configurations. Available for RG-178 and RG-316 cable type configurations.

Coaxial Contacts: MIL-DTL-38999, ARINC 404 and ARINC 600

Complete line of coaxial contacts for MIL-DTL-38999, ARINC 404 and 600 connectors are available. These include size 5, 9, 12 and 16 contacts for various cable types and PC tail configurations.

Torque Isolation Connectors

Sabritec's patented torque isolation technology (patent # 6,902, 422 and 6,878,008) extends the rear body of the coaxial connector to alleviate stress against the cable to connector solder joint. The slotted extension straddles the conformable cable confining it to its initial direction while increasing the mutual solder surfaces between the cable and connector body.



MDCX & MDHC
CONNECTORS Pg. 134

SCX CONNECTORS
Pg. 139

SMP & SMPM
CONNECTORS Pg. 144

CONFORMABLE TORQUE
ASSIST SMA Pg. 148

HIGH FREQUENCY MHC
CONTACTS Pg. 149

COAXIAL CONTACTS
Pg. 152

GROUND PLANE
CONNECTORS Pg. 156

CABLE ASSEMBLY
ORDERING Pg. 157



Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



MDCX and MDHC Coaxial Connectors

MDCX and MDHC Overview and Specifications

Sabritec's multipin MDCX and MDHC coax connectors have a constant 50 ohm airline impedance interface and are 30% smaller than our SCX coaxial connectors. Each coax contact has a maximum overall diameter of 0.125" fitted into a low-profile metalized housing.

MDCX and MDHC coaxial contacts are compact in size allowing multiple high density connections in a Micro-D style shell for applications where space and weight savings are important. No cumbersome spring mounts are required. These connectors are also available with locking post mechanisms or blind-mate hardware attachment.

Insert arrangements are available in 2, 4, 6, 8 and 10 way coax assemblies as well as mixed signal, power, coax and high speed twinax contacts for hybrid arrangements.

MDHC high frequency coaxial contacts are a drop in replacement to Sabritec's MDCX RF contacts with an increased frequency range from 10 GHz to 40 GHz.

- MDCX VSWR of 1.25:1 (typ) up to 10 GHz (max mated pair).
- MDHC VSWR of 1.3:1 (typ) up to 30GHz (max mated pair).
- MDHC VSWR of 1.5:1 (typ) up to 40GHz (max mated pair).

Mechanical & Environmental Specifications	
Temperature Rating	-65°C to + 165°C
Corrosion	MIL-STD-202 Method 101, Test Condition B
Shock	MIL-STD-202 Method 213, Test Condition B
Vibration	MIL-STD-202 Method 204, Test Condition B
Thermal Shock	MIL-STD-202 Method 107, Test Condition B
Durability	1,000 cycles min. 500 cycles min. Signal Contacts
Mating/Unmate Force	1 lb. min.
Float Mount Constraints	0.010" full radial & 0.010 axial misalignment max
Electrical Specifications	
Dielectric Withstanding Voltage	500 VDC @sea level with 70% relative humidity
Insulation Resistance	5000 mega-ohms min. @ 200 VDC
Contact Current Rating	5 Amps max. for 0.030 Signal Pins 2.0 Amps max. for 0.015 Signal Contacts
Characteristic Impedance	50 Ohm constant airline impedance
RF HI Potential Withstanding Voltage	125 VRMS @ 5 MHz
Corona Level @ 70,000 ft.	Center contact to intermediate contact: 125 VAC
Permeability	2.0 max.
Frequency Range	MDHC: DC-40 GHz MDCX: DC-10 GHz
VSWR	1.5:1 (typ) Mated Pair up to 40 GHz (MDHC) 1.3:1 (typ) Mated Pair up to 30 GHz (MDHC) 1.25:1 (typ) Mated Pair up to 10 GHz (MDCX)
Material & Finishes	
Center & Outer Spring Contacts	Brass per ASTM-B16, alloy UNS C36000 or BeCu per ASTM-B196, alloy UNS C17200, C17300 Gold Plate per MIL-DTL-45204, Type II, Class 1
Insulators	PTFE per ASTM D-1710
Connector Plug/ Receptacle Shell	Aluminum per ASTM-B211/221, 6061-T6 Electroless Nickel Plate per SAE-AMS-C-26074
RoHS Compliant	

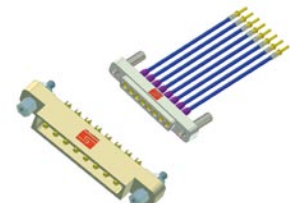
All specifications subject to change without notice.



MDCX Connectors

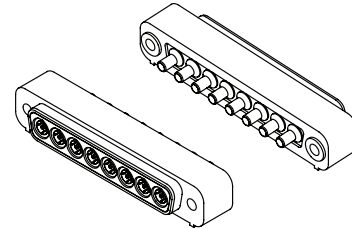
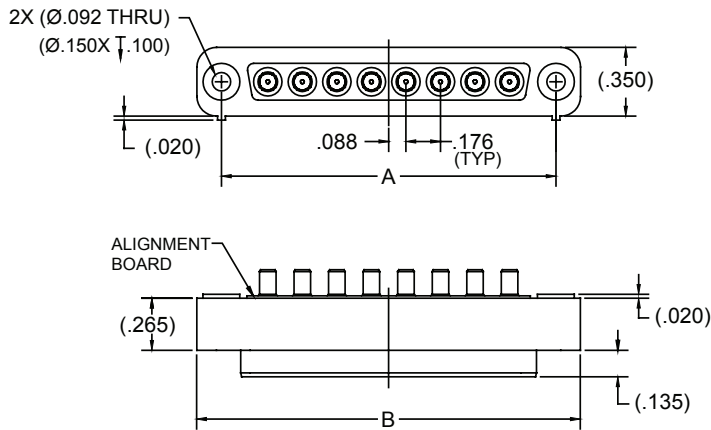


MDHC Connectors



Multipin Coax Connector with Locking Post

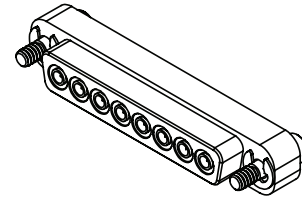
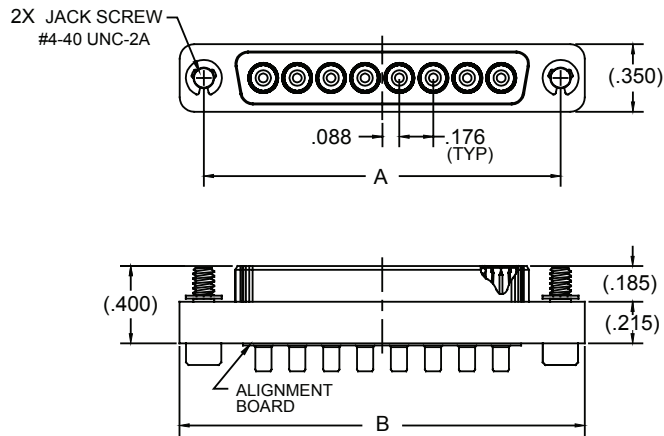
Connector Plug for Cable Mount MDCX & MDHC Coax Socket Contacts



Part Number	Contacts
017300-2003	2
017300-2004	4
017300-2006	6
017300-2008	8
017300-2010	10

*Cable Mount Coaxial Contacts Sold Separately

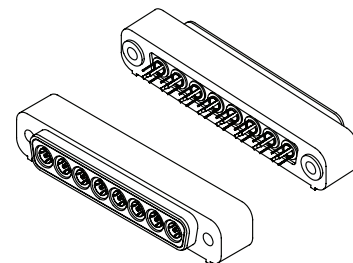
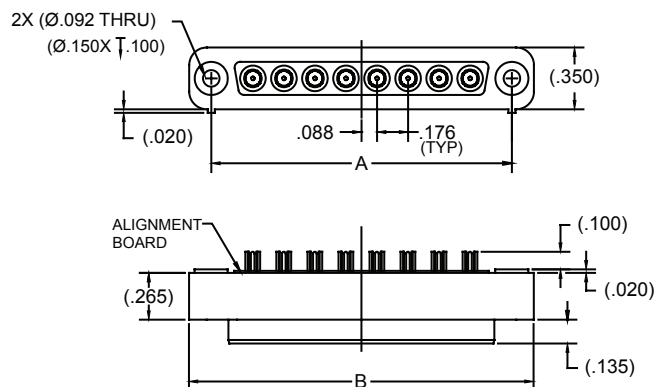
Connector Plug for Cable Mount MDCX & MDHC Coax Socket Contacts (w/Mounting Hardware)



Part Number	Contacts
017300-2013	2
017300-2014	4
017300-2016	6
017300-2018	8
017300-2020	10

*Cable Mount Coaxial Contacts Sold Separately

Connector Plug for MDCX & MDHC With PC-Tail Coax Socket Contacts



*PC Tail Contacts included

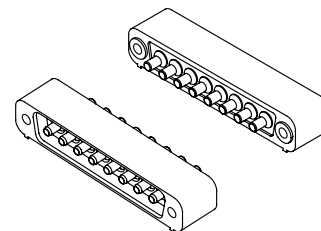
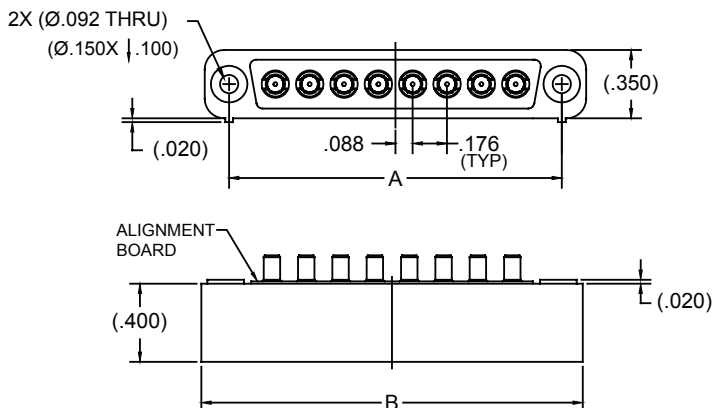
MDCX	MDHC	Contacts
017317-2003	017317-2013	2
017317-2004	017317-2014	4
017317-2006	017317-2016	6
017317-2008	017317-2018	8
017317-2010	017317-2020	10



MDCX and MDHC Connectors

Connector Receptacle Bodies for Pin Contacts

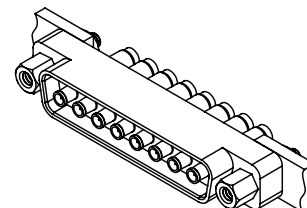
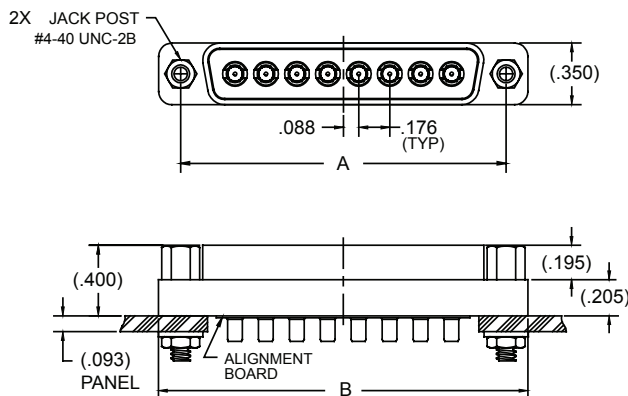
Connector Receptacle for Cable Mount MDCX & MDHC Coax Pin Contacts



Part Number	Contacts
017300-3003	2
017300-3004	4
017300-3006	6
017300-3008	8
017300-3010	10

*Cable Mount Coaxial Contacts Sold Separately

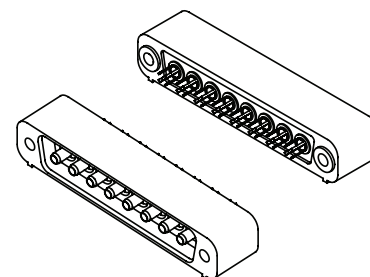
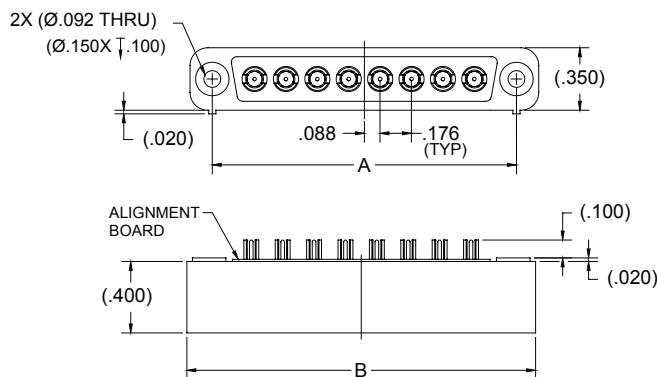
Connector Receptacle for Cable Mount MDCX & MDHC Coax Pin Contacts (w/Mounting Hardware)



Part Number	Contacts
017300-3013	2
017300-3014	4
017300-3016	6
017300-3018	8
017300-3020	10

*Cable Mount Coaxial Contacts Sold Separately

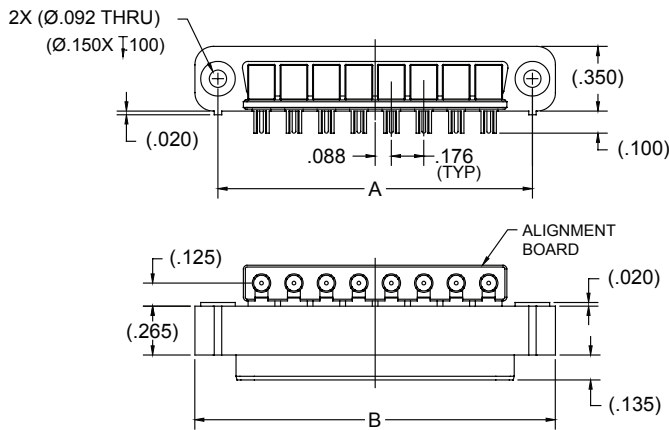
Connector Receptacle for MDCX & MDHC With PC-Tail Pin Contacts



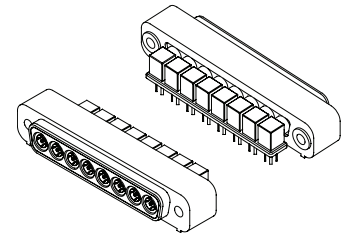
MDCX	MDHC	Contacts
017317-3003	017317-3013	2
017317-3004	017317-3014	4
017317-3006	017317-3016	6
017317-3008	017317-3018	8
017317-3010	017317-3020	10

*PC Tail Contacts included

Connector Plug With MDCX Right Angle PC-Tail Coax Socket Contact

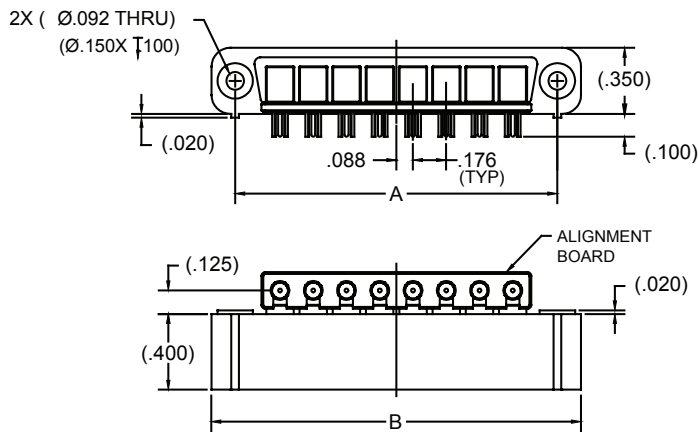


*PC Tail Contacts included

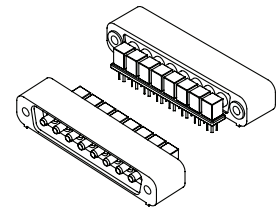


Part Number	Contacts
017317-1103	2
017317-1104	4
017317-1106	6
017317-1108	8
017317-1110	10

Connector Receptacle With MDCX Right Angle PC-Tail Coax Pin Contact

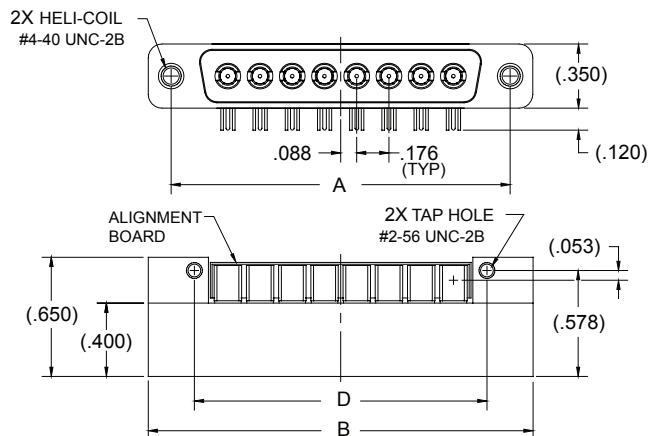


*PC Tail Contacts included

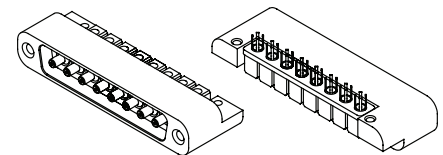


Part Number	Contacts
017317-1003	2
017317-1004	4
017317-1006	6
017317-1008	8
017317-1010	10

Connector Receptacle With MDCX Right Angle PC-Tail Coax Pin Contact (w/Mounting Hardware)

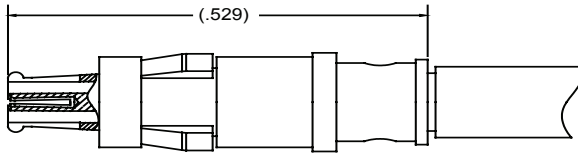


*PC Tail Contacts included



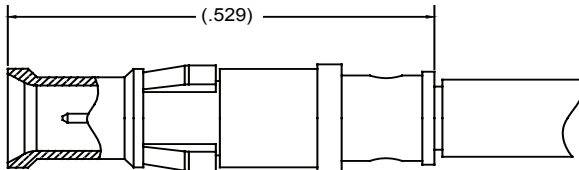
Part Number	Contacts
017317-1203	2
017317-1204	4
017317-1206	6
017317-1208	8
017317-1210	10

MDHC Coax Pin Contact (DC-40 GHz)



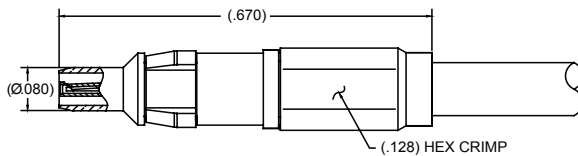
Part Number	Cable Type	Cable
013209-2004	Flexible Coax	RG-405 Flex

MDHC Coax Socket Contact (DC-40 GHz)



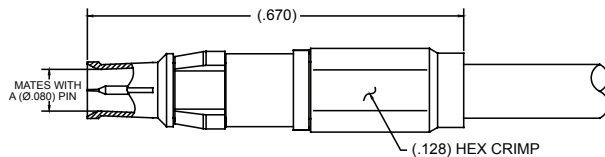
Part Number	Cable Type	Cable
013109-2004	Flexible Coax	RG-405 Flex

Removable MDCX Coax Pin Contact (DC-10 GHz)



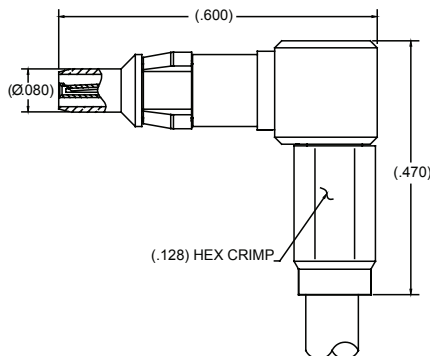
Part Number	Cable Type	Cable
013214-2005	Flexible Coax	RG-178
013214-2004	Flexible Coax	RG-316
013214-2003	Flexible Coax	RG-405 Flex

Removable MDCX Coax Socket Contact (DC-10 GHz)



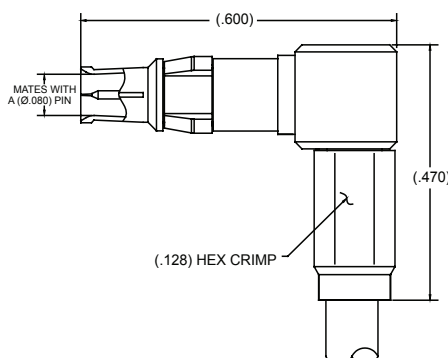
Part Number	Cable Type	Cable
013114-2005	Flexible Coax	RG-178
013114-2004	Flexible Coax	RG-316
013114-2003	Flexible Coax	RG-405 Flex

Removable MDCX Right Angle Coax Pin Contact (DC-10 GHz)



Part Number	Cable Type	Cable
013214-1003	Flexible Coax	RG-178
013214-1002	Flexible Coax	RG-316
013214-1001	Flexible Coax	RG-405 Flex

Removable MDCX Right Angle Coax Socket Contact (DC-10 GHz)



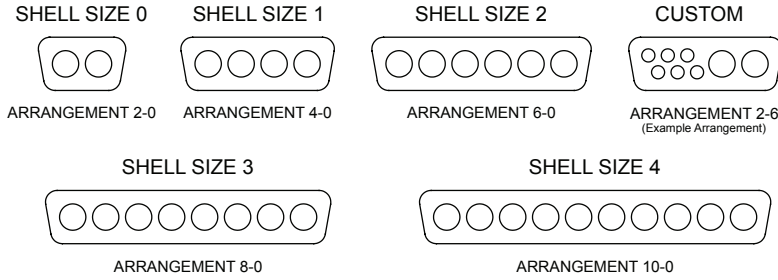
Part Number	Cable Type	Cable
013114-1003	Flexible Coax	RG-178
013114-1002	Flexible Coax	RG-316
013114-1001	Flexible Coax	RG-405 Flex



MDCX & MDHC Ordering Information

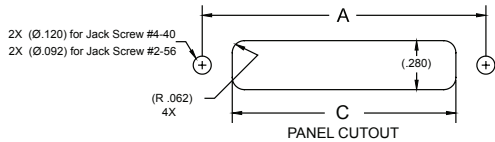
Insert Arrangements/Interface/Ordering Information

Insert Arrangements

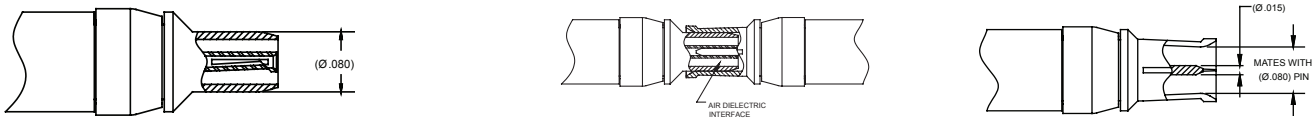


Shell Size	Contacts	A dim.	B dim.	C dim.	D dim.
0	2	.800	1.050	.525	.600
1	4	1.150	1.400	0.875	.950
2	6	1.500	1.750	1.225	1.300
3	8	1.850	2.100	1.575	1.650
4	10	2.200	2.450	1.925	2.000

*Consult factory for Hybrid Arrangement Dimension Details

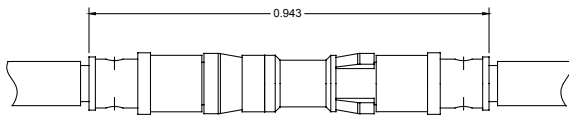


MDCX Coaxial Contact Interface

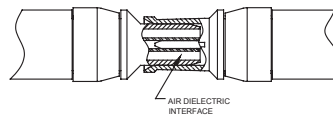


MDHC Coaxial Contact Interface

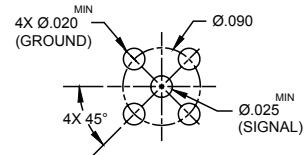
Contact Mated Pair



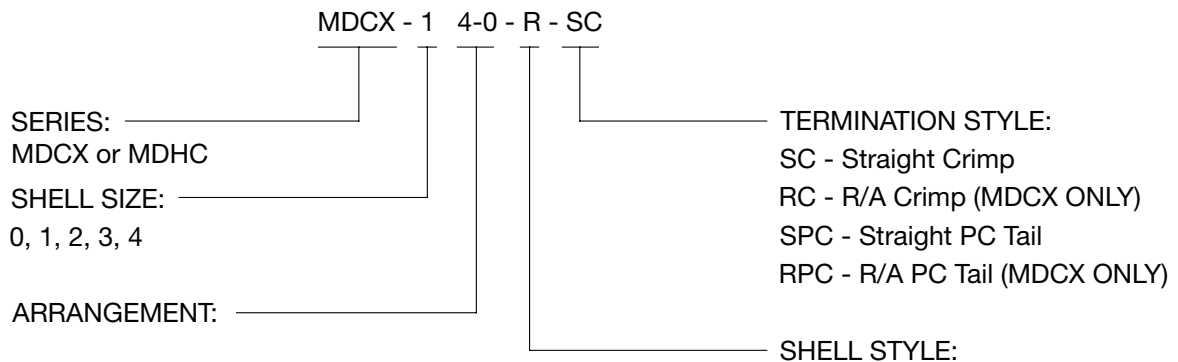
Contact Interface



MDCX & MDHC PCB FOOTPRINT



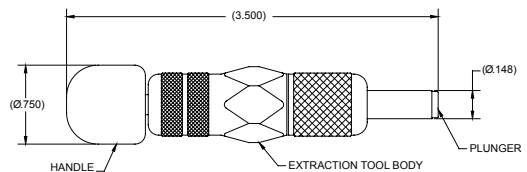
Coax Multi-Pin Connector Part Description



Notes:

1. Coax Contacts Sold Separately for Crimp Version
2. Optional mounting hardware available, please specify panel thickness.
3. Removable Coax Contacts Require Removal Tool SIR-029 (ordered separately)
4. Consult Factory for Mixed Layouts

Removal Tool SIR-029





SCX Coaxial Connectors

Connector Specifications

The SCX series offers the utmost savings in space utilization without compromising rugged mechanical performance and superior RF high frequency electrical performance. These connectors feature a .145" maximum overall diameter with a .375" overall length for the mated connector pair.

A revolutionary designed air dielectric interface is integrated into the SCX series resulting in exceptional RF performance with a 50 ohm characteristic impedance maintained throughout the mated connector pair. The result is an extremely small and rugged high frequency RF connector series with exceptionally low VSWR (1.25:1) from DC to 20 GHz. This connector series is ideal for low profile board to board stacking arrangements.



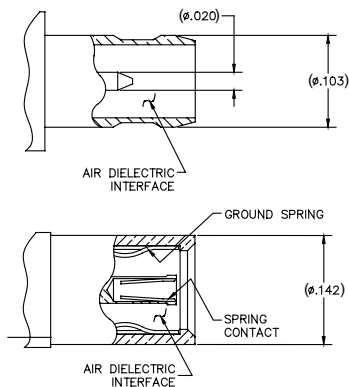
All configurations and styles are available including surface mount, end launch and compliant pin press-fit PCB mounting alternatives. The cable mount connectors are designed for a full crimp assembly with standard crimp tools or solder assembly termination.

The SCX series is applicable for high frequency RF applications from DC to 20 GHz. The durable connector is gold plated with heat treated beryllium copper spring fingers allowing for a minimum of 1,000 mating cycles without any noted degradation of RF performance. The spring fingers allow for a rugged and reliable snap-on, detent locking interconnect mechanism. The low profile mated pair overall length of .375" significantly increases the number of mounting possibilities.

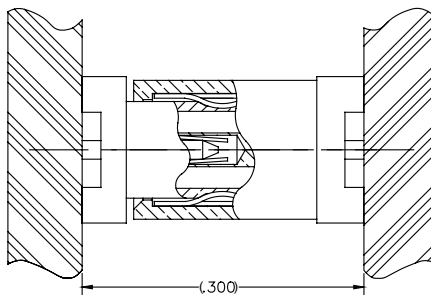
Mechanical & Environmental Specifications	
Temperature Rating	-65°C to + 165°C
Corrosion	MIL-STD-202 Method 101, Test Condition B
Shock	MIL-STD-202 Method 213, Test Condition B
Vibration	MIL-STD-202 Method 204, Test Condition B
Thermal Shock	MIL-STD-202 Method 107, Test Condition B
Durability	1000 Mate/Unmate cycles min.
Mating/Unmate Force	1 lb. min.
Float Mount Constraints	0.10" full radial & 0.015 axial misalignment max
Electrical Specifications	
Dielectric Withstanding Voltage	500 VDC @sea level with 70% relative humidity
Insulation Resistance	5000 mega-ohms min. @ 200 VDC
Contact Current Rating	2 Amps max.
Characteristic Impedance	50 Ohm constant airline impedance
RF HI Potential Withstanding Voltage	125 VRMS @ 5 MHz
Corona Level @ 70,000 ft.	Center contact to intermediate contact: 125 VAC
Permeability	2.0 max.
Frequency Range	DC to 20 GHz
VSWR	1.25:1 max. (mated pair)
Material & Finishes	
Shell	Brass per ASTM B16, alloy UNS C36000 Gold plate per MIL-DTL-45204, Type II, Class 1
Center Contacts	Brass per ASTM B16, alloy UNS 36000 or BeCu per ASTM-B196, alloy UNS C17200, C17300 Gold plate per MIL-DTL-45204, Type II, Class 1
Ground Spring	BeCu per ASSTM-B194, alloy UNS C17200 Gold plate per MIL-DTL-45204, Type II, Class 1
Insulators	PTFE per ASTM D-1710

All specifications subject to change without notice.

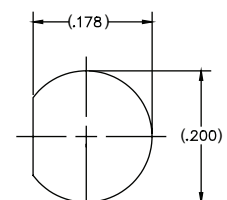
SCX INTERFACE DIMENSIONS



Mated Pair Length



Mounting D-Hole Bulkhead Connectors

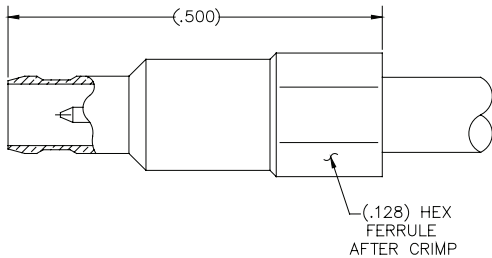




SCX Cable & Bulkhead Connectors

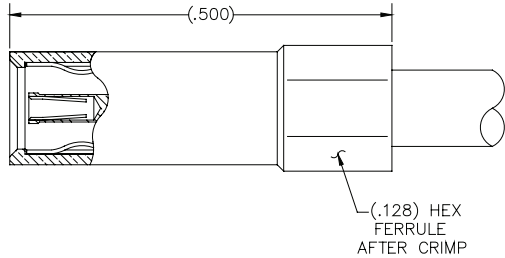
Cable Type Connectors

SCX Cable Plug



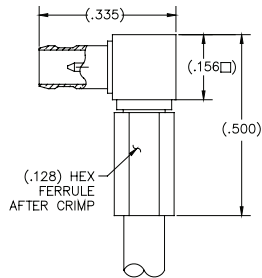
Part Number	Cable Type	Cable
013220-2000	Flexible Coax	RG-316
013220-2001	Flexible Coax	RG-178
013220-2002	Semi-Rigid Coax	RG-405

SCX Cable Receptacle



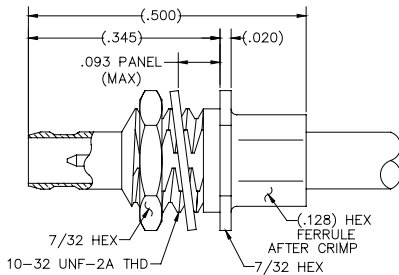
Part Number	Cable Type	Cable
013120-2000	Flexible Coax	RG-316
013120-2001	Flexible Coax	RG-178
013120-2002	Semi-Rigid Coax	RG-405

SCX Right Angle Plug



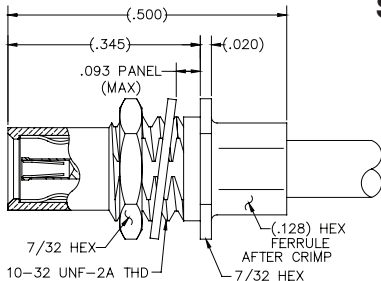
Part Number	Cable Type	Cable
013220-1008	Flexible Coax	RG-316
013220-1009	Flexible Coax	RG-178
013220-1010	Semi-Rigid Coax	RG-405

SCX Bulkhead Mount Cable Plug



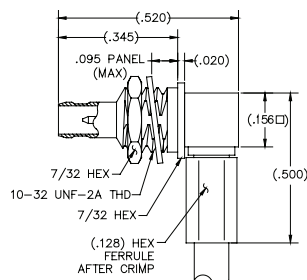
Part Number	Cable Type	Cable
013220-5011	Flexible Coax	RG-316
013220-5012	Flexible Coax	RG-178
013220-5013	Semi-Rigid Coax	RG-405

SCX Bulkhead Mount Cable Receptacle



Part Number	Cable Type	Cable
013120-5011	Flexible Coax	RG-316
013120-5012	Flexible Coax	RG-178
013120-5013	Semi-Rigid Coax	RG-405

SCX Right Angle Bulkhead Mount Cable Plug



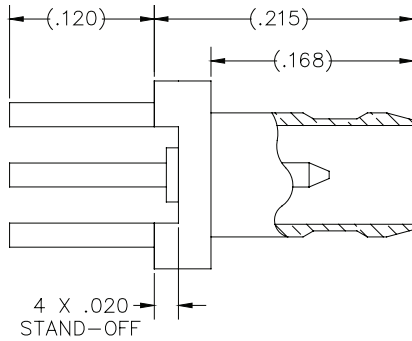
Part Number	Cable Type	Cable
013212-1011	Flexible Coax	RG-316
013212-1012	Flexible Coax	RG-178
013212-1013	Semi-Rigid Coax	RG-405



SCX PCB Connectors

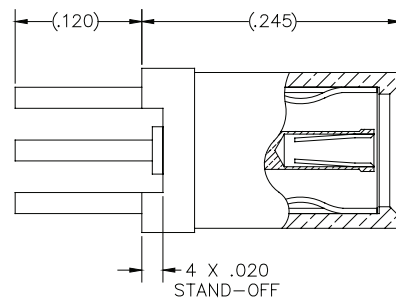
PCB Type Connectors

Straight PCB Plug



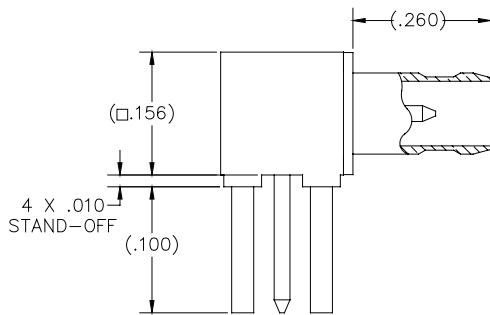
P/N 013200-2024

Straight PCB Receptacle



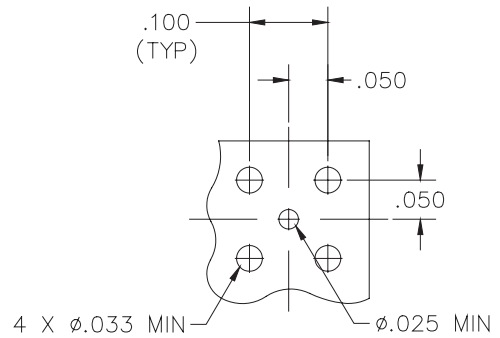
P/N 013100-2024

Right Angle PCB Plug



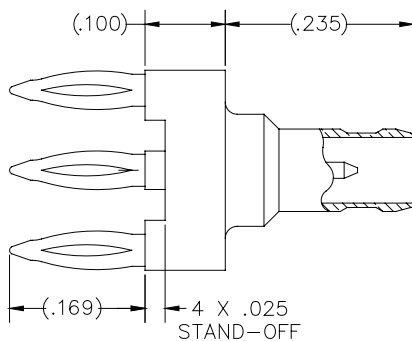
P/N 013200-1002

PCB Mounting Dimension



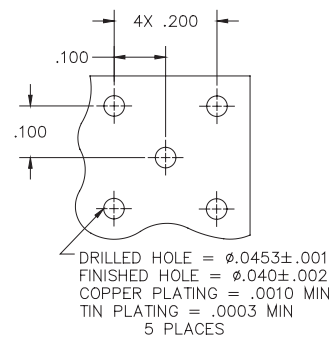
PCB Pattern for .100 Centers

Compliant Pin PCB Plug



P/N 013200-2029

Compliant Pin PCB Mounting Dimension



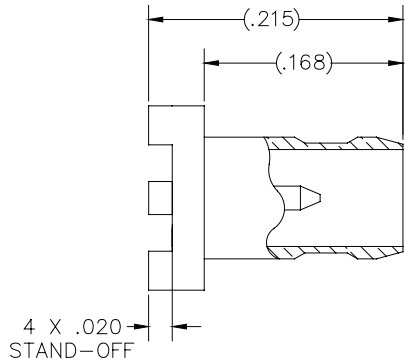
PCB Pattern for .200 Centers



SCX Surface Mount Connectors

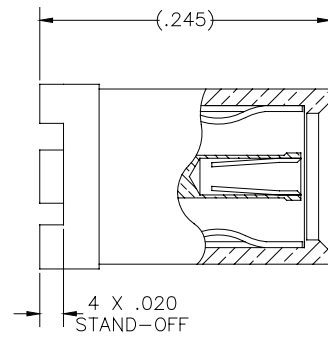
Surface Mount Connectors

Surface Mount Plug



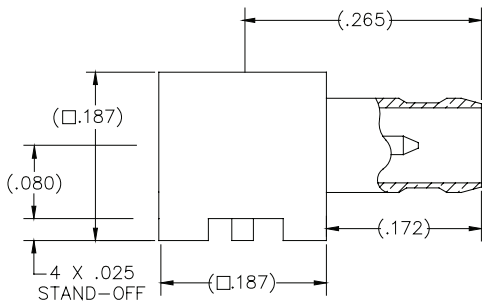
P/N 013200-2023

Surface Mount Receptacle



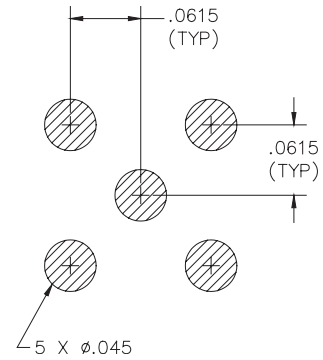
P/N 013100-2023

Right Angle Surface Mount Plug

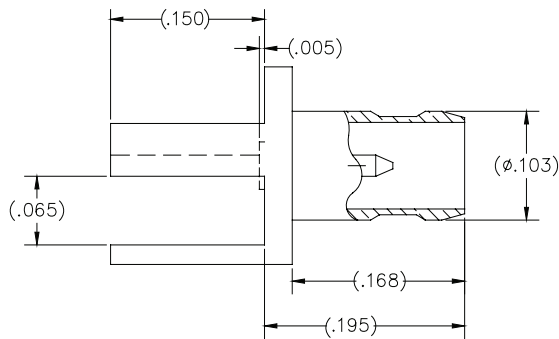


P/N 013200-1003

Surface Mount PCB Layout

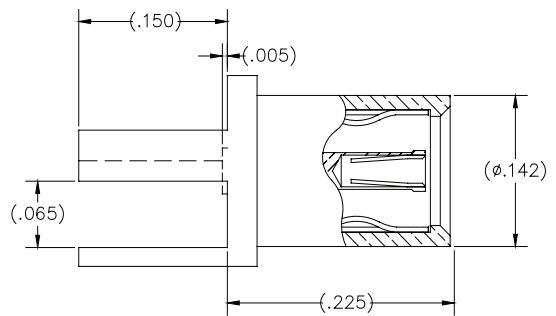


End Launch Surface Mount Plug



P/N 013200-2030

End Launch Surface Mount Receptacle



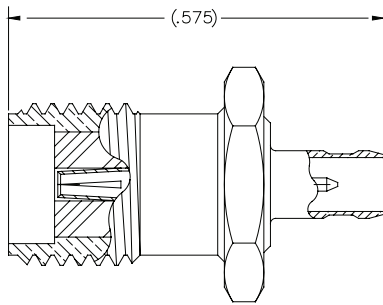
P/N 013100-2030



SCX Adapters / Terminators

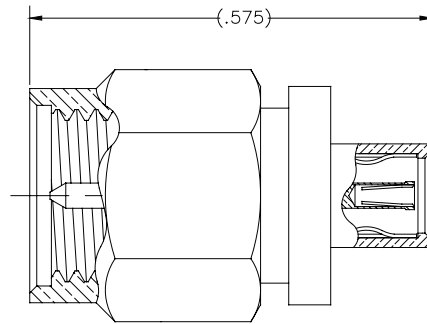
Between Series Adapters/Terminators

SCX Plug to SMA Jack Adapter



P/N 013200-4010

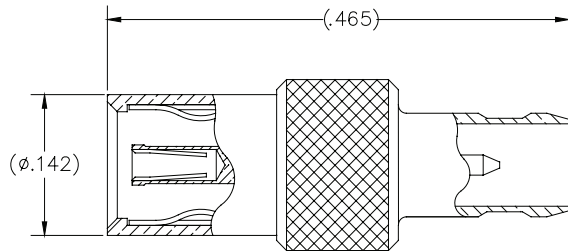
SCX Receptacle to SMA Plug Adapter



P/N 013100-4010

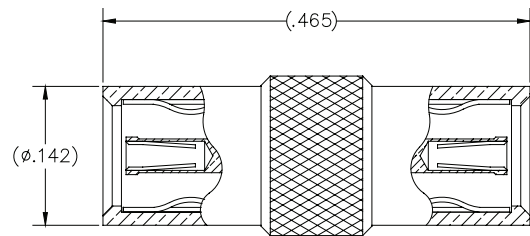
In-Series SCX Adapters

Plug to Receptacle Adapter



P/N 013100-4011

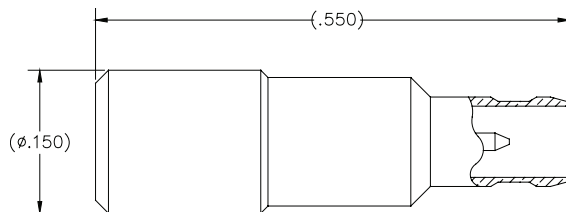
Receptacle to Receptacle Adapter



P/N 013200-4011

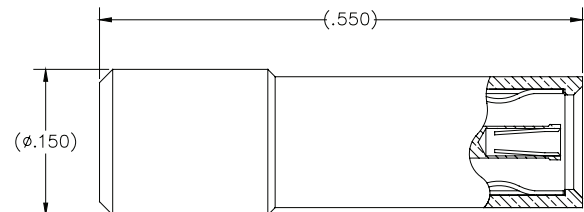
50 Ohm Load Terminators

50 Ohm Load Termination Plug



P/N 013200-2028

50 Ohm Load Termination Receptacle



P/N 013100-2028

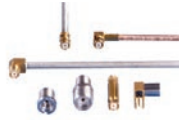


SMP Coaxial Connectors

Connector Specifications

The SMP coax connector line features a snap-in vibration proof connection, suitable for high shock mobile applications and space level connector requirements of extreme random vibration, thermal shock, and outgassing environments. Frequency range is DC-40 GHz with low VSWR.

The extremely small package size allows for high density board-to-board applications. Blind mate SMP connectors are available in smooth bore for maximum float of mating (0.015" radial and axial misalignment between mating planes). The full and limited detent SMP connections are suitable for mobile applications with extreme shock and vibration requirements. These connectors meet or exceed the applicable requirements of DSCC drawing numbers 94007, 94008 and MIL-STD-348.

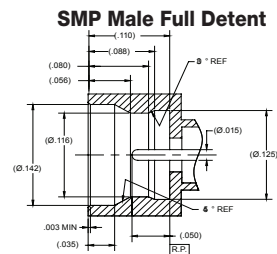


In addition to the SMP coaxial connector line, Sabritec offers a smaller SMPM series. The SMPM series is available with detent and non detent mating levels with blindmate capabilities. The SMPM coaxial connector is 30% smaller than the SMP and has the advantage of a higher frequency range capable of 60 GHz.

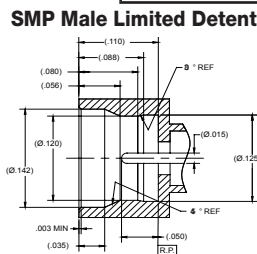
Features and Benefits:

- Meets extreme shock and high vibration requirements
- Snap in connection
- Durable light weight construction
- Ideal for high density packaging
- Full and limited detent locking
- Blind-mate smooth bore series available
- Space approved SMP connectors available
- Permits high density board-to-board connections
- Gold plated contact members

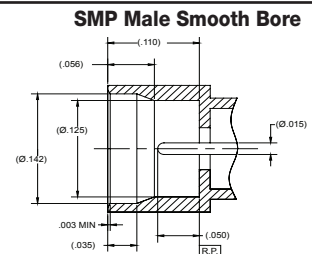
Interface Dimensions



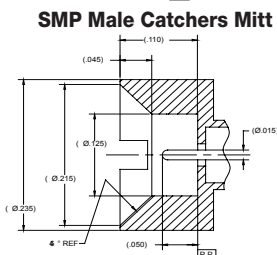
SMP Male Full Detent



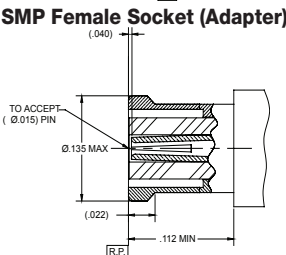
SMP Male Limited Detent



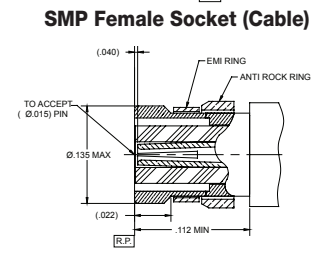
SMP Male Smooth Bore



SMP Male Catchers Mitt



SMP Female Socket (Adapter)



SMP Female Socket (Cable)

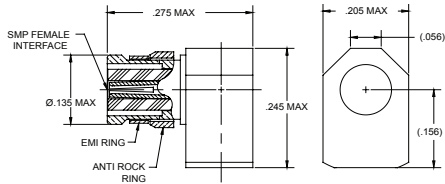
Mechanical & Environmental Specifications	
Temperature Rating	-65°C to + 165°C
Corrosion	MIL-STD-202 Method 101, Test Condition B
Shock	MIL-STD-202 Method 213, Test Condition B
Vibration	MIL-STD-202 Method 204, Test Condition B
Thermal Shock	MIL-STD-202 Method 107, Test Condition B
Durability	100 cycles min.
Force to Engage	Full Detent: 15 lbs max Limited Detent: 10 lbs max Smooth Bore, Catchers Mitt: 2 lbs max
Force to Disengage	Full Detent: 5 lbs max Limited Detent: 2 lbs max Smooth Bore, Catchers Mitt: 0.5 lbs max
Electrical Specifications	
Dielectric Withstanding Voltage	500 VRMS @sea level
Insulation Resistance	5000 mega-ohms min. @ 200 VRMS
Voltage Rating	335 VRMS @ sea level
Impedance	50 Ohm constant airline impedance
Frequency Range	DC to 40 GHz
VSWR	DC to 26.5 GHz 1.15 max 26.5 to 40 GHz 1.5:1 max
Material & Finishes	
Center & Outer Spring Contacts	BeCu per ASTM-B196, alloy UNS C17200, C17300 Gold plate per MIL-DTL-45204, Type II, Class 1
Shell	Brass per ASTM-16, alloy UNS C36000 Gold plate per MIL-DTL-45204, Type II, Class 1 or 305 CRES per ASTM-A240, passivated per ASTM-A967
Insulators	PTFE per ASTM D-1710 or equivalent
Interconnect Configurations	
Flange Mount Right Angle Flange Mount Thread-In Box Mount Press-In Flange Mount PCB Mount, Right Angle & Straight Cable Connectors, Semi-Rigid & Flexible RG Cables	



SMP Coaxial Connectors

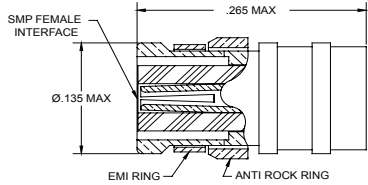
Cable Mount/PCB Connectors

SMP Right Angle Female to S/R Cable



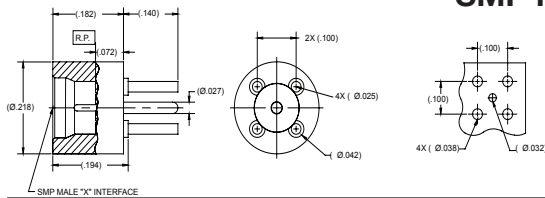
Part Number	Cable Type	Cable
219936-1000	Semi-Rigid	SR.047
219909-1001	Semi-Rigid	SR.086

SMP Straight Female to Semi Rigid Cable



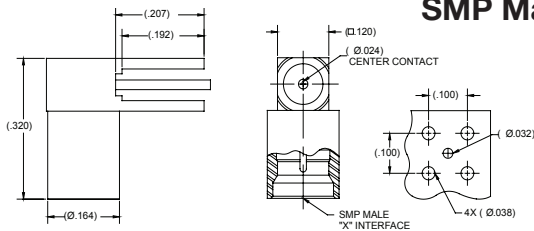
Part Number	Cable Type	Cable
219936-3000	Semi-Rigid	SR.047
219909-3001	Semi-Rigid	SR.086

SMP Male to Straight PCB Mount



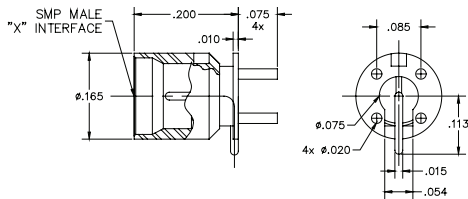
Part Number	Detent Level
219900-2000	FD
219900-2001	LD
219900-2002	SB

SMP Male to Right Angle PCB Mount



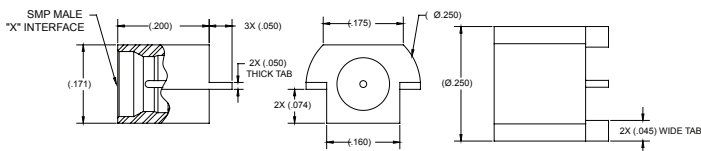
Part Number	Detent Level
219900-1000	FD
219900-1001	LD
219900-1002	SB

SMP Male Straight PCB Mount



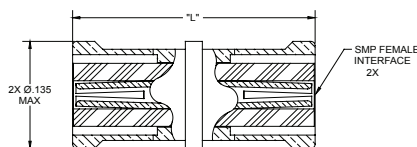
Part Number	Detent Level
219900-2003	FD
219900-2004	LD
219900-2005	SB

SMP Male PCB Edge Launch to Straight Termination



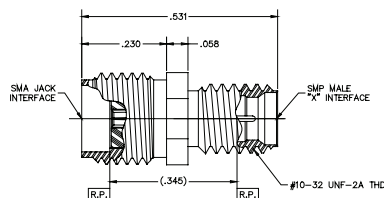
Part Number	Detent Level
219900-2006	FD
219900-2007	LD
219900-2008	SB

SMP Female to Female Adapter



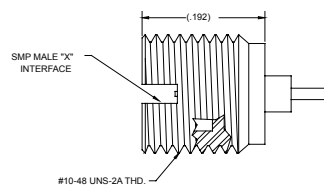
Part Number	Length
219900-4000	0.254
219900-4001	0.395
219900-4002	0.484
219900-4003	0.568

SMA Female to SMP Male Thread-In Adapter



Part Number	Detent Level
219900-4008	FD
219900-4009	LD
219900-4010	SB

SMP Male Straight Termination



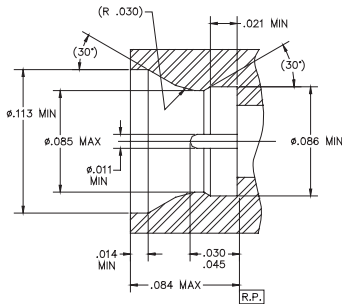
Part Number	Detent Level
219900-2009	FD
219900-2010	LD
219900-2011	SB



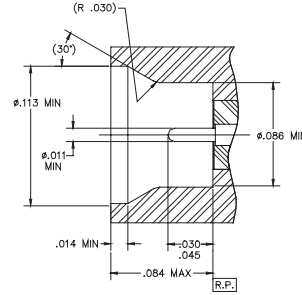
SMPM Coaxial Connectors

Interface Mating Dimensions

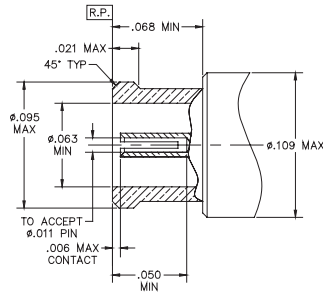
SMPM Male Detent



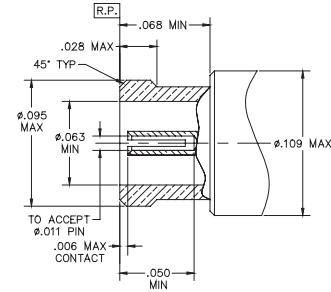
SMPM Male Non-Detent



SMPM Female (Adapter)

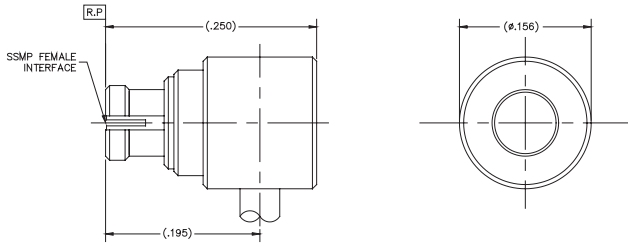


SMPM Female (Cable)



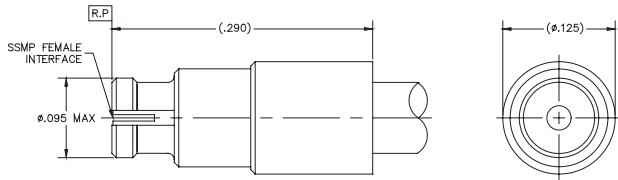
SMPM Cable Mount Connectors/Adapters

SMPM Right Angle Female to S/R Cable



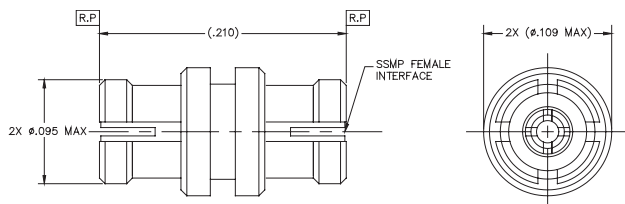
Part Number	Cable Type	Cable
229909-1000	Semi-Rigid	SR.047
229909-1001	Semi-Rigid	SR.086

SMPM Straight Female to S/R Cable



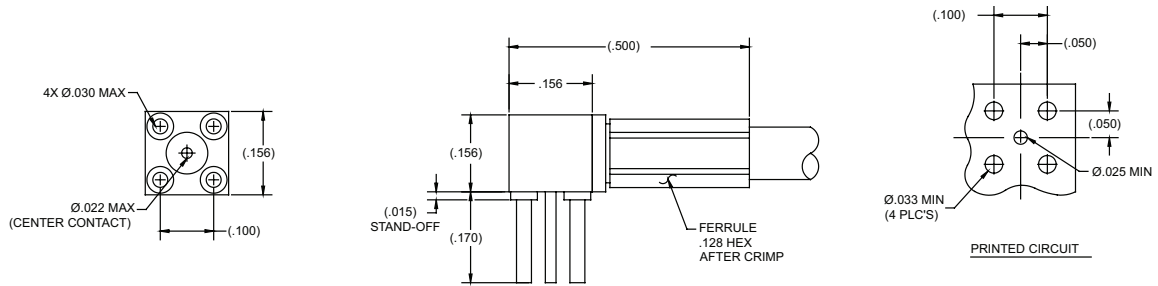
Part Number	Cable Type	Cable
229909-3000	Semi-Rigid	SR.047
229909-3001	Semi-Rigid	SR.086

SMPM Female to Female Adapter



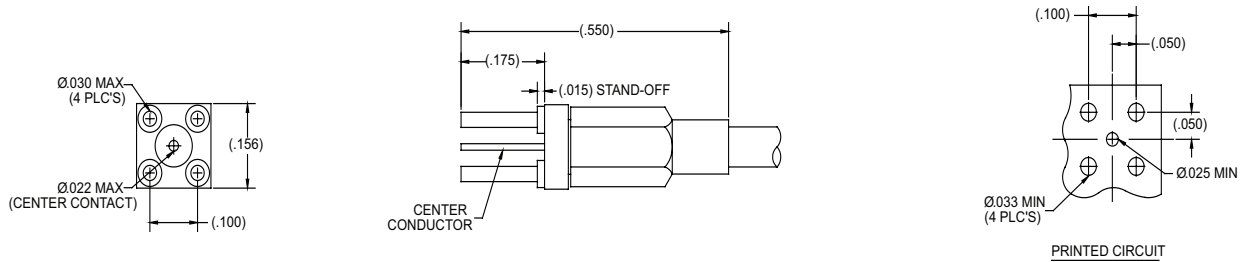
P/N 229900-4000

Right Angle PCB Mount to Cable



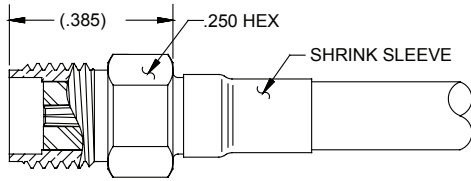
Part Number	Cable Type	Cable
010012-1011	Flexible Coax	RG-178
010012-1012	Flexible Coax	RG-316

Straight PCB Mount to Cable



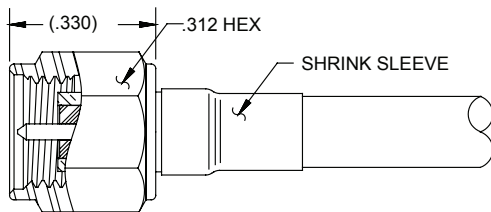
Part Number	Cable Type	Cable
010012-2010	Flexible Coax	RG-178
010012-2011	Flexible Coax	RG-316

Straight SMA Jack



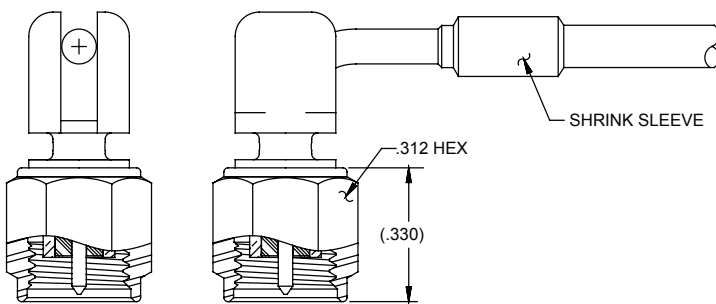
Part Number	Cable Type	Cable
011609-8000	Conformable	.141 Flex
011609-8001	Conformable	.086 Flex

Straight SMA Plug



Part Number	Cable Type	Cable
011509-8000	Conformable	.141 Flex
011509-8001	Conformable	.086 Flex

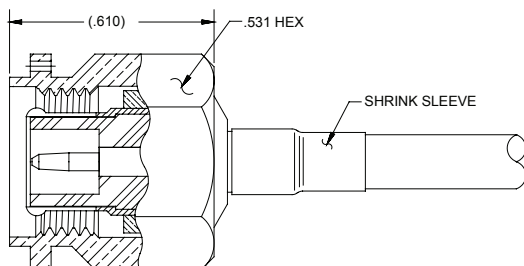
Right Angle SMA Plug (Torque Isolation Connector)



Part Number	Cable Type	Cable
011509-1002	Conformable	.141 Flex
011509-1003	Conformable	.086 Flex

Patent # 6,902,422 and 6,878,008

Straight TNC Plug



Part Number	Cable Type	Cable
011109-8000	Conformable	.141 Flex
011109-8001	Conformable	.086 Flex



Multi-Pin High Frequency Contacts (MHC)

High Frequency Contacts



Sabritec's High Frequency Coax Contacts (MHC) offer exceptional RF performance up to 26.5 GHz for Size 8 and 40 GHz for Size 12 contacts in multi-pin connector applications. Engineered with a "float mount" design, these contacts ensure low VSWR at microwave frequencies by preventing air gaps at the mating interface. These contacts are designed to be terminated to .086 diameter flexible cables (RG-405 equivalent).

MHC Contact Features:

- Fits size 8 and 12 cavities for MIL-DTL-38999, ARINC 404 and ARINC 600
- Fits Size 8 cavity for MIL-DTL-24308 D-Sub
- Spring loaded for optimum contact mating force
- High frequency performance
- Low VSWR
 - Size 8: 1.15:1 Typ Mated Pair (DC to 26.5 GHz)
 - Size 12: 1.25:1 Typ Mated Pair (DC to 26.5 GHz)
 - 1.5:1 Typ Mated Pair (26.5 - 40 GHz)
- Insertion Loss:
 - 0.15 dB to 26.5 GHz Typ (Size 8)
 - 0.2 dB to 40 GHz Typ (Size 12)
- Socket contacts are spring loaded float mount for superior RF performance and reliability

Electrical Specifications (MIL-DTL-38999/ARINC 404/ARINC 600)	
Impedance	50 Ohms
Frequency Range	DC to 26.5 GHz (Size 8) DC to 40 GHz (Size 12)
VSWR	1.15:1 Typ (Size 8) to 26.5 GHz 1.25:1 Typ (Size 12) to 26.5 GHz 1.50:1 Typ (Size 12) to 40 GHz (mated pair)
DWV	500 VRMS @ Sea Level (Size 8) 325 VRMS @ Sea Level (Size 12)
Temperature Range	-65°C to + 165°C
Materials & Finishes	
Center & Outer Spring Contacts	Brass per ASTM-B16, alloy UNS C36000 or BeCu per ASTM-B196, alloy UNS C17200, C17300 Gold plate per MIL-DTL-45204, Type II, Class 1
Shell	Brass per ASTM-B16, alloy UNS C36000 Gold plate per MIL-DTL-45204, Type II, Class 1
Hood	305 CRES per ASTM-A240, passivated per ASTM-A967
Insulators	PTFE per ASTM D-170

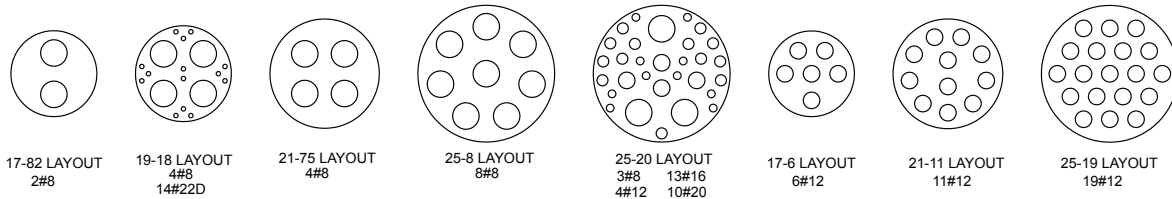
All specifications subject to change without notice.

MHC Sample Insert Arrangements

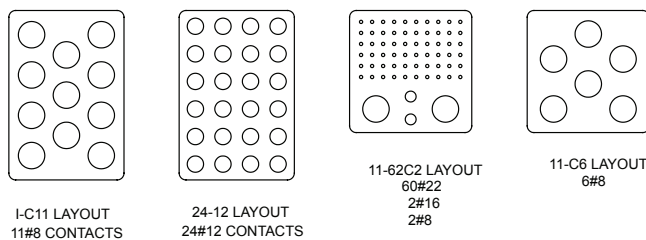
Consult Factory For:

- Custom or Special Insert Arrangements
- Connector Ordering Information
- PC Tail Versions of Contacts

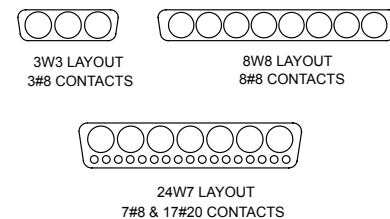
MIL-DTL-38999



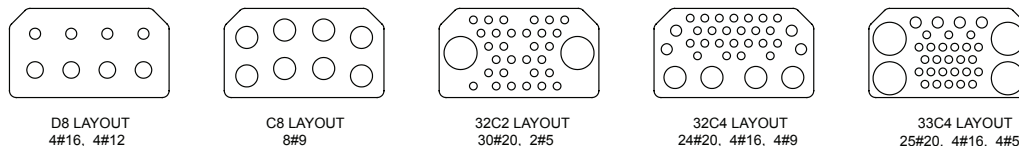
ARINC 600



MIL-DTL-24308



ARINC 404



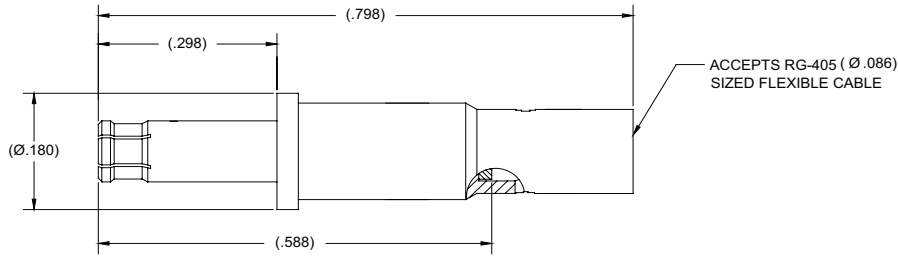
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MHC Coax Pin Contacts

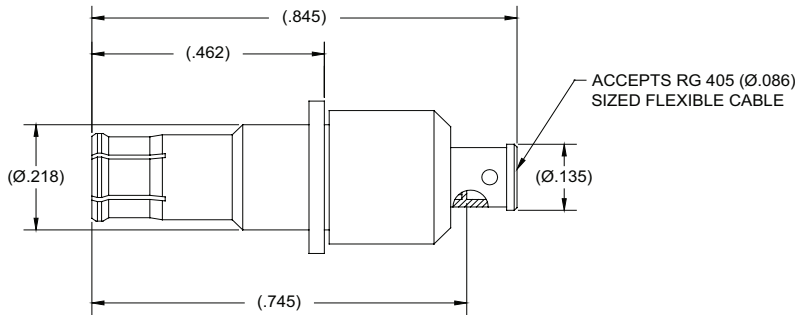
MIL-DTL-38999/ARINC 404/ARINC 600/MIL-DTL-24308

Size 12 Pin Contact for MIL-DTL-38999



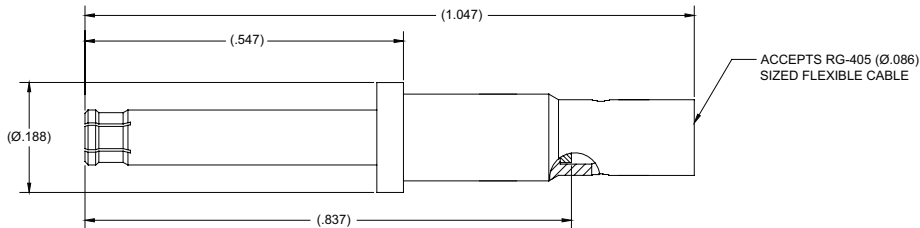
Part #	Cable Size
018624-8002	.086 Flex

Size 8 Pin for MIL-DTL-38999



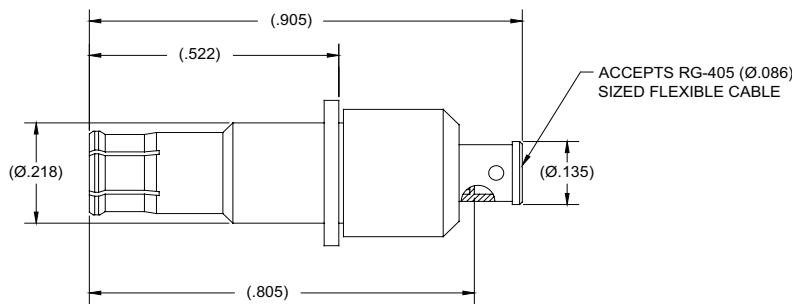
Part #	Cable Size
019624-2011	.086 Flex
019624-2012	.141 Flex

Size 12 Pin Contact for ARINC 404 and ARINC 600



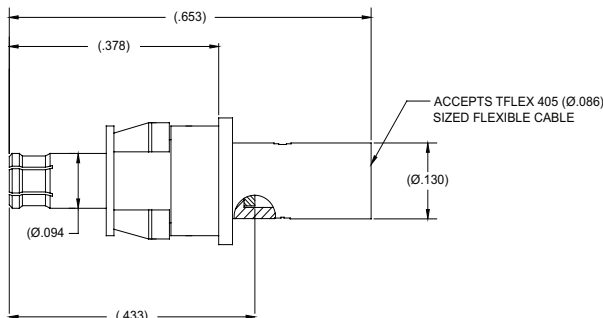
Part #	Cable Size
018624-8004	.086 Flex

Size 8 Pin Contact for ARINC 404 and ARINC 600



Part #	Cable Size
019624-2014	.086 Flex

Size 8 Pin for MIL-DTL-24308



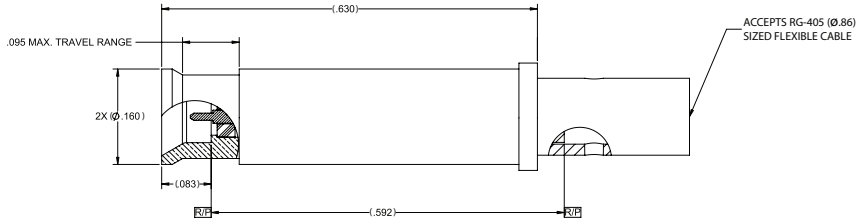
Part #	Cable Size
019829-2000	.086 Flex



MHC Coax Socket Contacts

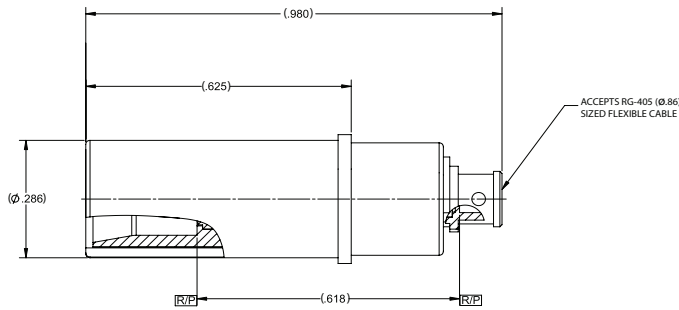
MIL-DTL-38999/ARINC 404/ARINC 600/MIL-DTL-243080

Size 12 Socket Contact for MIL-DTL-38999



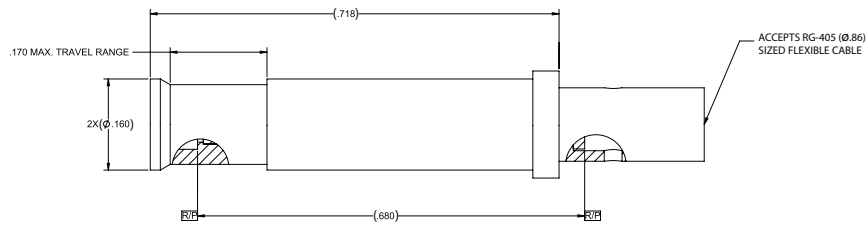
Part #	Cable Size
018724-8002	.086 Flex

Size 8 Socket for MIL-DTL-38999



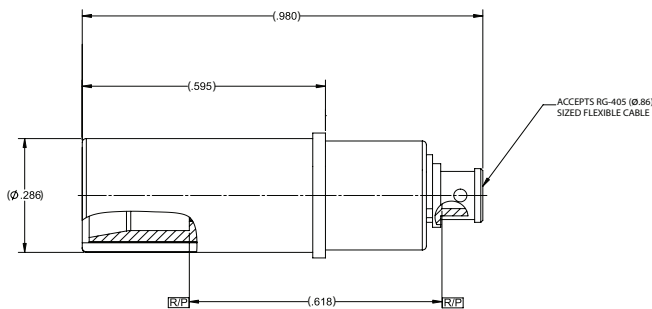
Part #	Cable Size
019524-2011	.086 Flex
019524-2012	.141 Flex

Size 12 Socket Contact for ARINC 404 and ARINC 600



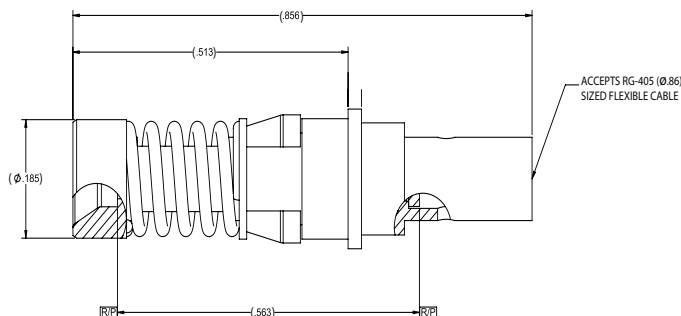
Part #	Cable Size
018724-8004	.086 Flex

Size 8 Socket Contact for ARINC 404 and ARINC 600



Part #	Cable Size
019524-2014	.086 Flex

Size 8 Socket for MIL-DTL-24308



Part #	Cable Size
019729-2000	.086 Flex



Coaxial Contacts

MIL-DTL-38999/ARINC 404/ARINC 600 Coax Contacts

Sabritec's coaxial contacts provide flexibility in the design of high frequency RF and microwave applications. The contacts, including sizes 5, 8, 9, 12 and 16 and have the same outline dimensions as traditional power contacts that fit various insert arrangements for d-sub, circular, and rack and panel connectors. The coaxial cable type contacts are designed for low-loss concentric 50 and 75 Ohm cable types. These contacts are available in 50 Ohm for flexible RG-178 and RG-316 and semi rigid of SR.047 and SR. 080 cables. Flexible cables such as RG-179 for 75 Ohm applications are also available.

An innovative design of coax contacts opens a whole new world of design options. These small, rugged contacts have a VSWR rating of 1.3:1 max with a frequency range from DC to 5 GHz and fit standard connector contact cavities for MIL-DTL-38999, ARINC 404, and ARINC 600.

FEATURES

- Small size for high density packaging
- Ideal for RF and microwave applications for instruments, radar, communications, and RF shielding.

Interface Dimensions

- MIL-DTL-38999 ARINC 404 and ARINC 600 Per SAE-AS39029

Mechanical & Environmental Specifications	
Temperature Rating	-65°C to + 165°C
Corrosion	MIL-STD-202 Method 101, Test Condition B
Shock	MIL-STD-202 Method 213, Test Condition B
Vibration	MIL-STD-202 Method 204, Test Condition B
Thermal Shock	MIL-STD-202 Method 107, Test Condition B
Durability	1000 mate/unmate cycles min.
Electrical Specifications	
Dielectric Withstanding Voltage	500 VDC @ sea level with 70% relative humidity
Insulation Resistance	5000 mega-ohms min. @ 200 VDC
Contact Current Rating	2.0 Amps max
Characteristic Impedance	50 Ohm constant airline impedance
RH HI Potential Withstanding Voltage	125 VRMS @ 5 MHz
Corona Level @ 70,000 ft.	Center contact to intermediate contact: 125 VAC
Permeability	2.0 max
Frequency Range	DC to 5 GHz
VSWR	1.3:1 max. (mated pair)
Material & Finishes	
Center & Outer Spring Contacts	Brass per ASTM B16, alloy UNS C36000 or BeCu per ASTM-B196, alloy UNS C17200, C17300 Gold plate per MIL-DTL-45204, Type II, Class 1
Shell	Brass per ASTM B16, alloy UNS C36000 or BeCu per ASTM-B196, alloy UNS C17200, C17300 or Leaded Nickel Copper, alloy UNS C19500, C19600 Gold plate per MIL-DTL-45204, Type II, Class 1
Hood	305 CRES per ASTM-A240, passivated per ASTM-A967
Insulators	PTFE per ASTM D-1710

All specifications subject to change without notice.

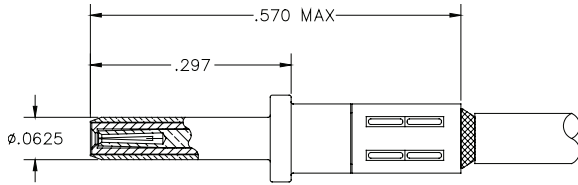
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MIL-DTL-38999 Series I, III, IV Coax Contacts

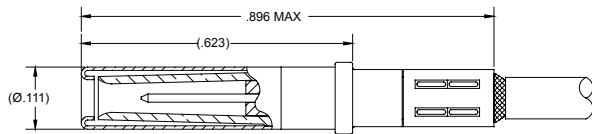
Size 16, 12 and 8 Contacts for MIL-DTL-38999

MIL-DTL-38999 Size 16 Coax Pin Contact



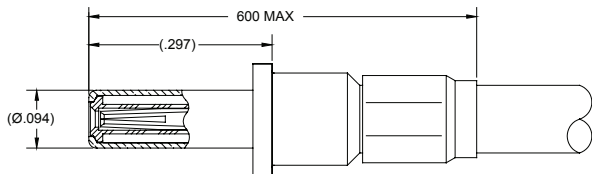
Part Number	Cable Type	Cable
018512-2100	Flexible Coax	RG-178
018512-2101	Flexible Coax	RG-316

MIL-DTL-38999 Size 16 Coax Socket Contact



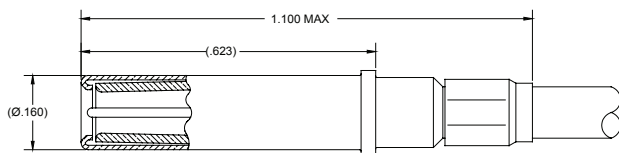
Part Number	Cable Type	Cable
018412-2100	Flexible Coax	RG-178
018412-2101	Flexible Coax	RG-316

MIL-DTL-38999 Size 12 Coax Pin Contact



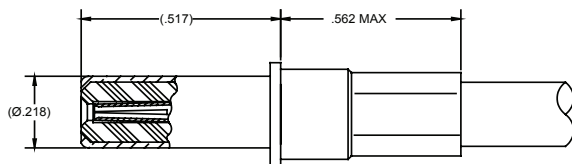
Part Number	Cable Type	Cable
018612-2118	Flexible Coax	RG-178
018612-2119	Flexible Coax	RG-316

MIL-DTL-38999 Size 12 Coax Socket Contact



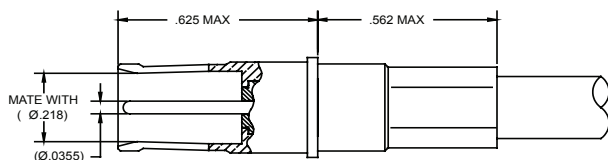
Part Number	Cable Type	Cable
018712-2118	Flexible Coax	RG-178
018712-2119	Flexible Coax	RG-316

MIL-DTL-38999 Size 8 Coax Pin Contact



Part Number	Cable Type	Cable
019612-2100	Flexible Coax	RG-58
019612-2101	Flexible Coax	RG-316

MIL-DTL-38999 Size 8 Coax Socket Contact



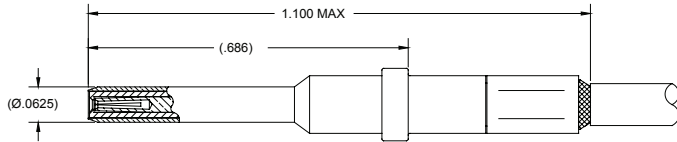
Part Number	Cable Type	Cable
019512-2100	Flexible Coax	RG-58
019512-2101	Flexible Coax	RG-316



ARINC 600 Coaxial Contacts

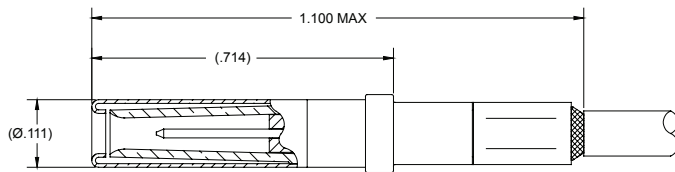
Size 16 and 12 Contacts for ARINC 600

ARINC 600 Size 16 Coax Pin



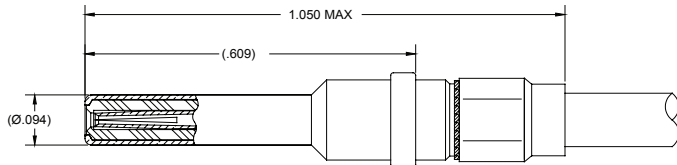
Part Number	Cable Type	Cable
018512-2200	Flexible Coax	RG-178
018512-2201	Flexible Coax	RG-316

ARINC 600 Size 16 Coax Socket



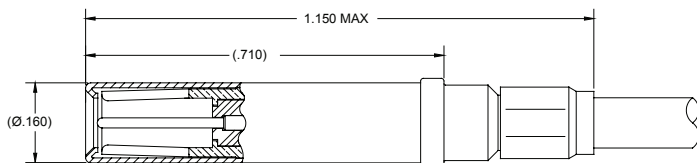
Part Number	Cable Type	Cable
018412-2200	Flexible Coax	RG-178
018412-2201	Flexible Coax	RG-316

ARINC 600 Size 12 Coax Pin



Part Number	Cable Type	Cable
018612-2200	Flexible Coax	RG-178
018612-2201	Flexible Coax	RG-316

ARINC 600 Size 12 Coax Socket



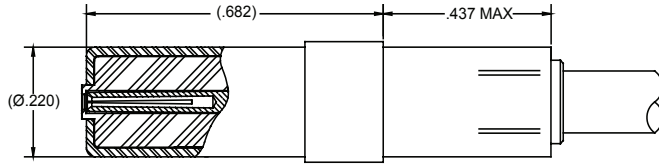
Part Number	Cable Type	Cable
018712-2200	Flexible Coax	RG-178
018712-2201	Flexible Coax	RG-316



ARINC 404/600 Coaxial Contacts

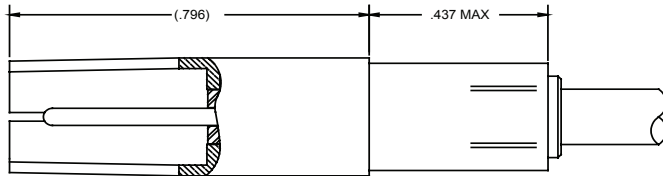
Size 5 Contacts for ARINC 404/600 Size 9 for ARINC 404

ARINC 404/600 Size 5 Coax Pin



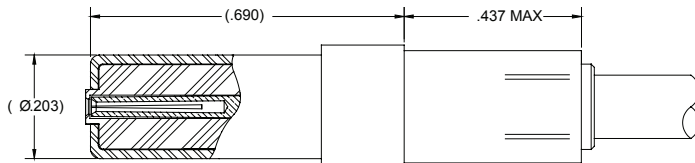
Part Number	Cable Type	Cable
019412-2200	Flexible Coax	RG-58
019412-2201	Flexible Coax	RG-316

ARINC 404/600 Size 5 Coax Socket



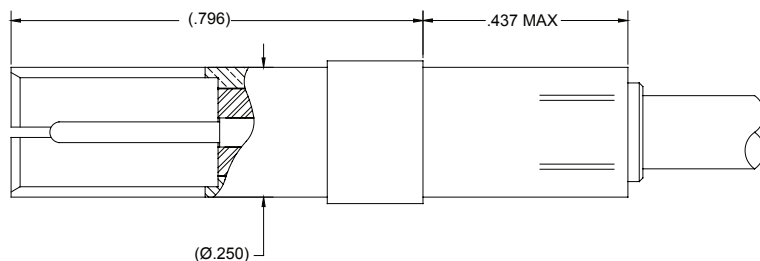
Part Number	Cable Type	Cable
019312-2200	Flexible Coax	RG-58
019312-2201	Flexible Coax	RG-316

ARINC 404 Size 9 Coax Pin



Part Number	Cable Type	Cable
019212-2016	Flexible Coax	RG-58
019212-2017	Flexible Coax	RG-316

ARINC 404 Size 9 Coax Socket



Part Number	Cable Type	Cable
019112-2016	Flexible Coax	RG-58
019112-2017	Flexible Coax	RG-316



Ground Plane Connectors

Multipin Circular Grounded Connectors

Sabritec's grounded circular connectors are designed to ground the outer shield of a triax or coaxial contact directly to the shell of the connector. An innovative designed multi-finger contact spring mechanism fixed within each metalized grounded connector cavity serves a dual purpose. It acts as a mechanically sound and well proven contact retention clip mechanism as well as a multi-finger contact engagement point for superior EMI shielding resulting in extremely low contact resistance values when measured from the coax or triax contact outer body to the connector flange. Contact resistance is 5 milli-ohms maximum. All ground plane connectors meet or exceed all applicable requirements of standard QPL Mil-Spec circular connectors.



Features:

- Grounded multi-finger contact spring mechanism within each connector cavity
- Contact resistance: 5 milli-ohms max
- Intermateable and interchangeable with standard non-filtered connectors
- Superior EMI shielding
- Suitable for MIL-STD-1760 applications

Connector Types

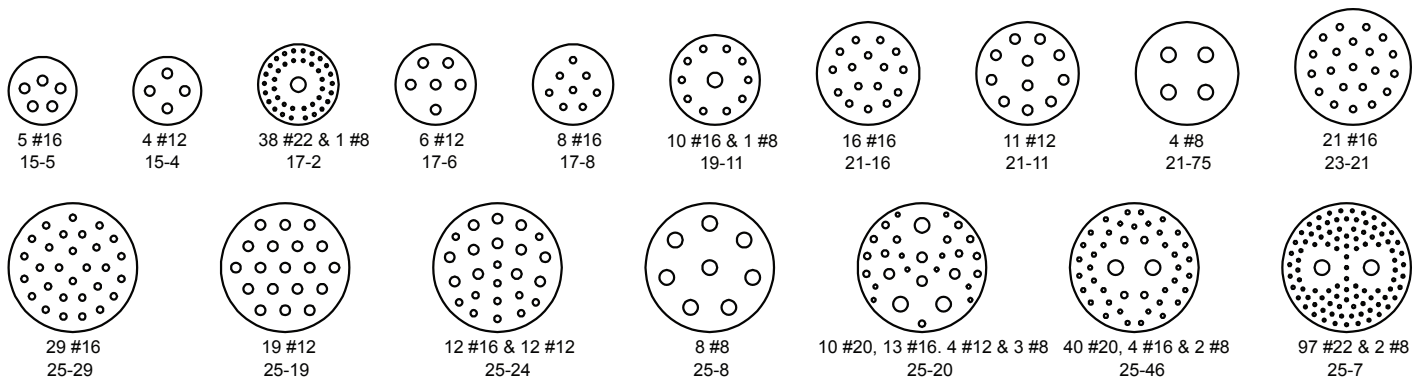
- MIL-DTL-38999 SERIES I
- MS27505 Square Flange Receptacle
- MIL-DTL-38999 SERIES II
- MS27499 Square Flange Receptacle
- MIL-DTL-38999 SERIES III
- D38999/20 Box Mount Receptacle
- MIL-DTL-38999 SERIES IV
- D38999/40 Box Mount Receptacle
- MIL-C-26482 SERIES II
- MS3470 Square Flange Receptacle

Material and Finishes

Ground Retention Clip	BeCu per ASTM-B196, alloy UNS C17200, C17300 Gold plate per MIL-DTL-45204, Type II, Class 1
Inserts	Aluminum per ASTM-B211/221, 6061-T6 Silver plate per ASTM-B700
Connector Plug/Receptacle Shell	Aluminum per ASTM-B211/221, 6061-T6 Electroless Nickel plate per SAE AMS-C-26074 or Cadmium plate per SAE AMS-QQ-P-416
Grommet & Seal	Silicone Rubber per A-A-59588

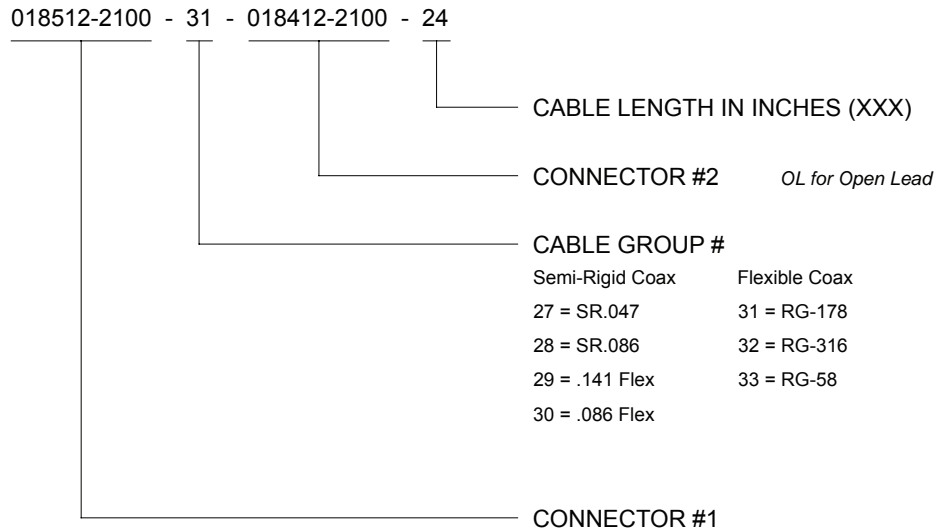
All specifications subject to change without notice.

Insert Arrangements

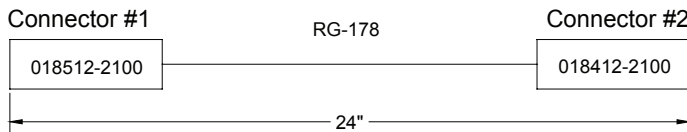


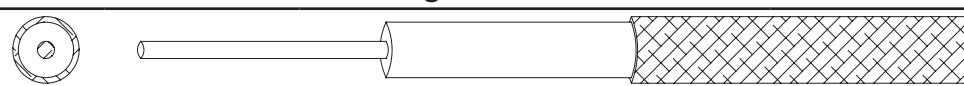

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Part Number Description Code

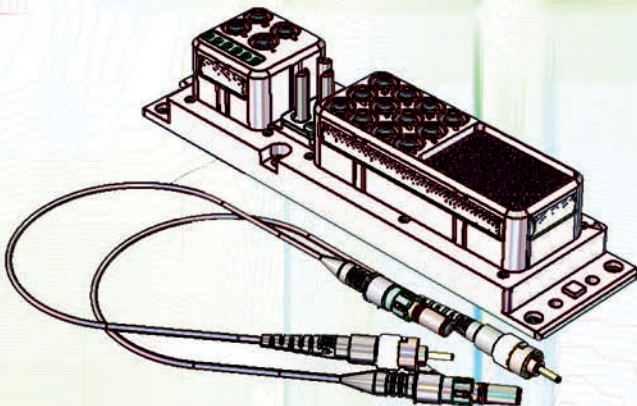
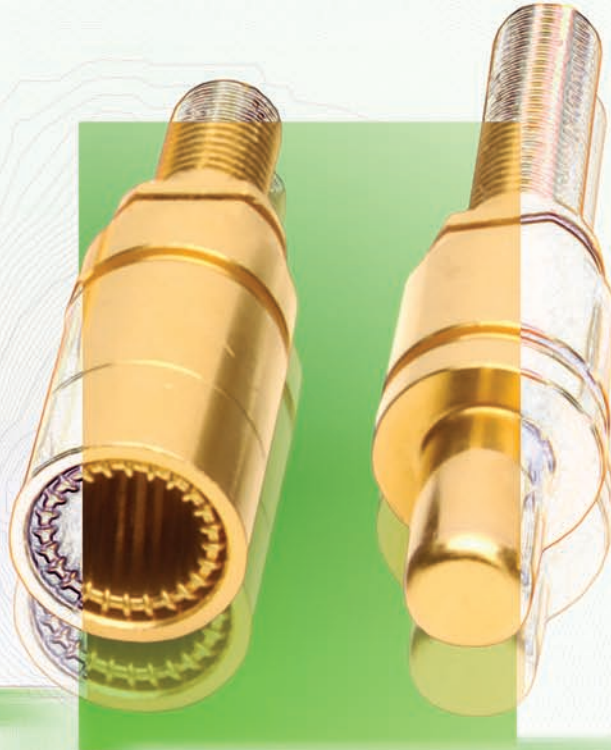


Sample Part Number Code: 018512-2100 / 31 / 018412-2100 / 24



Semi-Rigid Coax Cables				
				
Cable Group	Cable Designation	Impedance (Ohms)	Jacket	Inner Conductor
27	SR.047	50	0.047"	0.0362"
28	SR.086	50	0.0865"	0.0201"
Flexible Coax Cables				
				
29	.141 Flex	50	0.160"	0.036"
30	.086 Flex	50	0.104"	0.020"
31	RG-178	50	0.071"	0.012"
32	RG-316	50	0.098"	0.0201"
33	RG-58	50	0.195"	0.0355"

HIGH POWER/HIGH DENSITY CONNECTORS SPECIALS/CUSTOM INTERCONNECTS CABLE ASSEMBLIES



HIGH POWER / HIGH DENSITY / CUSTOM INTERCONNECTS / CABLE ASSEMBLIES



High Power Connectors

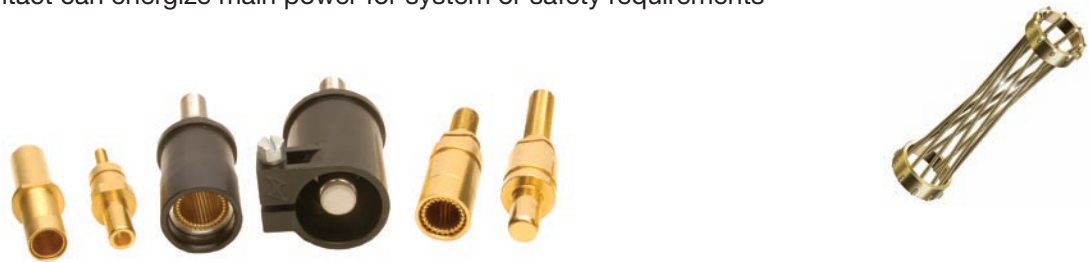
Overview and Contact Performance

Sabritec's High Power connectors utilize the superior performing Hyperboloid® contact technology, ideal for harsh and demanding environments with low contact resistance. These connectors provide high current ratings with smaller contacts for the same power thus saving overall weight and space.

Key Features:

- Low coupling force
- Improved low rate of wear and high coupling durability
- Shock and vibration resistance
- Operate in harsh environments
- Increased power handling capability by 25% as compared to standard contacts
- Reduced contact resistance
- Contact elements can be insulated, to enable multi-pole use (coaxial)
- Contact mating sequence can be used to gain benefits such as power switching
- Mating of shorter contact can energize main power for system or safety requirements

Contact Mechanical & Environmental Specifications	
Contact Endurance	Contact Mating Cycles >1000
Operating Temperature	-65°C to +150°C
Connector Materials and Finishes	
Shell	Aluminum Alloy, Stainless Steel, Composite
Contacts	Copper Alloy, Gold Over Nickel
Inserts	Glass Filled Thermoplastic or Epoxy
Seals & O Ring	Fluorosilicone Rubber



Hyperboloid® Performance vs MIL-C-39029

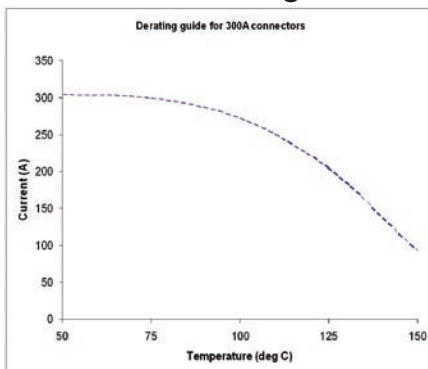
Pin Size	Pin Diameter, mm (in)	Socket OD maximum, mm (in)	MIL Spec Current Rating Continuous, A	Hyperboloid® Contact Current Rating Continuous, A	Hyperboloid® Contact Resistance Typical, mΩ	Hyperboloid® Contact Resistance Maximum, mΩ
8	3.61 (0.142)	6.50 (0.256)	46	60	0.20	.50
4	5.72 (0.225)	9.53 (0.375)	80	100	0.10	.50
0	9.07 (0.357)	13.35 (0.526)	150	300	0.10	.20
00	10.31 (0.406)	18.55 (0.730)	185	300	0.07	.20
0000	12.70 (0.500)	21.02 (0.828)	225	500	0.05	.10

Mating Cycles (Durability):

MIL-Spec = 500

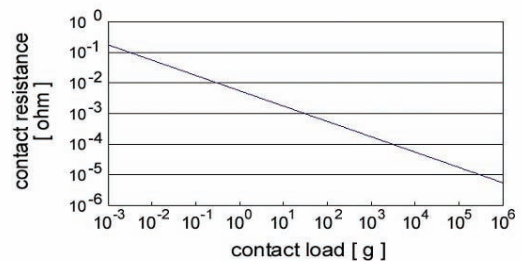
Hyperboloid® Equivalent = 5,000

Current Derating Curve



De-rating guide for power connectors used at elevated temperatures. Cable and / or busbar type and installation arrangements need to be considered in applying this data.

Contact Resistance vs. Load





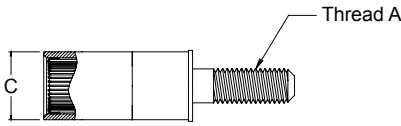
High Power Connectors and Contacts

High Power Socket Contact Termination Styles

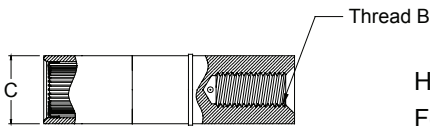
High Power Contact Terminations



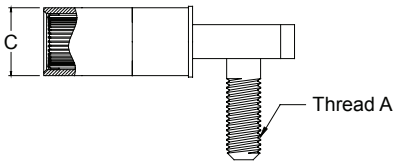
Hyperboloid Contact with Wire Crimp Termination



Hyperboloid Contact with Male Threaded Post Termination



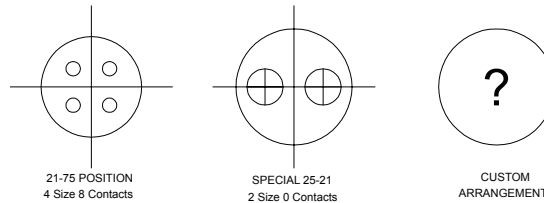
Hyperboloid Contact with Female Threaded Termination



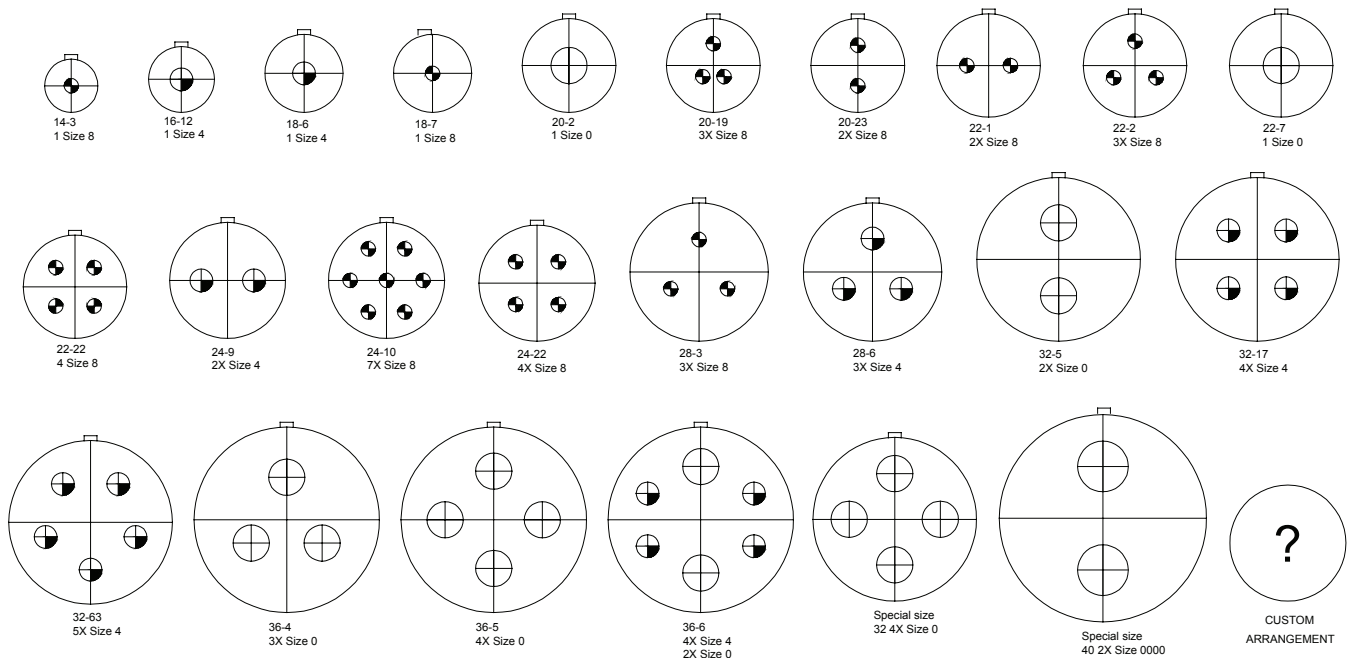
Hyperboloid Contact with R/A Thread Post (Male, Female or Crimp Termination)

Contact Dimensions				
Contact Size	A Thread	B Thread	C Max	E Max
8	1/4-20 UNC-2A	1/4-20 UNC-2B	.256	.182
4	3/8-16 UNC-2A	3/8-16 UNC-2B	.375	.283
0	9/16-12 NC-2A	9/16-12 UNC-2B	.526	.455
00	5/8-11 UNC-2A	5/8-11 UNC-2B	.730	.500
0000	3/4-10 UNC-2A	3/4-10 UNC-2B	.828	.641

MIL-DTL-38999 Connector Insert Arrangements



MIL-DTL-5015 Connector Insert Arrangements

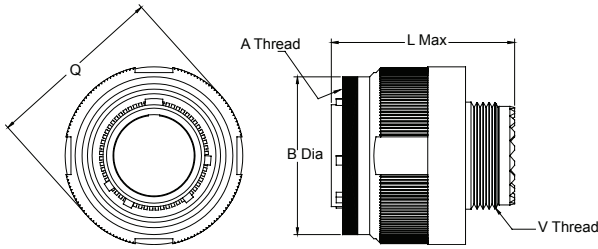




High Power Connector Housing

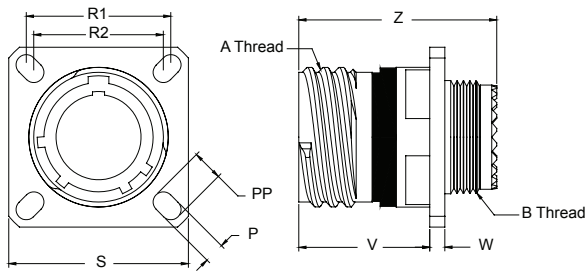
MIL-DTL-38999 and MIL-DTL-5015 Connector Styles

MIL-DTL-38999/26 Plug (Series III Shown)



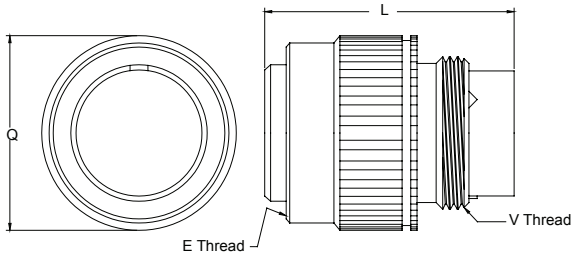
Dimensions					
Shell Size	A Thread .1 Pitch .3 Lead	B + .008 - .000	L Max	Q Dia. Max	V Thread Metric
21	1.375	1.500	1.235	1.642	M31X1
25	1.625	1.744	1.235	1.890	M37X1

MIL-DTL-38999/20 or 24 Receptacle (Series III Shown)



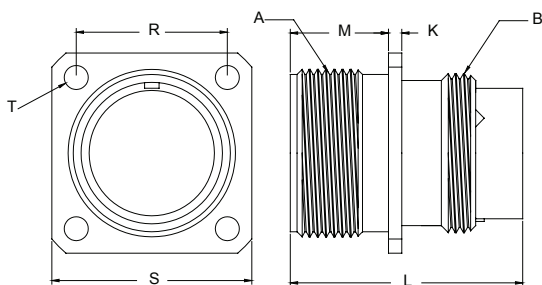
Dimensions										
Shell Size	A Thread .1 Pitch .3 Lead	P ± .008	PP ± .008	R1	R2	S	V Max	W Max	Z + .005 - .010	B Thread Metric
21	1.375	0.154	0.242	1.250	1.156	1.563	0.790	0.126	1.235	M31X1
25	1.625	0.154		1.500	1.375	1.811	0.790	0.126	1.235	M37X1

MIL-DTL-5015 Plug



Dimensions				
Shell Size	E Thread Class 2A	Q Dia Max	L Max	V Thread Class 2A
14	7/8-20 UNEF	1.156	2.100	7/8-20 UNEF
16	1-20 UNEF	1.25		1-20 UNEF
18	1 1/8-18 UNEF	1.344		1 1/16-18 UNEF
20	1 1/4-18 UNEF	1.469		1 3/16-18 UNEF
22	1 3/8-18 UNEF	1.594	2.250	1 5/16-18 UNEF
24	1 1/2-18 UNEF	1.719		1 7/16-18 UNEF
28	1 3/4-18 UNS	1.969		1 3/4-18 UNS
32	2-18 UNS	2.219		2-18 UNS
36	2 1/4-16 UN	2.469		2 1/4-16 UN
40	2 1/2-16 UN	2.719		2 1/2-16 UN
44	2 3/4-16 UN	2.969		2 3/4-16 UN
48	3-16 UN	3.219		3-16 UN

MIL-DTL-5015 Receptacle



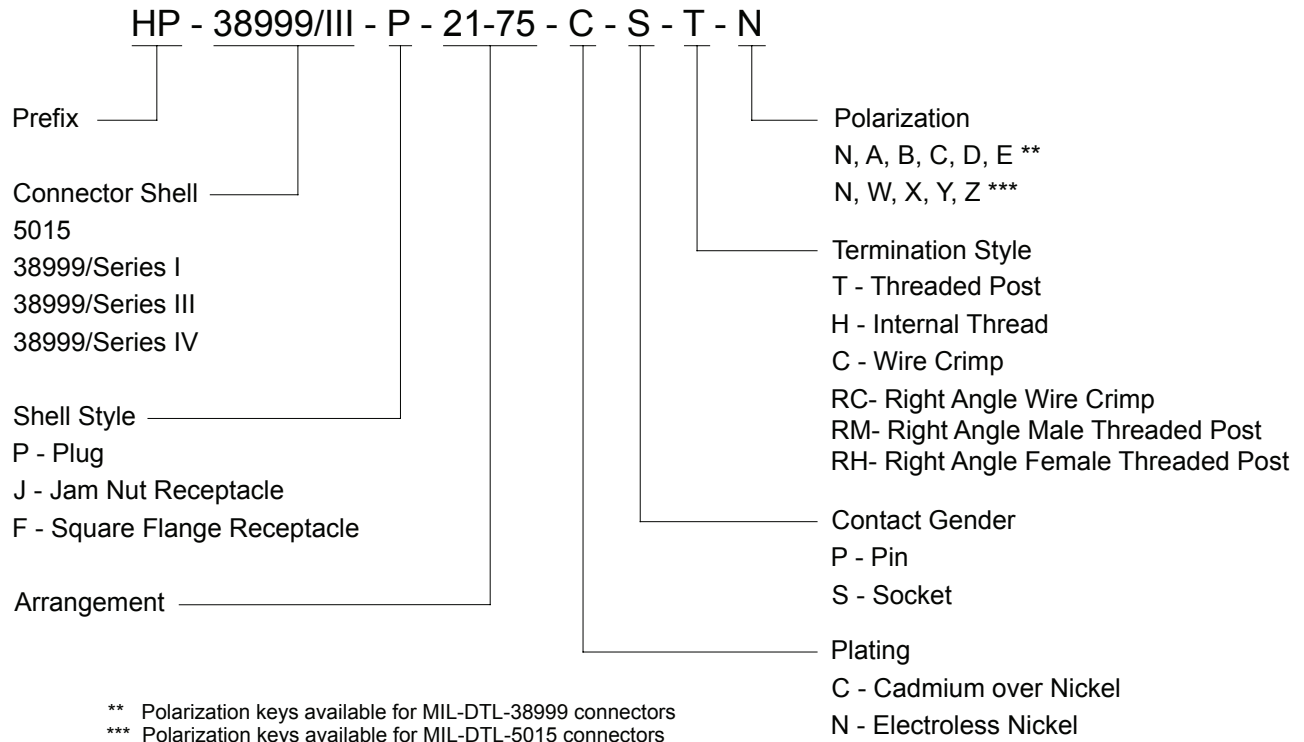
Dimensions								
Shell Size	A Thread Class 2A	K ± .015	L Max	M + .031 - .000	R	S	T Dia + .005 - .000	B Thread Class 2A
14	7/8-20 UNEF	0.083	2.100	0.75	0.906	1.188	0.115	7/8-20 UNEF
16	1-20 UNEF				0.969	1.281		1-20 UNEF
18	1 1/8-18 UNEF				1.062	1.375		1 1/16-18 UNEF
20	1 1/4-18 UNEF				1.156	1.500		1 3/16-18 UNEF
22	1 3/8-18 UNEF	0.125	2.250	0.812	1.250	1.625	0.142	1 5/16-18 UNEF
24	1 1/2-18 UNEF				1.375	1.750		1 7/16-18 UNEF
28	1 3/4-18 UNS				1.562	2.000		1 3/4-18 UNS
32	2-18 UNS				1.750	2.250		2-18 UNS
36	2 1/4-16 UN				1.938	2.500		2 1/4-16 UN
40	2 1/2-16 UN				2.188	2.750		2 1/2-16 UN
44	2 3/4-16 UN				2.375	3.000		2 3/4-16 UN
48	3-16 UN				2.625	3.250		3-16 UN



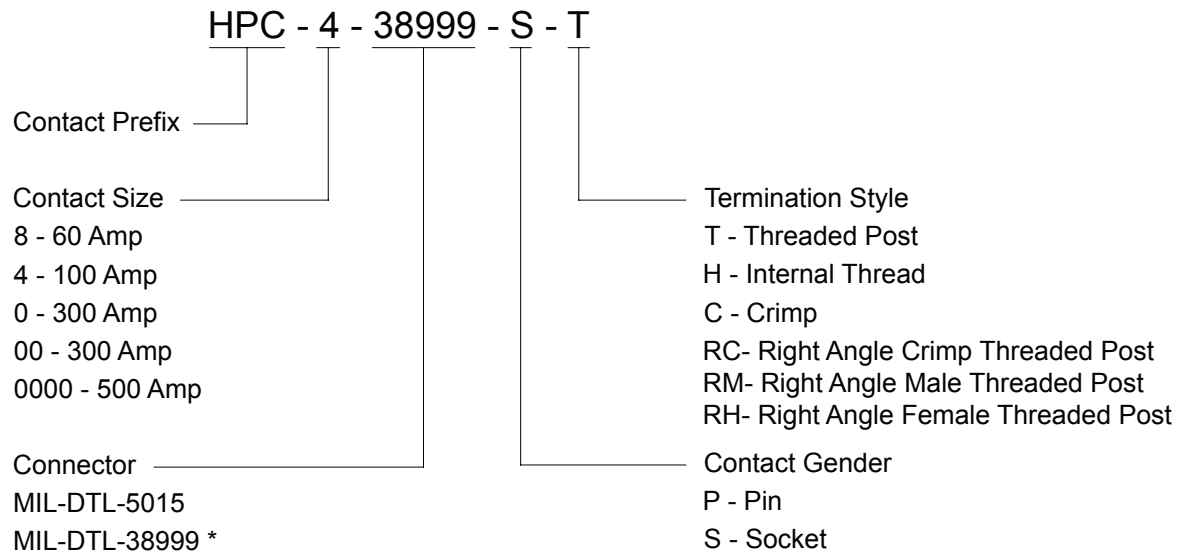
High Power Connector Ordering Information

Part Description Code for High Power Connectors/Contacts

Connector Part Number Description Code



Contact Ordering Information



* Contacts are only available for Series I, III and IV



High Density Mini Circular Connectors (HDMC)

Sabritec's new High Density Miniature Circular Connectors (HDMC) series offers the performance of a MIL-DTL-38999 connector in a smaller size with significant weight savings. The HDMC is offered with Size 23 crimp removable contacts, Size 12 High Frequency Coax (MDHC) contacts, Size 10 High Speed Twinax and rugged Fiber Optic signaling.

MDHC high frequency coaxial contacts have a frequency range up to 40 GHz and offer a low VSWR (1.3:1 typical up to 30 GHz and 1.5:1 typical up to 40 GHz) per mated pair.



HDMC Connector Features/Benefits

- Meets or exceeds electrical and environmental performance criteria for MIL-DTL-38999 style connectors
- Shell size 7 offers 10 Crimp Removable Size 23 Crimp contacts or 1 Size 12 MDHC high frequency coax contact
- Greater than 50% space saving compared to MIL-DTL-38999 Shell Size 9
- Increased signal density by 40% compared to MIL-DTL-38999 Shell Size 9
- Offers 70% in weight reduction compared to MIL-DTL-38999 Shell Size 9
- Compatible with industry standard backshells
- Various styles and features to suit a wide variety of applications
- Consult factory for other insert arrangements and contact styles

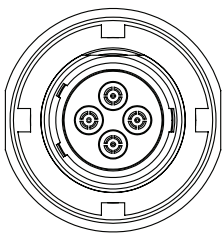
Material & Finishes	
Center & Outer Contacts	Brass per ASTM-B16, Alloy UNS C36000 or BeCu per ASTM-B196, Alloy UNS C17200, C17300 Gold Plate per ASTM-B488, Type II, Class 1.25
Jam Nut	Aluminum Alloy
Grommet & Interfacial Seal	Silicon base elastomer
Insulators	High grade plastic/epoxy resin
Plug & Receptacle Shells	Aluminum per ASTM-B211/221, 6061-T6 Electroless Nickel Plate per SAE-AMS-C-26074 or CAD per QQ-P-416

Electrical Specifications	
Dielectric Withstanding Voltage	500 VRMS @sea level with 70% relative humidity
Insulation Resistance	MDHC: 1000 mega-ohms min. @ 250 VDC Size 23 Signal: 5000 megohms min.
Contact Current Rating	5 Amps max. for 0.030 Signal Pins 2.0 Amps max. for 0.015 Signal Contacts
Magnetic Permeability	2.0 max.
Frequency Range (MDHC)	DC-40 GHz
VSWR (MDHC)	MDHC 1.5:1 (typ) Mated Pair up to 40 GHz 1.3:1 (typ) Mated Pair up to 30 GHz

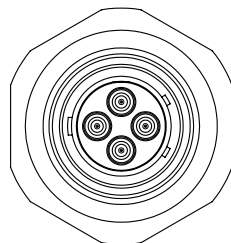
Alternate Shell Sizes with Multiway RF and High Speed Insert Patterns

A wide variety of high density space saving shell sizes containing multiple high speed twinax, high frequency coax, shielded triax and EMI filtered layouts are available. Please consult factory for more information on alternate shell sizes and layouts.

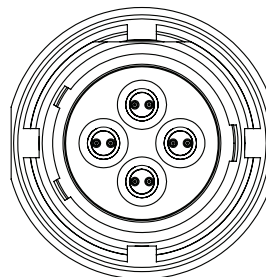
Alternate Sample Arrangements:



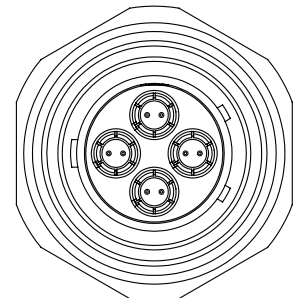
Alternate HDMC Receptacle with 4 MDHC Coax Pin Contacts



Alternate HDMC Plug with 4 MDHC Coax Socket Contacts



Alternate HDMC Receptacle with Size 10 Twinax/Quadrax Pin Contacts



Alternate HDMC Plug with Size 10 Twinax/Quadrax Socket Contacts

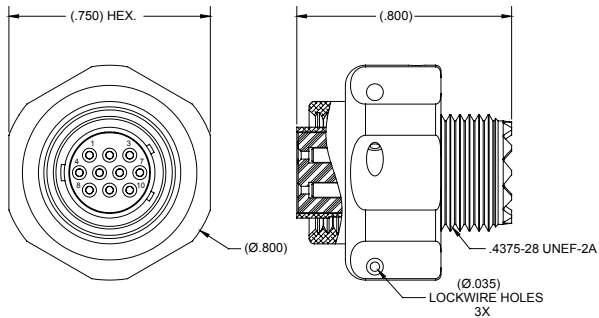
See Page 138 for MDHC Coax Contact details and page 54 for Size 10 High Speed Twinax Contact details.



HDMC Connectors Shell Size 7

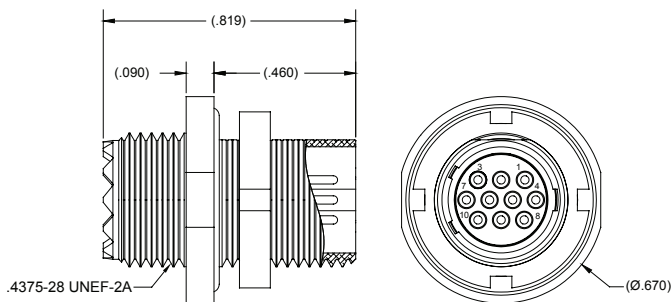
HDMC Connectors with Size 23 Signal and MDHC Contacts

HDMC Connectors Plug with Size 23 Socket Crimp Contacts



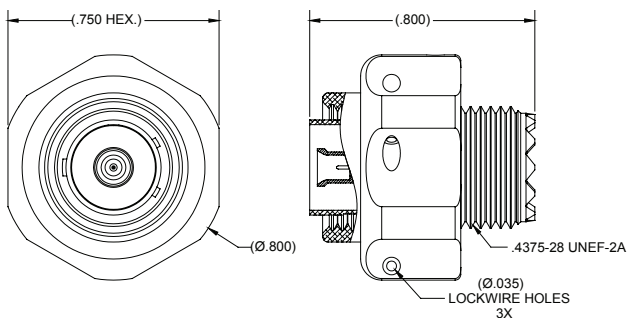
P/N 019032-2000

HDMC Connector Receptacle with Size 23 Pin Contacts



P/N 019031-2000

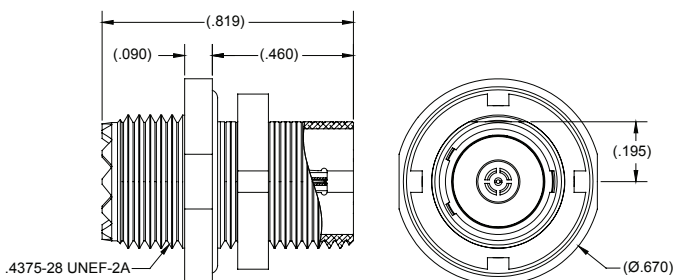
HDMC Connector Plug with High Frequency 40 GHz Coax (MDHC) Socket Contact



P/N 019032-2002

RF Coaxial contacts are sold separately. See page 157 for contact ordering information

HDMC Connector Receptacle with High Frequency 40 GHz Coax Contacts (MDHC) Pin Contact



P/N 019031-2002

RF Coaxial contacts are sold separately. See page 157 for contact ordering information



Cable Assemblies & Custom Interconnects

Value Added Cable Assemblies

All cable assemblies are subjected to mechanical visual and dimensional inspections, thus ensuring a dependable and reliable rugged cable assembly. Sabritec cable assemblies are tested for electrical or optical characteristics. Product quality, reliability and on-time delivery are essential to all of Sabritec's products. Please contact our applications engineering department for more information.

Custom Interconnects

Sabritec's expertise is precision design and manufacturing of electronic interconnect systems. Our engineers work directly with customers to develop unique solutions that address specific customer needs and industry requirements. The combination of engineering talent and in-house manufacturing capabilities, such as 3D solid modeling, high precision machining, injection molding and complete assembly to provide customers with quick turnaround on custom designs.

We can easily modify standard products and/or create completely unique designs from start to finish. If you have the need for a custom product, please contact us with any questions or specifications. We look forward to assisting you in every way possible.

Water Sealed Connectors

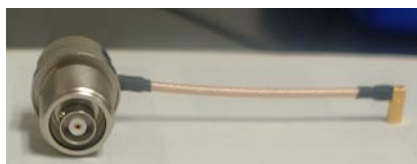
Electronic equipment that is used in harsh environments requires connectors that can withstand exposure to moisture, dust and other elements. Also many applications require components to meet the Ingress Protection (IP) rating of IP67. Sabritec has developed water sealed connectors that can be successfully used in systems where moisture, humidity, water, and dust are present. The Sabritec design method is capable of sealing up to 35 psi in the unmated, open faced condition. These connectors are ideal for high-pressure/low leakage applications in land, air, sea, and space environments. The water sealed connector features can be added to both filtered and non-filtered multipin connectors, coaxial, triaxial, and high speed copper connector types.

Circular, Rack and Panel and D-subminiature Types

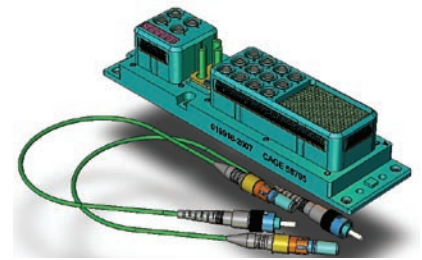
Sabritec has incorporated this water sealed technology in connector types that meet the requirements of most connector standards including MIL-DTL-38999, MIL-DTL-26482, MIL-DTL-83527, MIL-DTL-81659, and ARINC 600. These connectors can be designed to fit the envelope of the specification standard or can incorporate any special features desired including different mounting types, unique shell or flange configurations, or EMI/EMP filtering.

Customer Defined Specialty Connector Types

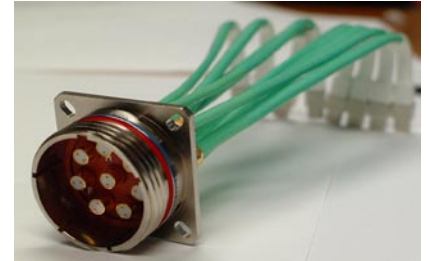
Sabritec also provides water sealed capabilities to connectors that do not conform to any connector standard but are application specific designs as defined by unique interface requirements. Along with being sealed in the unmated condition, these connectors can also incorporate threaded inserts, hybrid contact configurations (power, signal, coaxial, triaxial, and high speed), custom housing configurations, EMI/EMP filtering, and value added cable assemblies.



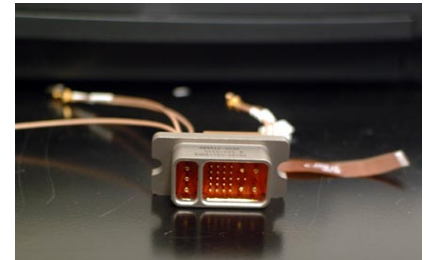
Filtered Coaxial Switching Connector



ARINC 600 Connector with Expanded Beam Cable Assemblies



MIL-DTL-38999 Twinax Connector with Value Added Cable Assembly



Water Sealed Hybrid Connector with Coax, Power and Signal Contacts



MIL-DTL-38999 Compliant Water Sealed Connector



GPS Connector

Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



European Style Connectors

Cross Reference Guide

PAN6433		
PAN6433-6A1706PN	013712-2000	MIL-DTL-38999/III Receptacle Shell Size 17-6P for 6# 12 Triax/Coax
PAN6433-6B1706PN	013512-2000	MIL-DTL-38999/III Plug Shell Size 17-6P for 6# 12 Triax/Coax
PAN6433-6A1706SN	013612-2000	MIL-DTL-38999/III Receptacle Shell Size 17-6S for 6# 12 Triax/Coax
PAN6433-6B1706SN	013412-2000	MIL-DTL-38999/III Plug Shell Size 17-6S for 6# 12 Triax/Coax
PAN6433-8A1706PN	013712-2010	MIL-DTL-38999/III Receptacle Shell Size 17-6P for 6# 12 Triax/Coax
PAN6433-8A1706SN	013612-2010	MIL-DTL-38999/III Receptacle Shell Size 17-6S for 6# 12 Triax/Coax
PAN6433-8A2519PN	013712-2009	MIL-DTL-38999/III 20WJ19PN Receptacle Shell for 12 Triax/Coax
PAN6433-8A2519PA	013712-2008	MIL-DTL-38999/III 20WJ19PA Receptacle Shell for 12 Triax/Coax
PAN6433-8B1706PN	013512-2010	MIL-DTL-38999/III Plug Shell Size 17-6P for 6# 12 Triax/Coax
PAN6433-8B1706SN	013412-2010	MIL-DTL-38999/III Plug Shell Size 17-6S for 6# 12 Triax/Coax
PAN6433-8B2519SN	013412-2009	MIL-DTL-38999/III 26WJ19SN Plug Shell for 12 Triax/Coax
PAN6433B2519SA	013412-2008	MIL-DTL-38999/III 26WJ19SA Plug Shell for 12 Triax/Coax

PAN6841		
PAN6841P75C01	018612-2023	MIL-DTL-38999 #12 Pin Triax/Coax for JN1088WU 75 Ohm Cable
PAN6841S75C01	018712-2023	MIL-DTL-38999 #12 Socket Triax/Coax for JN1088WU 75 Ohm Cable
PAN6841P75T/JN1104P75T	018612-2016	MIL-DTL-38999 #12 Pin Triax for JN1088WU 75 Ohm Cable
PAN6841S75T/JN1104S75T	018712-2016	MIL-DTL-38999 #12 Socket Triax for JN1088WU 75 Ohm Cable
PAN6841P75C02	018612-2024	MIL-DTL-38999 #12 Pin Triax/Coax for PAN 6422XYCoax/6595XM Triax Cable
PAN6841S75C02	018712-2024	MIL-DTL-38999 #12 Socket Triax/Coax for PAN 6422XYCoax/6595XM Triax Cab
PAN6841P50C	018612-2025	MIL-DTL-38999 #12 Pin Coax for PAN 6422XQ 50 Ohm Coax Cable
PAN 6841S50C	018712-2025	MIL-DTL-38999 #12 Socket Coax for PAN 6422XQ 50 Ohm Coax Cable
PAN6841P50T/JN1104P50T	018612-2015	MIL-DTL-38999 #12 Pin Triax/Coax for JN1088WT 50 Ohm
PAN6841S50T/JN1104S50T	018712-2015	MIL-DTL-38999 #12 Socket Triax/Coax for JN1088WT 50 Ohm

PAN6842		
PAN6842S05T	019312-2014	ARINC 404 #5 Socket Triax per PAN6595 XM Concentric Triax Cable
PAN6842P05T	019412-2014	ARINC 404 #5 Pin Triax per PAN6595 XM Concentric Triax Cable
PAN6842S05TW	019311-2007	ARINC 404 #5 Socket Twinax Per PAN6421 Twinax Cable 77 ohm
PAN6842P05TW	019411-2007	ARINC 404 #5 Pin Twinax for PAN6421 Twinax Cable 77 ohm
PAN6842S05TW75	019311-2008	ARINC 404 #5 Socket Twinax per PAN6595 XM Cable 75 ohm
PAN6842P05TW75	019411-2008	ARINC 404 #5 Pin Twinax per PAN6595 XM Cable 75 ohm
PAN6842S09T	019112-2014	ARINC 404 #9 Socket Twinax per PAN6421 ZA Twinax Cable
PAN6842P09T	019212-2014	ARINC 404 #9 Pin Twinax per PAN6421 ZA Twinax Cable
PAN6842S09TB	019112-2024	ARINC 404 #9 Socket Triax per PAN6421 ZA002 77 Ohm triax Cable
PAN6842P09TB	019212-2024	ARINC 404 #9 Pin Triax per PAN6421 ZA002 77 Ohm triax Cable
PAN6842S09T75	019112-2015	ARINC 404 #9 Socket Triax per PAN6595 XM Concentric Triax Cable
PAN6842P09T75	019212-2015	ARINC 404 #9 Pin Triax per PAN6595 XM Concentric Triax Cable
PAN6842P09T75	019212-2034	ARINC 404 #9 Pin Triax per PAN6595 XM Concentric Triax Cable
PAN6842S09T75B	019112-2025	ARINC 404 #9 Socket Triax PAN6595 XM 75 Ohm Cable
PAN6842P09T75B	019212-2025	ARINC 404 #9 Pin Triax PAN6595 XM 75 Ohm Cable
PAN6842S09T50	019112-2033	ARINC 404 #9 Socket Triax per PAN6596XN Triax Cable
PAN6842P09T50	019212-2033	ARINC 404 #9 Pin Triax per PAN6596XN Triax Cable
PAN6842S09C	019112-2034	ARINC 404 #9 Socket Coax for PAN6422 XZ Coax Cable 95 ohm
PAN6842P09C	019217-2004	ARINC 404 #9 Pin Coax PC Tail
PAN6842S09C75	019112-2035	ARINC 404 #9 Socket for PAN6422 XY M17/94-RG179/U Concentric Triax Cable
PAN6842P09C75	019212-2035	ARINC 404 #9 Pin for PAN6422 XY Coax Cable 75 ohm
PAN6842P12	018612-2052	MIL-DTL-38999 #12 Pin Triax per PAN6421 Twinax Cable 77 Ohm
PAN6842S12	018712-2052	MIL-DTL-38999 #12 Socket Triax per PAN6421 Twinax Cable 77 Ohm
PAN6842P12T	018612-2055	MIL-DTL-38999 #12 Pin Triax per PAN6595 XM Triax Cable 75 ohm
PAN6842S12T	018712-2055	MIL-DTL-38999 #12 Socket Triax per PAN6595 XM Triax Cable 75 ohm
PAN6842P12T50	018612-2059	MIL-DTL-38999 #12 Pin Triax per PAN6595 XM Triax Cable 50 ohm
PAN6842S12T50	018712-2059	MIL-DTL-38999 #12 Socket Triax per PAN6595 XM Triax Cable 50 ohm
PAN6842S05D	130-0025-000	Arinc 404 #5 Contact Dummy Socket
PAN6842S05DS	130-0055-000	Arinc 404 #5 Contact Dummy Socket Special
PAN6842P05D	130-0024-000	Arinc 404 #5 Contact Dummy Pin
PAN6842S09D	130-0023-000	Arinc 404 #9 Contcat Dummy Socket
PAN6842P09D	130-0029-000	Arinc 404 #9 Contcat Dummy Pin

PAN6486		
PAN6499A	018812-2008	Size # 10 Triax Pin Contact per PAN6421 Cable (77 Ohm)
PAN6499B	018912-2008	Size # 10 Triax Socket Contact per PAN6421 Cable (77 Ohm)

JN1150		
JN1150S08	019512-2012	MIL-DTL-38999 #8 Socket Coax For PAN6422 XY Cable
JN1150P08	019612-2012	MIL-DTL-38999 #8 Pin Coax For PAN6422 XY Cable



European Style Connectors

Cross Reference Guide

JN1057		
JN1057P	019612-2014	MIL-DTL-38999 #8 Pin Triax for PAN6421 Twinax Cable 77 Ohm
JN1057S	019512-2014	MIL-DTL-38999 #8 Socket Triax For PAN6421Twinax Cable 77 Ohm

JN1062		
JN1062	018512-2011	MIL-DTL-38999 #16 Pin Coax per JN1088WT Triax Cable
JN1062	018412-2011	MIL-DTL-38999 #16 Socket Coax per JN1088WT Triax Cable

JN1104		
JN1104P50C	018612-2020	MIL-DTL-38999 #12 Pin Triax/Coax for JN1088WT/WU 50 Ohm Cable
JN1104S50C	018712-2020	MIL-DTL-38999 #12 Socket Triax/Coax for JN1088WT/WU 50 Ohm Cable
JN1104P50T	018612-2015	MIL-DTL-38999 #12 Pin Triax/Coax for JN1088WT 50 Ohm
JN1104S50T	018712-2015	MIL-DTL-38999 #12 Socket Triax/Coax for JN1088WT 50 Ohm
JN1104P75T	018612-2016	MIL-DTL-38999 #12 Pin Triax for JN1088WU 75 Ohm Cable
JN1104S75T	018712-2016	MIL-DTL-38999 #12 Socket Triax for JN1088WU 75 Ohm Cable

JN1141		
JN1141A25-20PSN	013700-4000	MIL-DTL-38999/III Adapter, Receptacle #25-20 Pin to Socket w/Common grou

ECS MIL-DTL-38999 & 83527 Connector Series		
ECS 0704 P12	018612-2036	MIL-DTL-38999 #12 Pin Triax for ECS 0700 Twinax Cable
ECS 0703 A S12	018712-2036	MIL-DTL-38999 #12 Socket Triax For ECS 0700 Twinax Cable
ECS 0704 B P12	018612-2050	MIL-DTL-38999 #12 Pin Triax for ECS 700 Twinax Cable
ECS 0703 D S12	018712-2050	MIL-DTL-38999 #12 Socket Triax for ECS 0700 Twinax Cable
ECS 0703 B S12	018712-2009	MIL-DTL-38999 #12 Socket Triax For ECS 0700 Twinax Cable
ECS 0703 C S12	018712-2051	MIL-DTL-38999 #12 Socket Triax for ECS 0700 Twinax Cable
ECS 0709A	019312-2000	MIL-DTL-83527 #5 Socket Coax for ASN-E0691 Coax Cable
ECS 0709B	019312-2001	MIL-DTL-83527 #5 Socket Coax for ASN-E0691 Coax Cable
ECS-0703	018712-2060	MIL-DTL-83527 #12 Socket Triax for PAN6421 Twinax Cable
ECS 0711	019312-2002	MILC-83627 #5 Socket Coax for ASN-E0293 Coax Cable
ECS 0707 S 8	019512-2011	MIL-DTL-83527 #8 Socket Triax for ECS 0700 Twinax Cable
ECS 0708 S 8	019512-2018	MIL-DTL-38999 #8 Socket Triax For ECS 0700 Twinax Cable

EN3682 / 83527		
EN3682 / 83527	018612-2073	MIL-DTL-83527 # 12 Pin Triax per PAN6421 Twinax Cable (77 Ohm)
EN3682 / 83527	018712-2060	MIL-DTL-83527 # 12 Socket triax per PAN6421 Twinax Cable (77 Ohm)
EN3682 / 83527	018612-2074	MIL-DTL-83527 # 12 Pin triax per JN1111 Twinax Cable
EN3682 / 83527	018712-2074	MIL-DTL-83527 # 12 Socket triax per JN1111 Twinax Cable
EN3682 / 83527	018617-2005	MIL-DTL-83527 # 12 Pin Triax PCB Mount
EN3682 / 83527	018617-2004	MIL-DTL-83527 # 12 Pin Coax PCB Mount
EN3682 / 83527	018517-2004	MIL-DTL-83527 # 16 Pin Coax PCB Mount
EN3682 / 83527	018612-2046	MIL-DTL-83527 # 12 Pin Triax per ECS0700 Twinax Cable
EN3682 / 83527	018712-2046	MIL-DTL-83527 # 12 Socket Triax per ECS0700 Twinax cable
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EN3682 / 83527	018712-2049	MIL-DTL-83527 # 12 Socket Coax per RG-179 Coax Cable 75 ohm
EN3682 / 83527	018512-2004	MIL-DTL-83527 # 16 Pin Coax per RG-179 Coax Cable 75 ohm
EN3682 / 83527	018412-2004	MIL-DTL-83527 # 16 Socket Coax per RG-179 Coax Cable 75 ohm

Sabritec offers VG Series Connectors to the following standards:

VG 95234

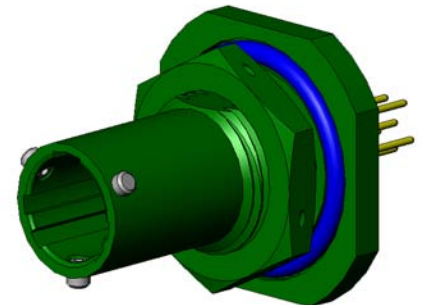
VG 96912

VG 95328

VG 95319

VG 96918

Consult Factory for VG Series Part Numbers



Sabritec provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Sabritec's connectors are fully interchangeable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.



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Distribution Parts

Sabritec Parts Offered in Distribution

Sabritec offers several catalog parts for High Speed Copper, Fiber Optic, Coax and Triax through distribution. For the most up to date distribution parts please visit our website: www.sabritec.com/contactus/distribution.html. Please note that parts listed are subject to change without notice.

Sabritec U.S. Distributors

Koehlke Components, Inc
Phone (937) 435-5435
www.koehlke.com

TIM-CO Component Sales
Phone (818) 992-5040
www.tim-co.com

Part Number	Description	Distributor
High Speed Copper		
012600-2166	Quad/Twinax MIL-DTI-38999 21-75 Socket Plug	Tim-Co
012600-2167	Quad/Twinax MIL-DTI-38999 25-8 Socket Plug	Tim-Co
012600-3166	Quad/Twinax MIL-DTI-38999 21-75 Pin Receptacle	Tim-Co
012600-3167	Quad/Twinax MIL-DTI-38999 25-8 Pin Receptacle	Tim-Co
012700-2002	Quad/Twinax D-Sub Plug 2 Way	Tim-Co
012700-2003	Quad/Twinax D-Sub Plug 4 Way	Tim-Co
012735-2000	Micro Quadrax Plug 100 Ohm for 540-1165-000 Cable	Tim-Co
012735-2013	Micro Quadrax Plug 100 Ohm for 540-1183-000 Cable	Tim-Co
012800-3002	Quad/Twinax D-Sub Receptacle 2 Way	Tim-Co
012800-3003	Quad/Twinax D-Sub Receptacle 4 Way	Tim-Co
012817-1000	Micro Quadrax Right Angle PCB Mount Receptacle 100 Ohm	Tim-Co
012817-5001	Micro Quadrax Bulkhead Mount PCB Jack	Tim-Co
014034-2045	Micro Twinax Threaded NDL Straight Cable Plug for 540-1153-000 Cable	Tim-Co
014034-2046	Micro Twinax Threaded NDL Straight Cable Plug for 540-1161-000 Cable	Tim-Co
014034-2049	Micro Twinax Quick Disconnect NDL Plug for 540-1153-000 Cable	Tim-Co
014034-2050	Micro Twinax Quick Disconnect NDL Plug for 540-1161-000 Cable	Tim-Co
014117-1030	Micro Twinax Threaded NDL Right Angle Jack 100 Ohms	Tim-Co
014117-1037	Micro Twinax Quick Disconnect NDL Right Angle PCB Mount 100 Ohms	Tim-Co
014117-2020	Micro Twinax Threaded NDL Straight Jack 100 Ohms	Tim-Co
014117-2023	Micro Twinax Quick Disconnect NDL Jack Straight PCB Mount 100 Ohms	Tim-Co
016400-2026	38999/III Plug 25-8 N Polarization for Size 8 Skt Quad Contacts	Koehlke Components
016400-3026	38999/III Receptacle 25-8 N Polarization for Size 8 Pin Quad Contacts	Koehlke Components
016401-2012	38999/III Plug 21-75 N Polarization for Size 8 Quad Skt Contacts	Koehlke Components
016401-3013	38999/III Receptacle 21-75 N Polarization for Size 8 Pin Quad Contacts	Koehlke Components
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019217-1001	Size 9 Quadrax Right Angle PC Tail Contact 100 Ohm	Tim-Co
019217-2000	Size 9 Quadrax Pin Contact PCB Mount 100 Ohm	Tim-Co
019235-8000	Size 9 Quadrax Pin Contact 100 Ohm	Tim-Co
019535-0001	Size 8 Quadrax Socket Contact 100 Ohm	Tim-Co
019535-8000	Size 8 Quadrax Socket Contact 100 Ohm (Solder Version)	Koehlke Components
019635-0001	Size 8 Quadrax Pin Contact 100 Ohm	Tim-Co
019635-8000	Size 8 Quadrax Pin Contact 100 Ohm (Solder Version)	Koehlke Components
540-1153-000	Twinax 100 Ohm Cable	Tim-Co
SIR-027	Size 9 Contact Removal Tool	Tim-Co
Fiber Optic		
238500-8000	Fiber Optic ARINC 801 Terminus Multi-Mode	Tim-Co & Koehlke Components
Coax		
018624-8002	High Frequency Size 12 Pin Contact for MIL-DTL-38999	Tim-Co
018724-8002	High Frequency Size 12 Socket Contact for MIL-DTL-38999	Tim-Co
019524-2011	High Frequency Size 8 Socket Contact for MIL-DTL-38999	Tim-Co
019624-2011	High Frequency Size 8 Pin Contact for MIL-DTL-38999	Tim-Co
Triax		
015028-1001	NDL-T right angle cable plug	Koehlke Components
015028-2000	NDL-T Cable Plug for M17/176-00002	Tim-Co & Koehlke Components
015028-2014	NDL-T Cable Plug for 540-1050-000 Cable	Tim-Co
015100-1011	NDL-T Right Angle PCB Jack	Koehlke Components
015100-1012	NDL-T Right Angle PCB Jack (Mounting for .200 Centers)	Tim-Co & Koehlke Components
015100-3010	NDL-T Straight PCB Jack	Koehlke Components
015100-3012	NDL-T Straight PCB Jack	Koehlke Components
015100-4014	NDL-T jack to TRB plug	Koehlke Components
015100-5024	NDL-T Feed Thru Jack Adapter	Tim-Co
015100-5025	NDL-T Bulkhead Jack	Tim-Co & Koehlke Components
015112-1101	NDL-T Right angle cable plug	Koehlke Components
015112-5000	NDL-T Bulkhead cable jack	Koehlke Components
016028-1001	NDL-Q Right Angle Cable Plug	Koehlke Components
016100-1001	NDL-Q Right Angle PCB Jack (Mounting for .100 Centers)	Tim-Co & Koehlke Components
016100-1002	NDL-Q Right Angle PCB Jack (Mounting for .200 Centers)	Tim-Co & Koehlke Components
016100-3000	NDL-Q Straight PCB Jack (Mounting for .100 Centers)	Tim-Co & Koehlke Components
016100-3002	NDL-Q Straight PCB Jack (Mounting for .200 Centers)	Tim-Co & Koehlke Components



Company Profile



We Welcome Your Challenges!

In today's high technology environment, success comes to those with the agility to move in new directions very quickly. Organizations must be adept in rapid response, creativity and flexibility balanced with a commitment to the highest quality and price performance. Sabritec is such a company.

Many of our customers first come to us with a difficult interconnect problem. Often, they are using a connector or cabled system that must be upgraded to handle new size and weight constraints, and/or harsher environments. They are pleased with our solutions, and you will be, too. Drawing on solid experience, Sabritec's technical team wastes no time in finding a successful solution. In fact, we may have already solved a problem similar to yours.

Sabritec's operations are completely consolidated into our fully equipped facility in Irvine. This facility is vertically integrated from initial concept, design and development, through production and acceptance testing, guaranteeing the customer the best product quality available anywhere. Further comprehensive in-house manufacturing and assembly capabilities assure total control over both quality and lead time, providing flexibility to meet your tight schedules and to react to midstream specification changes with a minimal schedule impact.

Working with Sabritec can ensure the smooth progress of your projects to save time and money and contribute greatly to the program's overall success. We will work closely with your procurement and engineering staffs to define requirements clearly and to respond quickly as well as a cost effective manner.

Sabritec's proven ability to perform can be a major advantage in your next program. Call or e-mail us for details on how quickly we can become an important part of your team. Sabritec is an ISO 9001:2000/AS9100 Rev B Certified company.



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