

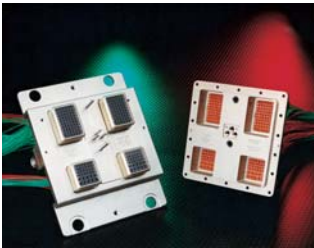
Space Connectors



SABRITEC

Your Connection to the Future





Space Approved Connectors

Sabritec offers a full range of space level products designed to meet the rigorous environmental requirements for use in space applications. Our space connector line includes filtered and non-filtered D-subminiature and MIL-DTL-38999 Series III connectors. We offer a complete line of fibre channel connectors and contacts including micro twinax, quadrax, quadsplitter, MIL-

DTL-38999 twinax, and blindmate twinax connectors. Our space level triax connectors feature Sabritec's multiway connector (MTC) with size 10 triax/twinax contacts for numerous insert arrangements. Also featured in our triax line is the NDL-T threaded triax



D-Subminiature Connectors

connectors. Our coaxial connector line includes Micro-D connectors with multi-coax assemblies, and SMP and SMPM (miniature SMP) coaxial connectors, and cable assemblies.



MIL-DTL-38999 Circular Connectors

Sabritec's space connectors provide low insertion force with high durability power, signal, coax, and triax contacts. Our MTC series is available with 2, 7, 12 or 14 contacts in a single housing and provides a polarizing shell to prevent mismatching.



SMP Coaxial Connectors

Sabritec's space level connectors meet requirements for outgassing, toxicity, flammability and environmental concerns, such as vibration and high/low temperature, suitable for use in space and military/aerospace applications.



Twinax Multiway Connectors

Sabritec is capable of testing high speed signaling for eye pattern, jitter, skew, and insertion loss on differential pair 100 ohm

and 150 ohm fibre channel and high speed Gigabit Ethernet applications. 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. Using 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.

D-Subminiature Connectors

MIL-DTL-38999 Connectors

Quad Connectors
Pg. 20

MIL-DTL-38999 Twinax
Pg. 22

Quadrax Connectors
Pg. 25

Micro Twinax Connectors
Pg. 26

Fibre Channel Connectors
Pg. 30

Multiway Triax Connectors
Pg. 33

NDL-T Triax Connectors
Pg. 39

Micro D Coax Connectors
Pg. 48

SMP Coax Connectors
Pg. 51

SMPM Coax Connectors
Pg. 55

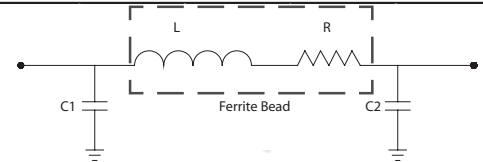
Cable Assembly/Ordering
Pg. 58

Boeing Space Station
Pg. 61

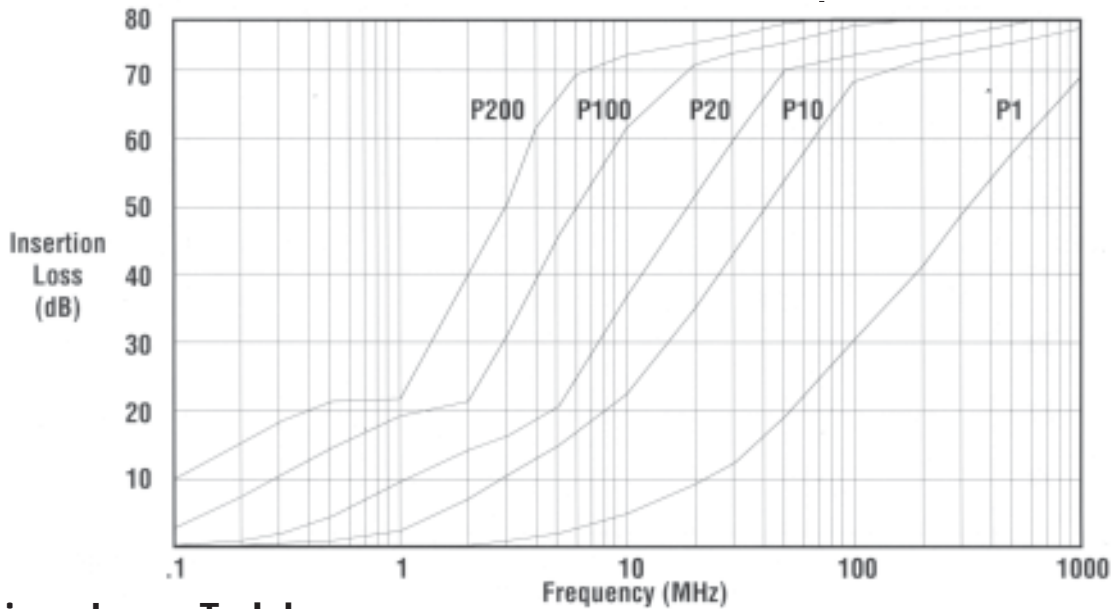


Electrical Characteristics - 'Pi' Section

Filter Description	P200	P100	P76	P38	P20	P10	P8	P4	P2	P1
Operating Temp Range	-55 to + 125°C									
Voltage Rating	100 VDC			200 VDC-120Vrms 400 Hz						
Current Rating DC	15 amps size 16 / 7.5 amps size 20 / 5 amps size 22									
Insulation Resistance	5000 megohms minimum @ 100 VDC									
Current Rating R.F.	3.0 amps max									
DWV sea level with 50 microamps 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 at 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 Load Insertion loss at 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+	78.0	65.8	61.9	49.6	37.3	25.6
500-1k	85+	85+	85+	85+	85+	85+	80	75	64	52	

Notes:

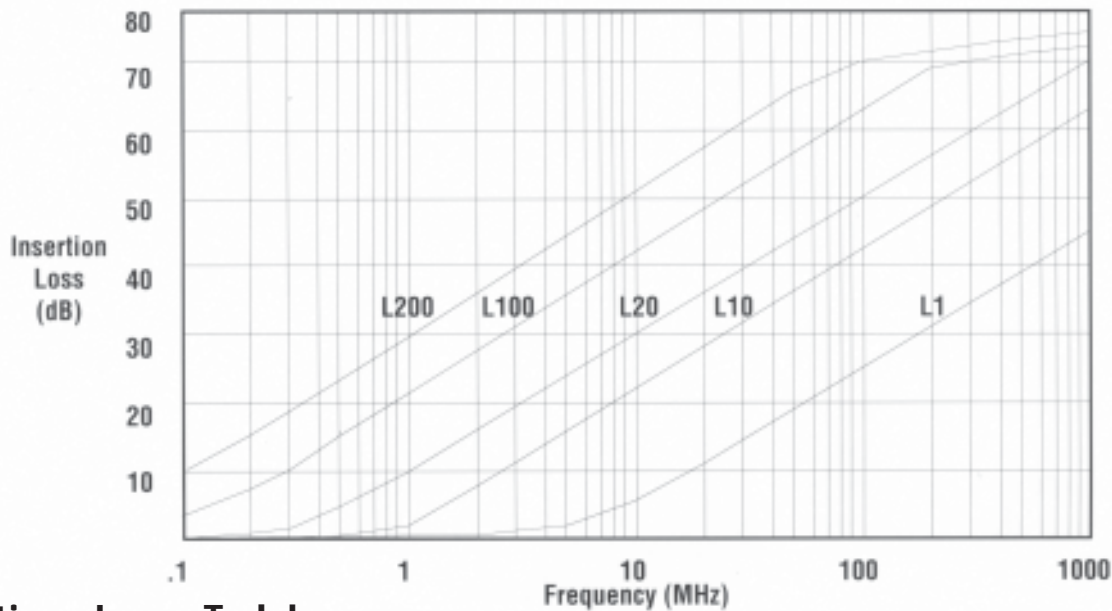
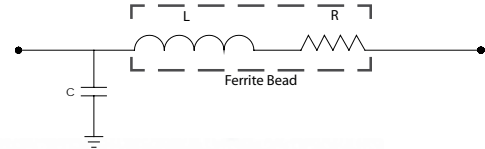
1. P200 & P100 Capacitance Values for Size 20 Contact Arrangements & Larger
2. No Load Minimum Attenuation Values per MIL-STD-220
3. Capacitance in Nanofarads (Nominal Value)
4. Consult Factory for Higher Voltages & Capacitance Values



Electrical Characteristics - 'L' Section

Filter Description	L200	L100	L76	L38	L20	L10	L8	L4	L2	L1
Operating Temp Range	-55 to + 125°C									
Voltage Rating	100 VDC			200 VDC-120Vrms 400 Hz						
Current Rating DC	15 amps size 16 / 7.5 amps size 20 / 5 amps size 22									
Insulation Resistance	5000 megohms minimum @ 100 VDC									
Current Rating R.F.	3.0 amps max									
DWV sea level with 50 microamps 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 at 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 Load Insertion loss at 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	

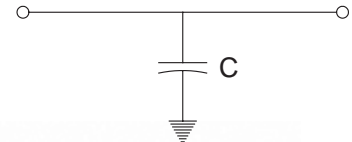
Notes:

1. 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

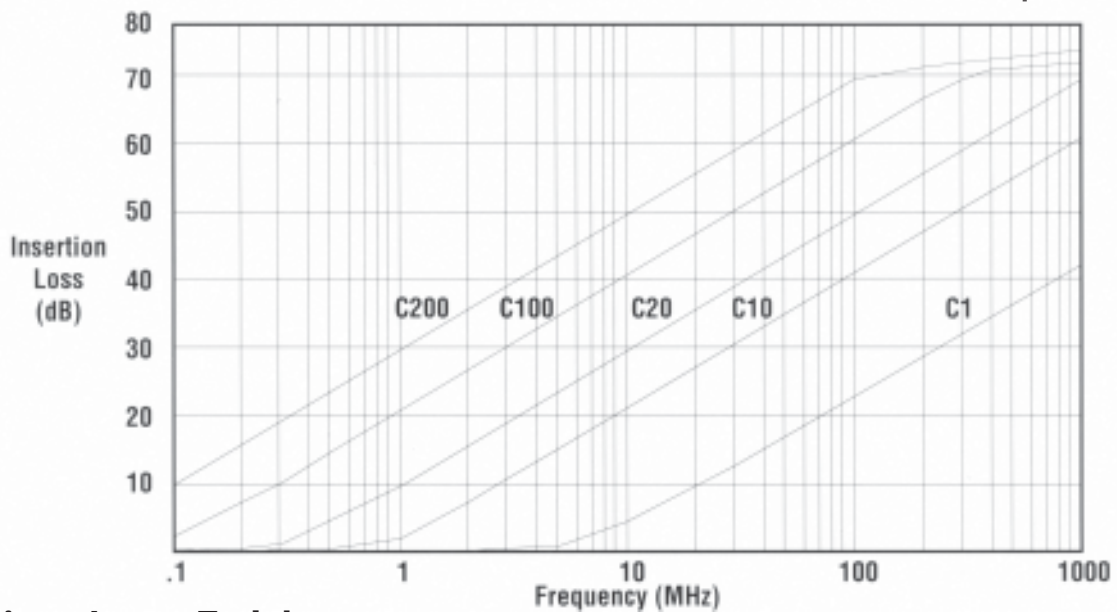


Electrical Characteristics - 'C' Section

Filter Description	C200	C100	C76	C38	C20	C10	C8	C4	C2	C1
Operating Temp Range	-55 to + 125°C									
Voltage Rating	100 VDC			200 VDC-120Vrms 400 Hz						
Current Rating DC				15 amps size 16 / 7.5 amps size 20 / 5 amps size 22						
Insulation Resistance	5000 megohms minimum @ 100 VDC									
Current Rating R.F.	3.0 amps max									
DWV sea level with 50 microamps 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 at 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 Load Insertion loss at 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. 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



D-SUBMINIATURE AND MIL-DTL-38999 CIRCULAR CONNECTORS

FILTERED AND NON-FILTERED D-SUBMINIAUTRE/CIRCULAR CONNECTORS

Filter and Non-Filtered D-Sub Connectors

Sabritec provides high performance D-Subminiature connectors for space applications. These connectors meet requirements for outgassing, toxicity, flammability and environmental concerns such as vibration and high/low differential temperature extremes, suitable for use in space and military/aerospace applications. Sabritec's D-Subminiature connectors are qualified by NASA. These connectors meet the performance and dimensional requirements of MIL-C-24308. We offer non-magnetic, outgassed and nickel plated connector assemblies.



MIL-DTL-38999 Series III Connectors

Sabritec offers standard MIL-DTL-38999 Series III filtered and non-filtered circular connectors. MIL-DTL-38999 connectors are designed to meet or exceed all applicable requirements of series III. Filter connectors are intermateable and interchangeable with standard non-filtered connectors. The MIL-DTL-38999 series are designed to meet space level requirements of outgassing, toxicity, flammability and environmental concerns such as vibration and high/low differential temperature extremes, suitable for use in space and military/aerospace applications. These connectors are made of nonmagnetic and nontoxic material. The filter connector line is designed for the most space efficient method of packaging EMI/RFI and EMP transient protection.



Sabritec's connectors have successfully completed qualification tests for military standards. We have extensive in-house capabilities for complete environmental, mechanical and electrical qualification testing to NASA and ESA standards. Most requirements are completed in-house.

Materials and Finishes

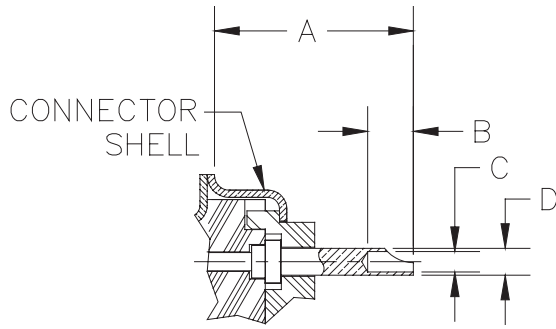
Shell & Jam Nut:	Aluminum Alloy Electroless Nickel per MIL-C-26074 Brass per ASTM-B36-C26800
Pin Contacts:	Brass per ASTM B16, Gold Plate Per MIL-G-45204
Socket Contacts:	Copper Alloy Gold Plate Per MIL-G-45204
Insulators:	High Grade Thermoplastic
Seals and Grommets:	Silicone Base Elastomer



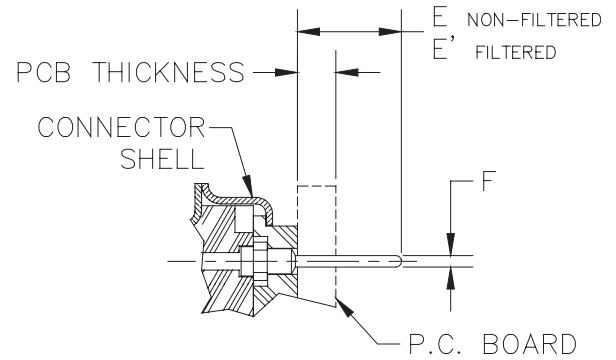
CONTACT TERMINATION

SOLDER CUP/PC TAIL/CRIMP REMOVABLE/OPTIONAL HARDWARE

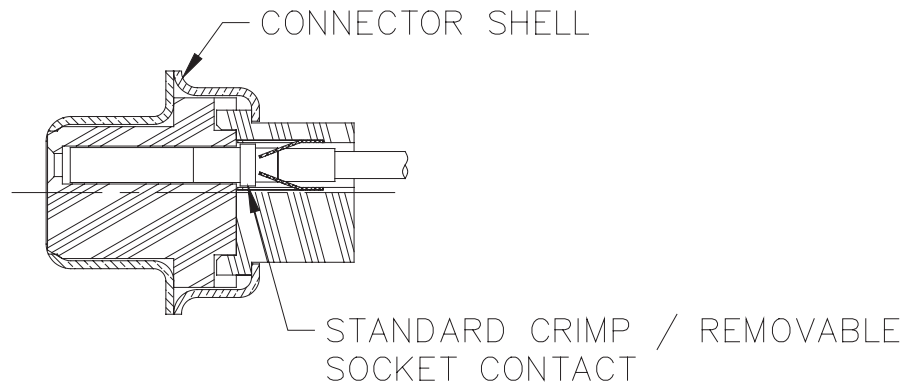
Solder Cup



PC Tail



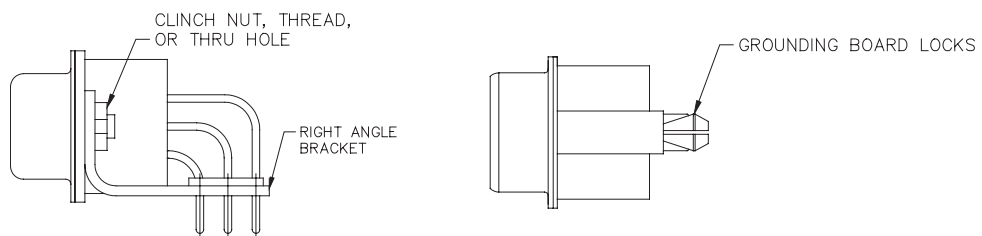
Crimp / Removable



Dimensions

CONTACT SIZE	A ^{MAX}		B	C ^{MIN}	D	E		E ^{±.015} FILTERED	F ^{±.003}
	PLUG	RECEPTACLE				NON-FILTERED			
						PCB THK=(.094)	PCB THK=(.125)		
22	.442	.390	.110/.093	∅.0345	∅.049/.047	.185/.130	.320/.275	.200	∅.020
20				∅.042	∅.061/.057		.210/.155		∅.030

Optional Hardware



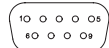


D-SUB INSERT ARRANGEMENTS

STANDARD AND HIGH DENSITY CONTACT ARRANGEMENTS SIZES #20 AND #22

Plug Insert Arrangements

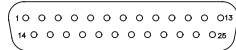
Standard Density Pin Contact Size #20



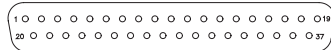
SHELL SIZE 1
ARRANGEMENT 9



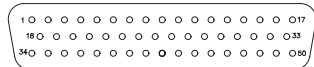
SHELL SIZE 2
ARRANGEMENT 15



SHELL SIZE 3
ARRANGEMENT 25

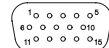


SHELL SIZE 4
ARRANGEMENT 37

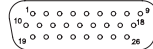


SHELL SIZE 5
ARRANGEMENT 50

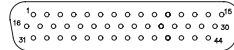
High Density Pin Contact Size #22



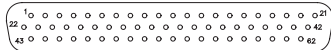
SHELL SIZE 1
ARRANGEMENT 15HD



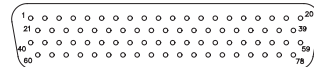
SHELL SIZE 2
ARRANGEMENT 26



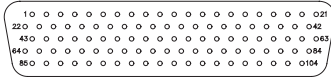
SHELL SIZE 3
ARRANGEMENT 44



SHELL SIZE 4
ARRANGEMENT 62



SHELL SIZE 5
ARRANGEMENT 78



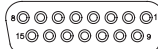
SHELL SIZE 6
ARRANGEMENT 104

Receptacle Insert Arrangements

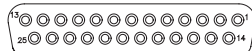
Standard Density Socket Contact Size #20



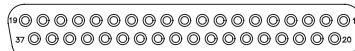
SHELL SIZE 1
ARRANGEMENT 9



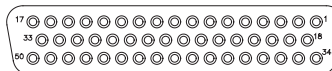
SHELL SIZE 2
ARRANGEMENT 15



SHELL SIZE 3
ARRANGEMENT 25



SHELL SIZE 4
ARRANGEMENT 37



SHELL SIZE 5
ARRANGEMENT 50

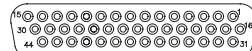
High Density Socket Contact Size #22



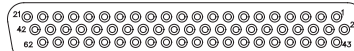
SHELL SIZE 1
ARRANGEMENT 15HD



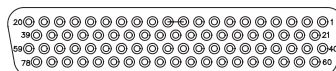
SHELL SIZE 2
ARRANGEMENT 26



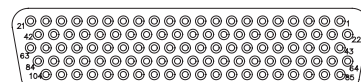
SHELL SIZE 3
ARRANGEMENT 44



SHELL SIZE 4
ARRANGEMENT 62



SHELL SIZE 5
ARRANGEMENT 78



SHELL SIZE 6
ARRANGEMENT 104



Filtered and Non-Filtered D-Sub Specifications

Shell Front	Brass per ASTM-B36-C26800 Electroless Nickel Per MIL-C-26704, Class 2, Grade B
Shell Rear	Non-Filter: Brass per ASTM-B36-C26800 Electroless Nickel Per MIL-C-26704, Class 2, Grade B Filter: Aluminum 6061-T6 Electroless Nickel Per MIL-C-26704, Class 2, Grade B
Contacts	BE CU Per ASTM-B196/B196M -OR- Brass UNS C36000 Per ASTM-B16 Gold Plate Per ASTM-B488 Type 3, Grade C
Insulators	High Grade Thermoplastic
Filter Array	Ceramic

Part Description

Sabritec D-Sub Connectors

P20 - 24308 25 S P

Filter Type _____
See Tables
Pages 3-5
NF for Non-Filtered Connectors

Prefix _____
MII-DTL-24308

Contact Arrangement _____
9, 15, 25, 37, 50,
15HD, 26, 44, 62, 78,
104
Page 8

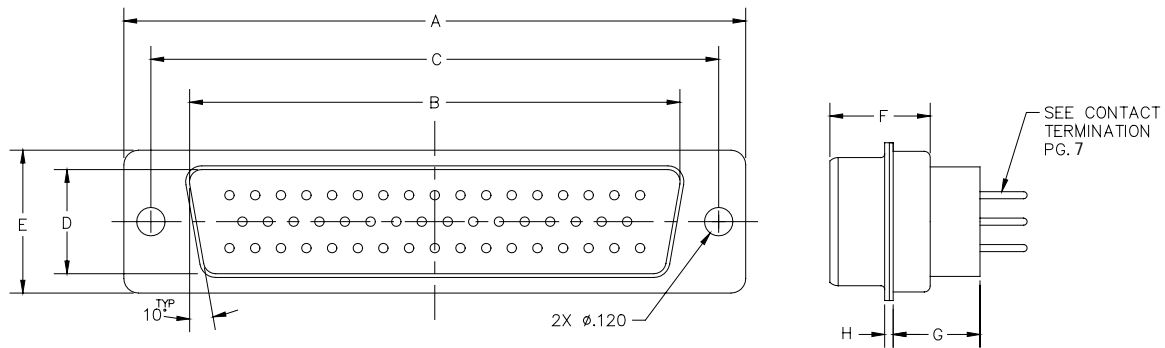
_____ Contact Termination
S - Solder Cup
P - PC Tail
C - Crimp
R - Right Angle
_____ Contact Type
P - Pin
S - Socket



NON-FILTERED D-SUBMINIATURE CONNECTORS

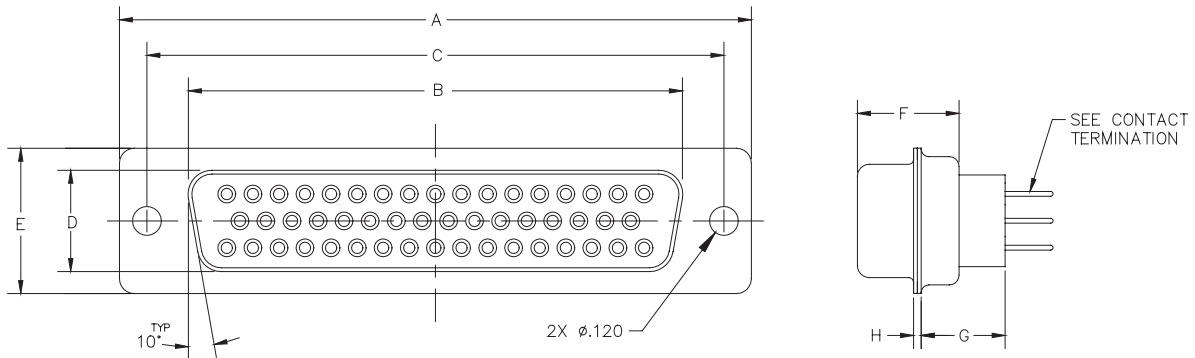
STRAIGHT NON-FILTERED CONNECTORS

Non Filtered Straight D-Sub Plug



SHELL SIZE	STANDARD DENSITY LAYOUT #20 PIN	HIGH DENSITY LAYOUT #22 PIN	A ±.015	B ±.005	C BASIC	D ±.005	E ±.015	F ±.010	MAX G			H ±.010
									STANDARD DENSITY		HIGH DENSITY	
									PC TAIL & SOLDER CUP	CRIMP	ALL	
1	9	15	1.213	.666	.984	.329	.494	.422	.251	.365	.375	.039
2	15	26	1.541	.994	1.312							
3	25	44	2.088	1.534	1.852							
4	37	62	2.729	2.182	2.500	.441	.605	.426	-	-	-	-
5	50	78	2.635	2.079	2.406							
6	-	104	2.729	2.212	2.500	.503	.668					

Non Filtered Straight D-Sub Receptacle



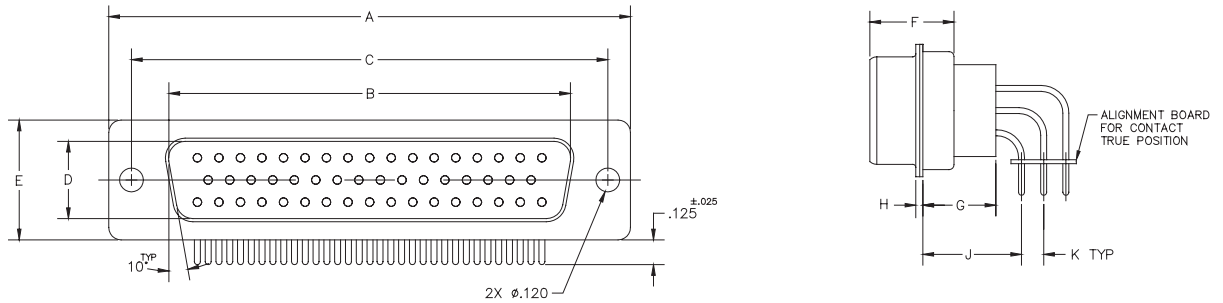
SHELL SIZE	STANDARD DENSITY LAYOUT #20 PIN	HIGH DENSITY LAYOUT #22 PIN	A ±.015	B ±.005	C BASIC	D ±.005	E ±.015	F ±.010	MAX G			H ±.010
									STANDARD DENSITY		HIGH DENSITY	
									PC TAIL & SOLDER CUP	CRIMP	ALL	
1	9	15	1.213	.643	.984	.310	.494	.429	.251	.365	.375	.039
2	15	26	1.541	.971	1.312							
3	25	44	2.088	1.511	1.852							
4	37	62	2.729	2.158	2.500	.423	.605	-	-	-	-	-
5	50	78	2.635	2.064	2.406							
6	-	104	2.729	2.189	2.500	.485	.668					



NON-FILTERED D-SUBMINIATURE CONNECTORS

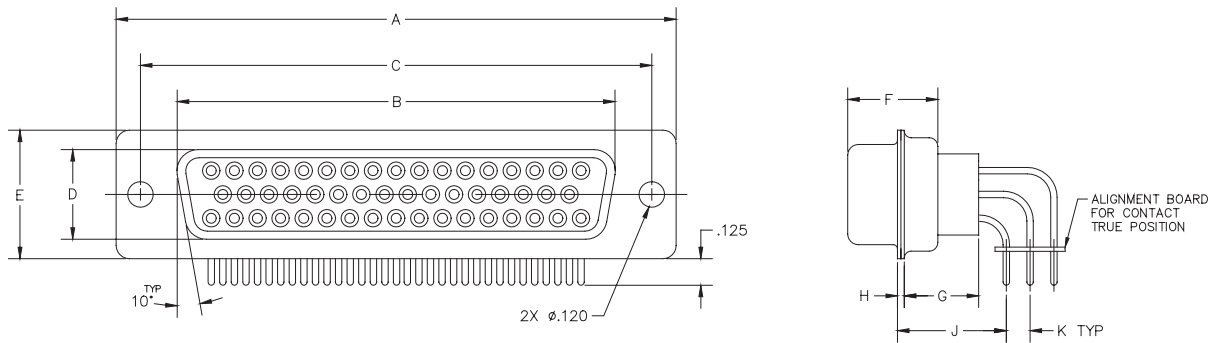
RIGHT ANGLE NON-FILTERED CONNECTORS

Non Filtered Right Angle D-Sub Plug



SHELL SIZE	STANDARD DENSITY LAYOUT #20 SKT	HIGH DENSITY LAYOUT #22 SKT	A ±.015	B ±.005	C BASIC	D ±.005	E ±.015	F ±.010	MAX G		H ±.010	J ±.010		K ±.015	
									STANDARD DENSITY	HIGH DENSITY		STANDARD DENSITY	HIGH DENSITY	STANDARD DENSITY	HIGH DENSITY
1	9	15	1.213	.666	.984	.329	.494	.426	.251	.375	.030	.283	.450	.112	.082
2	15	26	1.541	.994	1.312										
3	25	44	2.088	1.534	1.852	.442	.605	.426	.251	.375	.039	.283	.450	.112	.082
4	37	62	2.729	2.182	2.500										
5	50	78	2.635	2.079	2.406	.503	.668	.426	.251	.375	.039	.283	.450	.112	.082
6	—	104	2.729	2.212	2.500										

Non-Filtered Right Angle D-Sub Receptacle



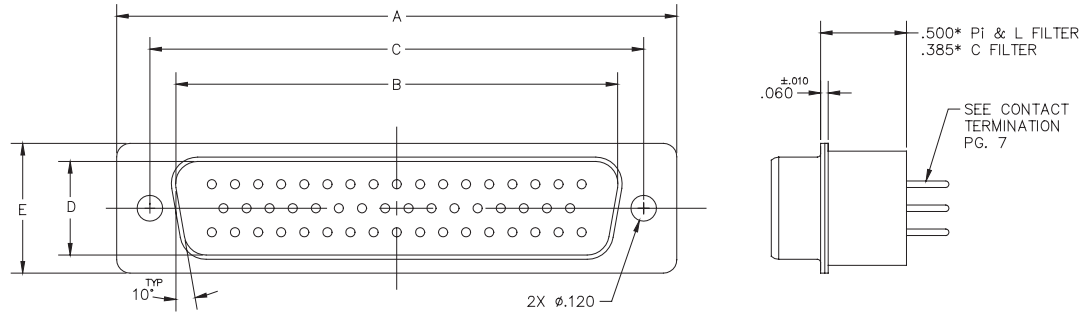
SHELL SIZE	STANDARD DENSITY LAYOUT #20 SKT	HIGH DENSITY LAYOUT #22 SKT	A ±.015	B ±.005	C BASIC	D ±.005	E ±.015	F ±.010	MAX G		H ±.010	J ±.010		K ±.015	
									STANDARD DENSITY	HIGH DENSITY		STANDARD DENSITY	HIGH DENSITY	STANDARD DENSITY	HIGH DENSITY
1	9	15	1.213	.643	.984	.310	.494	.429	.251	.375	.030	.283	.450	.112	.082
2	15	26	1.541	.971	1.312										
3	25	44	2.088	1.511	1.852	.423	.605	.429	.251	.375	.039	.283	.450	.112	.082
4	37	62	2.729	2.158	2.500										
5	50	78	2.635	2.064	2.406	.485	.668	.429	.251	.375	.039	.283	.450	.112	.082
6	—	104	2.729	2.189	2.500										



FILTERED D-SUBMINIATURE CONNECTORS

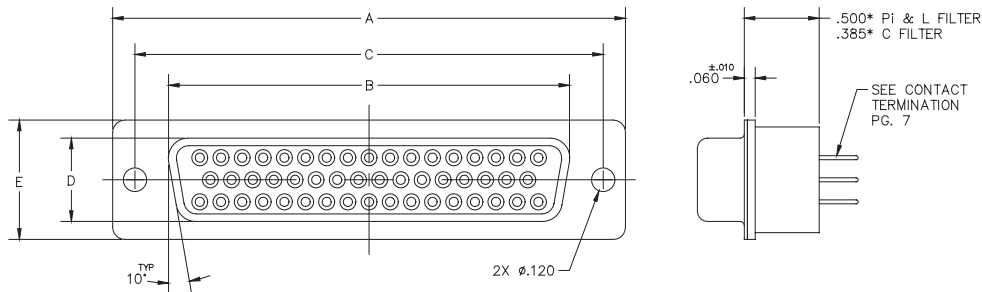
STRAIGHT FILTERED CONNECTORS

Filtered Straight D-Sub Plug



SHELL SIZE	STANDARD DENSITY LAYOUT #20 PIN	HIGH DENSITY LAYOUT #22 PIN	$\pm.015$ A	$\pm.005$ B	C BASIC	$\pm.005$ D	$\pm.015$ E
1	9	15	1.213	.666	.984	.329	.494
2	15	26	1.541	.994	1.312	.329	.494
3	25	44	2.088	1.534	1.852	.329	.494
4	37	62	2.729	2.182	2.500	.329	.494
5	50	78	2.635	2.079	2.406	.441	.605
6	—	104	2.729	2.212	2.500	.503	.668

Filtered Straight D-Sub Receptacle



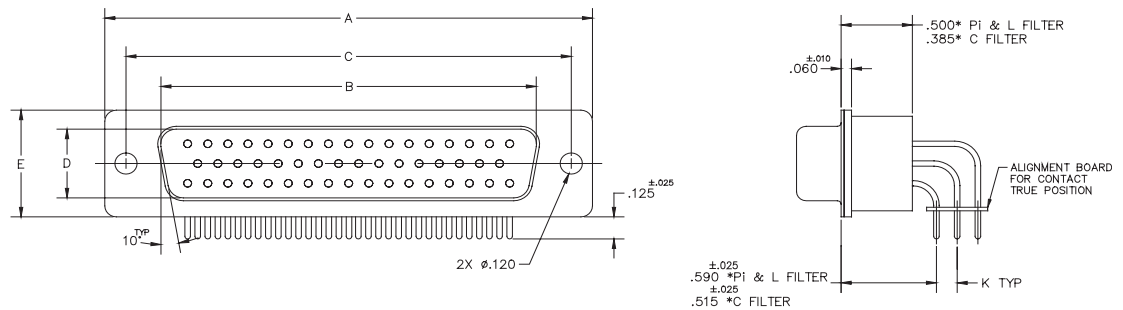
SHELL SIZE	STANDARD DENSITY LAYOUT #20 SKT	HIGH DENSITY LAYOUT #22 SKT	$\pm.015$ A	$\pm.005$ B	C BASIC	$\pm.005$ D	$\pm.015$ E
1	9	15	1.213	.643	.984	.310	.494
2	15	26	1.541	.971	1.312	.310	.494
3	25	44	2.088	1.511	1.852	.310	.494
4	37	62	2.729	2.158	2.500	.310	.494
5	50	78	2.635	2.064	2.406	.423	.605
6	—	104	2.729	2.189	2.500	.485	.668



FILTERED D-SUBMINIATURE CONNECTORS

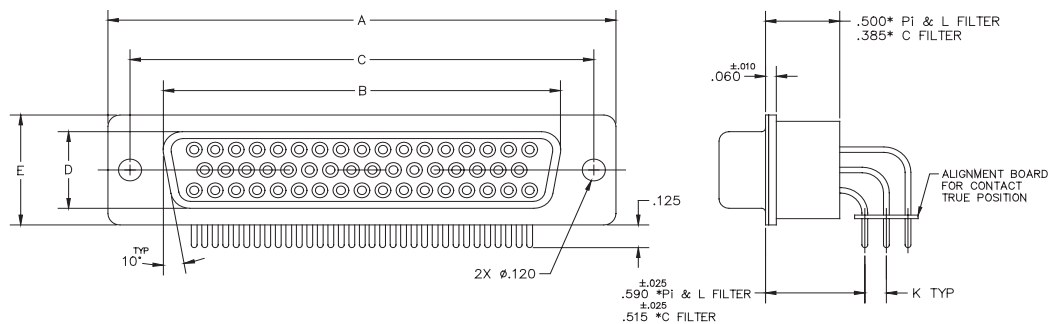
RIGHT ANGLE FILTERED CONNECTORS

Filtered Right Angle D-Sub Plug



SHELL SIZE	STANDARD DENSITY LAYOUT #20 PIN	HIGH DENSITY LAYOUT #22 PIN	A ±.015	B ±.005	C BASIC	D ±.005	E ±.015	K ±.015	
								STANDARD DENSITY	HIGH DENSITY
1	9	15	1.213	.666	.984	.329	.494	.112	.082
2	15	26	1.541	.994	1.312	.329	.494	.112	.082
3	25	44	2.088	1.534	1.852	.329	.494	.112	.082
4	37	62	2.729	2.182	2.500	.329	.494	.112	.082
5	50	78	2.635	2.079	2.406	.441	.605	.112	.082
6	—	104	2.729	2.212	2.500	.503	.668	—	.082

Filtered Right Angle D-Sub Receptacle



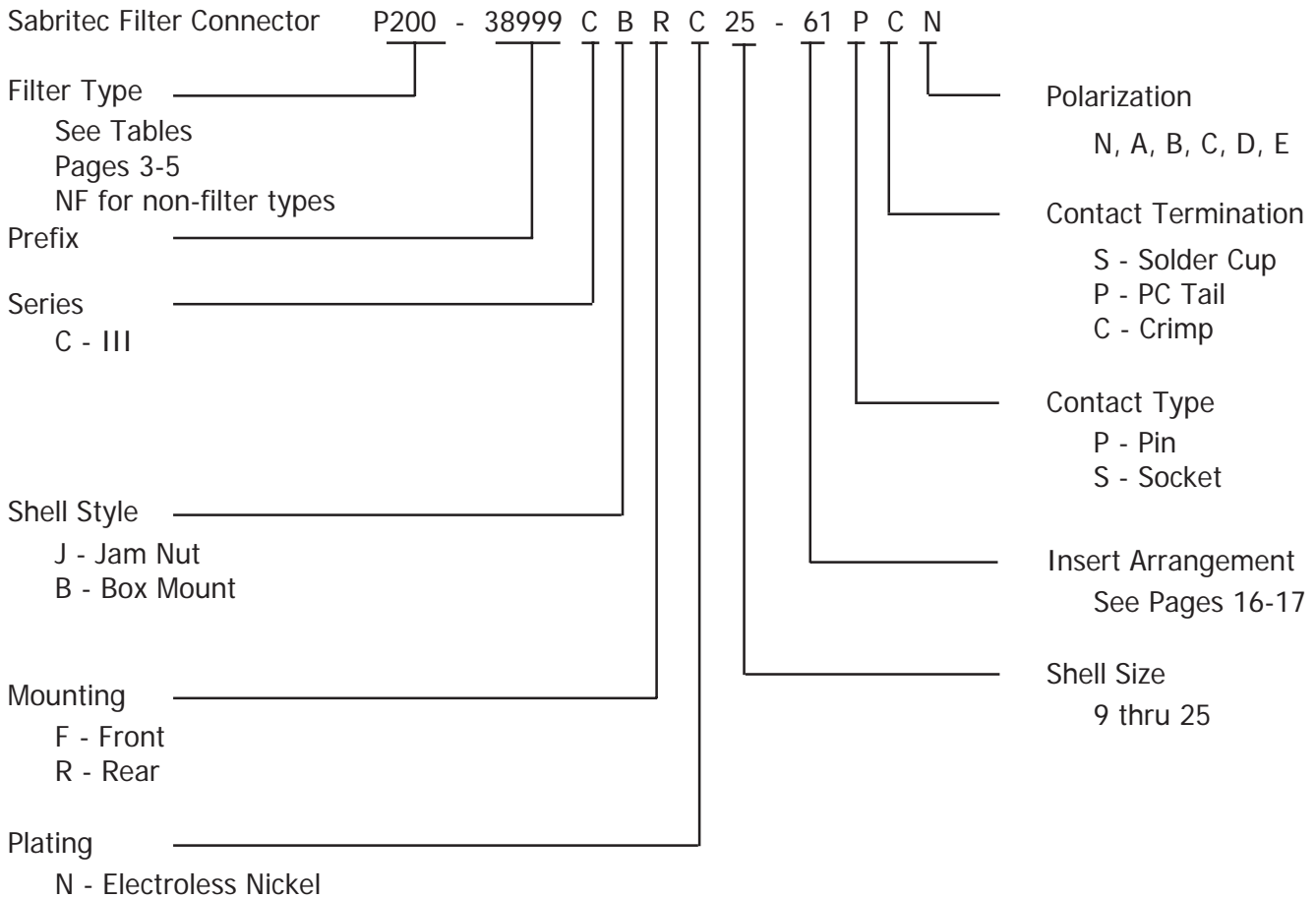
SHELL SIZE	STANDARD DENSITY LAYOUT #20 SKT	HIGH DENSITY LAYOUT #22 SKT	A ±.015	B ±.005	C BASIC	D ±.005	E ±.015	K ±.015	
								STANDARD DENSITY	HIGH DENSITY
1	9	15	1.213	.643	.984	.310	.494	.112	.082
2	15	26	1.541	.971	1.312	.310	.494	.112	.082
3	25	44	2.088	1.511	1.852	.310	.494	.112	.082
4	37	62	2.729	2.158	2.500	.310	.494	.112	.082
5	50	78	2.635	2.064	2.406	.423	.605	.112	.082
6	—	104	2.729	2.189	2.500	.485	.668	—	.082



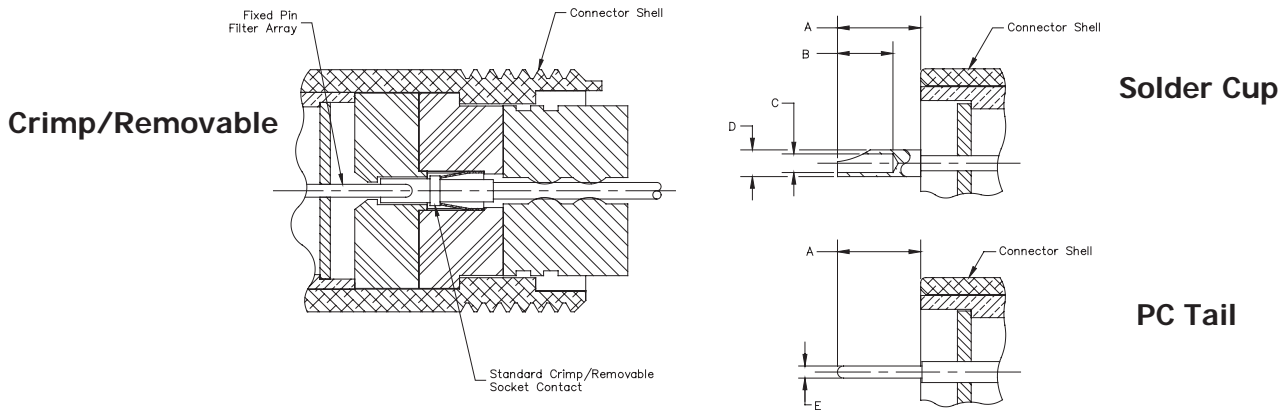
MIL-DTL-38999 CIRCULAR CONNECTORS

PART NUMBERING AND CONTACT TERMINATION

Part Description



MIL-DTL-38999 Contact Termination



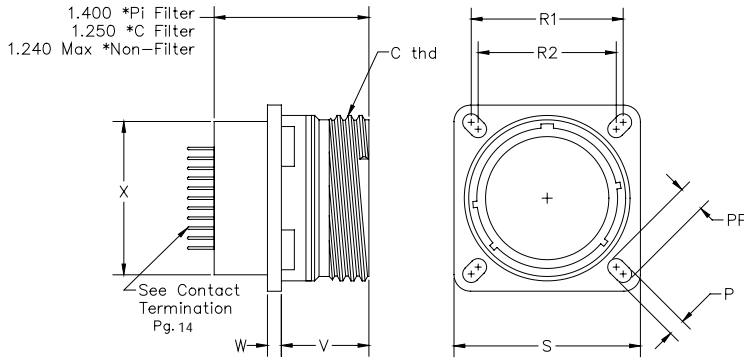
CONTACT SIZE	A	B	C	D	E
22	.175	.125/.094	.040/.035	.055/.051	.020
20		.156/.125	.048/.042	.088/.061	.030
16		.172/.141	.082/.069	.103/.097	.050
12		.120/.112	.142/.136	.065	



MIL-DTL-38999 SERIES III CIRCULAR CONNECTORS

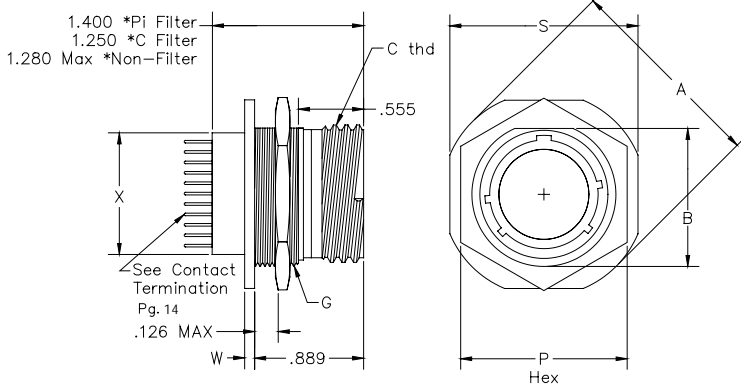
BOX MOUNT AND JAM NUT RECEPTACLES

D38999/20 Wall Mount Receptacle



DIMENSIONS									
Shell Size	C Thread	P	R1	R2	V	W	X	PP	S
	.1 Pitch .3 Lead	±.008	BSC	BSC	Max	Max	Max	Max	+ .012
9	0.625	0.128	.719	.564	.820	.098	.500	.194	.937
11	0.750		.812	.719			.620		1.031
13	0.875		.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

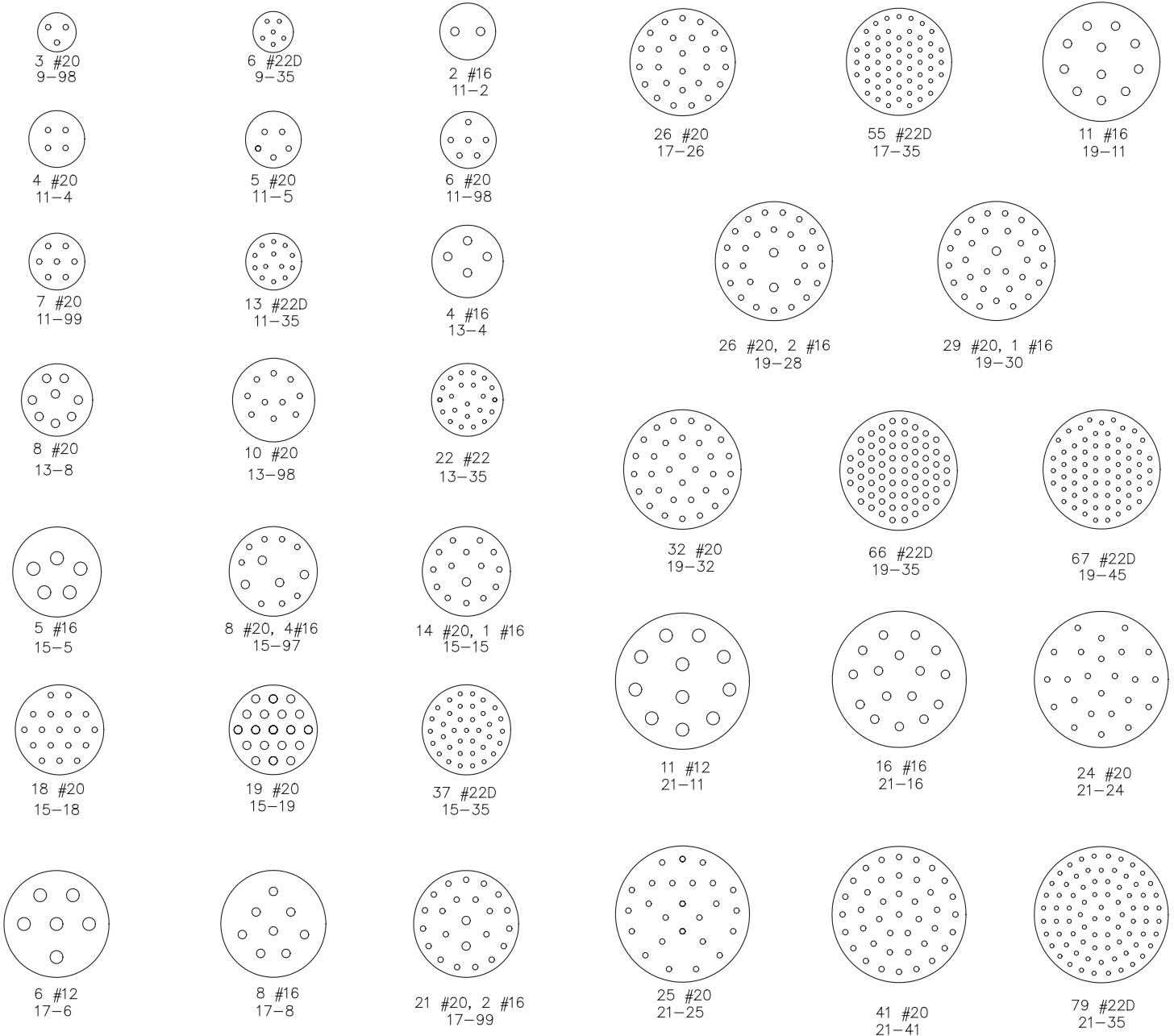
D38999/24 Jam Nut Receptacle



Dimensions								
Shell Size	A	B	C Thread	G Thread	P Hex	S	W	X
	+ .012	+ .004 - .006	.1 Pitch .3 Lead	6g .10R	Hex	+ .015	+ .035 - .004	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	1.752	1.187	1.1875	M32x1	1.614 1.581	1.626	.118	1.000
19	1.987	1.312	1.250	M35x1	1.811 1.781	1.811		1.120
21	2.163	1.437	1.375	M38x1	1.968	1.937		1.250
23	2.189	1.562	1.500	M41x1	1.938	2.063	1.390	
25	2.311	1.687	1.625	M44x1		2.189	1.500	

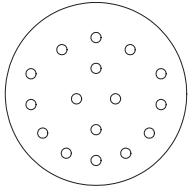


MIL-DTL-38999 INSERT ARRANGEMENTS

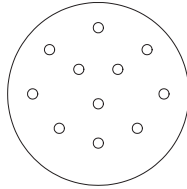




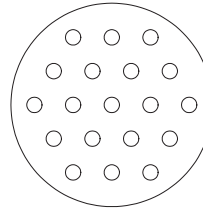
MIL-DTL-38999 INSERT ARRANGEMENTS



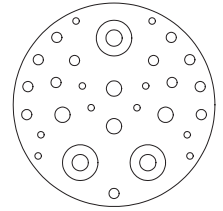
16 #16
23-97



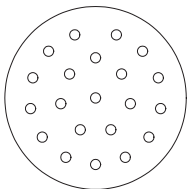
11 #16
23-99



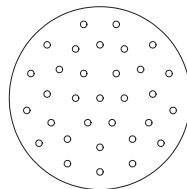
19 #12
25-19



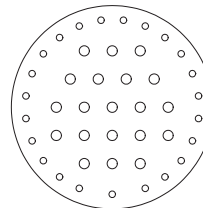
10 #20, 13 #16, 4 #12
3 #8 TWINAX
25-20



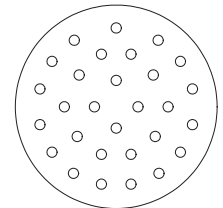
21 #16
23-21



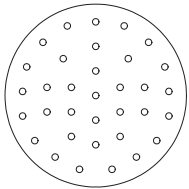
32 #20
23-32



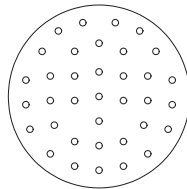
23 #20, 20 #16
25-43



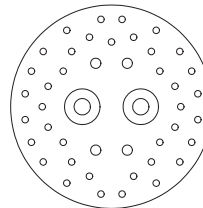
29 #16
25-29



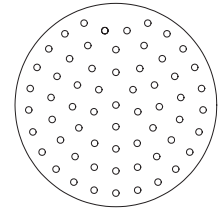
34 #20
23-34



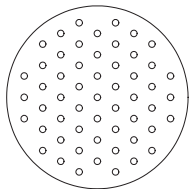
36 #20
23-36



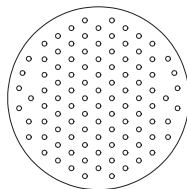
40 #20, 4 #16
2 #8 COAX
25-46



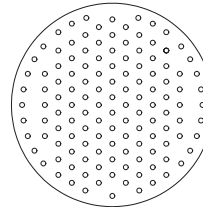
61 #20
25-61



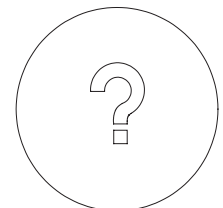
55 #20
23-55



100 #22D
23-35



128 #22D
25-35



Custom Layout*
XX-XX

*Consult Factory for Additional or Custom Layouts

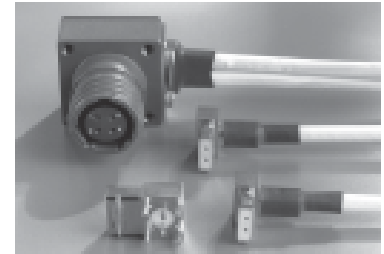


Sabritec offers a complete line of differential twinax, quadrax connectors, contacts, and cable assemblies for high speed Ethernet and fibre channel applications. Fibre channel transceivers can either be driven with fiber optic signaling or true differential pair twinaxial signaling with 150 Ohm impedance between conductors. For both applications, Sabritec offers ruggedized interconnect solutions with expanded beam fiber optic contacts and cable assemblies for avionic applications as well as a complete series of differential pair twinaxial connectors and cable assemblies offering the utmost in high speed matched impedance data-on-demand applications. The differential pair and signal to shield characteristic impedance is maintained throughout the connector pair. A true twinaxial connector interface ensures signal integrity minimizing jitter and data rate errors thus degrading the high speed digital signal.



Quadsplitter

Sabritec features a newly developed concept called a 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 differential 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.



Quadrax Contacts

Sabritec's Quadrax contacts consist of four center contacts (Quad configuration applications exceeding 1 Gbit/sec) with a low impedance grounding shield. These contacts come in rear release/rear removable and front release/rear removable contact types for cable mount and PCB mount applications.

Micro Twinax

Sabritec's 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 package size is applicable for High-Speed Ethernet (100 Base-T) and Fibre Channel (1 Gbit/sec min.) . SMA Size Package: Applicable for High-Speed Ethernet (100 Base-T) and Fibre Channel (1 Gbit/sec min) applications. Micro-D Size Package: Applicable for High-Speed Ethernet (100 Base-T) and Fibre Channel (1 Gbit/sec min) applications.

Fibre Channel Connector Series

For single stand-alone interconnect applications for a single differential pair signal to the PCB, Sabritec offers a complete series of true differential pair connectors for board-board jumper applications. These are available in quick disconnect versions including straight and right angle cable mount and PCB mount connectors. The cable mount connectors are designed for 150-ohm differential pair impedance cable types which maintain the differential pair impedance and signal to shield impedance throughout the mated pair. Our fibre channel connector series allows for data rates exceeding 2 Gbit/second with low jitter, skew and insertion loss over long cable runs. The eye-opening pattern meets or exceeds ANSI X 3T11 (FC-O) FC-PH specification requirements.





Testing Capabilities

Sabritec tests eye pattern, jitter, skew, and insertion loss on differential pair 100 ohm and 150 ohm fibre channel and high speed Gigabit Ethernet applications. 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. Using 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, Crosstalk.

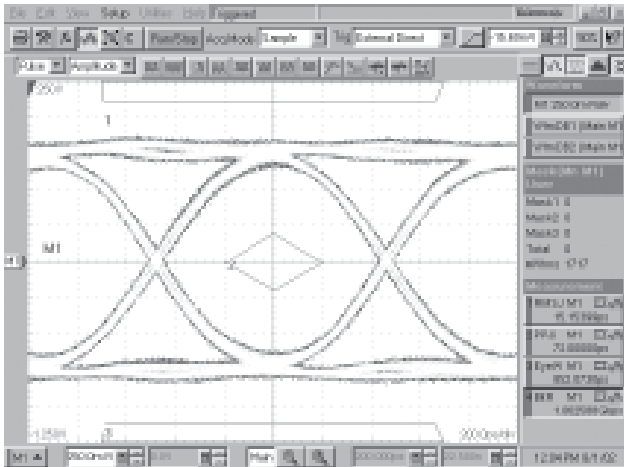
Sabritec's Other Testing Capabilities include:

Test Capabilities Electrical

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

Test Capabilities Mechanical

- Thermal Cycling & Thermal Shock
- Temperature Humidity & Salt Spray
- Durability
- Mechanical Loading



ELECTRICAL 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.

MECHANICAL & ENVIRONMENTAL SPECIFICATIONS

Dielectric Withstanding Voltage	250 VDC max
Insulation Resistance	5,000 Mega ohms min
Contact Current Rating	3.0 Amps D.C. max
Data Rates	1 Gbits/sec min.
Differential Pair Cable Impedance	150-ohm \pm 15-ohm 100-ohm \pm 10-ohm
Signal to Shield Cable Impedance	75-ohm \pm 10-ohm 50-ohm \pm 7-ohm

MATERIALS & FINISHES

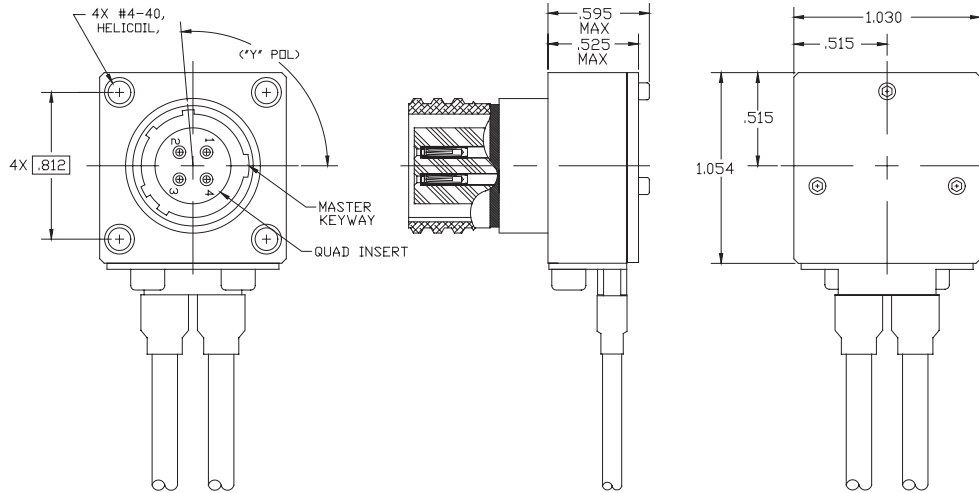
Shells	Brass per ASTM-B16 Nickel per SAE-AMS-QQ-N-290 Gold per ASTM-B488 Aluminum per ASTM-B211 Electroless Nickel per MIL-C-26074
Insulators	PTFE per ASTM-D1710 Ultem per ASTM-D5205
Contacts	Brass per ASTM-B16 Be Cu per ASTM B196 Gold per ASTM-B488



QUADSPITTER CONNECTORS

MIL-DTL-38999 SERIES III QUAD INSERT TO TWINAX CONVERSION ASSEMBLIES

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



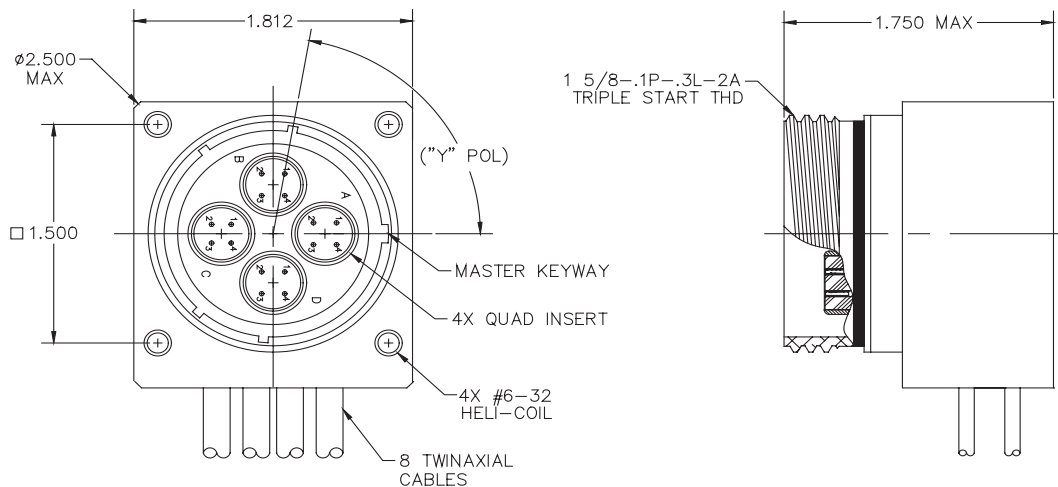
Y	Polarization
1	N
2	A
3	B
4	C
5	D
6	E

Y = Connector Polarization

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

Please specify cable length when ordering or use the RFQ worksheet in the back of this catalog.

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

Y = Connector Polarization

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

Please specify cable length when ordering or use the RFQ worksheet in the back of this catalog.

See Page 58 for Contact Cable Assembly Ordering Information

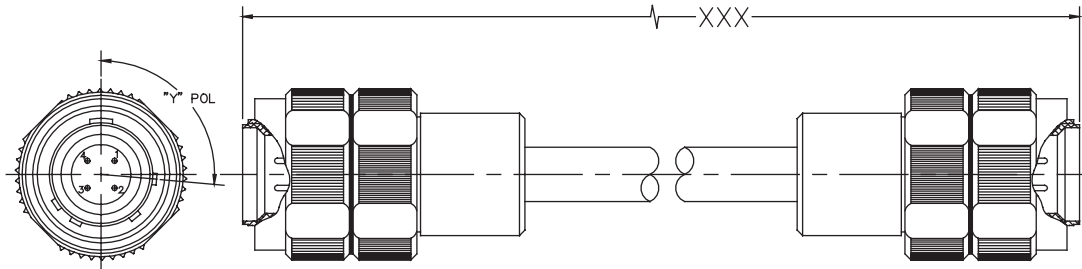
See Page 60 for Connector Cable Group Number Descriptors



MIL-DTL-38999 25-8T* RECEPTACLES & 25-4 FOUR WAY QUAD

MIL-DTL-38999 SERIES III CONNECTORS

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

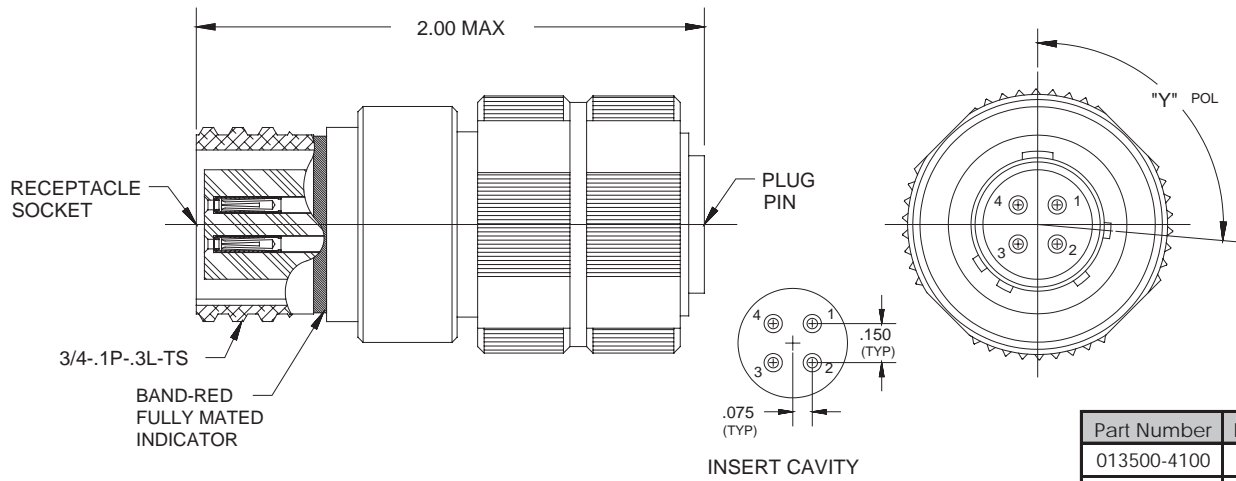


XXX = Cable Length in Inches
Y = Connector Polarization

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

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

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

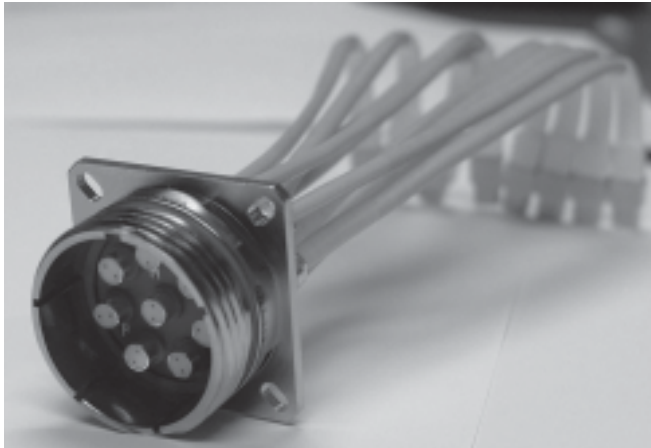
See Page 58 for Contact Cable Assembly Ordering Information

See Page 60 for Connector Cable Group Number Descriptors



MIL-DTL-38999 HIGH SPEED SERIES

MIL-DTL-38999 ORDERING INFORMATION



Differential twinax contacts are designed for use in MIL-DTL-38999, MIL-DTL-83527, ARINC 404, ARINC 600 and D-Sub connectors series. Twinax contacts consist of two inner contacts to form 100 or 150 ohm differential impedance. Designed to meet ARINC 600 Quad Ethernet specifications, Sabritec's Quadrax contacts consist of four center contacts (Quad configuration applications exceeding 1 Gbit/sec) forming two 100 or 150 ohm matched impedance differential pairs. These contacts have a low impedance grounding shield and are ideal for Ethernet 100 Base-T (100 Ohm), Fibre Channel (150 ohm) and IEEE 1394B Firewire (110 ohm) applications.

PART NUMBER ASSIGNMENT

38999 - III - B - R - C - 21 - 75 - P - C - N

Prefix

Series
I, III, IV

Shell Style
J - Jam Nut
B - Box Mount
W - Wall Mount

Mounting
F - Front
R - Rear

Material/Plating

C- Aluminum Alloy/Cadmium Over Nickel
 N- Aluminum Alloy/Electroless Nickel
 S- Stainless Steel/Electroless Nickel
 CC-Composite/Cadmium Over Nickel
 CN-Composite/Electroless Nickel

**Consult factory for alternate plating options*

Polarization
N, A, B, C, D, E

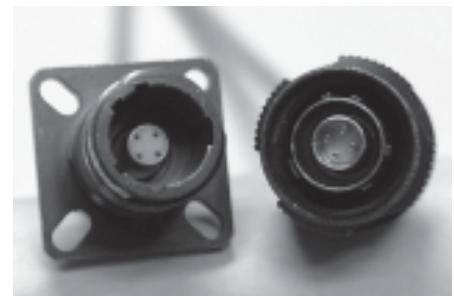
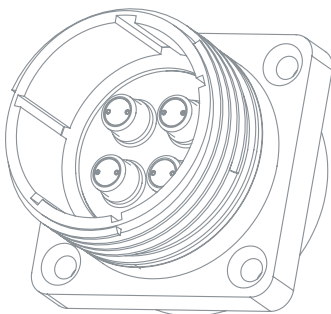
Contact Termination
S- Solder Cup
P - PC Tail
C- Crimp

Contact Type
P - Pin
S- Socket

Insert Arrangement

Shell Size

Note: Twinax/Quadax Contacts are sold separately



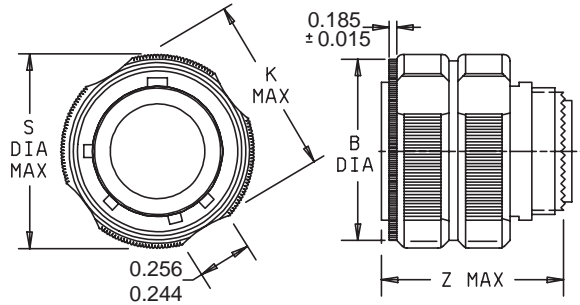
MIL-DTL-38999 with Single Way Quad



MIL-DTL-38999 TWINAX/QUADRAX

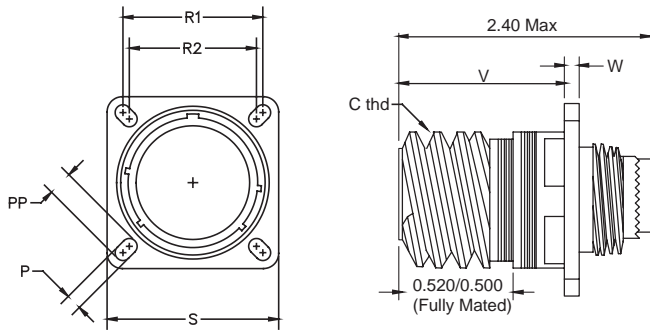
MIL-DTL-38999 SERIES III CONNECTOR SHELLS/SIZE 8 TWINAX CONTACTS

MIL-DTL-38999 Twinax/Quadax Plug



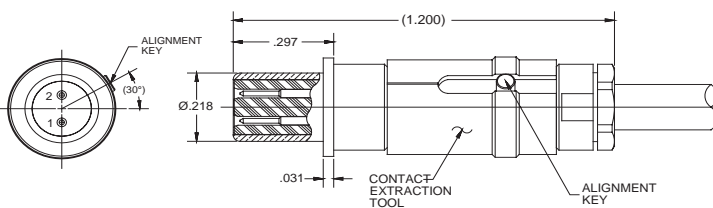
Shell Size	B Dia +.008 -0	K Max	S Dia Max	Z Max
9	0.724	0.748	0.858	1.220
11	0.831	0.862	0.984	
13	1.000	1.028	1.157	
15	1.130	1.154	1.280	
17	1.268	1.291	1.406	
19	1.374	1.398	1.516	
21	1.500	1.524	1.642	
23	1.618	1.642	1.768	
25	1.744	1.768	1.890	

MIL-DTL-38999 Twinax/Quadax Receptacle



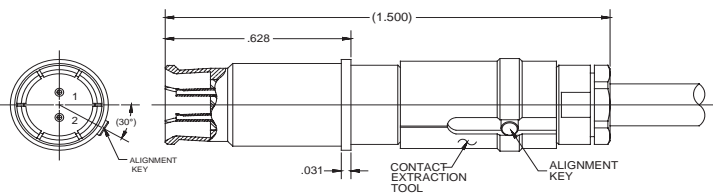
Shell Size	C Thread .1 Pitch 3 Lead	P ±.008	R1 BSC	R2 BSC	V Max + 0.00 - .005	W Max	X Max	PP Max ±.008	S ±.012
9	0.625	0.128	0.719	0.594	0.820	.098/.083	0.500	0.216	0.937
11	0.750		0.812	0.719			0.620	1.031	
13	0.875		0.906	0.812			0.740	1.026	
15	1.000		0.969	0.906			0.890	1.220	
17	1.188		1.062	0.969			1.000	1.311	
19	1.25	0.154	1.156	1.062	0.790	.126/.083	1.120	0.194	1.437
21	1.375		1.250	1.156			1.250	1.563	
23	1.500		1.375	1.250			1.390	1.689	
25	1.625		1.500	1.375			1.500	1.811	
									0.242

Size 8 Twinax Pin Contact 100 and 150 Ohm



Part Number	Impedance	Cable Type	Cable
019634-8001	150 Ohm	Differential Twinax	540-1099-000
019634-8002	150 Ohm	Differential Twinax	540-1114-000
019634-8003	100 Ohm	Differential Twinax	540-1153-000
019634-8004	100 Ohm	Flexible Twinax	540-1161-000
019634-8005	100 Ohm	Flexible Twinax	540-1086-000

Size 8 Twinax Socket Contact 100 and 150 Ohm



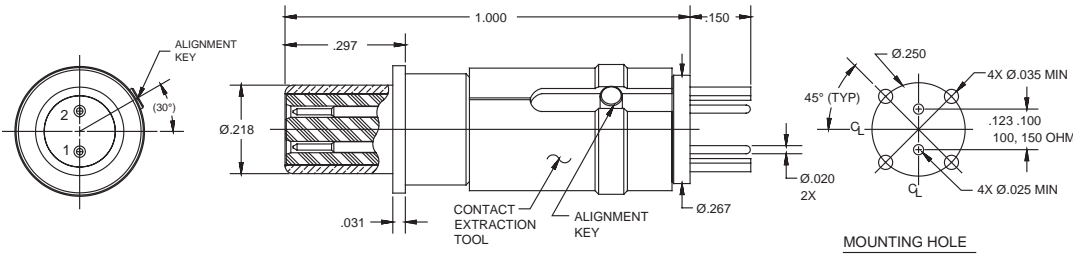
Part Number	Impedance	Cable Type	Cable
019534-8001	150 Ohm	Differential Twinax	540-1099-000
019534-8002	150 Ohm	Differential Twinax	540-1114-000
019534-8003	100 Ohm	Differential Twinax	540-1153-000
019534-8004	100 Ohm	Flexible Twinax	540-1161-000
019534-8005	100 Ohm	Flexible Twinax	540-1086-000



SIZE 8 TWINAX/QUADRIX CONTACTS

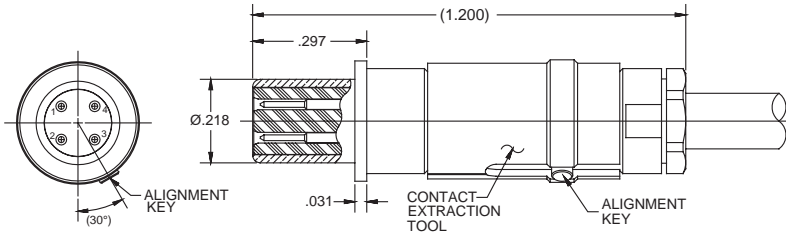
FOR MIL-DTL-38999 SERIES III CONNECTORS

Size 8 Twinax Pin 100 and 150 Ohm PCB Mount



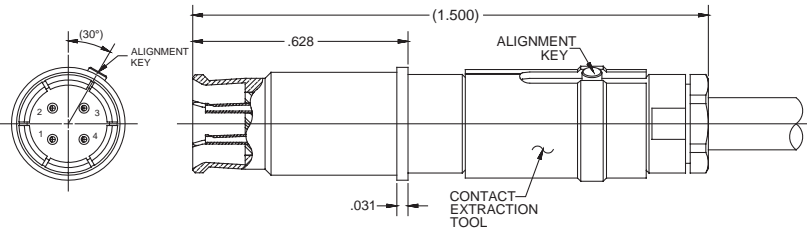
Part Number	Impedance
019617-0002	100 Ohm
019617-0003	150 Ohm

Size 8 Quadrix Pin 100 Ohm



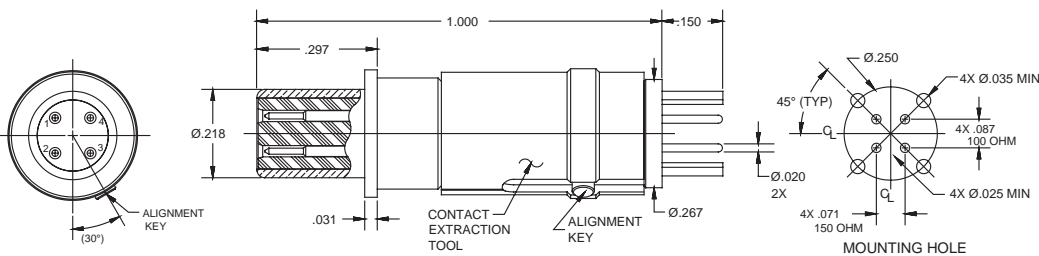
Part Number	Cable Type	Cable
019635-8000	Differential Quad	540-1165-000

Size 8 Quadrix Socket 100 Ohm



Part Number	Cable Type	Cable
019535-8000	Differential Quad	540-1165-000

Size 8 Quadrix Pin 100 and 150 Ohm PCB Mount



Part Number	Impedance
019617-0004	100 Ohm
019617-0005	150 Ohm

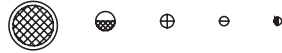
See Page 58 for Contact Cable Assembly Ordering Information

See Page 60 for Connector Cable Group Number Descriptors



INSERT ARRANGEMENTS

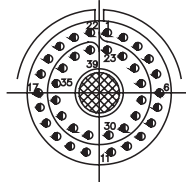
MIL-DTL-38999 TWINAX/QUADRAX INSERT ARRANGEMENTS



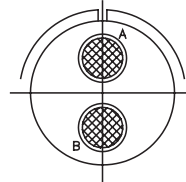
CONTACT LEGEND 8 12 16 20 22D
Size #8 Twinax /Quadrax (T/Q) Cavities are Anti-Rotational



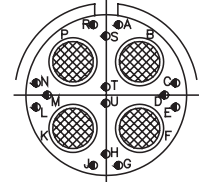
9-5 INSERT
1 #8 T/Q



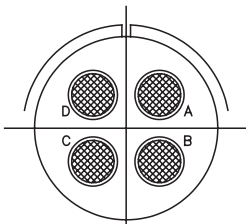
17-2 INSERT
1 #8 T/Q
38 #22D



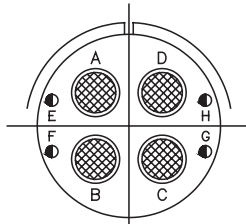
17-82 INSERT
2 #8 T/Q



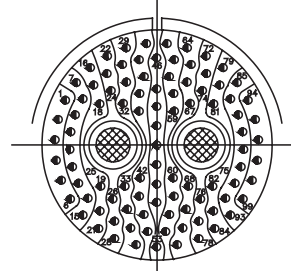
19-18 INSERT
4 #8 T/Q
14 #22D



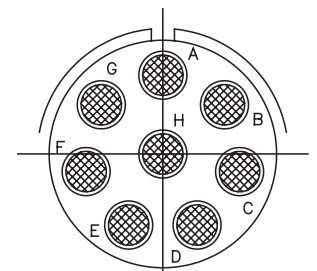
21-75 INSERT
4 #8 T/Q



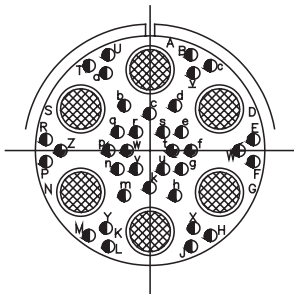
21-4T4 INSERT
4 #8 T/Q
4 #22D



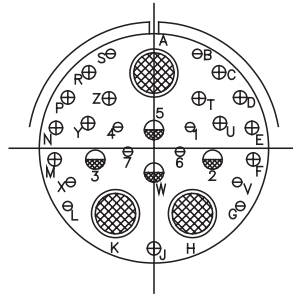
25-7 INSERT
2 #8 T/Q
97 #22D



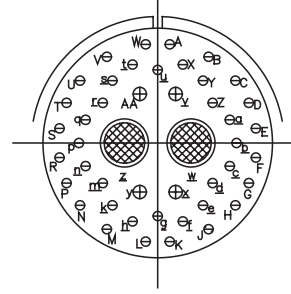
25-8 INSERT
8 #8 T/Q



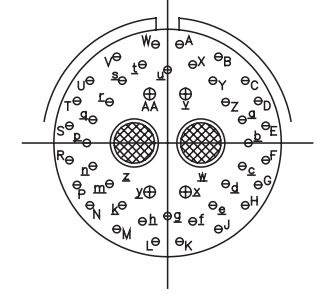
25-17 INSERT
6 #8 T/Q
36 #22D



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



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



25-90 INSERT
2 #8 T/Q
4 #16
40 #20

Note:

Size #8 Twinax/Quadrax contact cavities are common ground to the connector shell with a ground resistance of 10 milli-ohms maximum or insulated from common ground. Consult factory for details.



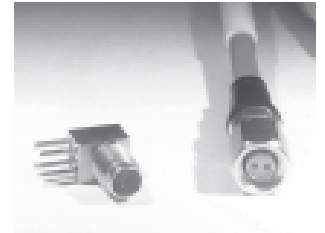
MICRO TWINAX CONNECTORS

NDL/SMA /MICRO-D SIZE PACKAGES

Micro Twinax connectors feature matched impedance miniaturized connectors that provide the user with controlled impedance and tightly spaced PCB footprint spacing. These connectors are available in straight or right angle versions.

Micro Twinax NDL Size:

- Replaces standard NDL Triax connector series for higher speed balanced twinax applications
- Identical NDL footprint PCB pattern for outer conductor spacing (.100" spacing)
- Applicable for High-Speed Ethernet (100 Base-T) and Fibre Channel (2 GBit/sec min.) applications
- $Z_0 = 100$ Ohm or 150 Ohm Differential Pair Impedance



NDL Size

Micro Twinax SMA Size Package:

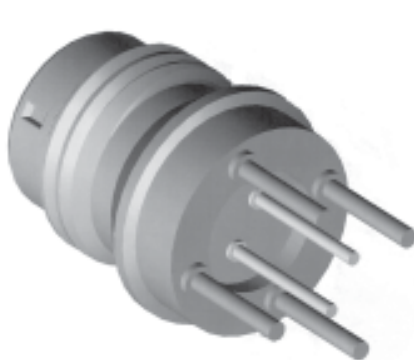
- Package size of a standard SMA series connector housing
- Differential pair matched impedance of $Z_0 = 100$ or 150 ohm balanced impedance between conductors
- Applicable for High-Speed Ethernet (100 Base-T) and Fibre Channel (2 GBit/sec min.) applications
- $Z_0 = 100$ Ohm or 150 Ohm Differential Pair Impedance

Micro Twinax Micro-D Size Package:

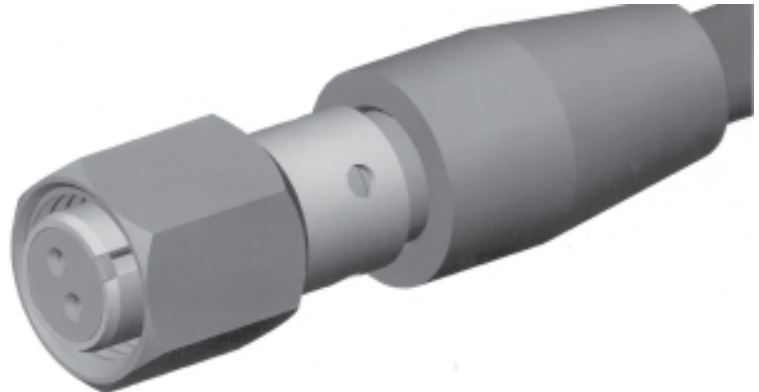
- Package size mimics Micro-D packaging constraints throughout connector pair
- Matched impedance 100 or 150 ohm balanced impedance throughout connector pair
- Applicable for High-Speed Ethernet (100 Base-T) and Fibre Channel (1 GBit/sec min.) applications
- $Z_0 = 100$ Ohm or 150 Ohm Differential Pair Impedance



Micro-D Size



Micro Twinax NDL Straight Jack PCB Mount



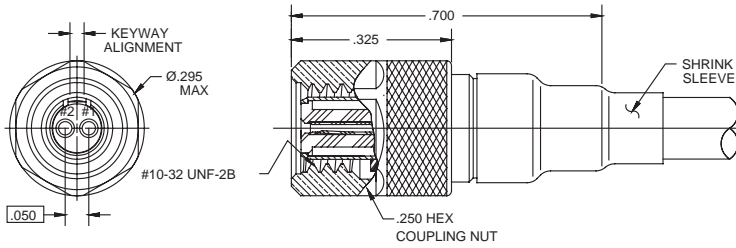
Micro Twinax NDL Plug



MICRO TWINAX CONNECTORS

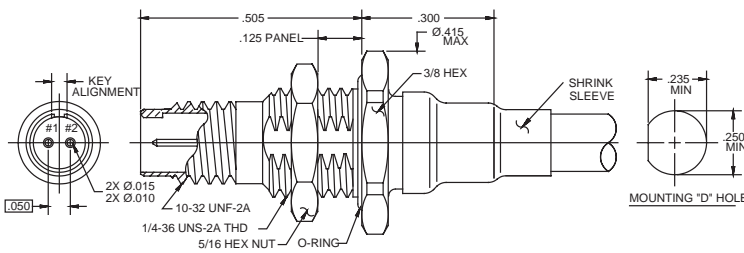
NDL SIZE PACKAGE MATCHED IMPEDANCE 100 AND 150 OHM MICRO TWINAX SERIES

Micro Twinax NDL Straight Cable Plug 100 and 150 Ohm



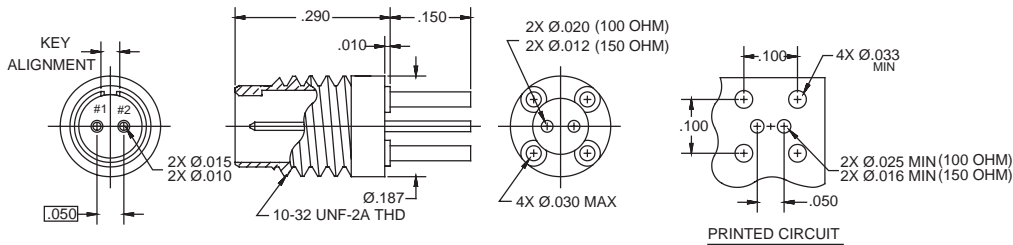
Part Number	Impedance	Cable Type	Cable
014034-2002	100 Ohm	Differential Twinax	540-1153-000
014034-2008	100 Ohm	Flexible Twinax	540-1161-000
014034-2016	100 Ohm	Flexible Twinax	540-1086-000
014034-2013	150 Ohm	Differential Twinax	540-1099-000

Micro Twinax NDL Bulkhead Mount Jack 100 and 150 Ohm



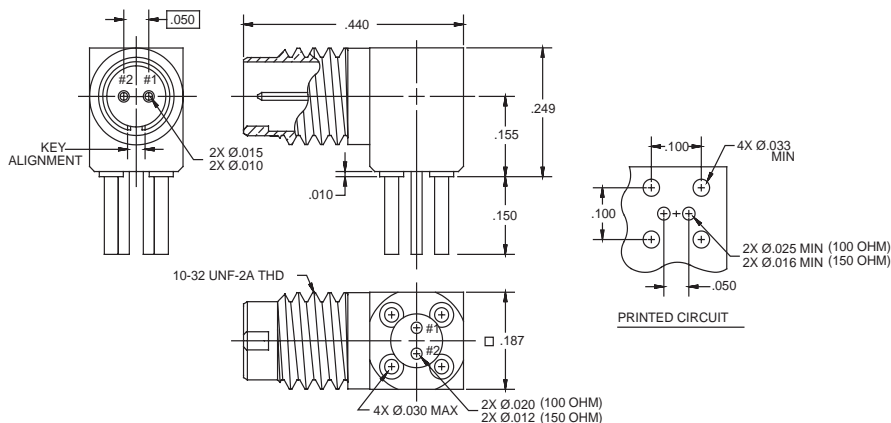
Part Number	Impedance	Cable Type	Cable
014134-5002	100 Ohm	Differential Twinax	540-1153-000
014134-5003	100 Ohm	Flexible Twinax	540-1161-000
014134-5004	100 Ohm	Flexible Twinax	540-1086-000
014134-5005	150 Ohm	Differential Twinax	540-1099-000

Micro Twinax NDL Straight Jack 100 and 150 Ohm PCB Mount



Part Number	Impedance
014117-2001	100 Ohm
014117-2006	150 Ohm

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



Part Number	Impedance
014117-1001	100 Ohm
014117-1006	150 Ohm

See Page 58 for Contact Cable Assembly Ordering Information

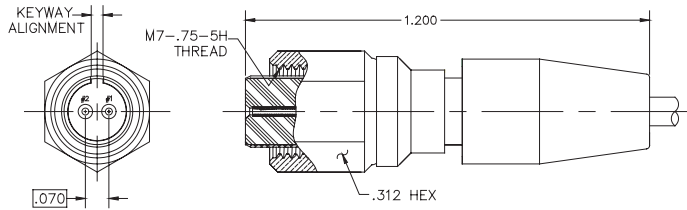
See Page 60 for Connector Cable Group Number Descriptors



MICRO TWINAX CONNECTORS

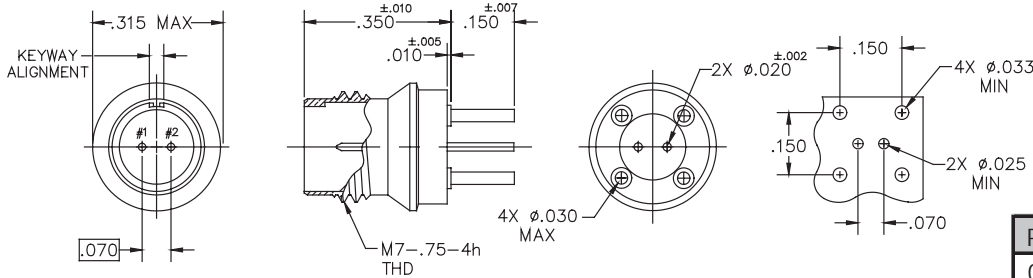
SMA SIZE TWINAX CONNECTORS 100 AND 150 OHM MATCHED IMPEDANCE

Micro Twinax SMA Size Plug 100 or 150 Ohm Matched Impedance



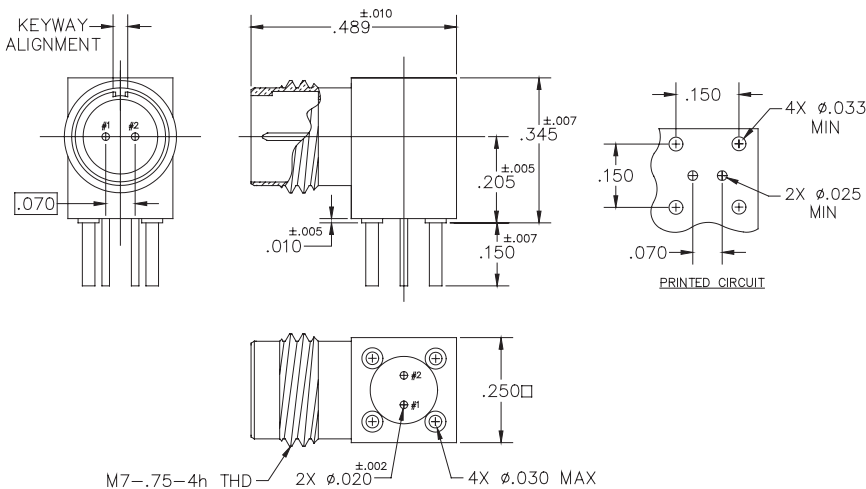
Part Number	Differential Impedance	Cable Type	Cable
014034-2004	100 Ohm	Differential Twinax	540-1153-000
014034-2010	100 Ohm	Flexible Twinax	540-1161-000
014034-2015	100 Ohm	Flexible Twinax	540-1086-000
014034-2003	150 Ohm	Differential Twinax	540-1099-000
014034-2009	150 Ohm	Differential Twinax	540-1114-000

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



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

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



Part Number	Impedance
014117-1001	100 Ohm
014117-1006	150 Ohm

See Page 58 for Contact Cable Assembly Ordering Information

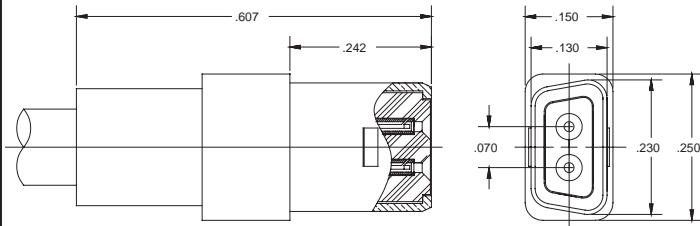
See Page 60 for Connector Cable Group Number Descriptors



MICRO TWINAX CONNECTORS

MICRO-D SIZE TWINAX CONNECTORS 100 AND 150 OHM MATCHED IMPEDANCE

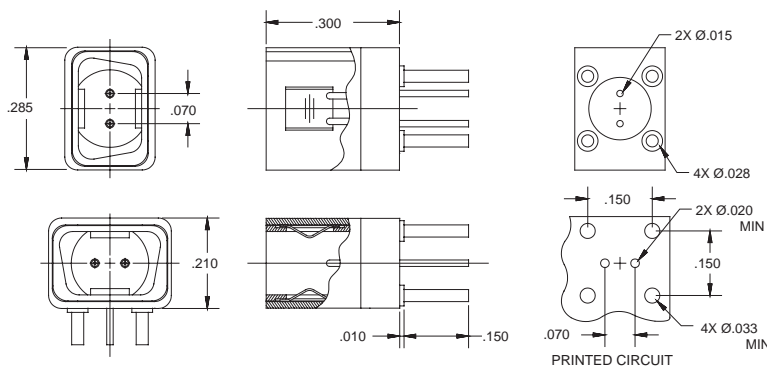
Micro-D Twinax Straight Plug 100 or 150 Ohm Matched Impedance



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

Mates with 014117-2005 and 2004 ONLY

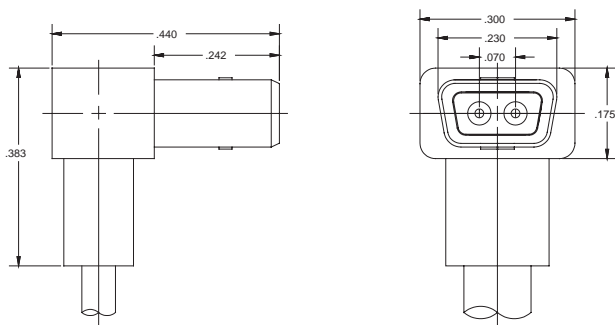
Micro-D Twinax Straight Jack PCB 100 or 150 Ohm Matched Impedance



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

Mates with P/N: 014034-2005 and 2006 ONLY

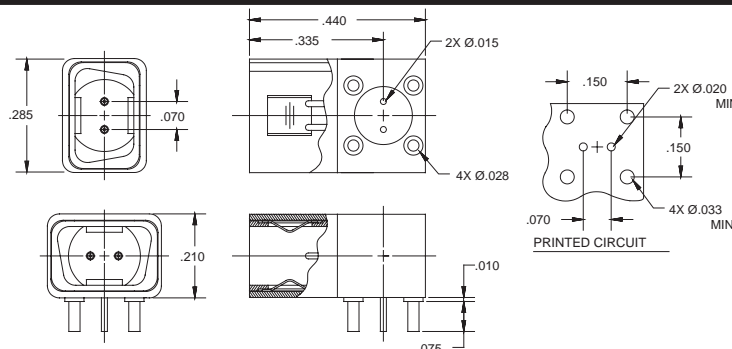
Micro-D Twinax Right Angle Plug 100 or 150 Ohm Matched Impedance



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

Mates with P/N: 014117-1002 and 1003 ONLY

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



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

See Page 58 for Contact Cable Assembly Ordering Information

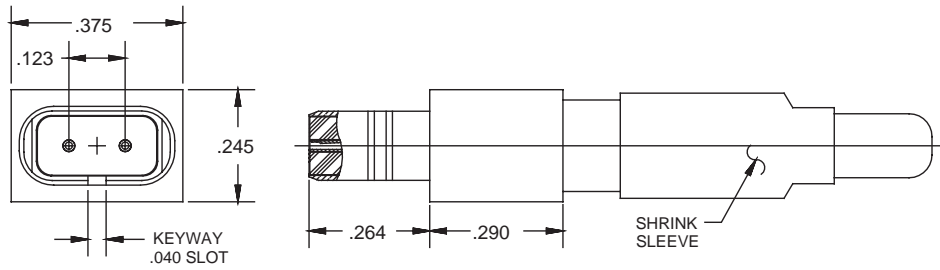
See Page 60 for Connector Cable Group Number Descriptors



FIBRE CHANNEL/ETHERNET CONNECTORS

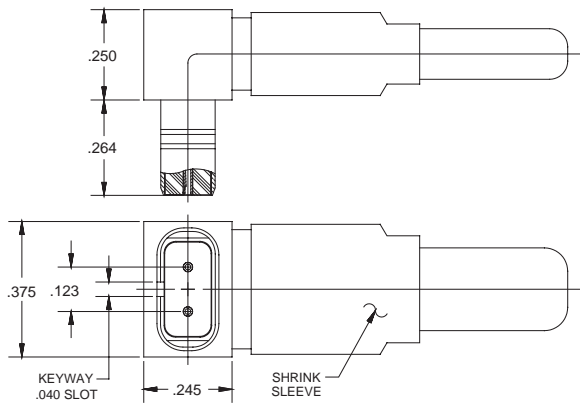
PCB AND CABLE MOUNT TWINAX CONNECTORS 150 OHM

Straight Fibre Channel Twinax Cable Connector 150 Ohm



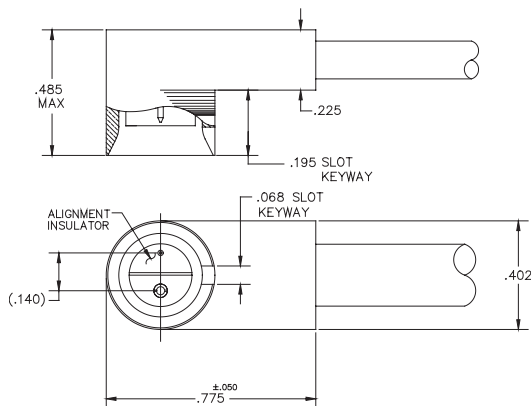
Part Number	Cable Type	Cable
014034-8000	Differential Twinax	540-1099-000
014034-8001	Differential Twinax	540-1114-000

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

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

See Page 58 for Contact Cable Assembly Ordering Information

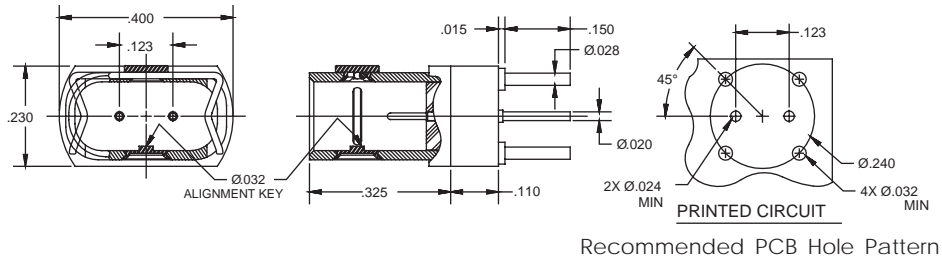
See Page 60 for Connector Cable Group Number Descriptors



FIBRE CHANNEL/ETHERNET CONNECTORS

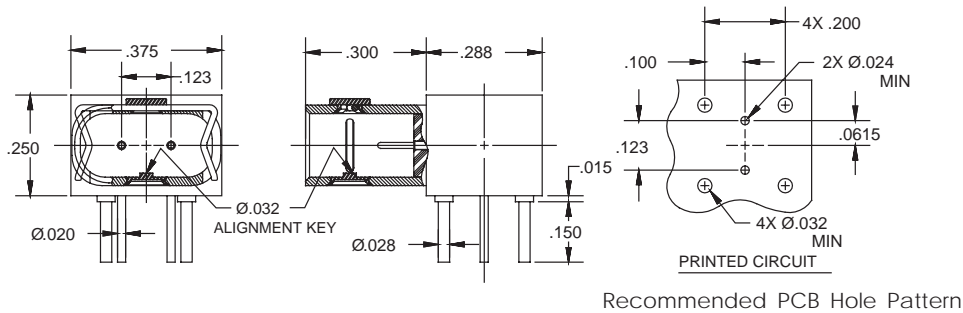
PCB AND CABLE MOUNT TWINAX CONNECTORS 150 OHM

Straight Fibre Channel Twinax PCB Mount Connector 150 Ohm



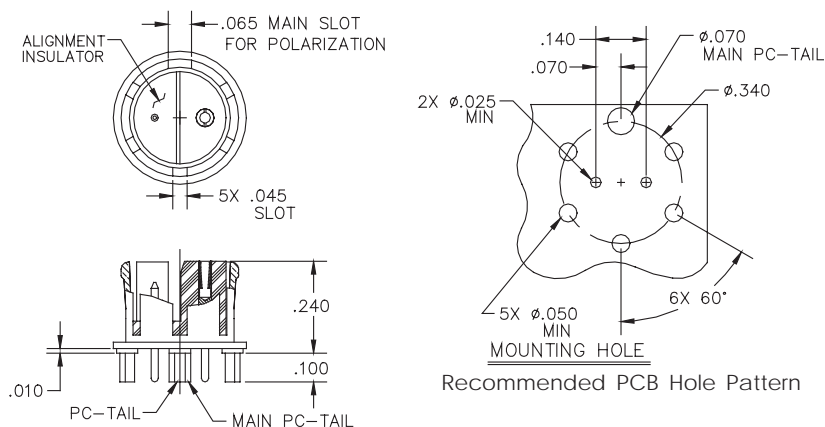
P/N 014117-2008

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



P/N 014117-1012

Quick Disconnect Twinax PCB Mount Connector 150 Ohm

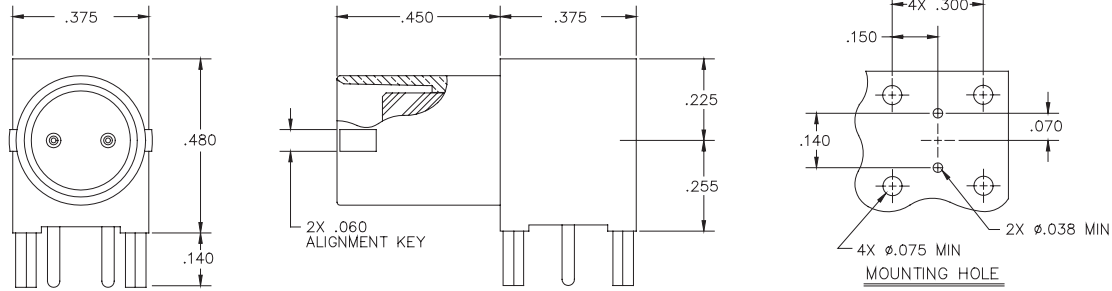




BLIND MATE TWINAX CONNECTORS

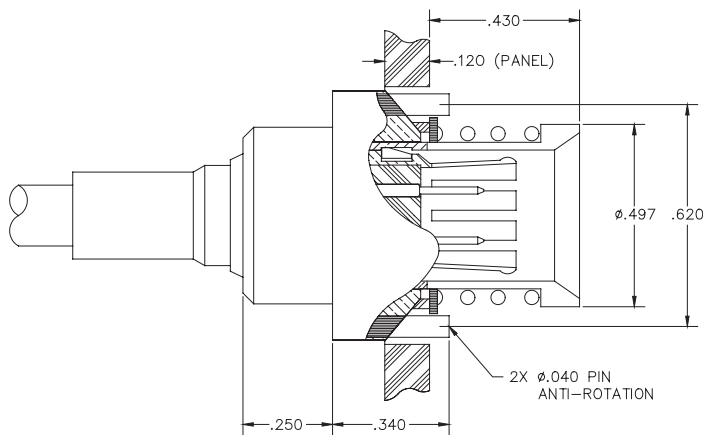
HIGH SPEED FIBRE CHANNEL SERIES 150 OHM MATCHED IMPEDANCE

Blind Mate Fibre Channel Right Angle PCB Mount Receptacle 150 Ohm



P/N 019917-1100

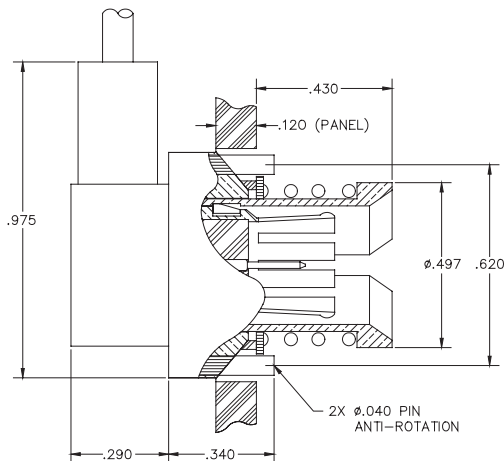
Blind Mate Fibre Channel Twinaxial Plug 150 Ohm



Mates with 019917-1100 Receptacle Only

Part Number	Cable Type	Cable
019911-2100	Differential Twinax	540-1099-000
019911-2101	Differential Twinax	540-1114-000

Blind Mate Fibre Channel Right Angle Twinaxial Plug 150 Ohm



Mates with 019917-1100 Receptacle Only

Part Number	Cable Type	Cable
019911-1100	Differential Twinax	540-1099-000
019911-1101	Differential Twinax	540-1114-000

See Page 58 for Contact Cable Assembly Ordering Information

See Page 60 for Connector Cable Group Number Descriptors



MTC SERIES

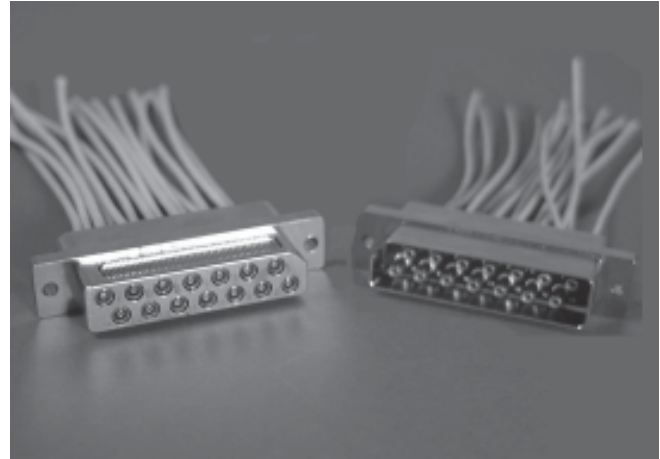
MULTIWAY TRIAX/TWINAX CONNECTOR SERIES

Sabritec's rugged multiway connectors are designed to ground the outer shield of a triax or twinax 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, firewire, and higher data rate formats such as fibre channel. 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 can also make the interface a true-balanced impedance twinax interface with a high impedance 100 ohm differential output. 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.

Sabritec offers true matched impedance size 10 twinax contacts with 150 ohm matched impedance differential pair output. For these high speed data rate applications, a true twinax differential pair interface is offered with precisely located keyed cavities along with aligning keys of each of the twinax contacts for anti-rotational features and true blindmating capability between each MTC series. Plug and receptacle housing with up to fourteen (14) twinax contacts.



CONTACT MATERIALS & FINISHES

Contacts:	BeCu per ASTM-B196, UNS C173 or leaded nickel copper, UNS C19150 Gold plate per ASTM-B488, Type III, Class 1.25
Insulators:	PTFE per ASTM-D1710 or ULTEM 1000 resin
Shells:	Leaded nickel copper, UNS C19150 Gold plate per ASTM-B488, Type III, Class 1.25
Snap Ring:	BeCu per ASTM-B196, UNS C17300 Nickel plate per SAE-AMS-QQ-N-290
Ground Spring:	BeCu per ASTM-B196, Alloy UNS C17300 Gold plate per ASTM-B488, Type III, Class 1.25
Data Rate:	Up to 500 Mbits/second

CONNECTOR MATERIALS & FINISHES

Shell:	Aluminum alloy per QQ-A-225/A, 6061-T6 Electroless nickel plate per MIL-C-26074
Insulator:	ULTEM 1000 resin
EMI Spring:	Copper alloy, nickel plate per SAE-AMS-QQ-N-290
Hardware:	300 Series Cres, passivate per ASTM-A697

Size 10 Triaxial Pin to Socket Adapter and Triaxial Socket Contact

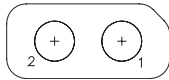


MULTI-WAY TRIAX INSERT ARRANGEMENTS

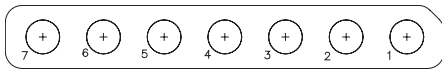
ADAPTERS/PLUGS/RECEPTACLES

Insert Arrangements

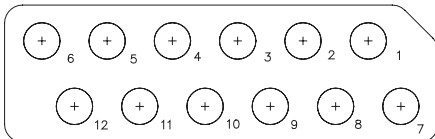
Shell Size 1
Arrangement 1-2
2 # 10 Triax/Twinax Contacts



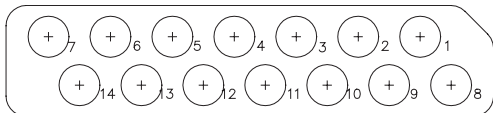
Shell Size 2
Arrangement 2-7
7 # 10 Triax/Twinax Contacts



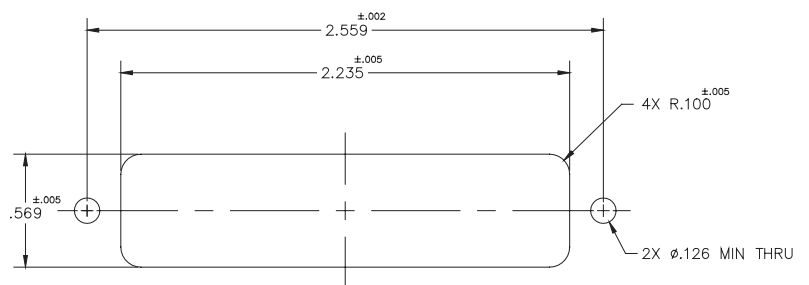
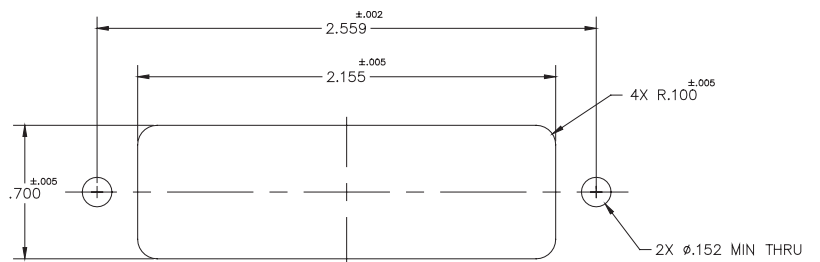
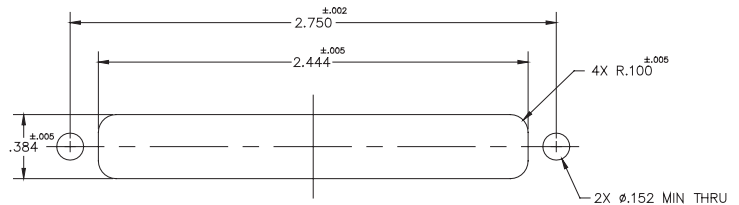
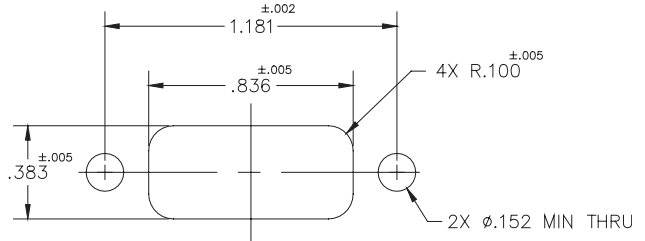
Shell Size 3
Arrangement 3-12
12 # 10 Triax/Twinax Contacts



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



Panel Cut-Out For Multitway Connector Assemblies

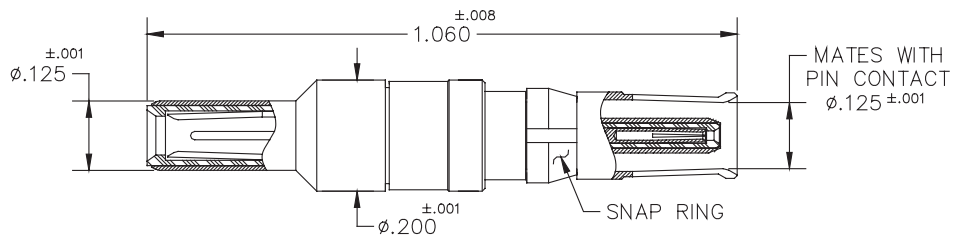




MULTIWAY TRIAX/TWINAX CONTACTS

SIZE 10 TRIAX/TWINAX CONTACTS

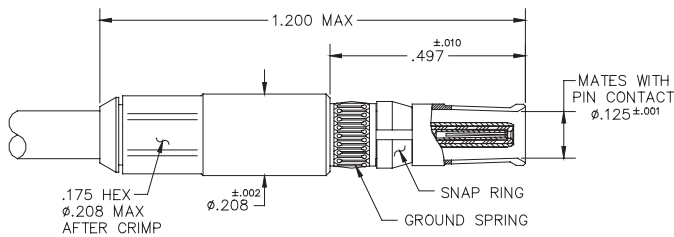
Size 10 Triaxial Pin to Socket Contact



P/N: 018800-4003

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

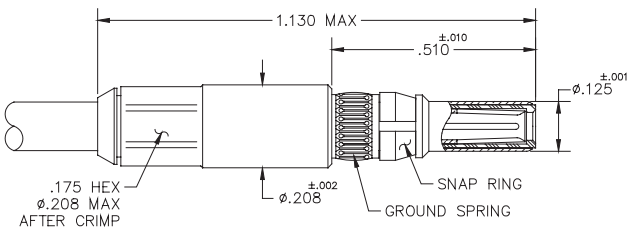
Size 10 Triaxial Socket Contact



Part Number	Cable Type	Cable
018912-2033	Flexible Twinax	540-1172-000
018912-2034	Flexible Twinax	540-1171-000
018912-2035	Flexible Twinax	540-1161-000

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
018812-2035	Flexible Twinax	540-1171-000
018812-2036	Flexible Twinax	540-1161-000

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

See Page 58 for Contact Cable Assembly Ordering Information

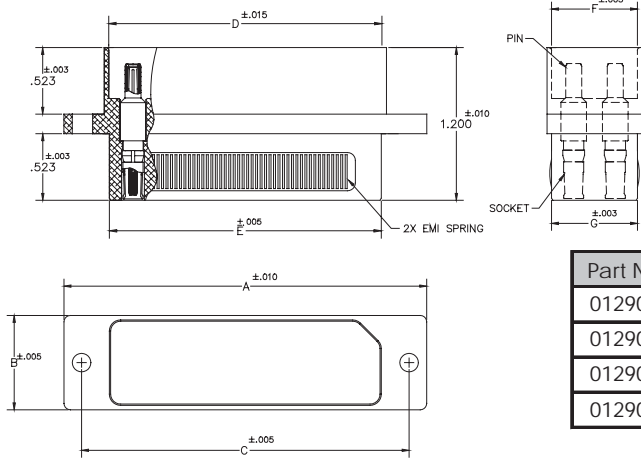
See Page 60 for Connector Cable Group Number Descriptors



MULTIWAY TRIAX/TWINAX CONNECTORS (MTC)

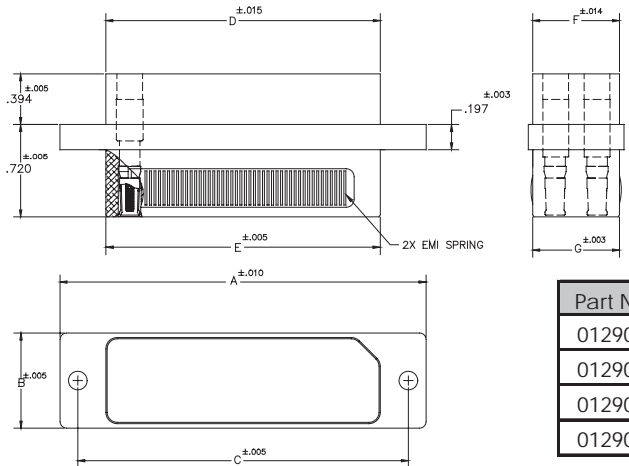
ADAPTERS/PLUGS/RECEPTACLES

Rugged Multi-Way Triax/Twinax Adapter



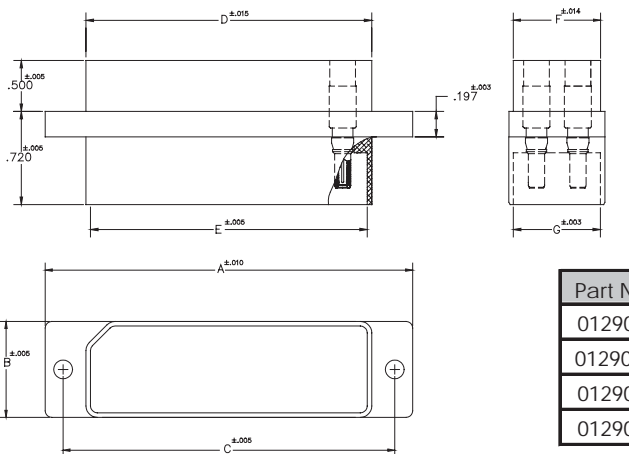
Part Number	Contacts	A	B	C	D	E	F	G
012900-4008	2	1.575	0.472	1.181	0.738	0.728	0.341	0.331
012900-4007	7	3.050	0.400	2.750	2.325	2.315	0.341	0.331
012900-4006	12	2.834	0.741	2.559	2.165	2.125	0.681	0.671
012900-4005	14	2.834	0.551	2.559	2.135	2.125	0.491	0.481

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

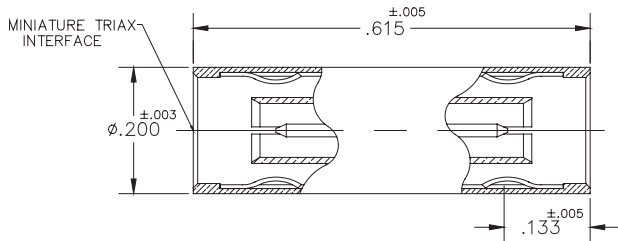


Part Number	Contacts	A	B	C	D	E	F	G
012900-3005	2	1.575	0.472	1.181	0.807	0.738	0.354	0.341
012900-3004	7	3.050	0.400	2.750	2.415	2.325	0.355	0.341
012900-3003	12	2.834	0.741	2.559	2.125	2.135	0.671	0.681
012900-3002	14	2.834	0.551	2.559	2.205	2.135	0.540	0.491



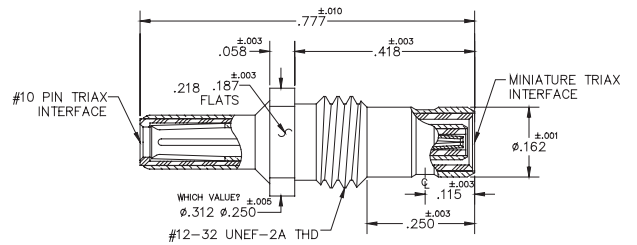
BLIND-MATE BETWEEN SERIES ADAPTERS

Miniature Triax Blind Mate Plug



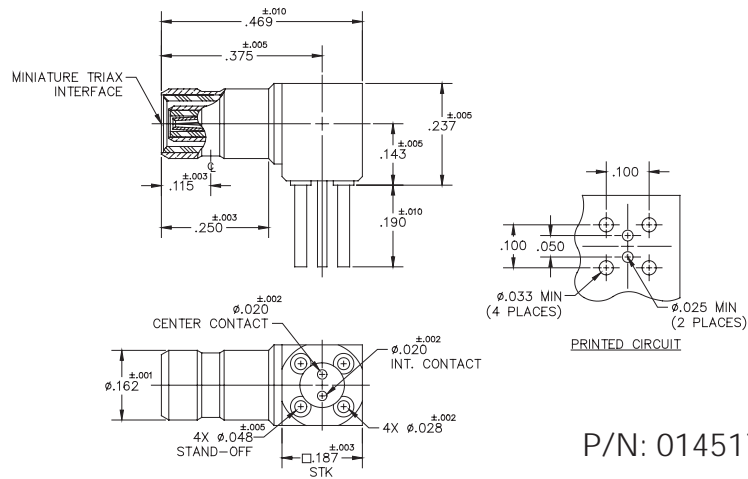
P/N: 014500-4001

Miniature Triax Receptacle to #10 Triax Pin



P/N: 014500-4002

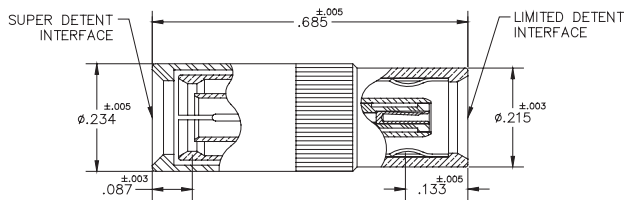
Miniature Triaxial Right Angle Receptacle PCB Mount



P/N: 014517-1001

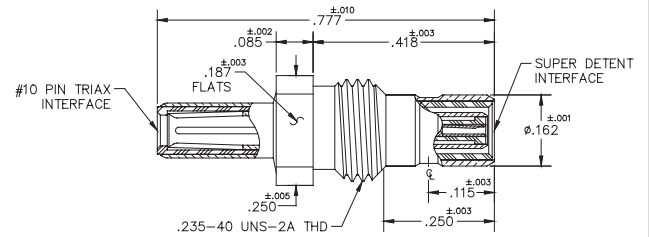


Triax Blindmate Plug Full to Limited Detent



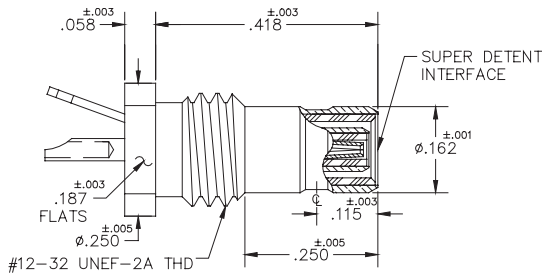
P/N: 014500-4003

Triax Receptacle Full Detent to #10 Triax Pin



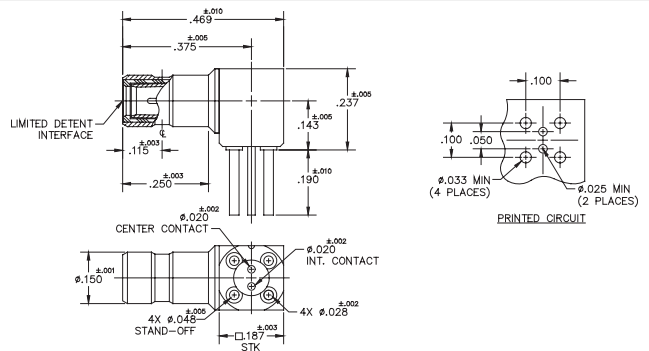
P/N: 014500-4004

Triax Bulkhead Mount Solder Tab Detent



P/N: 014500-5002

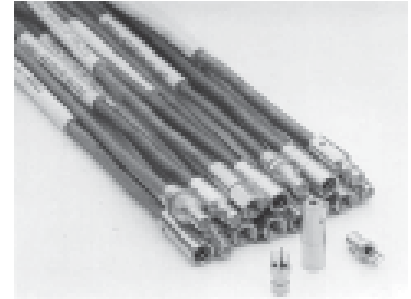
Limited Detent R/A Receptacle PCB Mount



P/N: 014517-1002



Sabritec's ultraminiature NDL triax connectors are offered in both threaded and quick disconnect versions. A complete product series is available for both the NDL-T, threaded version, and the NDL-Q, quick disconnect version. 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.



Twinax/Triax Connectors

Sabritec's twinax/triax connectors and contacts are capable of transmitting data sampling rates of 100 Base-T, firewire, and fibre channel based systems. A true matched high impedance output allows for true 100 ohm or 150 ohm differential pair impedance signaling. Our fibre channel connector series allows for data rates exceeding 2 Gbit/second with low jitter, skew and insertion loss over long cable runs. The eye-opening pattern meets or exceeds ANSI X 3T11 (FC-O) FC-PH specification requirements.



Triaxial Cable Assemblies

Sabritec manufactures complete triaxial and twinaxial cable assemblies that include flexible twinax, flexible triax and semi-rigid triax cables. Cables, connectors, and contacts can be combined into a variety of configurations for today's space application interconnect requirements.

Sabritec can perform rigorous Group A and B testing for space level cable assemblies as well as complete Group C environmental testing.

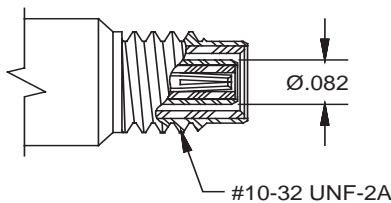
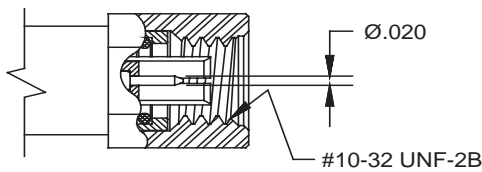
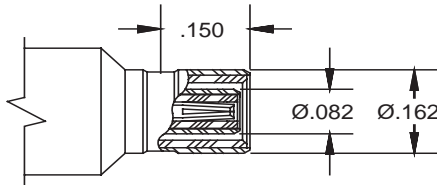
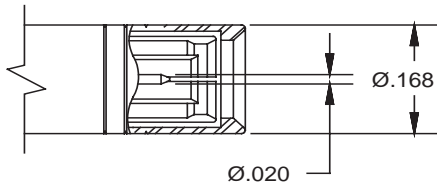




NDL-T

CABLE TYPE CONNECTORS

INTERFACE DIMENSIONS

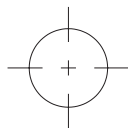


CONNECTOR TYPES Actual O.D. Size

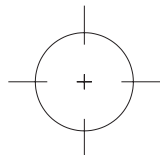
NDL



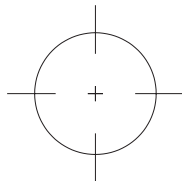
TTM/TRS



TRT/TRB



TRC/TTC



ELECTRICAL SPECIFICATIONS

Dielectric Withstanding Voltage	Center contact to intermediate contact: 1000 Vrms min Intermediate contact to outer contact: 400 Vrms min.
Insulation Resistance	5000 Megohms min Center contact to intermediate contact: 250 VDC Intermediate contact to outer contact: 125 Vrms
Contact Current Rating	1.5 Amps D.C., max
RF Hi Potential Withstanding Voltage	Center contact to intermediate contact: 500 Vrms @ 5 MHz 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 @ 1 MHz

MECHANICAL & ENVIRONMENTAL SPECIFICATIONS

Temperature Rating	-65° 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 per min
Coupling Nut Torque (NDL-T)	
Recommended:	2.3 in-lbs min.
Proof Torque	7.0 in-lbs
Mating Torque (NDL-T)	2.5 in-lbs
Engagement Disengagement Force (NDL-Q)	3.0 lbs min.

MATERIALS & FINISHES

Contacts	Beryllium copper per ASTM-B196, alloy UNS C17200 or leaded nickel copper, alloy UNS C19150, Condition H Gold plated per ASTM-B488, Type III, Class 1.25
Insulators	PTFE per ASTM -D 1710
Shells	Brass per ASTM-B16, alloy UNS C36000 or Beryllium copper per ASTM-B196 Gold plated per ASTM-B488, Type III, Class 1.25
O-Ring (NDL-T)	Silicone rubber per A-A-59588

All specifications subject to change without notice.

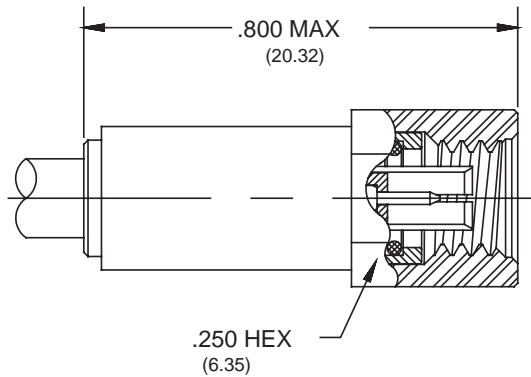
All specifications subject to change without notice.



NDL-T

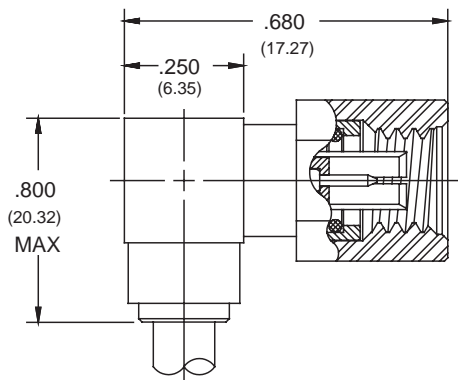
CABLE TYPE CONNECTORS

NDL-T Cable Plug



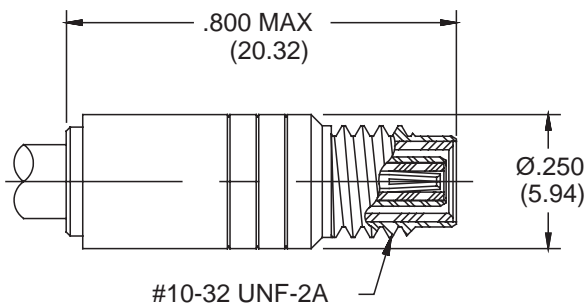
Part Number	Cable Type	Cable
015028-2000	Flexible Twinax	M177/176-00002
015028-2012	Flexible Twinax	540-1086-000
015028-2013	Flexible Triax	RG-403
015028-2014	Flexible Triax	540-1050-000
015028-2015	Semi-Rigid Triax	UT 141-50-50
015028-2030	Semi-Rigid Triax	UT 141-50-22
015028-2031	Flexible Triax	540-1081-000
015028-2032	Flexible Triax	540-1091-000

NDL-T Right Angle Cable Plug



Part Number	Cable Type	Cable
015028-1001	Flexible Twinax	M177/176-00002
015028-1012	Flexible Twinax	540-1086-000
015028-1013	Flexible Triax	RG-403
015028-1014	Flexible Triax	540-1050-000
015028-1015	Semi-Rigid Triax	UT 141-50-50
015028-1030	Semi-Rigid Triax	UT 141-50-22
015028-1031	Flexible Triax	540-1081-000
015028-1032	Flexible Triax	540-1091-000

NDL-T Cable Jack



Part Number	Cable Type	Cable
015112-2001	Flexible Twinax	M177/176-00002
015112-2012	Flexible Twinax	540-1086-000
015112-2013	Flexible Triax	RG-403
015112-2014	Flexible Triax	540-1050-000
015112-2015	Semi-Rigid Triax	UT 141-50-50
015112-2030	Semi-Rigid Triax	UT 141-50-22
015112-2031	Flexible Triax	540-1081-000
015112-2032	Flexible Triax	540-1091-000

See Page 58 for Contact Cable Assembly Ordering Information

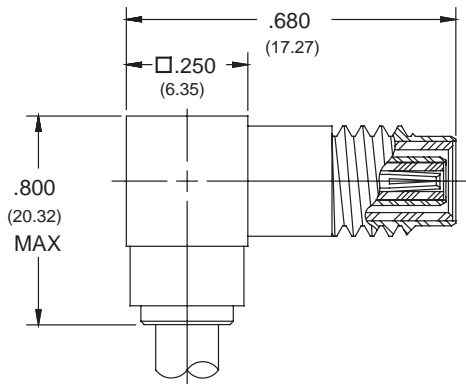
See Page 60 for Connector Cable Group Number Descriptors



NDL-T

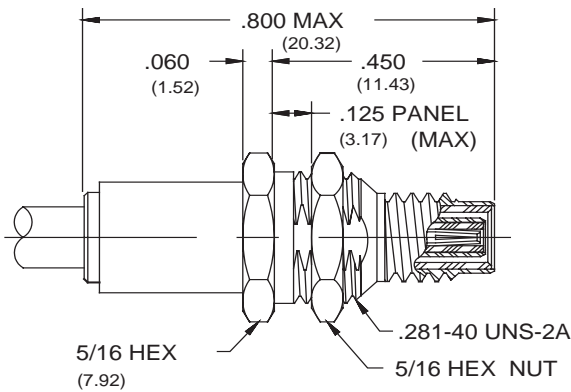
CABLE TYPE CONNECTORS

NDL-T Right Angle Cable Jack



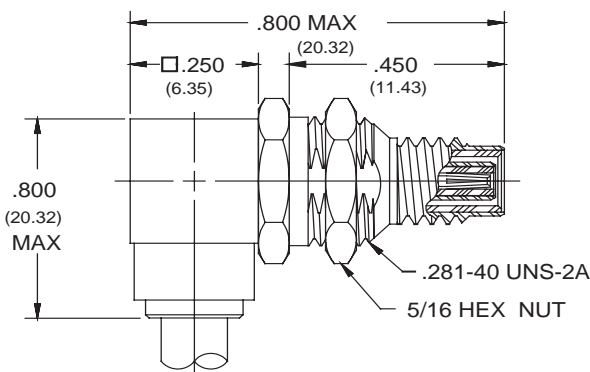
Part Number	Cable Type	Cable
015112-1001	Flexible Twinax	M17/176-00002
015112-1012	Flexible Twinax	540-1086-000
015112-1013	Flexible Triax	RG-403
015112-1014	Flexible Triax	540-1050-000
015112-1015	Semi-Rigid Triax	UT 141-50-50
015112-1030	Semi-Rigid Triax	UT 141-50-22
015112-1031	Flexible Triax	540-1081-000
015112-1032	Flexible Triax	540-1091-000

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
015112-5015	Semi-Rigid Triax	UT 141-50-50
015112-5030	Semi-Rigid Triax	UT 141-50-22
015112-5031	Flexible Triax	540-1081-000
015112-5032	Flexible Triax	540-1091-000

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
015112-1105	Semi-Rigid Triax	UT 141-50-50
015112-1130	Semi-Rigid Triax	UT 141-50-22
015112-1131	Flexible Triax	540-1081-000
015112-1132	Flexible Triax	540-1091-000

See Page 58 for Contact Cable Assembly Ordering Information

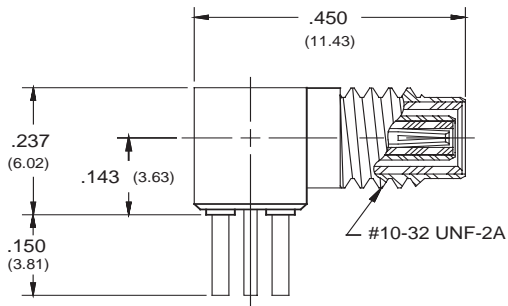
See Page 60 for Connector Cable Group Number Descriptors



NDL-T

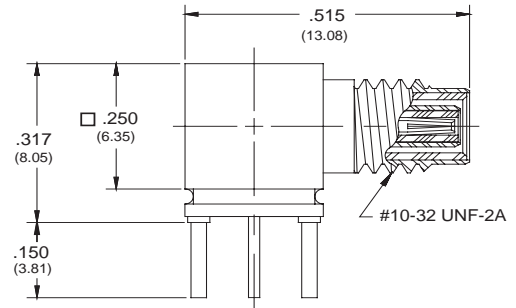
PCB MOUNT CONNECTORS

NDL-T Right Angle PCB Jack



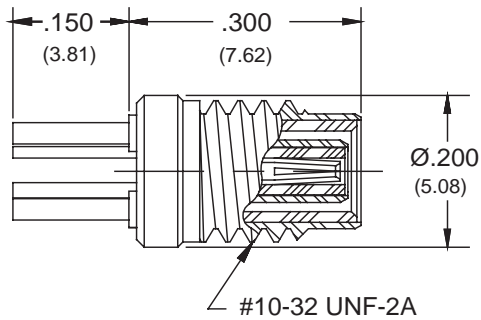
P/N 015100-1011
Mounting for .100 Centers

NDL-T Right Angle PCB Jack



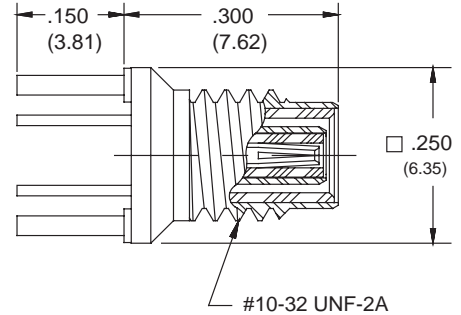
P/N 015100-1012
Mounting for .200 Centers

NDL-T Straight PCB Jack



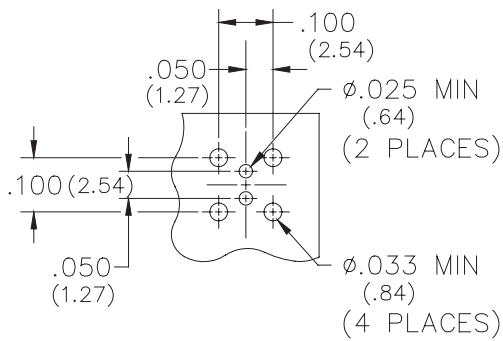
P/N 015100-3010
Mounting for .100 Centers

NDL-T Straight PCB Jack



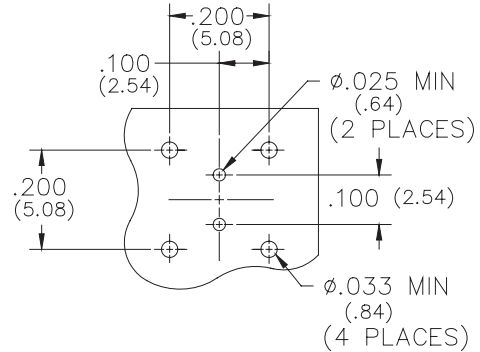
P/N 015100-3012
Mounting for .200 Centers

Mounting for PCB Connectors



PCB Pattern for .100 Centers

Mounting for PCB Connectors



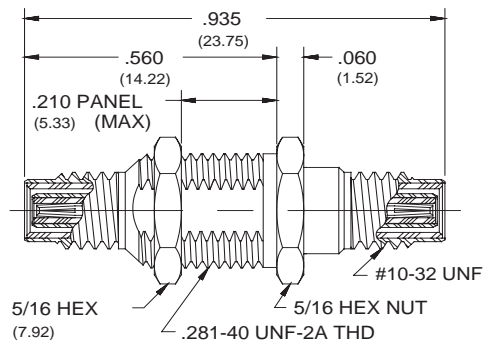
PCB Pattern for .200 Centers



NDL-T

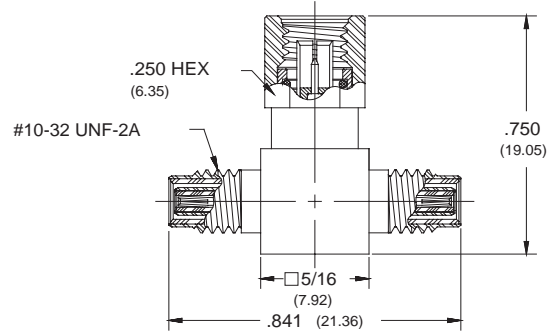
IN-SERIES ADAPTERS

NDL-T Feed-Thru Jack Adapter



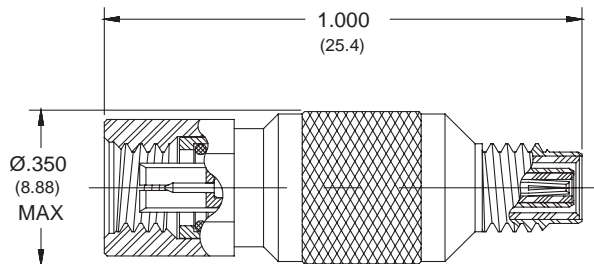
P/N 015100-5024

NDL-T "Tee" Adapter



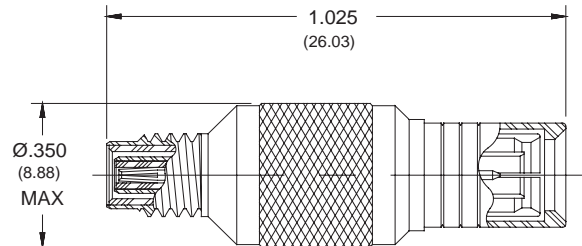
P/N 015000-4020

NDL-T Plug to NDL-T Jack



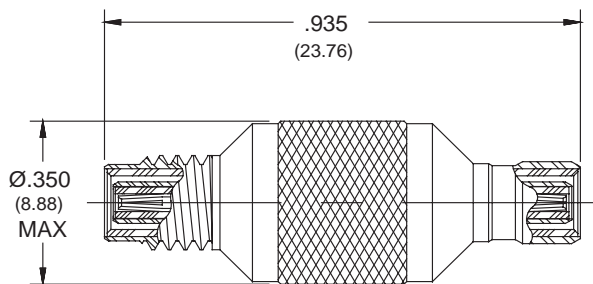
P/N 015000-4023

NDL-T Jack to NDL-Q Plug



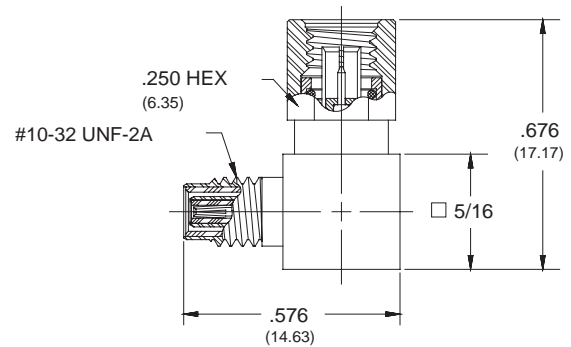
P/N 015100-4015

NDL-T Jack to NDL-Q Jack



P/N 015100-4016

NDL-T Right Angle Plug to NDL-T Jack



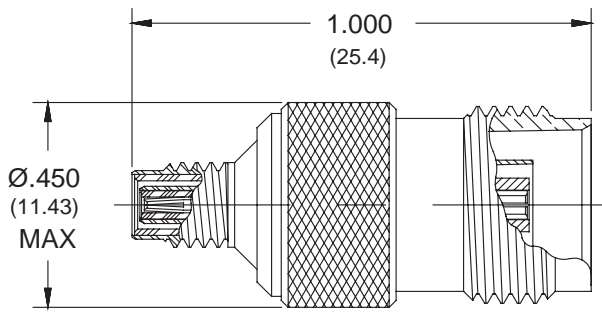
P/N 015000-1001



NDL-T

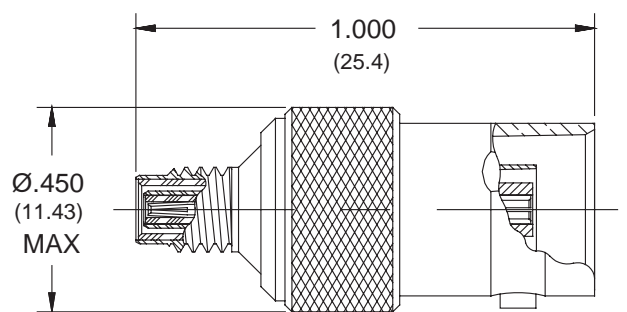
BETWEEN SERIES ADAPTERS

NDL-T Jack to TRT Jack



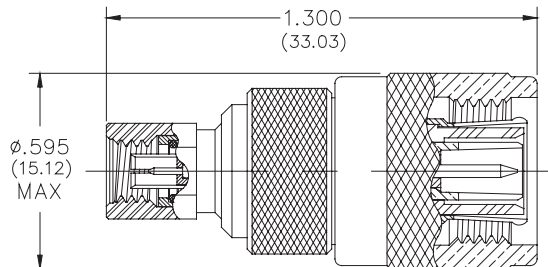
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NDL-T Jack to TRB Jack



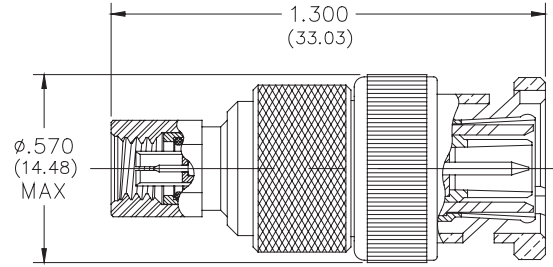
P/N 015100-4012

NDL-T Plug to TRT Plug



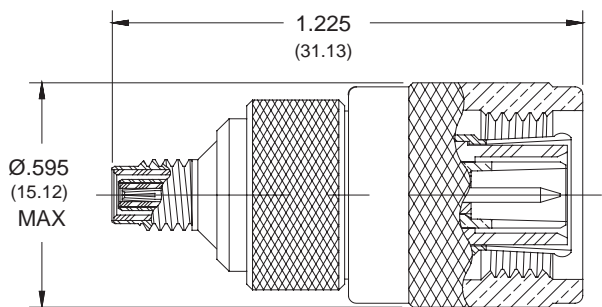
P/N 015000-4004

NDL-T Plug to TRB Plug



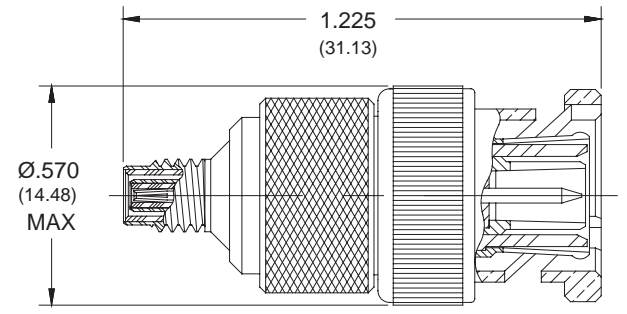
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NDL-T Jack to TRT Plug



P/N 015100-4013

NDL-T Jack to TRB Plug

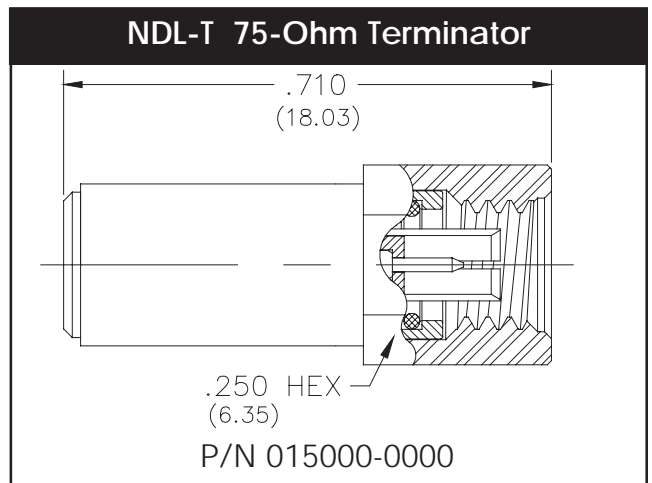
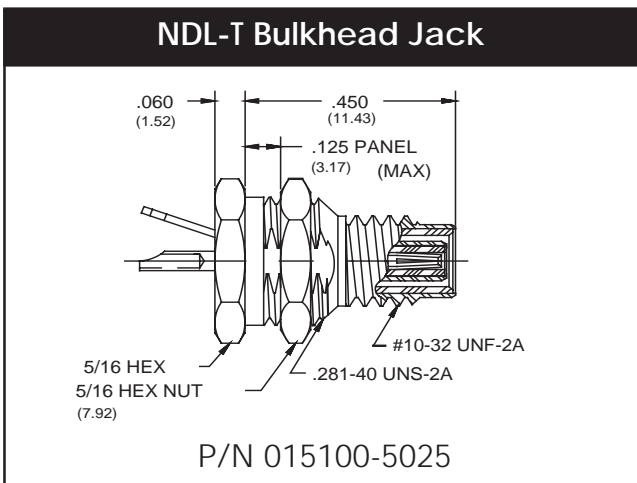
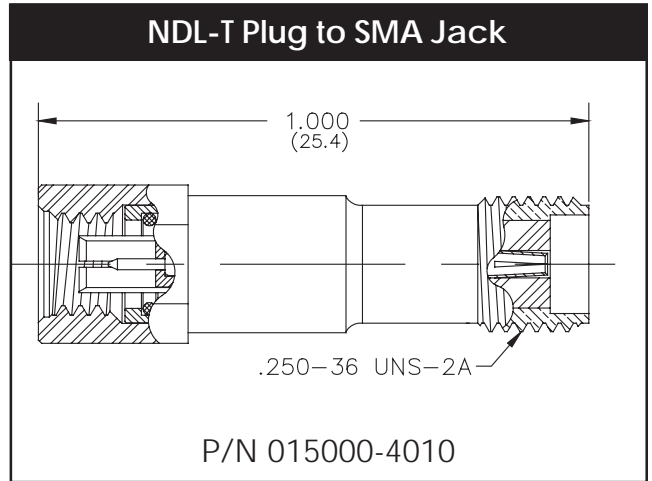
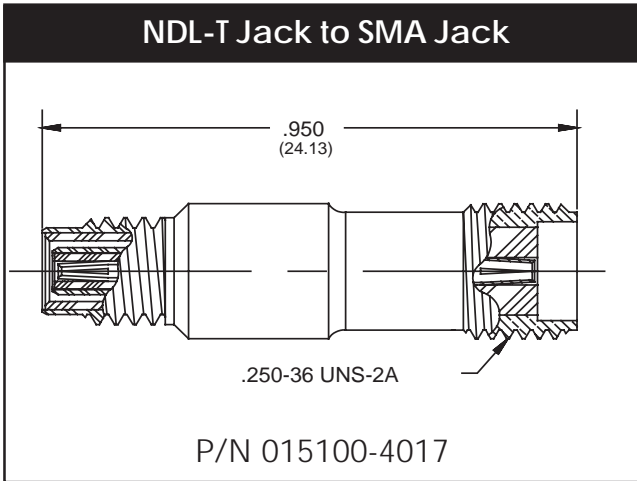


P/N 015100-4014



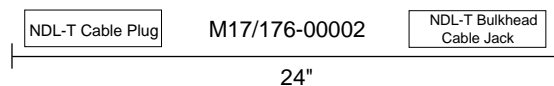
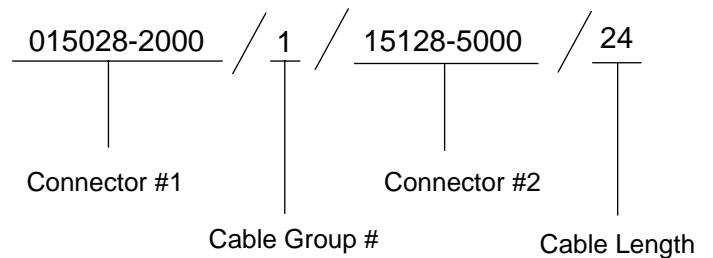
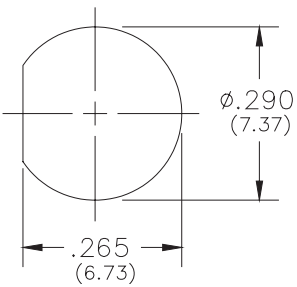
NDL-T

ULTRAMINIATURE TRIAXIAL CONNECTORS



NDL-T CABLE ASSEMBLY ORDERING INFORMATION

MOUNTING D-HOLE CONFIGURATION



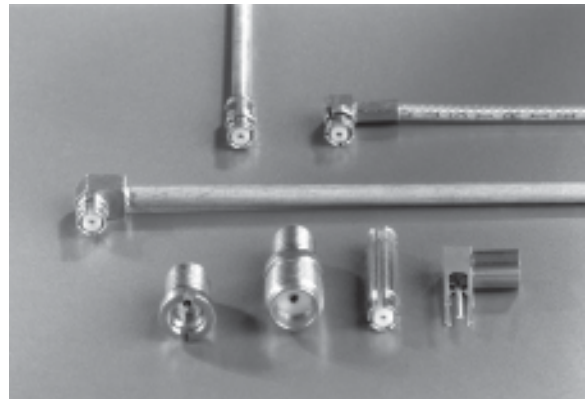


Sabritec offers a complete line of RF coaxial connectors, contacts and cable assemblies. The space connector coaxial line includes our Micro-D coaxial connectors and contacts, SMP connectors and miniature SMP connectors (SMPM).

Sabritec's Micro-D coaxial connectors have a low VSWR of 1:25:1 up to 20 GHz in a low profile design. These connectors feature multipin assemblies with a Micro-D housing.

Sabritec's 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 and insertion loss (dB) parameters of $0.10\sqrt{F(GHz)}$ dB max. 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 DESC drawing numbers 94007 and 94008.

In addition to the SMP coaxial connector line, Sabritec offers a smaller SMPM series. It is available with detent and nondetent 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.

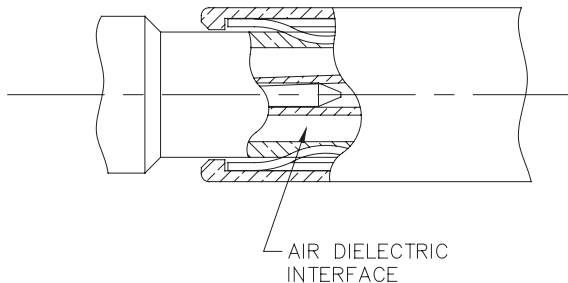
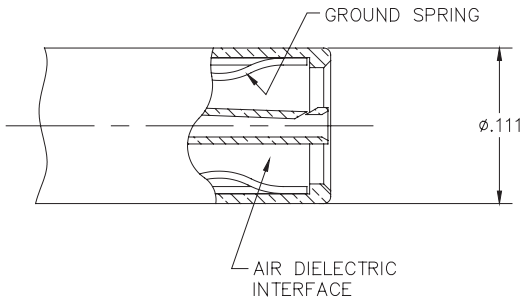
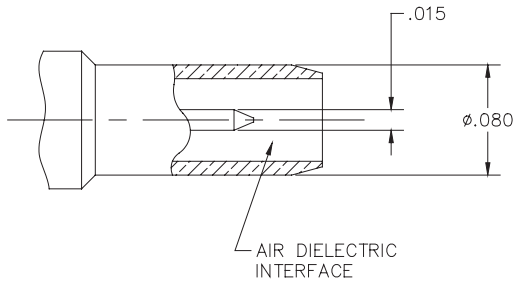


SMP Features and Benefits:

- ◆ 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 connectors
- ◆ Permits high density board-to-board connections
- ◆ Gold plated contact members



MICRO-D COAX (MDCX) INTERFACE



ELECTRICAL SPECIFICATIONS:

Dielectric Withstanding Voltage	500 VRMS @ sea level with 70% relative humidity
Insulation Resistance:	1000 megaohms min. @ 250 VDC
Contact Current Rating	1.5 Amps, D.C. max
Characteristic Impedance	50 Ohm constant air line 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)

MECHANICAL & ENVIRONMENTAL SPECIFICATIONS:

Temperature Rating:	-65° 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	.015" full radial & axial misalignment max

MATERIALS & FINISHES:

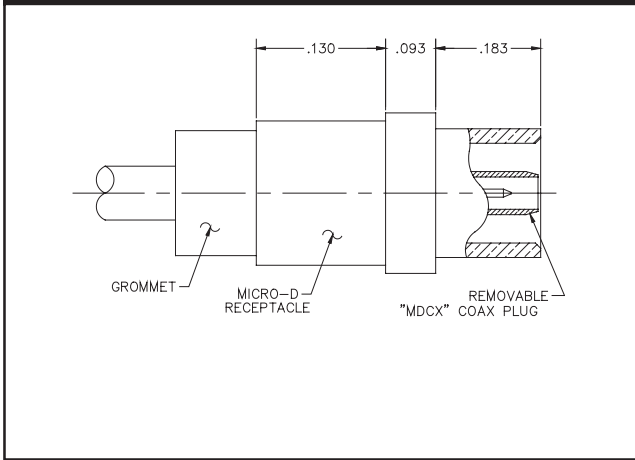
Center Contacts	Brass per ASTM B16, gold plated per ASTM B488, Type 3 Class 1.25
Spring Fingers	Beryllium copper per ASTM B196, gold plated per ASTM B488, Type 3 Class 1.25
Plug Body & Receptacle	Brass per ASTM B16, gold plated per ASTM B488, Type 3 Class 1.25
Insulators	PTFE per ASTM D-1710



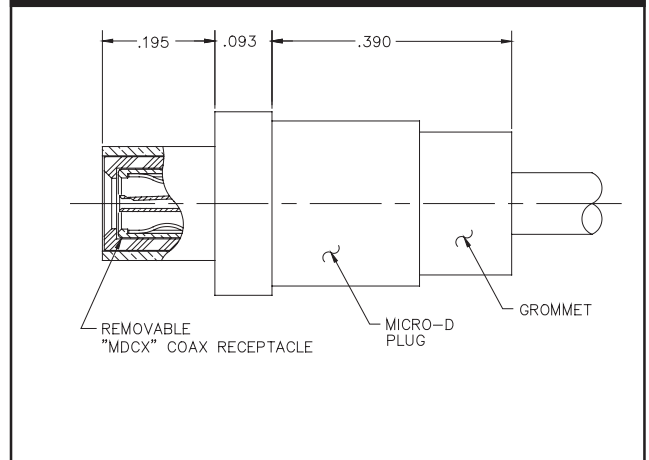
MICRO-D MDCX COAXIAL CONNECTORS

LOW PROFILE MULTIPIN MICRO-D COAXIAL CONNECTORS

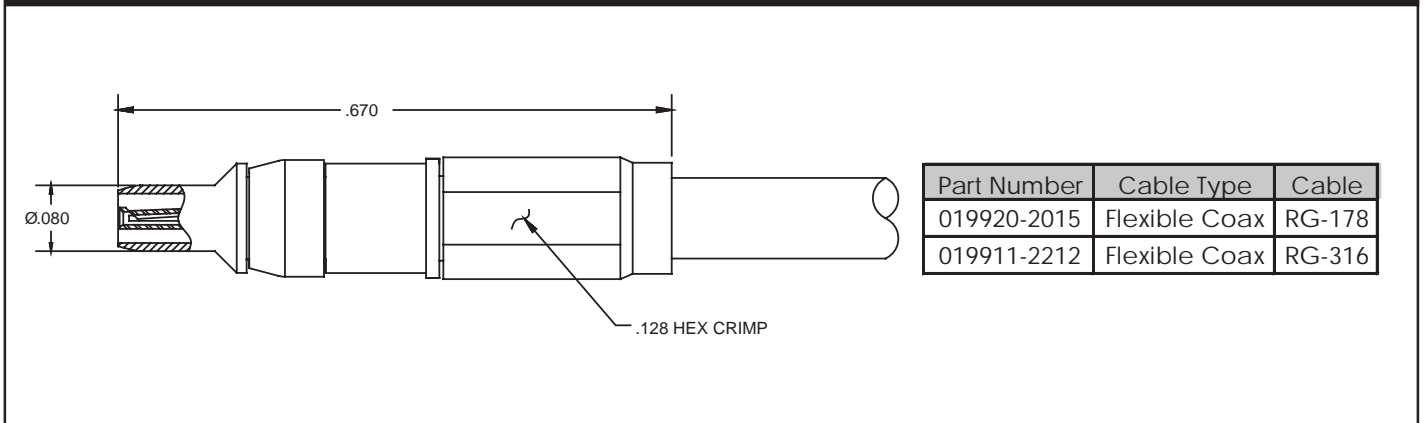
Special Micro-D Plug



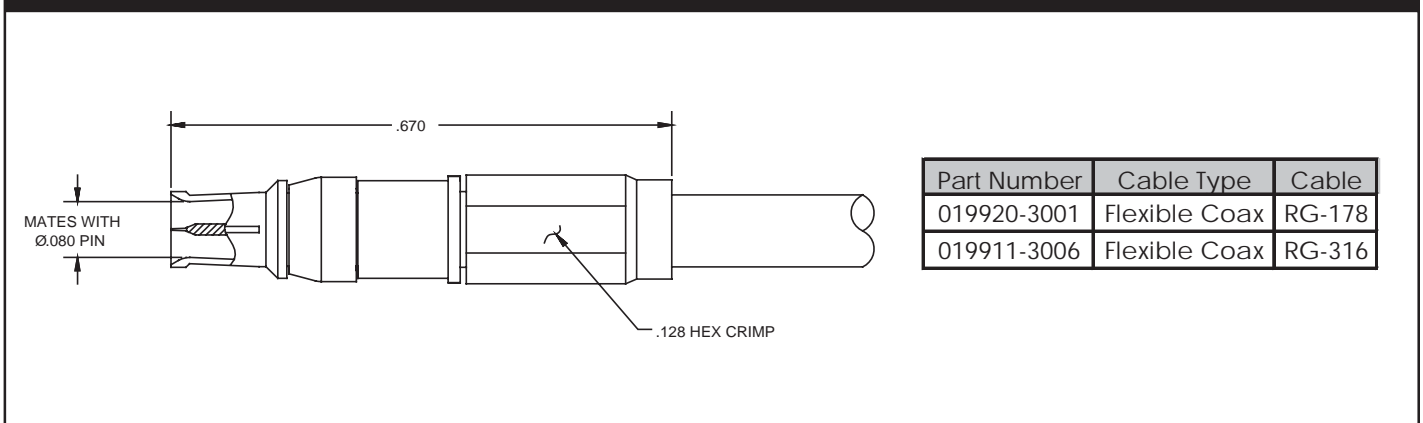
Special Micro-D Receptacle



Removable MDCX Coax Plug



Removable MDCX Coax Receptacle



See Page 58 for Contact Cable Assembly Ordering Information

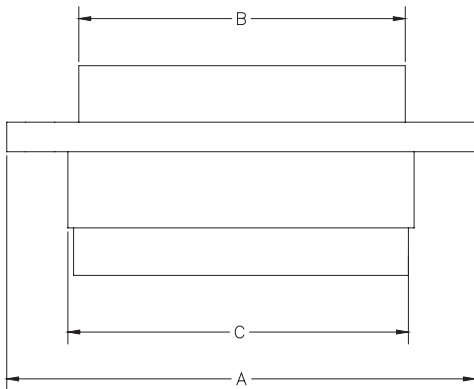
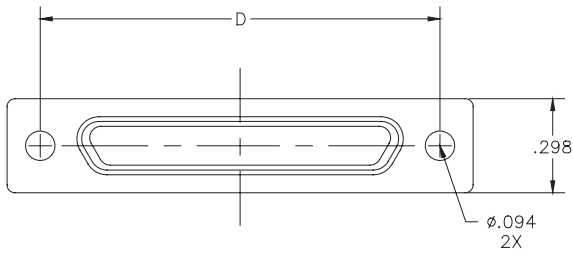
See Page 60 for Connector Cable Group Number Descriptors



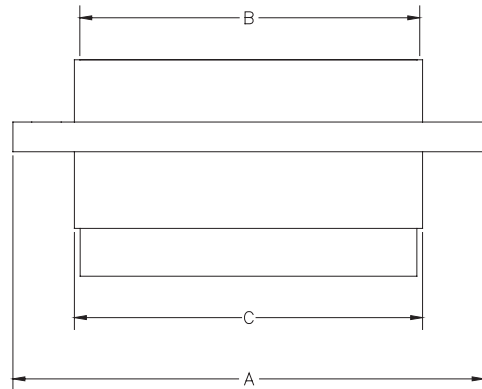
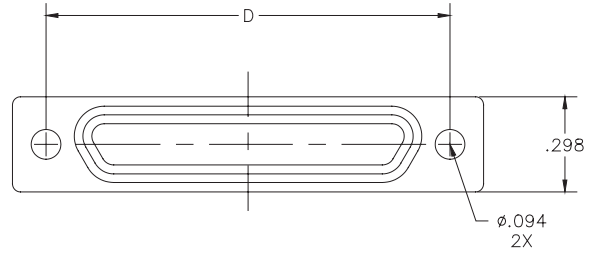
MICRO-D MDCX COAXIAL CONNECTORS

LOW PROFILE MULTIPIN MICRO-D COAXIAL CONNECTORS

Micro-D Plug



Micro-D Receptacle



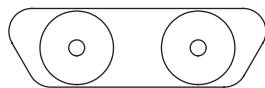
MICRO-D PLUG

Size	Sabritec P/N	A	B	C	D
15	017200-2000	0.925	0.4838	0.540	0.715
21	017200-2001	1.075	0.6338	0.690	0.865
31	017200-2002	1.325	0.8838	0.940	1.115
37	017200-2003	1.475	1.0338	1.090	1.265

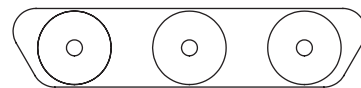
MICRO-D RECEPTACLE

Size	Sabritec P/N	A	B	C	D
15	017200-3000	0.925	0.4842	0.540	0.715
21	017200-3001	1.075	0.6342	0.690	0.865
31	017200-3002	1.325	0.8842	0.940	1.115
37	017200-3003	1.475	1.0342	1.090	1.265

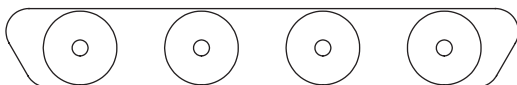
Standard Pin Layouts



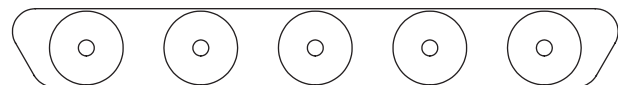
SIZE 15



SIZE 21



SIZE 31



SIZE 37

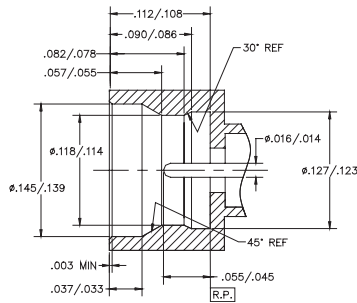


SMP COAXIAL CONNECTORS

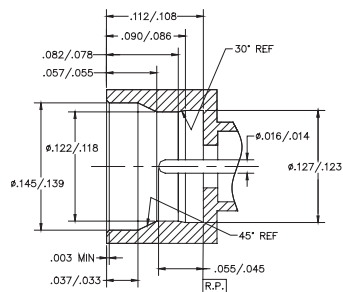
CONNECTOR SPECIFICATIONS

INTERFACE DIMENSIONS

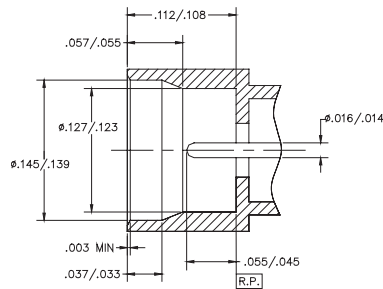
SMP Male Full Detent



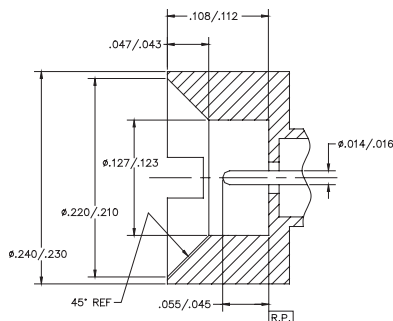
SMP Male Limited Detent



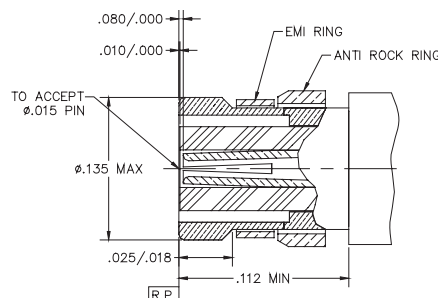
SMP Male Smooth Bore



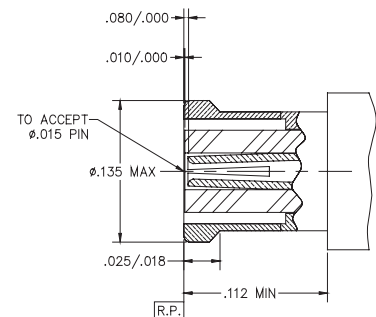
SMP Male Catchers Mitt



SMP Female Socket (Cable)



SMP Female Socket (Adapter)



ELECTRICAL SPECIFICATIONS:

Impedance:	50-ohm constant air line
Frequency Range:	DC to 40 GHz impedance
VSWR:	DC to 26.5 GHz 1.15: max. 26.5 to 40GHz 1.5:1 max.
DWV:	500 VRMS @ sea level
Insulation Resistance:	1000 megaohms min.
Voltage Rating:	500 VRMS @ sea level

MECHANICAL & ENVIRONMENTAL SPECIFICATIONS:

Temperature Rating:	-65° to +165°C
Corrosion:	MIL-STD-202 Method 101, Test Condition B
Shock:	MIL-STD-202 Method 213, Test Condition I
Vibration:	MIL-STD-202 Method 204, Test Condition D
Thermal Shock:	MIL-STD-202 Method 107, Test Condition B
Durability:	100 cycles min.
Force to Engage:	Full Detent: 15 pounds max.
	Limited Detent: 10 pounds max.
	Smooth Bore, Catcher's Mitt: 2 pounds max.
Force to Disengage:	5 pounds min. (full detent)
	2 pounds min. (limited detent)
	0.5 pound min (smooth bore, catcher's mitt)

MATERIALS & FINISHES:

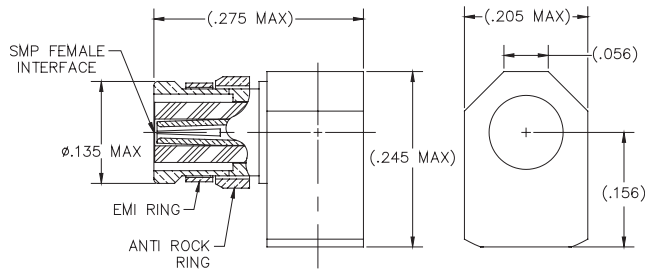
Center Contacts	Brass per ASTM B16, gold plated per ASTM B488, Type 3 Class 1.25
Spring Fingers	Beryllium Copper per ASTM B196, gold plated per ASTM B488, Type 3 Class 1.25
SMP Male Body	Stainless Steel per ASTM A582, passivated per ASTM A967
Insulators	PTFE per ASTM D-1710



SMP CABLE CONNECTORS

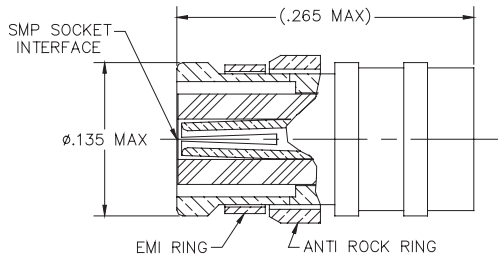
CABLE MOUNT/PCB CONNECTORS

SMP Right Angle Female



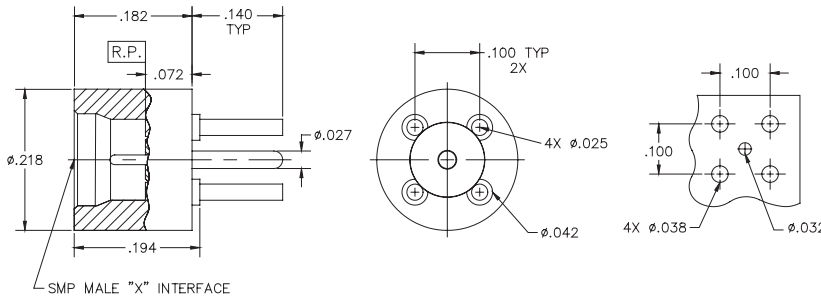
Part No.	Cable Type	Cable
219936-1000	Semi-Rigid	SR .047
219909-1001	Semi-Rigid	RG-405
219922-1000	Semi-Rigid	RG-402

SMP Straight Female



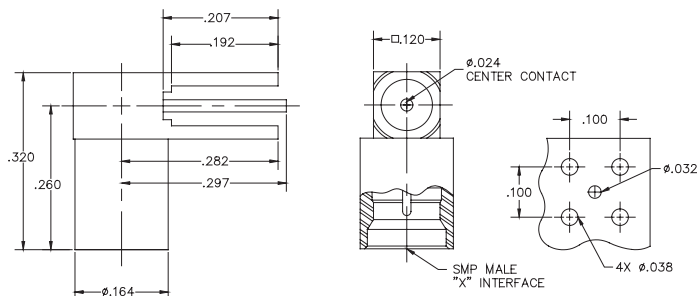
Part No.	Cable Type	Cable
219936-3000	Semi-Rigid	SR .047
219909-3001	Semi-Rigid	RG-405
219922-3000	Semi-Rigid	RG-402

SMP Male Straight PCB Mount



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

SMP Male Right Angle PCB Mount



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

See Page 58 for Contact Cable Assembly Ordering Information

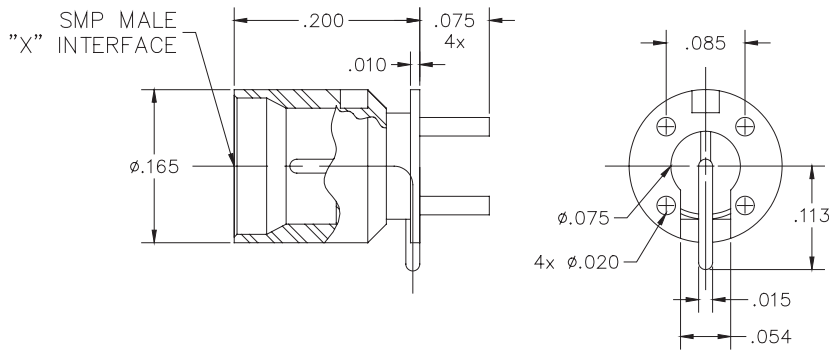
See Page 60 for Connector Cable Group Number Descriptors



SMP PCB MOUNT CONNECTORS

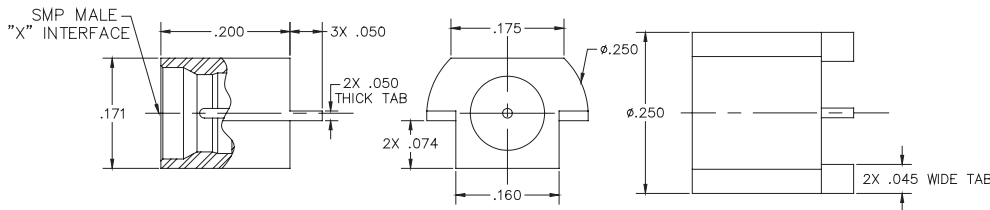
PCB TYPE CONNECTORS

SMP Male Straight PCB Mount



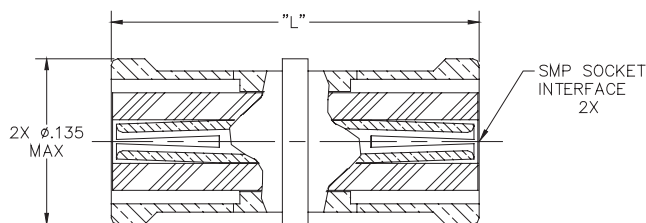
Part Number	Detent Level
219900-2003	FD
219900-2004	LD
219900-2005	SB

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



L=Length

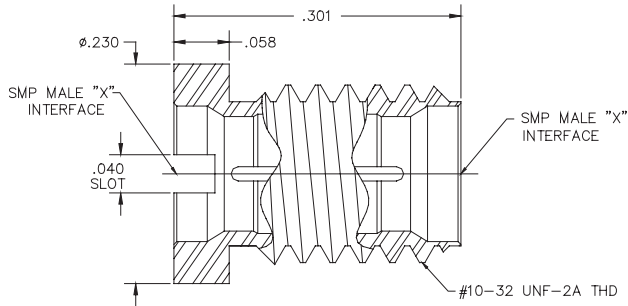
Part Number	Length
219900-4000	0.254
219900-4001	0.395
219900-4002	0.484
219900-4003	0.569



SMP COAXIAL CONNECTORS

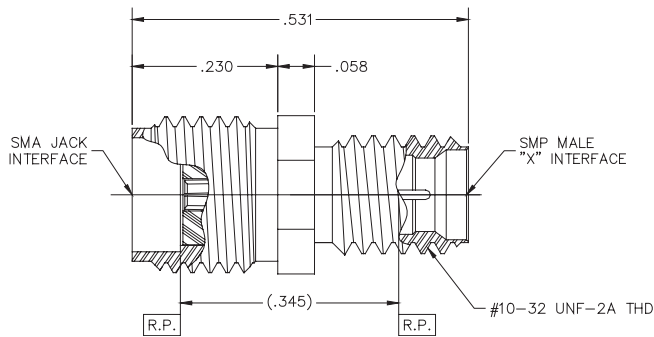
Feed-Thru Adapters/Terminators

SMP Male to Male Thread-In Adapter



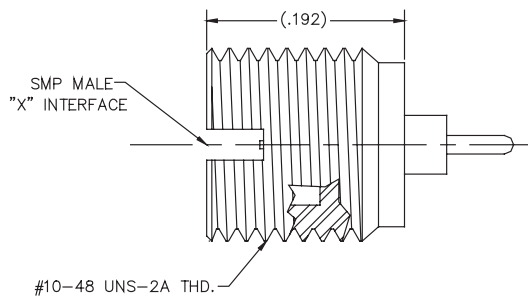
Part Number	Detent Level
219900-4005	FD
219900-4006	LD
219900-4007	SB

SMA Female to SMP Male Thread-In Adapter



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

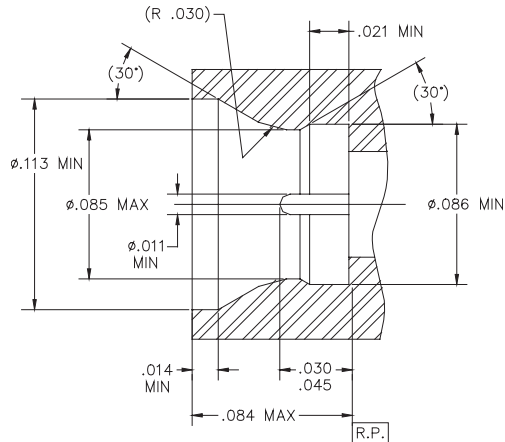
SMP Male Straight Termination



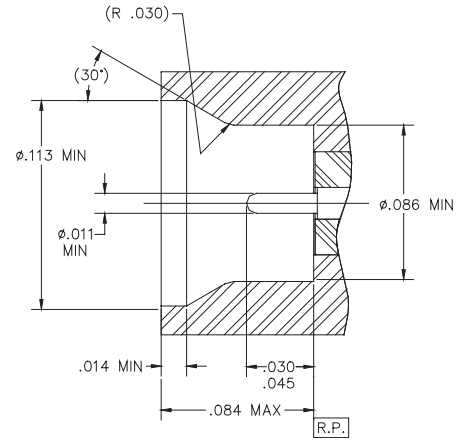
Part Number	Detent Level
219900-2009	FD
219900-2010	LD
219900-2011	SB



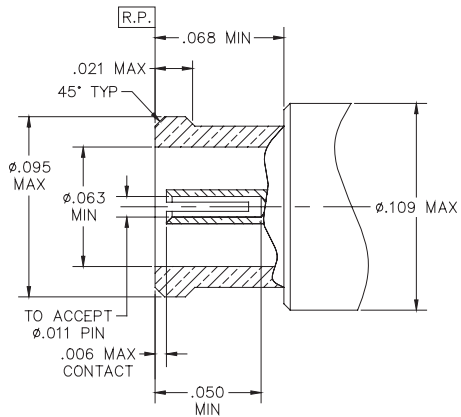
SMPM Male Detent



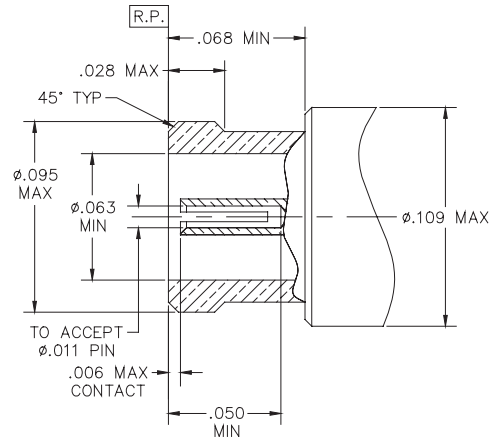
SMPM Male Non-Detent



SMPM Female (Adapter)



SMPM Female (Cable)

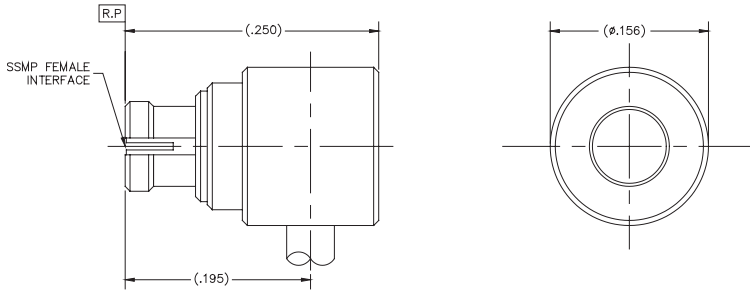




SMMP CONNECTORS

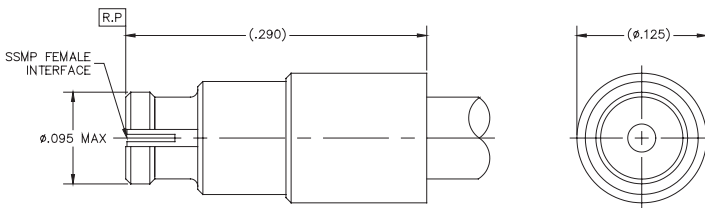
CABLE MOUNT CONNECTORS/ADAPTERS

SMMP Right Angle Female to S/R Cable



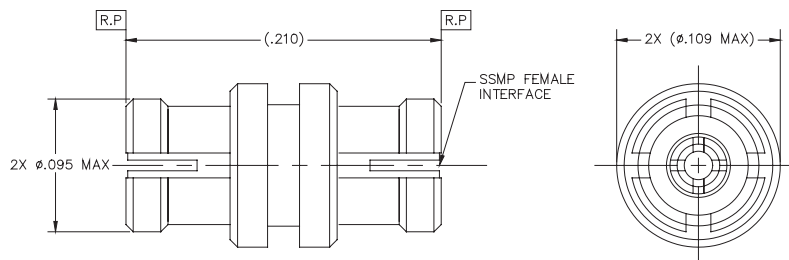
Part No.	Cable Type	Cable
229936-1000	Semi-Rigid	SR .047
229909-1001	Semi-Rigid	RG-405

SMMP Straight Female to S/R Cable



Part No.	Cable Type	Cable
229936-3000	Semi-Rigid	SR .047
229909-3001	Semi-Rigid	RG-405

SMMP Female to Female Adapter



P/N 229900-4000

See Page 58 for Contact Cable Assembly Ordering Information

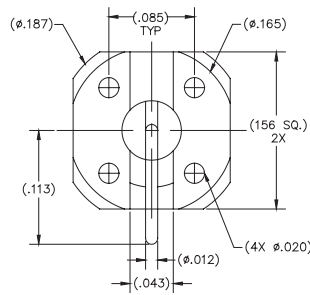
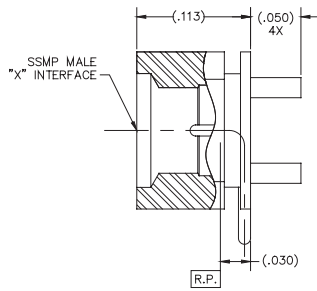
See Page 60 for Connector Cable Group Number Descriptors



SMMP CONNECTORS

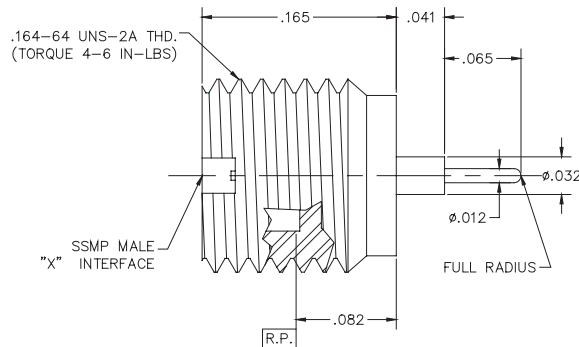
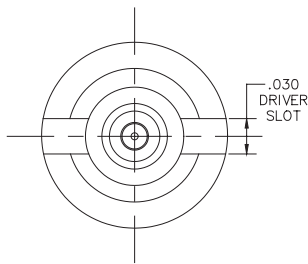
MALE INTERFACE PCB TYPE TERMINATORS

SMMP Male Straight PCB Mount



Part Number	Detent
229900-2000	Detent
229900-2001	Non-Detent

SMMP Male Straight Termination Thread-In

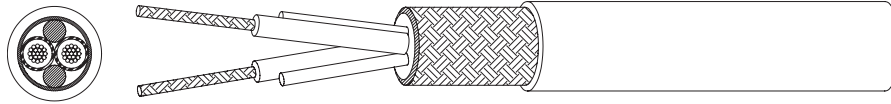


Part Number	Detent
229900-2002	Detent
229900-2003	Non-Detent

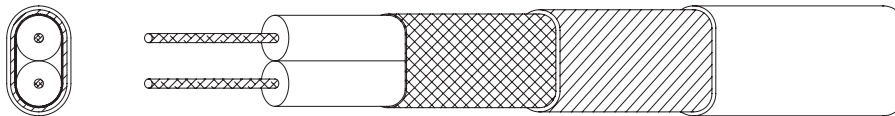


CABLE TYPES

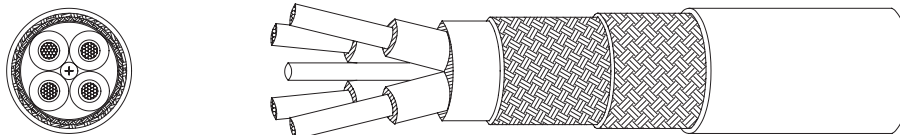
TWINAX/FIBRE CHANNEL/QUAD CABLE TYPES



Flexible Twinax Cables					
Cable Group No	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	0.144"	0.019"
3	540-1161-000	Sabritec	100	0.130"	0.024"
4	540-1171-000	W.L. Gore	100	0.087"	0.010"
5	540-1172-000	W.L. Gore	100	0.122"	0.016"



Differential Pair Fibre Channel Twinax Cables				
Cable Group No.	Cable Designation	Impedance (OHMS)	Jacket (DIA)	Conductor (DIA)
6	540-1099-000	Differential: 150 Sig. To Shield: 75	0.099" x 0.169"	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

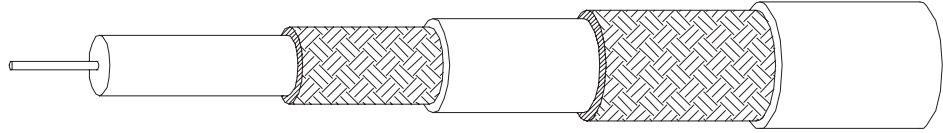


Differential Quad Fibre Channel Cables				
Cable Group No.	Cable Designation	Impedance (OHMS)	Jacket (DIA)	Conductor (DIA)
9	540-1138-000	Differential: 150 Sig. To Shield: 75	0.290"	0.032"
10	540-1143-000	Differential: 150 Sig. To Shield: 75	0.190"	0.020"
11	540-1165-000	Differential: 100 Sig. To Shield: 50	0.175"	0.024"

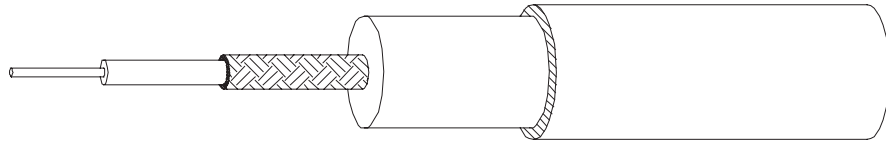
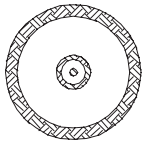


CABLE TYPES

FLEXIBLE TRIAX/SEMI-RIGID TRIAX/SEMI-RIGID COAX



Flexible Triax Cables					
Cable Group No	Cable Designation	Manufacturer	Impedance (OHMS)	Jacket (DIA)	Conductor (DIA)
12	RG-403	Mil-Spec	50	0.116"	0.012"
13	540-1050-000	Sabritec	75	0.125"	0.012"
14	540-1081-000	Sabritec	95	0.125"	0.008"
15	540-1091-000	Sabritec	75	0.175"	0.025"



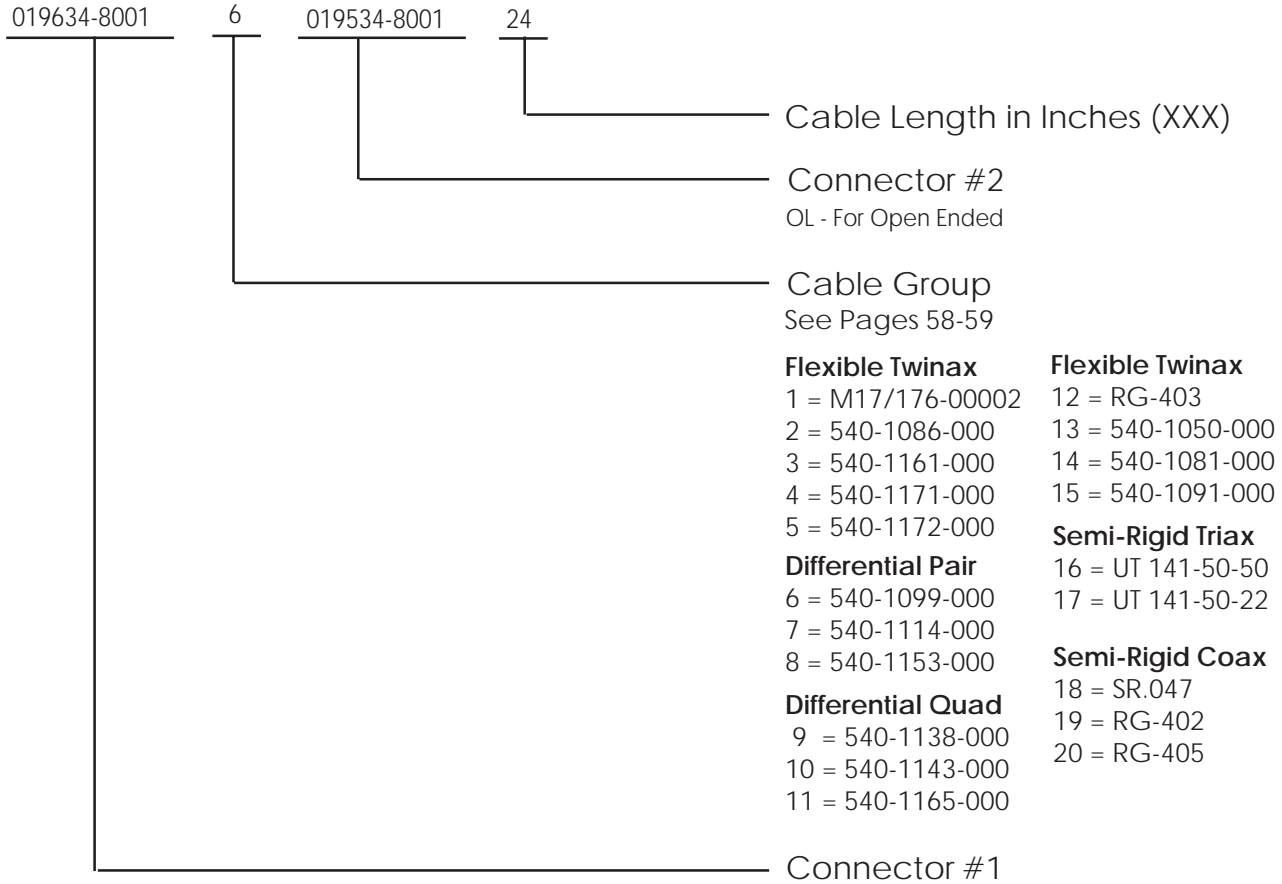
Semi-Rigid Triax Cables					
Cable Group No	Cable Designation	Manufacturer	Impedance (OHMS)	Jacket (DIA)	Conductor (DIA)
16	UT 141-50-50	Micro-Coax	50-50	0.141"	0.008"
17	UT 141-50-22	Micro-Coax	50-22	0.141"	0.012"



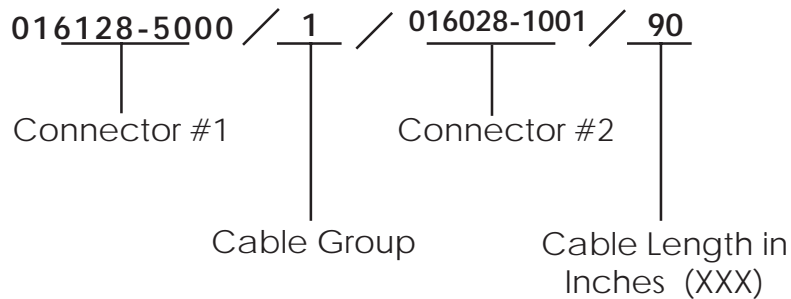
Semi-Rigid Coax Cables				
Cable Group No.	Cable Designation	Impedance (OHMS)	Outer Conductor	Inner Conductor
18	SR.047	50	0.047"	0.0362"
19	RG-402	50	0.141"	0.0113"
20	RG-405	50	0.0865"	0.0201"



PART NUMBER EXAMPLE #1

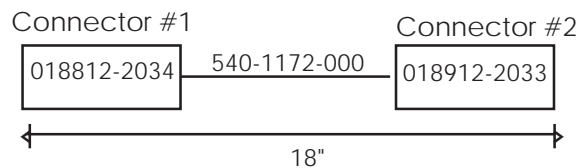


PART NUMBER EXAMPLE #2



PART NUMBER EXAMPLE #3

018812-2034/5/018912-2033/18





The International Space Station (ISS) is the largest and most complex international scientific project in history. Upon completion in 2004, the station will represent a move of unprecedented scale off the home planet. The ISS, which is more than four times the size of the Russian MIR Space Station, will have a mass of about 1,040,000 pounds. It will measure 356 feet across and 290 feet long, with almost an acre of solar panels to provide electrical power to six state-of-the-art laboratories.



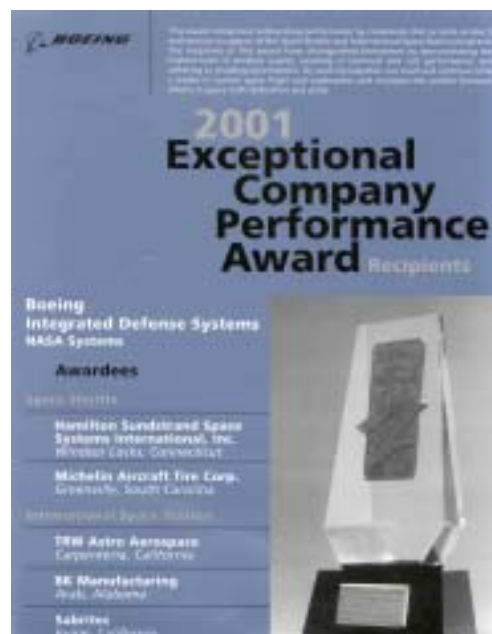
The station maintains an orbit with an altitude of 250 statute miles with an inclination of 51.6 degrees. This orbit allows the station to be reached by the launch vehicles of all the international partners to provide a robust capability for the delivery of crews and supplies. The orbit also provides excellent Earth observations with coverage of 85 percent of the globe and over flight of 95 percent of the population. The United States has the responsibility for developing and ultimately operating major elements and systems aboard the station. The U.S. elements include three connecting modules, or nodes, a laboratory module, truss segments, four solar arrays, a habitation module, three mating adapters, a cupola, an unpressurized logistics carrier, and a centrifuge module. The various systems being developed by the U.S. include thermal control, life support, guidance, navigation and control, data handling, power systems, communications and tracking, ground operations facilities, and launch-site processing facilities.

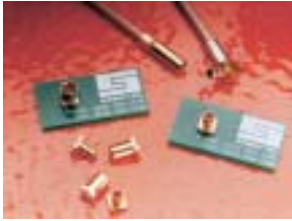
Sabritec is currently working with Boeing to design, develop, and manufacture two new external carrier connectors for the Space Station. The connectors will be installed on the Flight Replaceable Attach

Mechanism (FRAM), which is a mechanical structure used to mount orbital replaceable units (ORU). ORU's are electronic boxes used for

navigation and control, guidance, communications, etc. The connectors will serve as the main interconnect between the station and the ORU Flight Support Equipment (FSE). These two new versions will be used

for both power (K connector configuration) and data transmission (J connector configuration) applications. The data connector will also incorporate two fiber optic contacts alongside their electrical counterparts. Upon completion of the manufacturing phase of the program, rigorous qualification testing will take place to validate the connectors' use in space. The power connectors are scheduled to be on orbit via the Space Shuttle in early 2004.





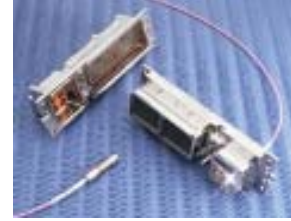
SCX Coaxial Features

- .020 Dia. center conductor
- 20 GHz capabilities
- Blindmate capabilities
- Low profile
- Rugged mechanical Performance
- Micro-D W/Fiber Optics available



SMP Coaxial Features

- Uses a snap-in connection
- Vibration proof connection, suitable for high shock mobile applications
- Allows for high density board to board applications
- Frequency range: DC-40GHZ
- Low VSWR and insertion loss (dB) parameters of 0.10 db max



Expanded Beam Fiber Optic Features

- Operating temperature: -40°C to 80°C
- Insertion loss: <2dB
- Mating cycles: >500
- Sampling rate: 1.0625 Gbits/sec min.
- Wavelength: 850nm – 1300nm
- Hermaphroditic interface design



High Power Filter D-Sub Miniature

- Available insert arrangements: 3W3 and 3WK3
- Capacitance values available: 1nf, 5nf, 47nf
- High voltage: 1,000 Vdc DWV: 400 VDC working
- Current rating: 30 Amps max per contact
- Terminations: PC Tail, Solder Cup and Press-fit versions available



Fibre Channel Features

- High speed fibre channel matched impedance data-on-demand applications
- Data rates exceeding 2 Gbit/Sec
- Quadrax to twinax conversion (Quadsplitter)
- Multiple Quadrax or Twinax connectors
- Can be driven via matched impedance differential pair interconnections for board to board high speed data transfer



NDL Ultraminiature Triaxial Series

- Ideal for MIL-STD-1553 Data Bus applications
- Threaded (NDL-T) & Quick Connect/ Disconnect Detent Locking (NDL-Q) Versions
- Solder termination
- Straight and right angle cable mount and PCB mount connectors



Rack and Panel Connectors

- Anti-rotational keyed insert assemblies for high speed Fibre Channel or Ethernet Twinax and Quadrax Contacts
- Designed for extreme environmental concerns
- Filtered EMI/EMP assemblies also available
- Meets applicable requirements of Arinc 404 & 600, MIL-C-83527, and MIL-C-81659



EMI Filter Connectors

- Addressing EMI/RFI filtering and EMP protection
- Internal Monolithic Planar Capacitors in any configuration
- Interchangeable and intermateable with non filtered connectors
- Transient suppression using commercial or JANTX diodes
- Rack and Panel EMI/EMP filter connectors
- Circular connectors
- Field replaceable/removable transient protection devices
- Standard catalog surge protection
- JANTX or High Reliability Commercial Grade Devices (Transient Absorption Zener)

Twinax/Triax Series Contacts

- Sizes 8,9,10 and 12 for MIL-DTL-38999, Arinc 404, and D-sub connectors
- Fully qualified to Military Specification and listed in the Qualified Product List for MIL-C-39029/90 529 and /91-530 contacts



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 professional technical team wastes no time on the route to 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 in a cost effective manner.

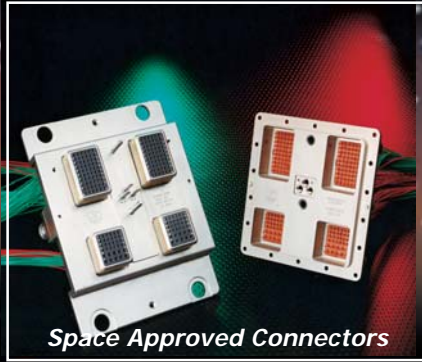
Sabritec's proven ability to perform can be a major

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 certified company.

17550 Gillette Avenue
Irvine, CA 92614
Tel: (949) 250 - 1244
Fax: (949) 250 -1009
www.sabritec.com

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Space Approved Connectors



SCX Ultraminiature Coax Connectors



SMP Series Coax Connectors



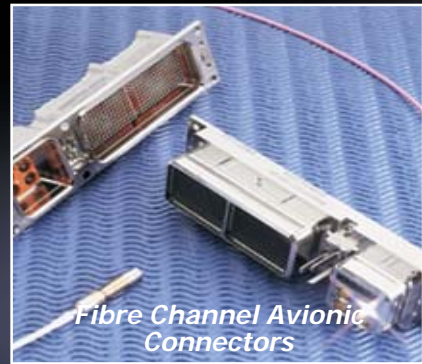
NDL Series Triax Connectors

SABRITEC

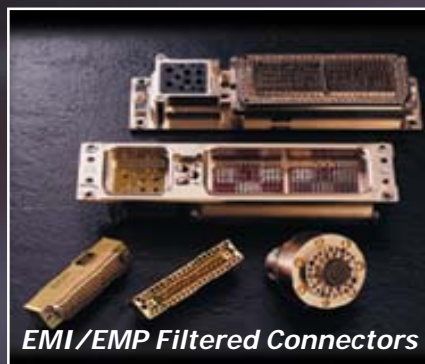
Family of Interconnect Products



Twinax Multiway Rugged D-Sub Connectors



Fibre Channel Avionic Connectors



EMI/EMP Filtered Connectors



*High Speed Fibre Channel/
Ethernet/Fiber Optics*



Your Connection to the Future

17550 Gillette Ave Irvine, CA 92614

Tel (949) 250-1244 Fax (949) 250-1009

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