Glenair®

HARSH-ENVIRONMENT

ARINC 801 Connectors and Termini

FOR HIGH-SPEED MIL-AERO FIBER-OPTIC DATA NETWORKING

OCTOBER 2014

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SERIES 180-159

Ultra-Low dB Loss ARINC 801 Fiber Optics

with removable alignment sleeve for easy cleaning, maintenance and inspection

The ARINC 801 (Series 180-159) fiber optic connection system is designed for use in RF-over-fiber applications, in-flight entertainment, avionics, and other high-speed data networking applications. The Glenair ARINC 801 system utilizes MIL-DTL-38999 Series III type connectors and is built in accordance with high-performance mil-aero mechanical and environmental standards.

Key features of the system include genderless contacts, a removable alignment sleeve retainer with guidepins to ensure low insertion loss and return loss values. Singlemode (UPC and APC) as well as multimode (PC) termini with familiar LC type termination and assembly for complete flexibility in cable choice and optical performance. The keyed size 16 genderless termini are equipped with ceramic ferrules and stainless steel springs. A complete range of insert arrangements is available in accordance with ARINC 801.

- **Genderless terminus design eliminates pin and socket complexity**
- **Rear-release size #16 termini**
- **Singlemode (1310 and 1550 nm) as well as multimode (850 and 1300 nm)**
- **Mechanical and environmental performance IAW MIL-DTL-38999 Series III**

ARINC 801 Type 1
Fiber Optic Connectors and Termini
MIL-DTL-38999 SERIES III TYPE

180-159

PRODUCT SELECTION GUIDE AND PERFORMANCE SPECIFICATIONS

Series 180-159 ARINC 801 Performance Specifications	
Test Description	**Performance Requirements/Specifications**
Insertion Loss	Multimode (PC): 0.30 dB typical at 850/1300nm
	Singlemode (UPC): 0.30 dB typical at 1310/1550nm
Return Loss	Multimode (PC): Better than 20 dB
	Singlemode (UPC): Better than 40 dB
Operating Temperature	-55°C to +165°C (cable/epoxy dependent)
Storage Temperature	-40°C to +85°C (cable/epoxy dependent)
Mating Durability	500 cycles, per TIA/EIA-455-21
Vibration	23.1g RMS, 8 hrs/axis, per TIA/EIA-455-11, Test Condition VI-G
Mechanical Shock (half-sine pulse)	300g Peak for 3ms, 3 shocks/axis in each direction, per TIA/EIA-455-14, Test Condition D
Thermal Cycling	-55°C to +125°C, 50 cycles, per TIA/EIA-455-3, Test Condition C-4 (cable/epoxy dependent)
Temperature Life	+125°C for 1000 hrs, per TIA/EIA-455-4 (cable/epoxy dependent)
Humidity, Steady State	+40°C for 240 hrs, 90% RH, per TIA/EIA-455-5, Method A, Test Condition B
Humidity, Temperature Cycling	-25°C to +65°C, 10 cycles for 24 hrs, 90% RH, per TIA/EIA-455-5, Method B7a (cable/epoxy dependent)

Glenair®

For more information contact Glenair at **818-247-6000** or visit our website at **www.glenair.com**
U.S. CAGE code 06324

ARINC 801 Type 1
Fiber Optic Connectors and Termini
MIL-DTL-38999 SERIES III TYPE

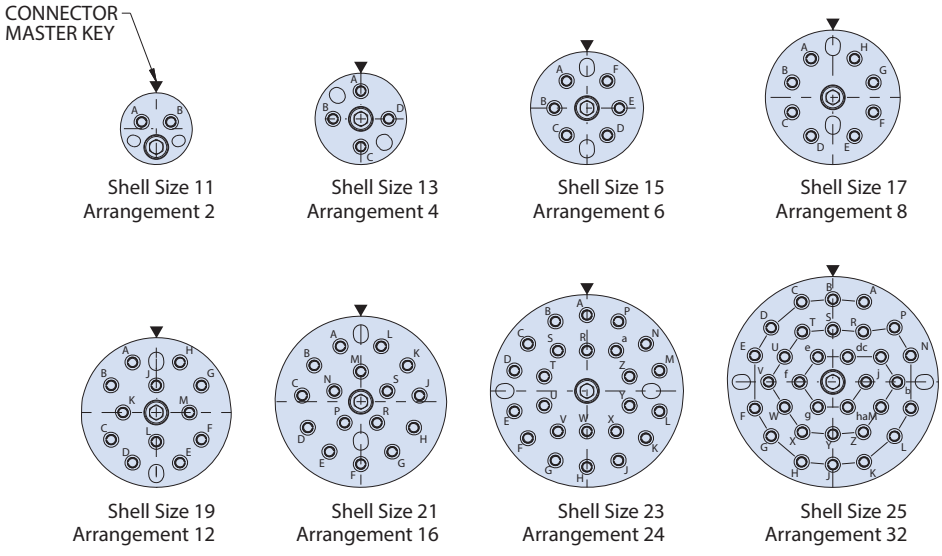
180-159

How To Order					
Sample Part Number	**180-159**	**NF**	**06**	**–17–8**	**N**
Fiber Optic connector	ARINC 801 connectors, MIL-DTL-38999 Series III Type				
Material/Finish Code	See Table I				
Connector Style	**06** = Plug **G6** = Plug with EMI/RFI Ground Spring **08** = Jam Nut Receptacle **05** = In-Line Receptacle **H7** = Wall Mount Receptacle with Round Holes (Standard) **S7** = Wall Mount Receptacle with Slotted Holes **T7** = Wall Mount Receptacle with Threaded Holes				
Shell Size - Insert Arrangement	See Figure I				
Alternate Key Position	per MIL-DTL-38999 Series III. **A**, **B**, **C**, **D**, **E**, **N** = Normal, omit for universal key				

Table I: Material and Finish

Code	Material	Finish Description
ME	Aluminum Alloy	Electroless Nickel
MT		Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF		Cadmium, Olive Drab
ZN		Zinc-Nickel, Olive Drab
ZR		Zinc Nickel, Black
XM	Composite	Electroless Nickel
XMT		Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
ZL	Stainless Steel	Electro-Deposited Nickel
Z1		Passivate

Figure 1: ARINC 801 Insert Arrangements



NOTES

1. Alignment Sleeve Retainer (ASR) is supplied with plug connector only, and may be ordered separately (see 180-159ASR)
2. Material/Finish:
   - Shells, Barrel, Coupling Nut: See Table I
   - Inserts: Al alloy / Chem Film or Al Alloy / Anodize - Mfr's option
   - Guide Pins: Stainless Steel / Passivate
   - Seals: Fluorosilicone
   - EMI/RFI/Ground Spring: Copper Alloy / Nickel

ARINC 801 Type 1
Fiber Optic Connectors and Termini
MIL-DTL-38999 SERIES III TYPE

180-159 Plug

PLUG (06)

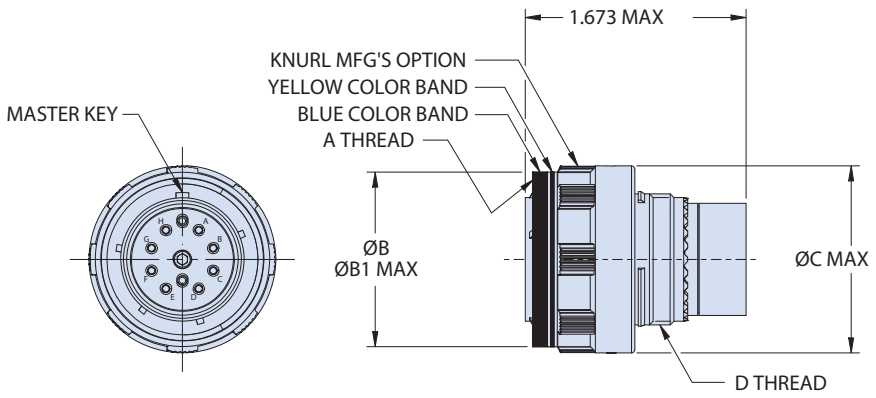


Table II: Plug									
Shell Code	Shell Size	A Thread	Ø B		Ø B1 Max*		Ø C Max		D Thread
			In.	mm.	In.	mm.	In.	mm.	
B	11	.7500-.1P-.3L-TS-2B	0.839 0.831	21.3 21.1	0.929	23.6	0.984	25.0	M15 X 1.0-6g 0.100R
C	13	.8750-.1P-.3L-TS-2B	1.008 1.000	25.6 25.4	1.110	28.2	1.157	29.4	M18 X 1.0-6g 0.100R
D	15	1.0000-.1P-.3L-TS-2B	1.138 1.130	28.9 28.7	1.232	31.3	1.280	32.5	M22 X 1.0-6g 0.100R
E	17	1.1875-.1P-.3L-TS-2B	1.276 1.268	32.4 32.2	1.358	34.5	1.406	35.7	M25 X 1.0-6g 0.100R
F	19	1.2500-.1P-.3L-TS-2B	1.382 1.374	35.1 34.9	1.469	37.3	1.516	38.5	M28 X 1.0-6g 0.100R
G	21	1.3750-.1P-.3L-TS-2B	1.508 1.500	38.3 38.1	1.594	40.5	1.642	41.7	M31 X 1.0-6g 0.100R
H	23	1.5000-.1P-.3L-TS-2B	1.626 1.618	41.3 41.1	1.720	43.7	1.768	44.9	M34 X 1.0-6g 0.100R
J	25	1.6250-.1P-.3L-TS-2B	1.752 1.744	44.5 44.3	1.843	46.8	1.890	48.0	M37 X 1.0-6g 0.100R
* Ø B1 dimensions apply to composite connectors only									

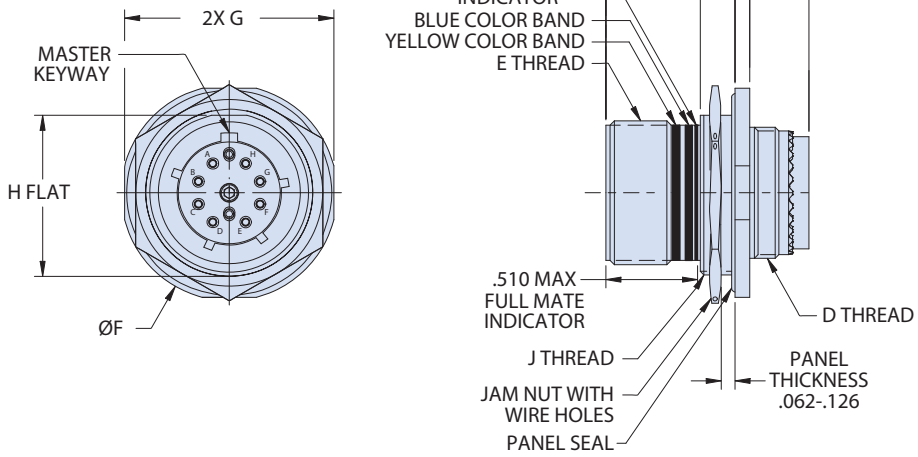
NOTES

1. Insert arrangement IAW ARINC 801
2. Yellow color band indicates fiber optic connector type, Blue band indicates rear-release retention system. Location of blue and yellow bands manufacturer's option.
3. Ø B and Ø B1 Max Dimension applies before paint stripe.
4. Alignment Sleeve Retainer (ASR) is supplied with plug connector only.

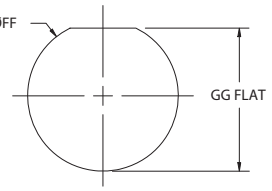
ARINC 801 Type 1
Fiber Optic Connectors and Termini
MIL-DTL-38999 SERIES III TYPE

180-159 Receptacles

JAM NUT MOUNT RECEPTACLE (08)



Jam Nut Panel Cut-Out



Shell Code	Shell Size	Ø FF		GG Flat	
		In.	mm.	In.	mm.
B	11	0.835 0.825	21.2 21.0	0.771 0.761	19.6 19.3
C	13	1.020 1.010	25.9 25.7	0.955 0.945	24.3 24.0
D	15	1.145 1.135	29.1 28.8	1.085 1.075	27.6 27.3
E	17	1.270 1.260	32.3 32.0	1.210 1.200	30.7 30.5
F	19	1.395 1.385	35.4 35.2	1.335 1.325	33.9 33.7
G	21	1.520 1.510	38.6 38.4	1.460 1.450	37.1 36.8
H	23	1.645 1.635	41.8 41.5	1.585 1.575	40.3 40.0
J	25	1.770 1.760	45.0 44.7	1.710 1.700	43.4 43.2

Table II: Plug

Shell Code	Shell Size	E Thread	Ø F		G		H		J Thread	D Thread	K	
			In.	mm.	In.	mm.	In.	mm.			In.	mm.
B	11	.7500-.1P-.3L-TS-2A	1.386 1.362	35.2 34.6	1.268 1.236	32.2 31.4	.755 .745	19.2 18.9	M20 X 1.0-6g 0.100R	M15 X 1.0-6g 0.100R	.121 .083	3.1 2.1
C	13	.8750-.1P-.3L-TS-2A	1.512 1.488	38.4 37.8	1.390 1.358	35.3 34.5	.942 .932	23.9 23.7	M25 X 1.0-6g 0.100R	M18 X 1.0-6g 0.100R		
D	15	1.0000-.1P-.3L-TS-2A	1.638 1.614	41.6 41.0	1.516 1.484	38.5 37.7	1.066 1.056	27.1 26.8	M28 X 1.0-6g 0.100R	M22 X 1.0-6g 0.100R		
E	17	1.1875-.1P-.3L-TS-2A	1.764 1.740	44.8 44.2	1.642 1.610	41.7 40.9	1.191 1.181	30.3 30.0	M32 X 1.0-6g 0.100R*	M25 X 1.0-6g 0.100R		
F	19	1.2500-.1P-.3L-TS-2A	1.949 1.925	49.5 48.9	1.827 1.795	46.4 45.6	1.316 1.306	33.4 33.2	M35 X 1.0-6g 0.100R	M28 X 1.0-6g 0.100R	.154 .114	3.9 2.9
G	21	1.3750-.1P-.3L-TS-2A	2.075 2.051	52.7 52.1	1.953 1.921	49.6 48.8	1.441 1.431	36.6 36.3	M38 X 1.0-6g 0.100R	M31 X 1.0-6g 0.100R		
H	23	1.5000-.1P-.3L-TS-2A	2.201 2.177	55.9 55.3	2.079 2.047	52.8 52.0	1.566 1.556	39.8 39.5	M41 X 1.0-6g 0.100R	M34 X 1.0-6g 0.100R		
J	25	1.6250-.1P-.3L-TS-2A	2.323 2.299	59.0 58.4	2.205 2.173-	56.0 55.2	1.691 1.681	43.0 42.7	M44 X 1.0-6g 0.100R	M37 X 1.0-6g 0.100R		

* Modified major diameter 1.252 - 1.257

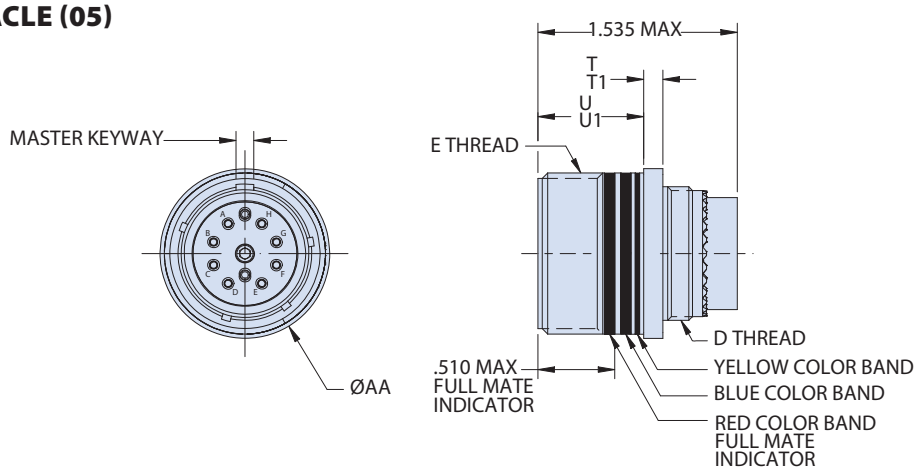
NOTES

1. Jam nut for composite receptacle connector is Al Alloy and plated same as connector shell.
2. Insert arrangement IAW ARINC 801
3. Yellow color band indicates fiber optic connector type, Blue band indicates rear-release retention system. Location of blue and yellow bands manufacturer's option.

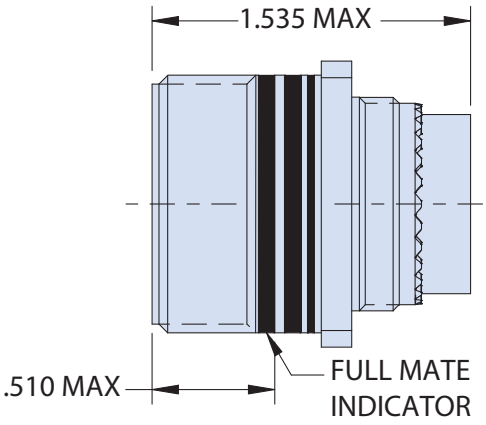
ARINC 801 Type 1
Fiber Optic Connectors and Termini
MIL-DTL-38999 SERIES III TYPE

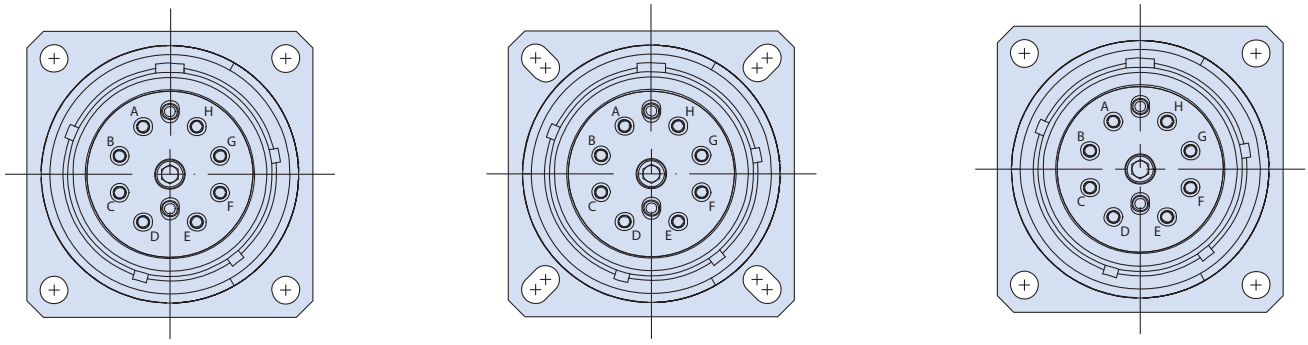
180-159 Receptacles

IN-LINE RECEPTACLE (05)



WALL MOUNT RECEPTACLES (H7, S7, AND T7)





NOTES

1. Yellow color band indicates fiber optic connector type, Blue band indicates rear-release retention system. Location of blue and yellow bands manufacturer's option.
2. S7 wall mount receptacle can be front panel mounted using cut out dimension EE1 or EE2 in Table V, page 8. Dimension EE2 is for use with S7 wall mount receptacle only
3. Insert arrangement IAW ARINC 801

ARINC 801 Type 1
Fiber Optic Connectors and Termini
MIL-DTL-38999 SERIES III TYPE

180-159 Receptacles

Table IV: Wall Mount and In-Line Receptacle Dimensions

Shell Code	Shell Size	A Thread	L Sq		M Bsc		T		U		D Thread	Ø V Holes		Ø AA	
			In.	mm.	In.	mm.	In.	mm.	In.	mm.		In.	mm.	In.	mm.
B	11	.7500-.1P-.3L-TS-2A	1.043 1.019	26.5 25.9	.812	20.6	.098 .083	2.5 2.1	.820 .771	20.8 19.6	M15 X 1.0-6g 0.100R	.136 .120	3.5 3.0	.840	21.3
C	13	.8750-.1P-.3L-TS-2A	1.138 1.114	28.9 28.3	.906	23.0					M18 X 1.0-6g 0.100R			.963	24.5
D	15	1.0000-.1P-.3L-TS-2A	1.232 1.208	31.3 30.7	.969	24.6					M22 X 1.0-6g 0.100R			1.090	27.7
E	17	1.1875-.1P-.3L-TS-2A	1.323 1.299	33.6 33.0	1.062	27.0					M25 X 1.0-6g 0.100R			1.275	32.4
F	19	1.2500-.1P-.3L-TS-2A	1.449 1.425	36.8 36.2	1.156	29.4					M28 X 1.0-6g 0.100R			1.337	34.0
G	21	1.3750-.1P-.3L-TS-2A	1.575 1.551	40.0 39.4	1.250	31.8	.126 .083	3.2 2.1	.790 .741	20.1 18.8	M31 X 1.0-6g 0.100R			1.463	37.2
H	23	1.5000-.1P-.3L-TS-2A	1.701 1.677	43.2 42.6	1.375	34.9					M34 X 1.0-6g 0.100R	.162 .146	4.1 3.7	1.587	40.3
J	25	1.6250-.1P-.3L-TS-2A	1.823 1.799	46.3 45.7	1.500	38.1					M37 X 1.0-6g 0.100R			1.713	43.5

Dimensions for Composite Receptacles

Shell Code	Shell Size	T1		U1	
		In.	mm.	In.	mm.
B	11	.144 .083	3.7 2.1	.823 .768	20.9 19.5
C	13				
D	15				
E	17				
F	19				
G	21	.171 .083	4.3 2.1	.791 .736	20.1 18.7
H	23				
J	25				

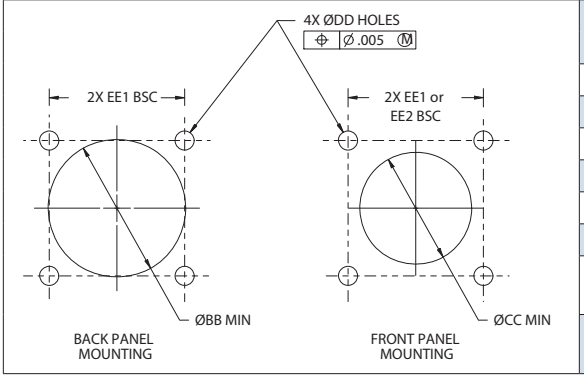
Dimensions for Slotted Hole Receptacles

Shell Code	Shell Size	N Bsc (front panel mount)		P		R	
		In.	mm.	In.	mm	In	mm.
B	11	0.719	18.3	0.136 0.120	3.5 3.0	.202 .186	5.1 4.7
C	13	0.812	20.6				
D	15	0.906	23.0			.181 .165	4.6 4.2
E	17	0.969	24.6			.202 .186	5.1 4.7
F	19	1.062	27.0				
G	21	1.156	29.4				
H	23	1.250	31.8	0.162 0.146	4.1 3.7	.250 .234	6.4 5.9
J	25	1.375	34.9				

Dimension for Threaded Hole Receptacles

Shell Code	Shell Size	W
B	11	.112-40 UNC-2B
C	13	
D	15	
E	17	
F	19	
G	21	
H	23	.138-32 UNC-2B
J	25	

Table V: Wall-Mount Receptacle Cutout



Shell Code	Shell Size	Ø BB Min		Ø CC Min		Ø DD Holes		EE1 Bsc		EE2 Bsc	
		In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.
B	11	.796	20.2	.625	15.9	.133 .123	3.4 3.1	.812	20.6	.719	18.3
C	13	.922	23.4	.750	19.1			.906	23.0	.812	20.6
D	15	1.047	26.6	.906	23.0			.969	24.6	.906	23.0
E	17	1.219	31.0	1.016	25.8			1.062	27.0	.969	24.6
F	19	1.297	32.9	1.141	29.0			1.156	29.4	1.062	27.0
G	21	1.422	36.1	1.266	32.2			1.250	31.8	1.156	29.4
H	23	1.547	39.3	1.375	34.9	.159 .149	4.0 3.8	1.375	34.9	1.250	31.8
J	25	1.672	42.5	1.484	37.7	.155 .145	3.9 3.7	1.500	38.1	1.375	34.9

ARINC 801 Type 1
Fiber Optic Connectors and Termini
MIL-DTL-38999 SERIES III TYPE

180-159 Alignment Sleeve Retainer

How To Order		
Sample Part Number	**180-159ASR**	**–25–32**
Fiber Optic connector	Alignment Sleeve Retainer for 180-159 plug connector	
Shell Size - Insert Arrangement	See Figure I	

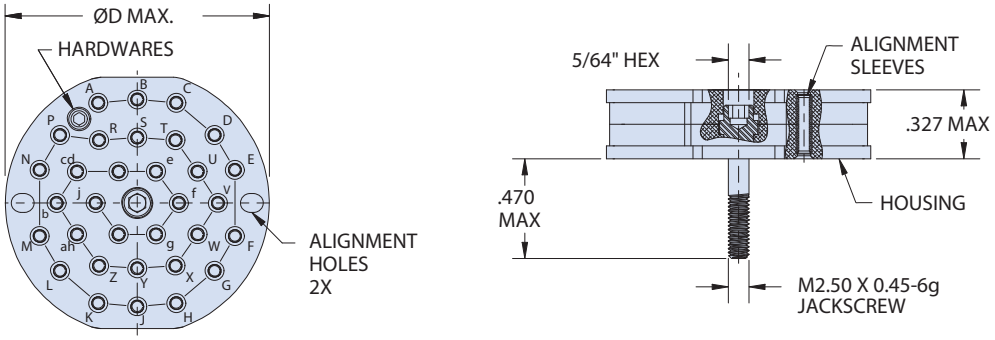
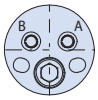
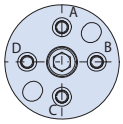


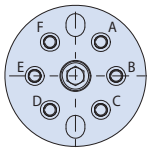
Figure 1: Insert Arrangements
ASR Face Shown



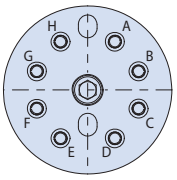
Shell Size 11
Arrangement 2



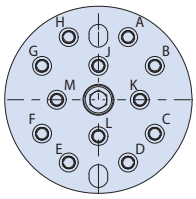
Shell Size 13
Arrangement 4



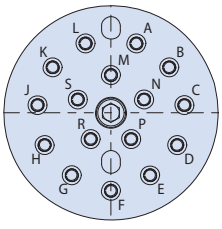
Shell Size 15
Arrangement 6



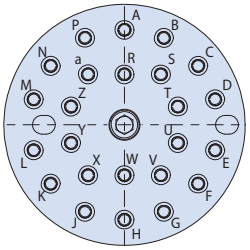
Shell Size 17
Arrangement 8



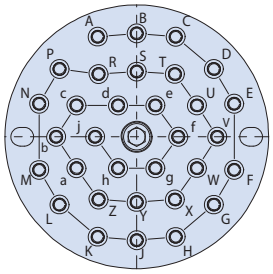
Shell Size 19
Arrangement 12



Shell Size 21
Arrangement 16



Shell Size 23
Arrangement 24



Shell Size 25
Arrangement 32

NOTES

1. Housing: Al alloy/chem film or Al alloy/anodize - mfr's option
2. Misc hardware: stainless steel/passivate
3. Alignment sleeve: zirconia ceramic
4. Alignment sleeve retainer is designed to meet or exceed all mechanical and performance requirements of ARINC 801 specification.
5. Ceramic alignment sleeve replacements may be purchased separately (P/N 181-056-S)

ARINC 801 Type 1
Fiber Optic Connectors and Termini
MIL-DTL-38999 SERIES III TYPE

181-076 Genderless Termini

GENDERLESS FIBER OPTIC TERMINI FOR ARINC 801 CONNECTORS, KEYED, REAR RELEASE

How To Order				
Sample Part Number	**181-076**	**–**	**P**	**–126**
Fiber Optic termini	Genderless terminus for ARINC 801 connector			
Cable Jacket Diameter	See Table I			
Cable Structure	**P** = Pull-Proof (loose structure cable) **N** = Non-Pull-Proof (tight structure cable or 900 micron buffer)			
Assembly Dash Number	See Table II			

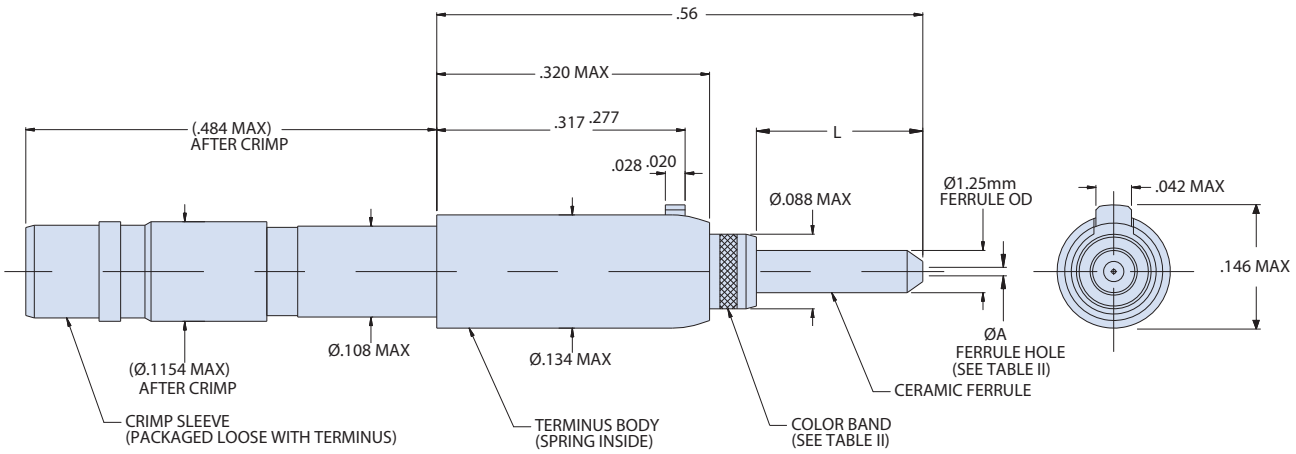


Table I: Cable Jacket Diameter	
Dash No.	Cable Jacket Diameter
A	900 micron buffer only
–	2.0/1.7mm

Table II: Ceramic Ferrule						
Dash No.	Ø A (microns)	Typ Fiber Type	Typ Fiber Size (microns) Core/Cladding	Ferrule Polish Type	L Inches	Color Band
-1255	125.5	Singlemode	9/125	PC	.196/.192	Blue
-1255A	125.5	Singlemode	9/125	APC	.200/.196	Green
-126S	126.0	Singlemode	9/125	PC	.196/.192	Blue
-126SA	126.0	Singlemode	9/125	APC	.200/.196	Green
-126	126.0	Multimode	50/125, 62.5/125	PC	.196/.192	None

NOTES

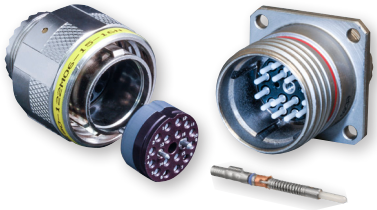
1. Crimp sleeve is packaged loose with terminus assembly. Spares may be ordered separately, consult factory.
2. Termini for 900 micron buffer are not provided with crimp sleeves
3. Material and Finish
   - Ferrule: Zirconia Ceramic
   - Terminus Bodies: Brass Alloy/Nickel
   - Crimp Sleeve: Brass Alloy/Nickel
   - Spring: Stainless Steel/Passivate

Advanced Fiber Optic Connection Systems

Tight-tolerance manufacturing and superior optical performance

GLENAIR FIBER OPTIC INTERCONNECT SYSTEMS

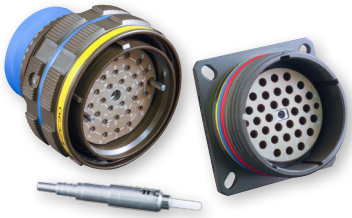
MIL-DTL-38999 Type Fiber Optic



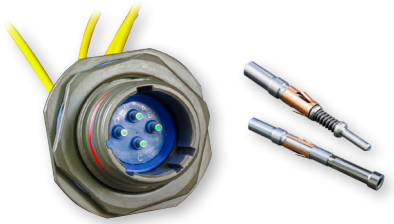
Glenair High Density (GHD) Fiber Optic

Series 80 Mighty Mouse Fiber Optic

MT Ferrule Fiber Optic



ARINC 801



Eye-Beam™ Expanded Beam Fiber Optic

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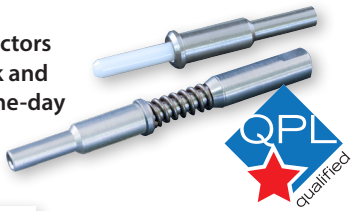

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Printed in U.S.A.