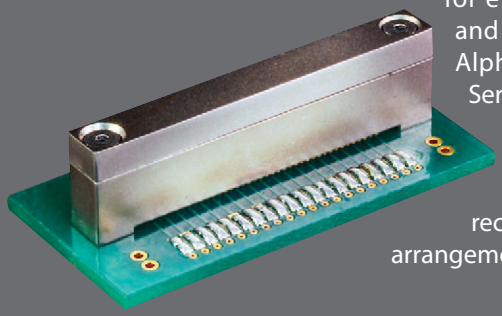
# AlphaLink®

## Board-level spring-loaded-contact connectors, interposers, and turnkey flex jumpers

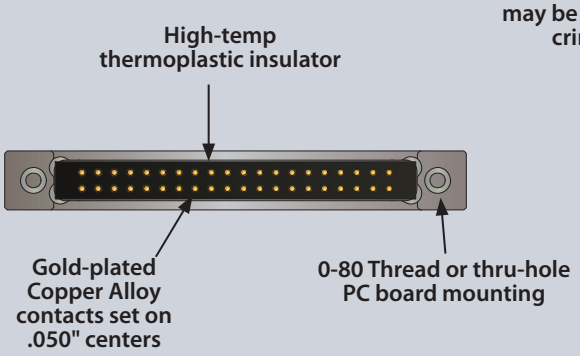
AlphaLink® SL is a high-performance, solderless board-level connector technology developed by Glenair that significantly expands board-level interconnection options for users of mil-spec caliber connectors. Precision-machined and EMI shielded, these ultralightweight PC tail, solder cup, and/or pigtail equipped connectors are designed for high-reliability applications that require avionic system levels of vibration and shock tolerance. Ultra low-profile and high-density, AlphaLink® SL connectors are equipped with 2–3 Amp spring-loaded contacts and may be ordered either as discrete connectors or in turnkey flex jumpers that combine popular Glenair high-reliability I/O connectors. Glenair is perfectly positioned to provide the entire solution with in-house manufacturing for every component part—from connectors and contacts to rugged polyimide-based flex. AlphaLink® SL flex jumpers are available with Series 80 Mighty Mouse, Series 88 SuperFly, and Series 89 nanominiature circular connectors, as well as Series 89 nanominiature, Micro-D subminiature and Series 79 Micro-Crimp rectangular connectors. A wide range of insert arrangements, from 4–40 contacts is available.



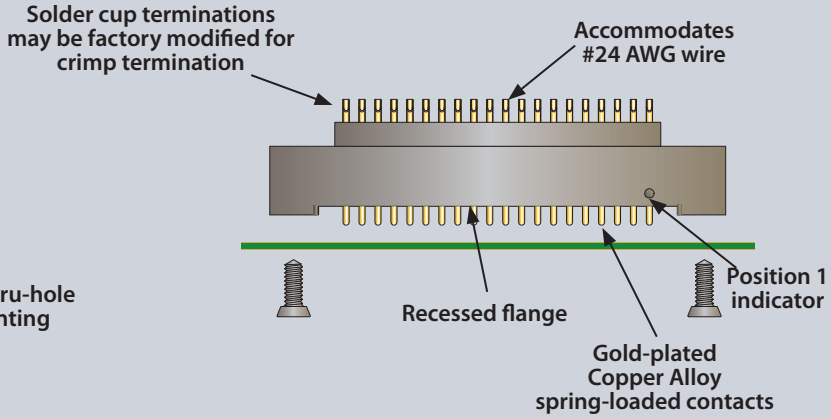
- **Spring-loaded, solderless board-level solution**
- **Available I/O-to-board flex and pigtail wire jumpers**
- **Lightweight, low-profile: up to 40% space savings compared to 2mm pitch solutions**
- **High-density .050" center-to-center contact footprint**
- **Fast and easy PC board integration with reduced board preparation and masking**
- **Temperature, vibration and shock resistant**

# Spring-loaded board level connector Design features

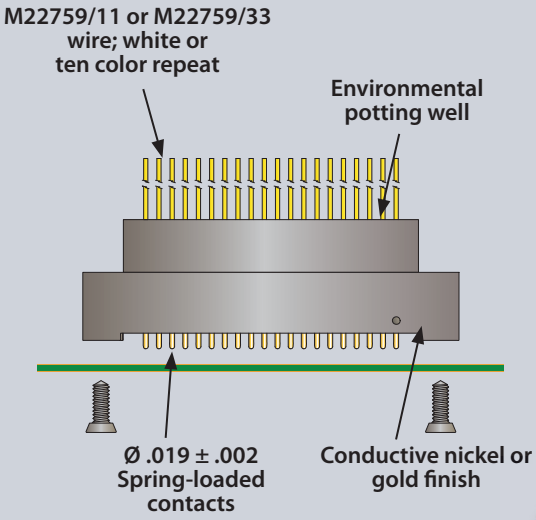
## AlphaLink® SL Spring-Loaded Contact Interface



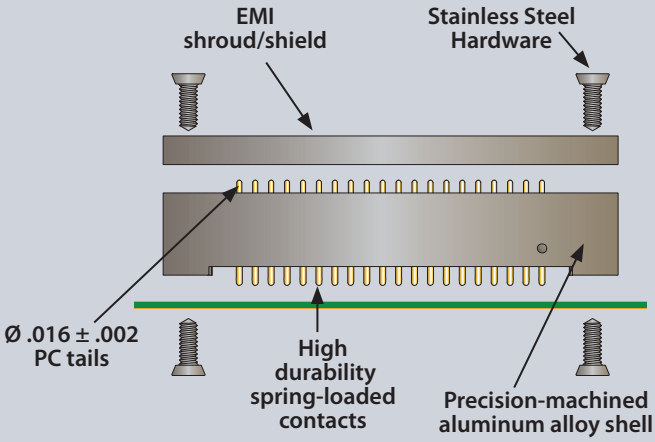

## 171-134-01 Solder Cup Termination



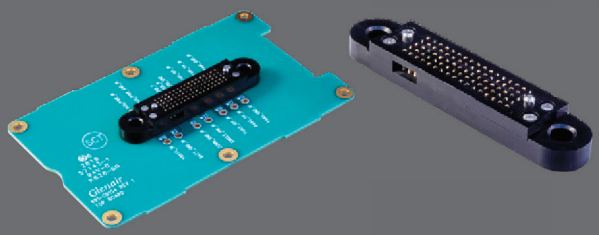

## 171-134-03 Wire Pigtail Termination

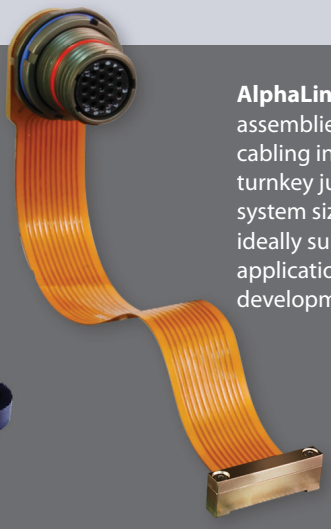



## 171-134-02 PC Tail Termination

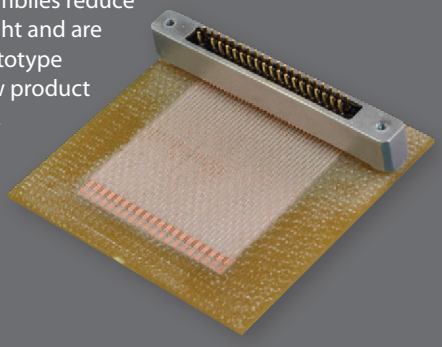



**AlphaLink® Interposer and Bridge Technologies:** Unique pogo pin contact technology enables this signature Glenair connector series to deliver the lowest profile board-to-board solution available in the industry today.





**AlphaLink® SL flex jumpers:** Compact interconnect assemblies that combine circuit board technology and cabling into a lightweight, integrated package. These turnkey jumper assemblies reduce system size and weight and are ideally suited for prototype applications and new product development efforts.



Glenair®


AmberStrand® is ultra-lightweight microfilament metal clad EMI/RFI composite braiding.
Glenair offers AmberStrand® users direct factory overbraiding services for point-to-point and multi-branch interconnect assemblies.

*LIGHTWEIGHT*

# AmberStrand®

## Composite metal-clad EMI/RFI expandable braided shielding

### The smart way to reduce launch and flight weights in aerospace systems

For many applications, the cable shield is the most important element in controlling EMI. Unfortunately, metal shielding—especially when applied in multiple layers—can be extremely heavy. The opportunity to provide robust EMI shielding at a fraction of the weight is the principal advantage of composite thermoplastic EMI/RFI braid made from AmberStrand® material. Transfer impedance test reports demonstrate the effectiveness of the material compared to conventional metal solutions. So get smart! Reduce weight and save money with AmberStrand®

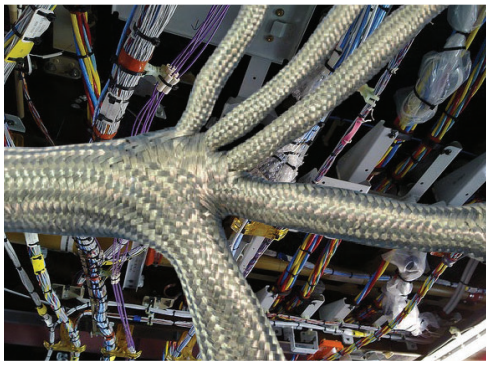
- **Metal-clad EMI/ RFI Shielding with a lightweight composite thermoplastic base material**
- **Highly conductive surface plating**
- **Reduce shielding weight up to 80% and more**
- **Reduce operation costs by permanently reducing launch and aircraft all-up weights**
- **Superior high frequency shielding compared to tinned and/or nickel plated copper**
- **Tensile strength: 590,000 psi (min)**

*LIGHTWEIGHT, FLEXIBLE*

# AmberStrand® Composite Braid for EMI/RFI Shielding Applications

## The lightest weight EMI/RFI braid in the industry

| 103-026 AmberStrand® 100% Lightweight Composite Thermoplastic Nickel Plated EMI/RFI Braid | | |
|---|---|---|
| Tensile Strength | 590,000 psi (min) | ATP196 MOD |
| Operating Temperature | -80°C to +220°C | 85% shielding effectiveness, 1000 hrs |
| Specific Gravity | 1.45% (max) | ISO 1183 |
| Thermal Cycling | No adverse effects in visual inspection or resistance after 50 cycles | -65°C to +200°C In accordance with ANSI/EIA-364-75-1997 |
| Lightning Current | Glenair qualification test report 040607AMB | In accordance with ANSI/EIA-364-75-1997 |
| Surface Transfer Impedance | Glenair qualification test report 040607AMB | IEC 96.1 A.5.5.3 method 2 |
| Vertical Flammability | Self-extinguishing ≤ 2 sec.<br>Burn length 0.1 in. max - Dripping 0.0 sec | 14CFR part 25.853 (A)<br>AMDT25-116 Appendix F Part I (a) (1) (ii) |
| Fungus Resistance Testing | 28 day incubation test: No fungus growth | Mil-Std 810F, Method 508.5 |
| Mass Loss And CVCM | 1.0% max mass loss; .10% max CVCM | ASTM E595 |
| Flex Test 50,000 Cycles | No tearing or visible damage | 90° to 120° bend |
| Salt Spray 500 hrs. | DC Resistance IAW AS85049 .5 milliohms; no visible evidence of base metal on braid | ASTM B 117-03 Sodium Chloride 5% |
| Salt Fog $SO_2$ | No damage or adverse effects | ASTM G 85 Annex 4 200 hrs. |
| JP-8 (Mil-T-83133) Military Jet Aircraft Fuel (70°C) | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| Skydrol Military Jet Aircraft Fuel (90°C) | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| Hydraulic Fluid Mil-H-5606 (70°C) | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| Silicate Ester Based Coolanol 25R (70°C) | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| Polyalphaolefin Mil-C-87252 (70°C) | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| Lubricating Oil Mil-L-23699 8 hrs. @ 150°C, followed by 72 hrs. @ 65°C | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| Isopropyl Alcohol 8 hrs. @ 50°C followed by 72 hrs. @ 65°C | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| Cleaner Fluid Mil-C-85570 8 hrs. @ 23°C followed by 72 hrs. @ 65°C | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| De-icer Fluid AMS-1432 8 hrs. @ 23°C followed by 72 hrs. @ 65°C | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| Fire Extinguishing foam 8 hrs. @ 23°C followed by 72 hrs. @ 65°C | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |
| R-134 Refrigerant 8 hrs. @ 23°C followed by 72 hrs. @ 65°C | No fraying, DC resistance within limits (AS85049 paragraph 4.6.3) | Mil-STD 810F Method 504 (Modified) |



*Up to 88% weight savings vs. NiCu*

| AmberStrand® 100% vs. nickel-coated copper | | | |
|---|---|---|---|
| Braid Dia. | AmberStrand® 100% 103-026 | Nickel-Copper 100-003 | % Weight Savings/ Foot |
| .062 | .6 | 1.9 | 68% |
| .125 | 1.0 | 4.8 | 79% |
| .250 | 1.8 | 16.1 | 88% |
| .375 | 2.3 | 18.5 | 87% |
| .500 | 3.7 | 22.3 | 83% |
| .625 | 4.4 | 27.7 | 84% |
| .750 | 5.2 | 34.3 | 85% |
| 1.000 | 8.0 | 35.0 | 77% |

| AmberStrand® 75% vs. nickel-coated copper | | | |
|---|---|---|---|
| Braid Dia. | AmberStrand® 75/25% NiCu 103-027 | Nickel-Copper 100-003 | % Weight Savings/ Foot |
| .062 | .9 | 1.9 | 52% |
| .125 | 1.5 | 4.8 | 68% |
| .250 | 2.4 | 16.1 | 85% |
| .375 | 3.9 | 18.5 | 79% |
| .500 | 5.4 | 22.3 | 76% |
| .625 | 6.4 | 27.7 | 77% |
| .750 | 7.2 | 34.3 | 79% |
| 1.000 | 11.0 | 35.0 | 69% |

Glenair®

## SERIES 72 LIGHTWEIGHT

# Polymer-core wire protection conduit systems

Turnkey connectorized factory conduit assembly for power charging application

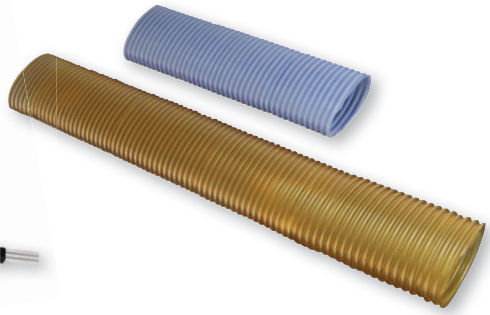
## SERIES 72 ANNULAR CONVOLUTED BULK TUBING

Conduit colors include standard black, natural, blue, yellow, red, desert tan, and orange

| Conduit Tubing Material Choices | |
|---|---|
| **Kynar®** | Flexible, thermally stabilized, resistant to harsh chemicals and radiation. UV resistant, self-extinguishing, nontoxic and resistant to low-temperatures. 166° C temp. rating. |
| **PVDF** | Flexible and chemical/radiation resistant. Available in 4 colors plus standard black and natural. 150° C temperature rating. |
| **G-FLEX Siltem** | Lightweight, halogen-free, low toxicity, low smoke. 175° temperature rating. Ideal for harsh environment applications. Exceptional flexibility and crush resistance. |

- **Lightweight, flexible polymer-core materials and easy to install fittings, transitions and adapters**
- **A wide range of colors including safety orange and desert tan**
- **Internal and external braided shielding provides outstanding EMI/RFI, environmental, chemical and rodent protection**
- **User-installable or turnkey, factory-terminated assemblies**

Any of Glenair's annular polymer-core tubings can be provided slit, for on-site installation or addition of wires in open wire loom applications.
Use the Wire Loom Tool for easy wire insertion



In-house manufacturing allows Glenair to design and fabricate non-standard shapes such as oval profile for specialized wire routing applications

Braid and jacketing options for EMI, chemical, environmental and rodent protection

*SERIES 72*

# Lightweight polymer-core wire protection conduit systems

CONDUIT SYSTEMS

## GUARDIAN SERIES LIGHTWEIGHT COMPOSITE EASY-TO-INSTALL CONDUIT SYSTEM

- **Economical and easy to install. *It's a snap!***
- **General duty, all-purpose wire protection**
- **O-ring equipped environmental sealing (splash-proof)**
- **Self-locking coupling nuts**
- **Band and shrink-boot ready**
- **Metal and composite thermoplastic materials**

composite thermoplastic feed-thru fitting

metal conduit-to-connector adapter

composite thermoplastic conduit-to-connector adapter

Direct-attach multibranch transitions

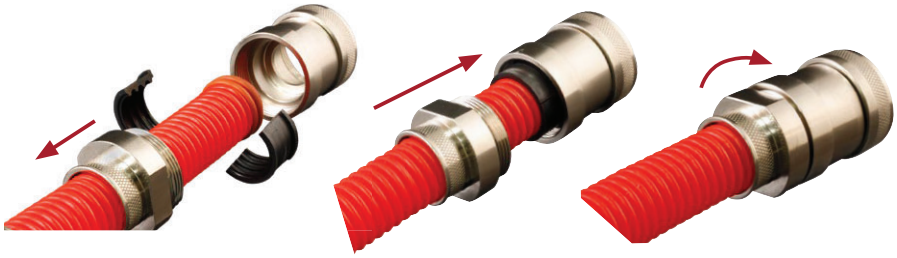
Easy installation:

1. Install pair of provided O-Rings on the two forwardmost tubing convolutes
2. Insert tubing into fitting
3. Run provided retaining clip into slot, aligned with the third convolution of conduit, behind the 2 O-Rings.

## SENTRY SERIES HEAVY-DUTY CONDUIT SYSTEM

- **Economical, heavy-duty wire protection system**
- **Stainless steel and aluminum fittings**
- **Integrated environmental bushing and compression nut sealing**
- **Band and shrink-boot ready**
- **Compact, low-profile design**

Complete range of metal conduit-to-connector adapters and feed-thrus



Easy installation:

1. Remove bushing and slide compression nut on conduit.
2. Reinstall bushing and bring nut forward.
3. Thread nut into rear of fitting body

SERIES 802

# AquaMouse

## Ultraminiature High-pressure

Originally developed for petroleum pipeline inspection equipment, Series 802 connectors are available in ten sizes from 1 to 130 contacts and equipped with Viton® O-rings to withstand exposure to corrosive chemicals and high temperature environments. These connectors feature high density crimp Mighty Mouse inserts, 316 stainless steel or marine bronze shells and a piston O–ring for hydrostatic sealing. Series 802 insulated wire, panel mount receptacles can be ordered as square flange, in–line or jam–nut versions. Choose integral shield termination platform or accessory thread for use with a variety of strain relief options. Crimp style gold–plated crimp contacts accept #12–30 wire. Connectors are backfilled with epoxy potting compound. Hermetic glass–sealed connectors come with solder cup contacts (non-removable) or PC tails. 100% tested to meet 1 x $10^{-7}$ cc/sec helium leakage. Mated pressure rating 3500 PSI.

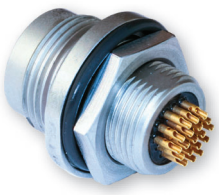
- **1000 PSI open face pressure rated**
- **High-temperature and corrosive chemical-resistant Viton® or Nitrile O-rings**
- **Ultraminiature #23 contacts**
- **Size #20, #20HD, #16, #12, #8 signal, power, fiber optic and shielded contacts**
- **Discrete connectors and turnkey cable assemblies**

### AQUAMOUSE CONNECTOR CONFIGURATIONS AND CLASSES

**Series 802 Plugs**

**Series 802 Jam Nut Mount**

**Series 802 Square Flange Receptacle**



**Series 802 Hermetic**

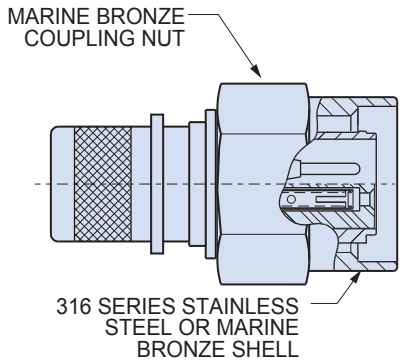
**Series 802 Hermetic Bulkhead Feed-Thru**

*SERIES 802 2400M / 3500 PSI*

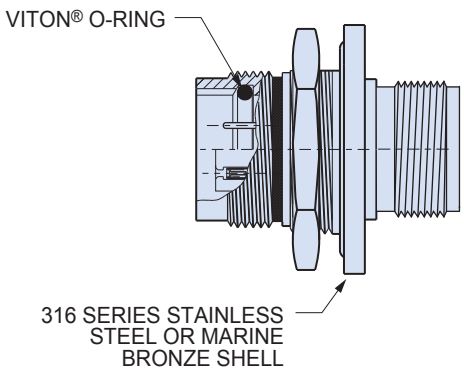
# Ultraminiature Subsea Connectors

## Series 802 AquaMouse™
## Performance specifications and material and finish

# Glenair Series 802 AquaMouse™ Delivers High-Pressure Sealing and Rugged Design in a Miniature Package




**Series 802 Plug**




**Series 802 Receptacle**

### Stainless Steel or Marine Bronze

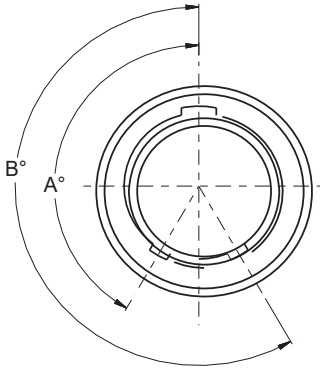
Available in ten sizes from 1 to 130 contacts, Series 802 connectors feature 316 stainless steel or marine bronze shells. Viton® o-rings resist high temperature and corrosive chemicals.

### 3500 psi

These connectors withstand up to 3500 PSI hydrostatic pressure in a mated condition. Hermetic versions withstand 1000 PSI open face pressure.

## AQUAMOUSE SPECIFICATIONS AND PLUG KEY POSITIONS

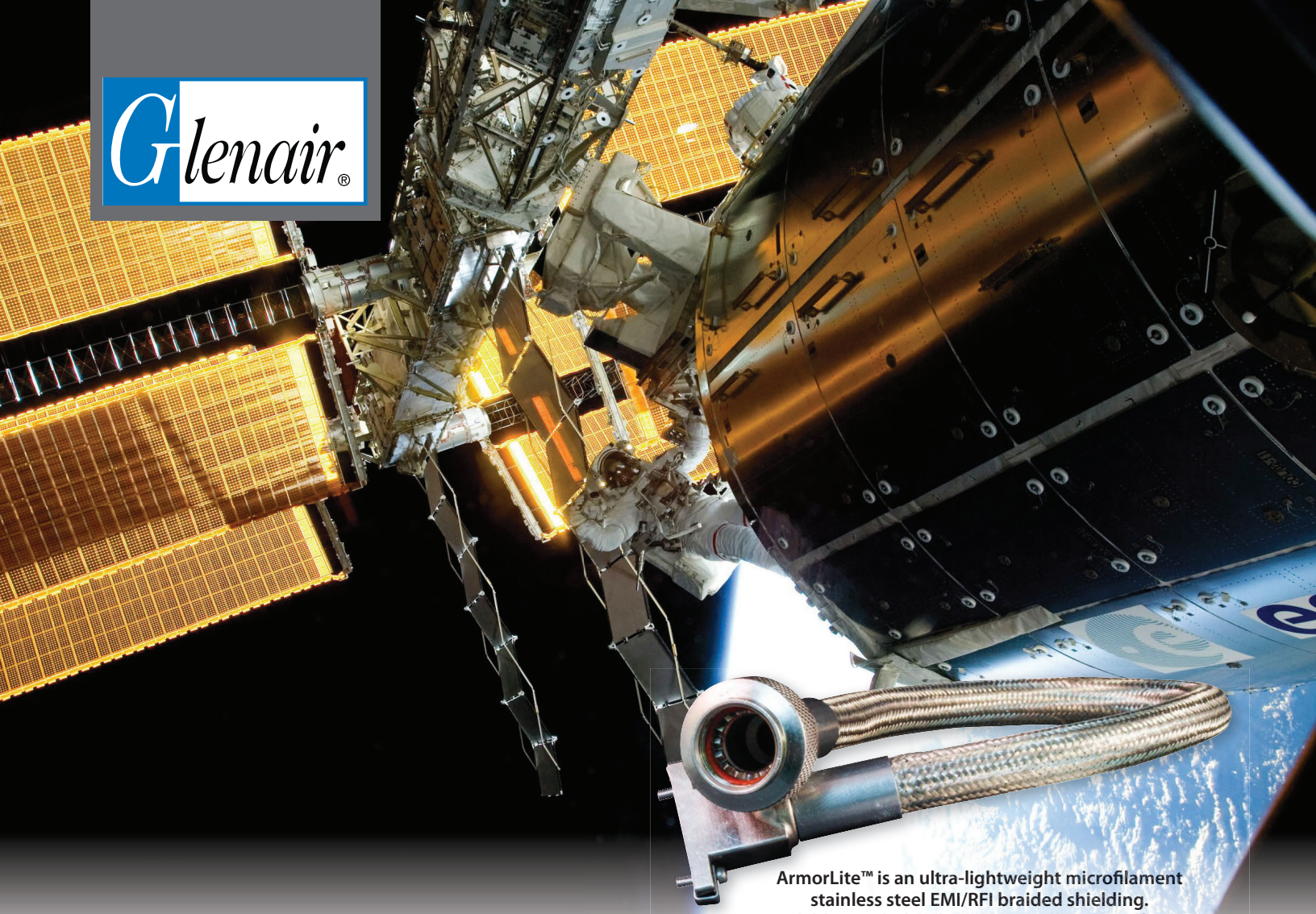
**Series 802 Plug Key Positions**




| Key Position | Key Rotation | |
|---|---|---|
| | A° | B° |
| Normal (A) | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |
| E | 75° | 275° |
| F | 9° | 210° |

| Performance Specifications | |
|---|---|
| Current Rating | #23–5 A, #20–7.5 A,<br>#16–13 A, #12–23 A |
| Dielectric Withstanding Voltage | #23–750 VAC,<br>#20HD–1000VAC,<br>#16 and #12–1800 VAC |
| Insulation Resistance | 5000 megohms minimum |
| Operating Temperature | -65° C. to +175° C. |
| Hydrostatic Pressure | 3500 PSI mated, 1000 PSI open face (hermetic) |
| Shock | 300 g. |
| Vibration | 37 g. |
| Durability | 2000 mating cycles |

| Material and Finish | |
|---|---|
| Shells, Jam Nuts | 316 stainless steel or marine bronze |
| Coupling Nuts | Marine bronze, unplated |
| Contacts | Copper alloy, 50 µInch gold plated. Socket hood: stainless steel, passivated. Hermetic pin contacts: Nickel-Iron alloy per ASTM-F-30, 50 µInch gold plated. |
| Insulators | Liquid crystal polymer (LCP) , 30% glass-filled |
| Contact Retention Clip | Beryllium copper alloy |
| Interfacial Seal, O-rings | Viton Rubber |
| Interfacial seal, rear grommet | Fluorosilicone rubber, blue |
| O-rings | Viton® |



ArmorLite™ is an ultra-lightweight microfilament stainless steel EMI/RFI braided shielding. Available as tubular sleeving as well as direct factory overbraiding for point-to-point and multi-branch interconnect assemblies.

*LIGHTWEIGHT*

# ARMORLITE™

## Microfilament nickel-clad expandable stainless steel EMI/RFI braided shielding

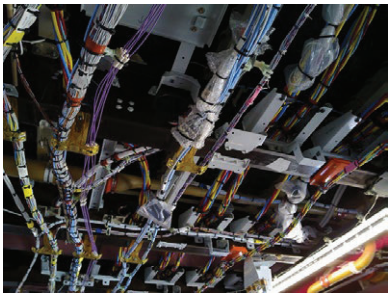
Save weight and money every time you fly! All-Up-Weight (AUW) has met its match: ArmorLite™ microfilament stainless steel braid saves pounds compared to standard QQ-B-575/A-A-59569 EMI/RFI shielding. ArmorLite™ is an expandable, flexible, high-strength, conductive stainless steel microfilament braid material designed for use as EMI/RFI shielding in high-performance wire interconnect systems. The principal benefit of ArmorLite™ is its extreme light weight compared to conventional nickel/copper shielding. By way of comparison, 100 feet of 5/8 inch ArmorLite™ is more than four pounds lighter than standard 575 A-A-59569 shielding. Plus, ArmorLite™ offers superior temperature tolerance compared to other lightweight tubular braided shielding including microfilament composite technologies.

- **Ultra-lightweight EMI/RFI braided sleeving for high-temperature applications -80°C to +260°C**
- **Microfilament stainless steel: *70% lighter* than NiCu A-A-59569/QQB575**
- **Outstanding EMI/RFI shielding and conductivity**
- **Aerospace environment qualified**
- **Superior flexibility and "windowing" resistance: 90 to 95% optical coverage**
- **70,000 psi (min.) tensile strength**
- **Best performing metallic braid during lightning tests (IAW ANSI/EIA-364-75-1997 Waveform 5B)**

*LIGHTWEIGHT, FLEXIBLE*

# ArmorLite™ Microfilament Braid for EMI/RFI Shielding Applications

## ARMORLITE™ AIRCRAFT UTILIZATION ANALYSIS COMPARED TO STANDARD A-A-59569 Ni/Cu BRAID



***ArmorLite™ lightweight EMI/RFI braided shielding is ideally suited for weight reduction efforts in Electrical Wire Interconnect Systems***

| Length and Weight of NiCu Braid in Typical Commercial Aircraft | | | |
|---|---|---|---|
| Diameter (in) | Weight (Lb/ft) | Length (in) | weight (Lb) |
| 0 - 0.25 | 0.02 | 12564.8 | 21.08 |
| 0.25 - 0.5 | 0.05 | 5259.3 | 21.17 |
| 0.5 - 0.75 | 0.07 | 1212.6 | 7.12 |
| 0.75 - 1.0 | 0.14 | 1437.4 | 16.88 |
| 1.0 - 1.5 | 0.18 | 467 | 7.05 |
| | | **Total weight** | **73.3** |

| Weight Savings Using ArmorLite™ (Equivalent Lengths) | | | | |
|---|---|---|---|---|
| Diameter (in) | Weight (Lb/ft) | Length (in) | Length in feet | weight (Lb) |
| 0 - 0.25 | .00507 | 12564.8 | 1047.07 | 5.309 |
| 0.25 - 0.5 | .0097 | 5259.3 | 438.28 | 4.251 |
| 0.5 - 0.75 | .0178 | 1212.6 | 101.05 | 1.737 |
| 0.75 - 1.0 | .0256 | 1437.4 | 119.78 | 3.063 |
| 1.0 - 1.5 | .0368 | 467 | 38.92 | 1.434 |
| | | **Total weight** | | **15.794** |

## Using ArmorLite™ in place of standard nickel-copper braid saves 54.6 pounds per system—up to 78% weight savings!

| ArmorLite™ Performance Test Matrix | | | |
|---|---|---|---|
| **DESCRIPTION** | **REQUIREMENT** | **PROCEDURE** | **REPORT** |
| Altitude test 27,000 ft (5 PSIA nom.) | 2.5% min. | RTCA DO-160F, Table 4-1, Table 4-2 Category C temp. spec | ARM-103 |
| Operating Temperature | -80°C to +260°C | (Shielding effectiveness 1000 hours) | ARM-103 |
| Braid Resistivity test, Pre and Post | Test pre/post–5 cycles–minimal disparity per spec. | EIA-364-32D IAW AS85049 | ARM-110/1 |
| Surface Transfer Impedance | Transfer Impedance (10.0 kHz ~ 1.0 GHz) | IEC 62153-4-3 min. 90% optical coverage | GT-17-263 |
| Shield Effectiveness test, Pre and Post | Screening Attenuation (0 ~ 4.00 GHz) | IEC 62153-4-4 min. 90% optical coverage | GT-17-263 |
| Tensile/ Pull Strength | 220 lbs. (min.). No anomalies within 8% - 10% of pre test for variable sizes | Glenair ATP- 183. 0 lbs. to 90 lbs, to 150 lbs, to 220lbs @ speed of 0.25 inches/min | ARM-105 |
| Specific Gravity Test | 8.2 (max) per ISO-1183 | ASTM A580 (ref 316L Stainless Steel) | ARM-109 |
| Lightning Current Test | Glenair Qual. Test Plan 191/ DC resistance/ voltage criteria per DO-160F Level for 3 sizes up to 30Ka. | ANSI/EIA-364-75-1977 Wave Form 5B SAE/ARP5416 Section 6.3 Waveform 1, 3 (1, 10MHz) and 5A | ARM-110 ARM-112 |
| Vertical Flammability | Self extinguishing ≤ 2 sec. Burn length 0.1 inch. max. Dripping 0.0 seconds. | 14 CFR part 25.853 (a) AMdT25-116 Appendix F Part I (a) (1) (ii) | ARM-101 |
| Mass Loss and Collected Volatile Condensable Materials | Total Mass Loss (TML) ≤1.0% Collected Volatile Condensable Matl.(CVCM) ≤.1% | ASTM E-595 | ARM-102 |
| Salt Spray Test | DC Resistance IAW AS85049 .5 milliohm. No evidence of base metal on braid | ASTM B117-09 Sodium Chloride 5% 500 hrs. | ARM-100 |
| Vibration Resistance | EAI Test Report 33247. DO160 section 8 Cat. R Vib. Curves E1 | DO-160F RTCA/DO-160F, Section 9, Fig. 8-4. Curve E1. - 3 sizes – 3 hours on each axis. | ARM-111 |
| Thermal Shock Cycling test and Resistivity | No adverse effects in visual inspection or resistance after 50 cycles | EIA-364-32D, Table 3 Test condition V -65°C to +175°C | ARM-113 |
| Abrasion and Plating test | DC Resistance IAW AS 85049. Glenair internal QTR-003 | ATP 180 20 continuous @ 6 cycles/min. over 3 arms with .030 radiused edges | ARM-107 |
| Fluid Immersion Test | Material compatibility – see table below | Customer/AS4373D method 601 Mod | ARM-106 |
| Flex Test | 2 Cycles: starting 0° over vertical ctr. line across to 180° cycle. Total cycles of 25633 | Glenair ATP 179 | ARM-112 |

*DURALECTRIC*

# AutoShrink™

## The fast and easy cold-action shrink tubing solution from Glenair

Designed for rugged weathering, UV and ozone-resistant performance, Glenair AutoShrink is the one-piece easy-action solution for Turboflex™ cable and lug termination, splice insulation, and Duralectric® jacketing repair. Universal design AutoShrink tubing delivers reliable and durable sealing as well as mechanical protection for cable end terminations in harsh military and industrial applications. Built from Glenair Duralectric material, AutoShrink is fully hydrophobic and resistant to caustic chemicals and solvents. Easy-action spiral hold-out and large cold shrink ratio makes for fast installation and durable, split-resistant performance.

- **Fast and easy installation**
- **Ideal for repair of cables and conduit with Duralectric® jacketing**
- **Reliable IP68 sealing**
- **3000 VAC rated**
- **Multiple color options**
- **Service temperature range: -65°C to 225°C**
- **Fire-resistant, Low Smoke-Zero Halogen (LSZH)**
- **Mil-aero and industrial fluid-resistant**
- **Accelerated UV/sunlight resistant, 53 year equivalent exposure**
- **Ozone resistant IAW ASTM D518**

**Fast and easy repair of Duralectric-jacketed cables**

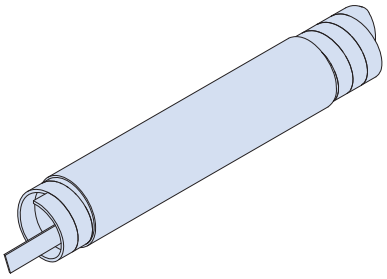
**Utilize for termination of lugs on new installations**

**Broad range of colors for safety marking and cable identification**

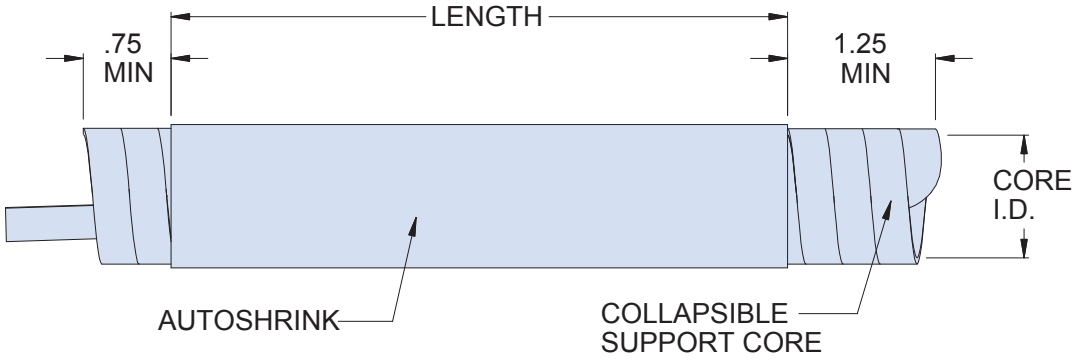
*DURALECTRIC*

# AutoShrink™

## Fast cold-action shrink tubing



| How To Order | | | | |
|---|---|---|---|---|
| **Sample Part Number** | **777-004** | **-01** | **-6** | **-0** |
| **Product Code-Basic No.** | AutoShrink | | | |
| **Size Code** | See Table I | | | |
| **Length** | in Inches. 3" min., 12" max. | | | |
| **Color Code** | See Table II | | | |




**Note: 779-005 Adhesive (sold separately) may be specified for applications that require extraordinary environmental sealing performance**

| Table I - Size, Dimensions, Wire Bundle Range | | | | | | |
|---|---|---|---|---|---|---|
| Dash No. | Tube I.D. after unrestricted shrinkage (ref) | | As Supplied Core I.D. | | Ref. Wire Bundle Range min / max | |
| | In. | mm | In. | mm | In. | mm |
| 01 | 0.250 | 6.4 | 0.80 | 20.3 | 0.35 / 0.65 | 8.9 / 16.5 |
| 02 | 0.375 | 9.5 | 1.18 | 30.0 | 0.55 / 1.00 | 14.0 / 25.4 |
| 03 | 0.625 | 15.9 | 2.00 | 50.8 | 0.85 / 1.65 | 21.6 / 41.9 |
| 04 | 0.750 | 19.1 | 2.34 | 59.4 | 1.00 / 2.00 | 25.4 / 50.8 |
| 05 | 0.937 | 23.8 | 2.75 | 69.9 | 1.25 / 2.50 | 31.8 / 63.5 |
| 06 | 1.437 | 36.5 | 4.00 | 101.6 | 2.00 / 3.85 | 50.8 / 97.8 |

***Sneak Peek: AutoShrink Boots***

**Fast, easy-to-install environmental sealing for cable-to-connector terminations. No heat gun needed! Designed for use with Duralectric cable jacketing. Consult the factory for available sizes, styles, and colors.**

| Table II - AutoShrink Color Option | | |
|---|---|---|
| Code | Color | Reference |
| 0 | Black | FED-STD-595C; #17038 |
| 1 | Desert Tan | FED-STD-595C; #33446 |
| 2 | Red | FED-STD-595C; #11120 |
| 3 | Orange | FED-STD-595C; #12300 |
| 4 | Yellow | FED-STD-595C; #13591 |
| 5 | Green | FED-STD-595C; #14193 |
| 6 | Blue | FED-STD-595C; #15125 |
| 7 | Purple | FED-STD-595C; #17142 |
| 8 | Gray | FED-STD-595C; #26270 |
| 9 | White | FED-STD-595C; #17875 |

### NOTES

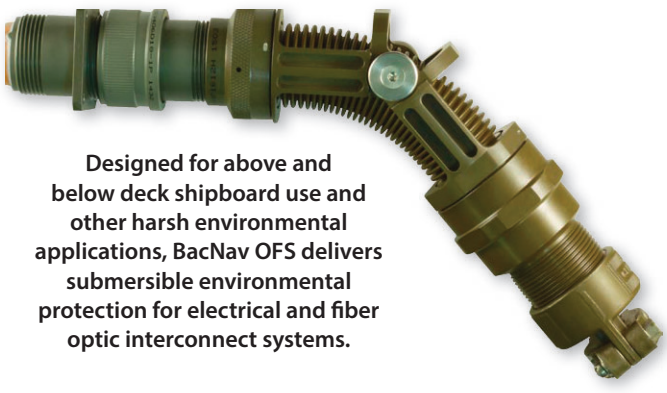
Length in expanded form may be less than length after unrestricted shrinkage.
Material: Duralectric per GPS67-E1
Extruded wall thickness: .062


SERIES 390

# BacNav OFS

## Outstanding repositionable backshell for harsh-environment applications

Designed for use in rugged shipboard applications as well as military ground systems such as armored vehicles, the Glenair BacNav OFS delivers outstanding mechanical, electrical, and environmental performance. The innovative design incorporates an environmentally-sealed, EMI shielded core with a locking pivot that facilitates cable routing and eliminates the need to stock discrete straight, 45° and 90° variants of standard wire sealing, strain relief, and EMI shield termination backshells. Built to withstand the handling abuse that topside and below-deck electrical and fiber optic interconnect systems are routinely subjected to by ham-fisted sailors and marines, the BacNav OFS is purpose-designed to deliver life-of-ship and life-of-system performance and durability. Available for the broad range of power, signal, and fiber optic connector systems—including MIL-PRF-28876 and MIL-PRF-64266 (fiber optics) to MIL-DTL-28840, AS50151, and more—BacNav OFS meets every current requirement for backshell-equipped connectorized cabling.



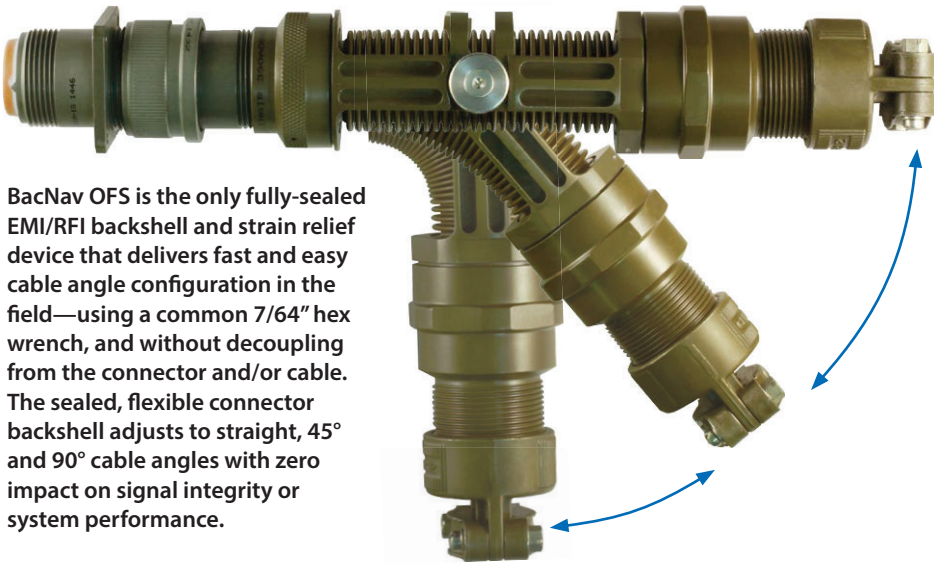
**Designed for above and below deck shipboard use and other harsh environmental applications, BacNav OFS delivers submersible environmental protection for electrical and fiber optic interconnect systems.**

- **Easy repositioning from straight, 45° and 90° cable-exit orientations**
- **Submersible performance without the need for shrink boots**
- **Durable, flexible EMI/RFI and environmentally-sealed core with locking-pivot Swing-Arm™ frame**
- **Accommodates power, signal and fiber optic jacketed cables**
- **Reposition terminated cables with no impact on signal integrity or system performance**
- **Easy repeatable assembly process using standard tools**

*SERIES 390*

# BacNav OFS repositionable harsh-environment backshell

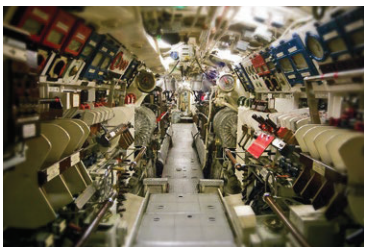
## Outstanding, flexible performance



**BacNav OFS is the only fully-sealed EMI/RFI backshell and strain relief device that delivers fast and easy cable angle configuration in the field—using a common 7/64" hex wrench, and without decoupling from the connector and/or cable. The sealed, flexible connector backshell adjusts to straight, 45° and 90° cable angles with zero impact on signal integrity or system performance.**

Topside

Ship-to-shore



Below deck

Other harsh environments

| PERFORMANCE DATA | | |
|---|---|---|
| **DESCRIPTION** | **REQUIREMENT** | **STANDARD** |
| Magnetic permeability | Less than 2.0µ | EIA-364-54 |
| Shell conductivity | < 2.5 milliohms[2] | EIA 364-83 |
| Salt spray (corrosion) | No exposure of basis material as defined in AIR4789 for 500 hours[2] | EIA 364-26 |
| Vibration | CIT <0.5dB No discontinuities[1] No damage | MIL-STD-167-1A (SHIPS), paragraph 5.1.2.4.6 (endurance test) |
| Shock | CIT <0.5dB No discontinuities[1] No damage | MIL-S-901D, grade A, Class 1 |
| Water pressure | 10 meters for 48 hours (IP68) | QTP-384 |
| Cable pullout | No slippage exceeding 1/8" CIT <0.5dB[1] | EIA 364-38<br>TIA-455-6 |
| Coupling thread strength | No damage at 3X magnification | AS85049 (Heavy Duty) |
| External bending moment | 300-750 in-lbs (size dependant) | AS85049 (Heavy Duty)<br>QTP-384 |
| Fluid immersion | No changes detrimental to performance[2] | EIA 364-10 |
| Insertion loss | MIL-STD-1678-2 Appendix C, Table 2101 C-I | TIA-455-34 Method A |
| Cable seal flexing | 100 cycles/axis | TIA-455-1 |
| Twist | 50 cycles • No damage/leaks | TIA-455-36 |
| Impact | 8 drops • No damage detrimental to performance | TIA-455-2 Method B |
| Crush | 7 cycles 1,250 N (281 lbs) | TIA-455-26 |
| Thermal Shock | 5 cycles -40°C to +85°C (-40°F to +185°F) | TIA-455-71 |
| Temp/humidity cycling | No damage detrimental to performance | TIA-455-5 Method B |
| Temperature cycling | No damage detrimental to performance | TIA-455-3 |
| Life Aging | 10 cycles | QTP-384-F |
| Freezing water immersion | No damage detrimental to performance | TIA-455-98 |
| Sand and dust | No damage detrimental to performance | TIA-455-35 |
| Modified SO2/salt spray | 240 hours • No damage detrimental to performance[2] | ASTM G85 + Annex A4 |

[1] Tested with MIL-PRF-28876 Multi-mode Fiber-Optic connectors
[2] Tested with Cadmium/Olive-Drab finish option (code NF)

HIGH-PERFORMANCE
CABLE
SHIELD BAND
TERMINATION
SYSTEM

# Band-Master ATS®

## Light Weight • High-Tension • Low-Resistance
## Shield Termination Bands and Tools

### Industry Advisory RE: Shield Termination Bands and Tools

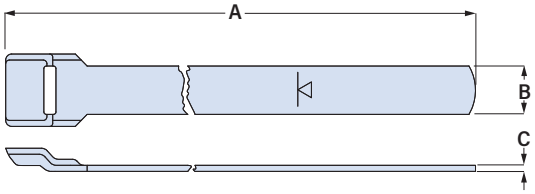
Precision bands and tools are exactingly dimensioned and calibrated for repeatable, reliable performance. But like many such equipment pairings, the products ONLY deliver 100% compatibility when used in tandem. The proliferation of counterfeit band straps, sold with Glenair part numbers but manufactured offshore is a troubling industry development. Tie-Dex® II banding tools supplied by Glenair will not function properly with any other make of band than those supplied by Glenair. Likewise, Glenair Band-Master ATS® bands are not engineered to work in any tool other than the hand-operated and bench-mount series manufactured by Band-IT® IDEX. To that end, this industry advisory is intended as formal notification that the improper mixing of non-compatible band straps and tooling will void any warranty offered by Glenair, and in our experience, will absolutely lead to tool damage and sub-standard shield terminations. Should you have any question about this notification, please do not hesitate to contact Glenair at bandittools@glenair.com.

## Band-Master ATS® System Overview

Band-Master ATS® EMI shield termination system instruction manuals and calibration details:
www.glenair.com/bandmaster

High Volume Pneumatic Tool

For rapid and reliable termination of cable braid shielding to connectors and adapters. Made in America from 304 series passivated stainless steel. Easy installation with hand tool or high-production bench-mounted pneumatic tool. Recommended bands supplied in four width configurations: ***Nano*** (.075" width, smallest overall size); ***Slim Standard*** (.24" width, lightest standard band weight); ***Micro Slim*** (.12" width, lightest micro band weight); and ***Micro-Max*** (.12" width, 60% higher tensile strength). All Glenair Band-Master bands available pre-coiled.




### Recommended Pneumatic Banding Tool Part Numbers

| | | |
|---|---|---|
| **Micro-Max** | Micro-Max pneumatic banding tool with counter | **601-130** |
| **Micro Slim** | Micro Slim pneumatic banding tool with counter | **601-123** |
| **Nano** | Nano pneumatic banding tool with counter | **601-118** |
| **Slim Standard** | Slim Standard pneumatic banding tool with counter | **601-110** |

MADE IN AMERICA

# Band-Master ATS® Shield Termination System

Industry-Leading • Guaranteed Quality • Reliable Performance

## Recommended Highest-Performance Sizes and Styles


### Micro-Max: 601-129 Band-Master ATS® Micro-Max with Counter for use with high-tension, low-resistivity Micro-Max Bands

Designed for use with high-tension Micro-Max .120" width clamping bands. Micro-Max is designed for shield termination requirements to a higher tension range from 100-180 lbs. resulting in lower-resistivity shield termination. Calibrate at 132 ± 3 lbs. for most shield terminations.


### Micro-Slim: 601-122 Band-Master ATS® Micro-Slim with Counter for use with lightweight, reduced-thickness Micro-Slim Bands

Micro-Slim bands are narrower width and are better at conforming to irregular platform shapes (elliptical platforms) and individual braid buildup (pig tails). Designed for Micro Slim .120" width clamping bands in a tension range from 60 to 90 lbs. Calibrate at 82 lbs. ±3 lbs. for most terminations.


### Nano: 601-108 Band-Master ATS® Nano with Counter. The industry's narrowest width, smallest size, and lightest weight shield termination band system

Nano bands are the industry's narrowest width, smallest size, and lightest weight shield termination bands. Designed for use with Nano .075" width clamping bands in a tension range from 25 to 90 lbs. Calibrate at 50 lbs. ± 3 lbs. for most shield terminations.


### Slim Standard: 601-109 Band-Master ATS® Slim Standard with Counter for use with lightweight, reduced-thickness Slim Standard Bands

Slim bands are 50% lighter and 50% lower-profile than standard bands and maintain similar performance. Slim bands are better at conforming to irregular platform shapes (elliptical platforms) and individual braid buildup (pig tails). Tension range is 30 – 80 lbs. Calibrate at 100 lbs. ± 3 lbs of linear pull.

Glenair Band-Master ATS® system tools and bands have been made in America in partnership with Band-IT® IDEX for over four decades and are the trusted, reliable solution for aerospace-grade cable shield termination.

## Recommended Band Part Numbers

| Size | A Length in | A Length mm | Fits up to Dia. in | Fits up to Dia. mm | B Width in | B Width mm | C Thickness in | C Thickness mm | Part Number Pre-coiled | Hand Tool Part Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Micro-Max | 8 | 203 | .88 | 22.4 | .12 | 3.0 | .015 | 0.4 | 601-701 | 601-129 |
| | 14 | 356 | 1.88 | 47.7 | .12 | 3.0 | .015 | 0.4 | 601-703 | |
| Micro Slim | 8 | 203 | .88 | 22.4 | .12 | 3.0 | .01 | 0.3 | 601-601 | 601-122 |
| | 14 | 356 | 1.88 | 47.7 | .12 | 3.0 | .01 | 0.3 | 601-603 | |
| Nano | 6 | 152 | .60 | 15.2 | .075 | 1.9 | .009 | 0.9 | 601-501 | 601-108 |
| | 9 | 229 | .94 | 23.9 | .075 | 1.9 | .009 | 0.9 | 601-505 | |
| | 14 | 356 | 1.80 | 45.7 | .075 | 1.9 | .009 | 0.9 | 601-509 | |
| Slim Standard | 9 | 228 | .94 | 23.9 | .24 | 6.1 | .01 | 0.3 | 601-571 | 601-109 |
| | 14 | 355 | 1.80 | 45.7 | .24 | 6.1 | .01 | 0.3 | 601-573 | |

# Band-Master ATS®

## Recommended Bands: Overview and Performance

| Criteria | Slim Standard | Micro Slim | Nano | Micro-Max |
|---|---|---|---|---|
| Material | 304 SS | 304 SS | 304 SS | 304 SS |
| Part Numbers (flat) | 601-570 (9″)<br>601-572 (14″) | 601-600 (8″)<br>601-602 (14″) | 601-500 (6″)<br>601-504 (9″)<br>601-508 (14″) | 601-700 (8″)<br>601-702 (14″) |
| Part Numbers (precoiled) | 601-571 (9″)<br>601-573 (14″) | 601-601 (8″)<br>601-603 (14″) | 601-501 (6″)<br>601-505 (9″)<br>601-509 (14″) | 601-701 (8″)<br>601-703 (14″) |
| Lengths (inch) | 9″ and 14″ | 8″ and 14″ | 6″, 9″ and 14″ | 8″ and 14″ |
| Fits Diameters (inch) | .30″ to 1.8″ | .15″ to 1.9″ | .08″ to 1.8″ | .15″ to 1.8″ |
| Width (inch) | .24″ | .12″ | .075″ | .12″ |
| Thickness (inch) | .01″ | .01″ | .01″ | .015″ |
| Weight before installation (grams) | 14″ is 4.46 g | 8″ is 1.16 g | 9″ is .84 g | 8″ is 1.80 g |
| **Tooling Information** | | | | |
| Hand Tool Part Number | 601-109 | 601-122 | 601-108 | 601-129 |
| Pneumatic Tool Part Number | 601-110 | 601-123 | 601-118 | 601-130 |
| Recommended Tool Setting | 100 ± 3 lbs. | 82 ± 3 lbs. | 50 ±3 lbs. | 132 ± 3 lbs |
| **Performace Data** | | | | |
| Termination Resistance (mΩ) | 0.083 | 0.085 | 0.155 | 0.080 |
| Termination Construction | Ni/Al backshell Size 25,<br>Tin Copper Braid | Ni/Al backshell Size 15,<br>Tin Copper Braid | Ni/Al backshell Size 16,<br>Tin Copper Braid | Ni/Al backshell Size 15,<br>Tin Copper Braid |
| Avg. Single Junction Resistance (mΩ) | 0.532 | 0.235 | 0.613 | .170 |
| Cable Pull Out (pounds) | 150 lbs. | 80 lbs. | 50 lbs. | 160 lbs |
| Clamping Tension (pounds) | 50 to 100 lbs. | 80 to 86 lbs. | 20 to 50 lbs. | 100 to 180 lbs. |
| Associated Test Report (Available Upon Request) | Test Report<br>GT-14-75 | Test Report<br>GT-20-258 | Test Report<br>GT-14-74 | Test Report<br>GT-22-188 |
| Mil-Spec (85049) | No | No | No | No |
| Random Vibration | 46 grms at +175°C 8 hrs each axis, EIA-364-28E cond. V, letter K | | | |
| Thermal Shock | -65°C to +200°C 5 cycles | | | |
| Temperature Life | 1,000 hrs at +200°C | | | |

SERIES 107

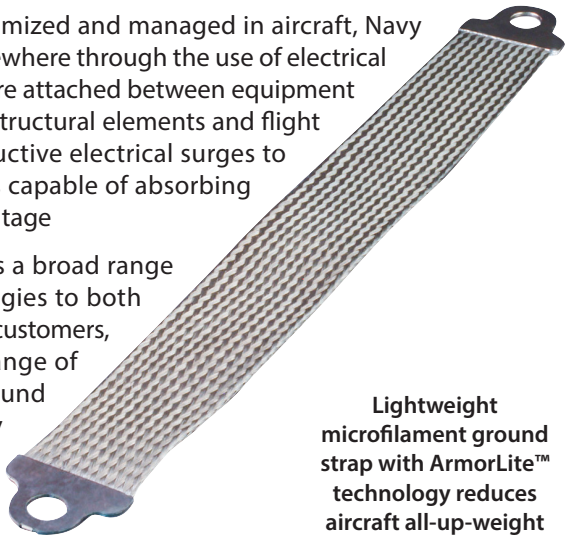
# Braided Ground Straps

## for electrostatic discharge, lightning strike and power equipment grounding

A single lightning strike can hit an aircraft with as much as 1,000,000 volts. Static electricity can charge an aircraft, particularly in cold and wet air, with enough electrical potential to result in a discharge that can ignite ground fueling equipment or fry avionics gear. Power generation systems (engines, alternators, starters, etc.) can also produce transient electrical current that can damage adjacent electronic systems.

Damage from these events is minimized and managed in aircraft, Navy ships, mass transit systems and elsewhere through the use of electrical bonding. Flexible bonding straps are attached between equipment and airframes as well as between structural elements and flight control surfaces to conduct destructive electrical surges to ground or to bus bar components capable of absorbing significant amounts of transient voltage

Glenair has designed and supplies a broad range of braided ground strap technologies to both commercial and military aerospace customers, as well as US Navy and a broad range of mass transit applications. Our ground strap technologies are exactingly designed with appropriate conductive and dissipative materials for each application.



**Lightweight microfilament ground strap with ArmorLite™ technology reduces aircraft all-up-weight**

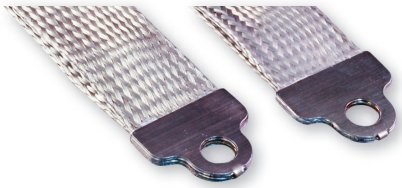
- **Ultra-lightweight ground straps with highly conductive or dissipative performance**
- **Metal-clad microfilament braided solutions**
- **Significant contribution to weight reduction initiatives in commercial and military aircraft**
- **Heavy-duty variants for electrical potential grounding from engines, starters, and power units**
- **Mil-qualified designs for Navy shipboard applications**
- **Fast turnaround on requests for unusual and build-to-print requirements**

*SERIES 107*

# Braided Ground Straps

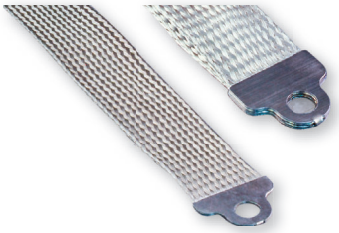
## Lightweight, general, and heavy-duty

### LIGHTWEIGHT ARMORLITE™ MICROFILAMENT GROUND STRAPS



- Ultra lightweight metal-clad stainless steel braid material
- Low-profile lug design and assembly
- Available in seven widths and any length
- Low electrical resistance and high temperature tolerance
- High conductivity-to-weight / material-cross-section ratio
- Corrosion resistant materials for life-of-system durability
- Bend cycle durability up to 250,000 cycles per EN4199-001

### GENERAL DUTY, CONFIGURABLE GROUND STRAPS



- Designed for general-purpose military and commercial aerospace as well as mass transit and industrial applications
- Nickel-plated copper lugs with configurable mounting hole options
- Broad range of standard-duty braid materials, including tin and silver-plated copper, stainless steel, and nickel 200
- Insulated sleeving option for environmental protection

### MIL-DTL-24749 TYPE IV QUALIFIED GROUND STRAPS FOR NAVY SHIPBOARD APPLICATIONS

- Meets the rigorous specifications of MIL-DTL-24749 Rev. B Type IV
- Tested to survive 1000 hours salt spray
- Unique Stainless Steel/Nickel hybrid braid
- Available in six standard configurations, with non-standard length/ lug size configurations available
- Rugged square form-factor lug

### FAST TURNAROUND ON UNUSUAL/BUILD-TO-PRINT REQUESTS

Hybrid braid materials and customizable lug material options

Specialized lug configurations including integrated bonding hardware and angled lugs

Heavy-duty braid and lug configurations

Round cross-section braid

Harsh environment and chemical-resistant ground strap jacketing

### GROUND CONTROL EARTH BOND SYSTEM

| How To Order | | |
|---|---|---|
| 600-120 | Hydraulic Setting Tool for 1/4" Earth Bonds | The tools feature one hand operation and ram retract mechanism actuated by release trigger. Consult factory for control gauges and earth bond part numbers for each material type and size. |
| 600-123 | Hydraulic Setting Tool for 3/8" Earth Bonds | |
| 600-124 | Hydraulic Setting Tool for M6 Earth Bonds | |
| 600-125 | Hydraulic Setting Tool for M10 Earth Bonds | |

Glenair®

*LIGHTWEIGHT*

# Composite connector accessories and backshells

## Rugged metal and lightweight composite backshells and accessories for every application requirement

- **Tens of thousands of popular part numbers in inventory ready for same-day shipment**
- **Fast turnaround on non-standard and made-to-order accessories, typically only two to three weeks**
- **RoHS compliant plating options**

**Composite banding / shield termination backshell**

**Composite low-profile shield termination / Qwik Ty**

**Lightweight composite strain relief**

**Composite band / boot adapter**

**Composite EMI/RFI shield termination backshell**

**Wide range of ProSeal protective covers**

*CIRCULAR CONNECTOR ACCESSORIES*

# EMI shielding, strain relief and environmental solutions

## Conductively-plated composite accessories: Outstanding corrosion resistance, weight reduction, and durability

- **High temperature, high strength engineering composite thermoplastics for maximum strength and durability**
- **Total immunity to galvanic corrosion**
- **Up to 70% weight reduction compared to standard metal connectors and accessories**
- **Hundreds of innovative, tooled designs**
- **All popular part numbers in stock and ready for immediate, same-day shipment**
- **Conductive platings including RoHS versions**

Glenair composite interconnect components are manufactured from 30% glass fiber polyetherimide (PEI), an amorphous thermoplastic with outstanding heat and chemical resistance and high strength. At room temperature, the 30% glass-filled PEI exhibits strength far beyond that of most engineering thermoplastics, with a tensile strength yield of over 15,000 psi. The PEI material meets the most stringent outgassing and flammability requirements.

**Composite Swing-Arm™ EMI/RFI Shield Sock**

**Composite Piggyback Accessory with Partially Recovered Boot**

**Composite Swing-Arm™ Strain Relief**

**Composite Shrink Boot/ Banding Adapter**

**Composite Plug and Receptacle Protective Covers**

**Composite Split-Ring for Shield Sock applications**

### STANDARD AND PRESSURE BOUNDARY FEED-THRUS

Weight saving composite feed-thrus

EMI/RFI split-shell metal feed-thru

Stainless steel firewall feed-thrus

- **High-grade engineering thermoplastic or machined metal**
- **Six pressure-boundary feed-thru layouts with accommodation for 1 – 6 cables**
- **Split-shell jam nut versions with EMI/RFI shield termination porch**
- **O-ring sealed panel and box mounting interface**
- **Conductive and non-conductive finish options**



*LIGHTWEIGHT, LOW RESISTANCE*

# CODE RED

## "Mission-Critical" hermetic sealing with 1X10$^{-7}$ leak-rate performance

Hermetically-sealed interconnects used in vacuum or high-altitude applications prevent moisture and other contaminants from damaging sensitive electronic equipment. Glass-to-metal hermetic sealing has been the gold standard in the aerospace and petrochemical industries for decades due to the strength and long-term durability of the materials used. But glass-to-metal seal hermetics come with a big price tag in both weight and electrical resistance.

CODE RED is an innovative sealing encapsulant and application process—invented by Glenair—that provides durable hermetic sealing in a lightweight aluminum package. CODE RED allows for the use of conventional gold-plated copper alloy contacts, significantly improving electrical performance. CODE RED hermetic connectors are available now in Glenair SuperNine® (D38999 Series III type metal and composite), Series 80 Mighty Mouse, and M24308 D-Sub; and deliver reliable, life-of-system 1X10$^{-7}$ max leak-rate hermetic sealing. Special non-magnetic (zero residual magnetism) versions are also available, consult factory.

- **Full hermetic sealing, 1X10$^{-7}$ in a lightweight aluminum shell with low electrical resistance gold-plated copper contacts**
- **Passed full D38999/23 qualification testing**
- **Meets NASA outgassing requirements, as well as aerospace temperature and corrosion resistance standards**
- **Operating temperature -65°C to +200°C**
- **Available today in Mighty Mouse 806 Mil-Aero, M24308/9 D-Sub and D38999/23**
- **Significant weight savings—up to +50%**
- **Order-of-magnitude improvement in current carrying capacity and electrical resistance compared to Kovar/ Inconel solutions**

*LIGHTWEIGHT, LOW RESISTANCE*

# Code Red Hermetic Connectors

## "Mission-Critical" hermetic sealing solution

## CODE RED LIGHTWEIGHT HERMETIC CONNECTOR TESTING AND VALIDATION

Connectors utilizing CODE RED hermetic encapsulant sealing underwent a grueling qualification test and validation process to prove material durability and hermeticity. Validation testing including 100 cycles of thermal shock IAW EIA-364-32 Test Condition A -65°C to +200°C while maintaining hermeticity followed by 1000 hours of thermal aging at 200°C. Additional tests included:

- DWV, DWV at altitude
- IR, IR at temperature
- Highly Accelerated Life Testing (HALT)
- Insert and contact retention
- Mating durability
- Random vibration at temperature IAW MIL-DTL-38999
- Hermetic seal at 30 psi

The entire qualification test cycle was repeated successfully a second time with new parts to validate complete reliability.

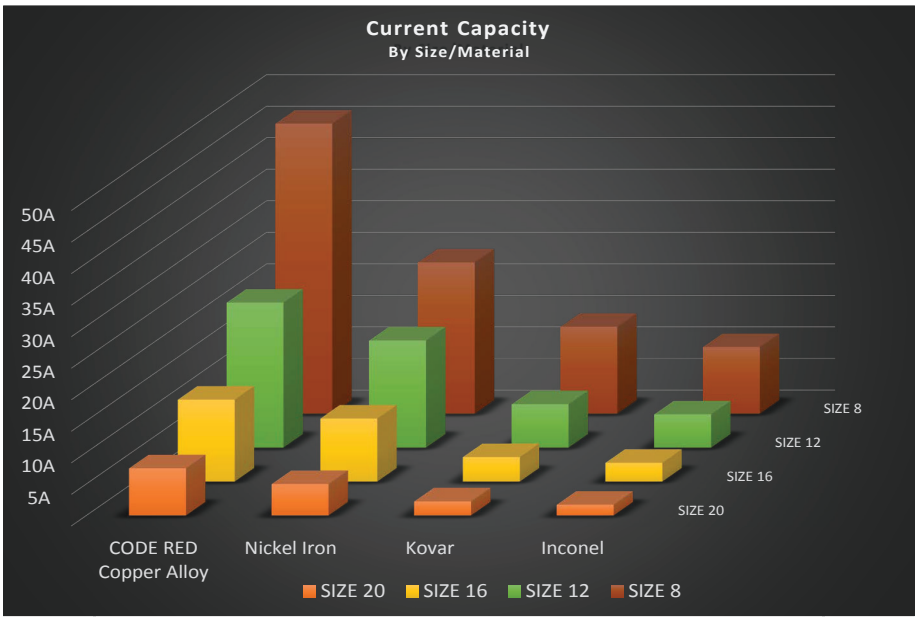
## CODE RED USES PROVEN-PERFORMANCE CONNECTOR AND CONTACT MATERIALS

| CODE RED Materials / Finish | |
|---|---|
| Sealing Adhesive | Proprietary Glenair compound |
| Contacts* | Gold-plated beryllium copper alloy per ASTM B 197 or equivalent |
| Insulator | Rigid plastic |
| Seals | Blended fluorosilicone/ silicone elastomer |
| Receptacle Shell and Jam Nut* | Aluminum alloy 6061-T6 per ASTM B 221 |
| Finish* | Electroless nickel per ASTM B 733 |

*zero residual magnetism materials also available

| Percentage Weight Savings CODE RED vs. Glass-to-Metal MIL-DTL-38999 Sr. III | |
|---|---|
| **Shell Size/Insert Arr.** | **Weight Reduction** |
| 9-35 | 52% |
| 11-98 | 47% |
| 13-35 | 47% |
| 15-97 | 42% |
| 19-32 | 40% |
| 21-11 | 32% |
| 23-21 | 28% |
| 25-08 | 43% |

Graph illustrates Current Carrying Capacity of CODE RED copper alloy contacts compared to the Inconel, Kovar, and nickel iron contacts used in conventional glass-to-metal seal hermetics.




**APPLICATION NOTES:** CODE RED is a viable drop-in solution for conventional glass-to-metal seal hermetic connectors with the following exceptions:

**1. Fuel Cells:** Although CODE RED exhibits outstanding resistance to caustic chemicals and fuels, its use in fuel tanks/fuel cell applications is not recommended.

**2. Cryogenics:** CODE RED has been tested and qualified to -65°C IAW MIL-DTL-38999

**3. Sustained High-Operating Temperatures:** CODE RED has been tested and qualified to +200°C IAW MIL-DTL-38999

**4. High Radiation:** Exposure to no more than 6 Megarads of radiation

**5. Deep Subsea:** CODE RED is ideally suited for aerospace and downhole applications that do not exceed 2 BAR (30 psi) atmospheric pressure differential.

**6. Space Life Support Systems:** Requires additional qualification testing not yet performed by Glenair.

Glenair®

TURNKEY

# Complex Cable Assemblies

Color-coded overmolded power and signal cable assembly

## Terminated, tested, and ready for use

Glenair complex cable assemblies may be supplied with MIL-M-24041 overmolding materials such as Viton®, Duralectric™, polyurethane, EPDM, Santoprene™, polyamide and more. Rugged overbraided assemblies for superior mechanical protection and flexibility are also a specialty. Fast turnaround and quality fabrication in complex cable assemblies depends on capital investment in tooling, injection molding equipment, planetary wire stranders, braiding machines and more.

Overmolded TurboFlex™ power and signal tank pylon assembly

### ADVANTAGES OF OVERMOLDING

- **Waterproof sealing**
- **Robust mechanical protection**
- **Permanent protection of terminations**
- **Resistance to chemicals and fuels**
- **No induced cold flow stress**
- **Electrical isolation and insulation**
- **Reduced wear damage**
- **Flexible routing and cable entry**
- **Repeatable assembly performance**

*TURNKEY*

# Complex Cable Assemblies

## Overmolded and overbraided, multibranch and point-to-point

### OVERMOLDED MULTIBRANCH AND POINT-TO-POINT CABLE ASSEMBLIES

Overmolded point-to-point assembly with coil cord cabling

Repairable accordion boot-equipped assembly

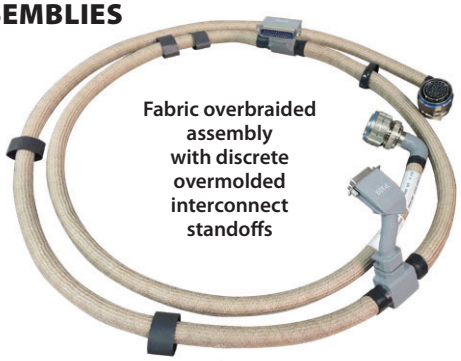
Commercial aircraft assembly with Duralectric™ overmolding and Mighty Mouse connectors

Tight-tolerance multibranch fighter jet assembly

Hybrid overmolded and tape-wrapped assembly

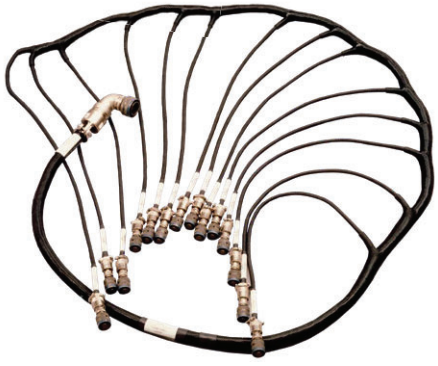
### OVERBRAIDED MULTIBRANCH AND POINT-TO-POINT CABLE ASSEMBLIES

Hybrid abrasion-resistant overbraided cable assembly with overmolded cable junctions



Fabric overbraided assembly with discrete overmolded interconnect standoffs

Lightweight microfilament (ArmorLite™) EMI/RFI shielded assembly for a non-environmental aerospace application



Complex multibranch aerospace assembly equipped with removable backshells for easy field repairability

Hybrid fabric overbraided assembly with overmolded bracket mounts and wire-to-connector junctions

Glenair®

First London
Mercedes Benz Citaro
photo: Arriva436

# SERIES 72 ANNULAR

# Conduit wire protection for bus and transit applications

Turnkey connectorized factory conduit assembly for power charging application

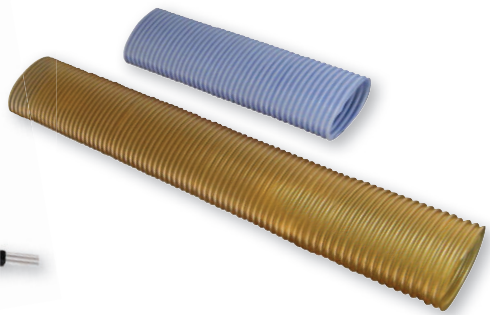
## SERIES 72 ANNULAR CONVOLUTED BULK TUBING

Conduit colors include standard black, natural, blue, yellow, red, desert tan, and orange

| Conduit Tubing Material Choices | |
|---|---|
| **Kynar®** | Flexible, thermally stabilized, resistant to harsh chemicals and radiation. UV resistant, self-extinguishing, nontoxic and resistant to low-temperatures. 166° C temp. rating. |
| **PVDF** | Flexible and chemical/radiation resistant. Available in 4 colors plus standard black and natural. 150° C temperature rating. |
| **G-FLEX Siltem** | Lightweight, halogen-free, low toxicity, low smoke. 175° temperature rating. Ideal for harsh environment applications. Exceptional flexibility and crush resistance. |

- **Lightweight, flexible polymer-core materials and easy to install fittings, transitions and adapters**
- **A wide range of colors including safety orange and desert tan**
- **Internal and external braided shielding provides outstanding EMI/RFI, environmental, chemical and rodent protection**
- **User-installable or turnkey, factory-terminated assemblies**

Any of Glenair's annular polymer-core tubings can be provided slit, for on-site installation or addition of wires in open wire loom applications.
Use the Wire Loom Tool for easy wire insertion



In-house manufacturing allows Glenair to design and fabricate non-standard shapes such as oval profile for specialized wire routing applications

Braid and jacketing options for EMI, chemical, environmental and rodent protection

*SERIES 72*

# Lightweight polymer-core wire protection conduit systems

CONDUIT SYSTEMS

## GUARDIAN SERIES LIGHTWEIGHT COMPOSITE EASY-TO-INSTALL CONDUIT SYSTEM

- **Economical and easy to install. *It's a snap!***
- **General duty, all-purpose wire protection**
- **O-ring equipped environmental sealing (splash-proof)**
- **Self-locking coupling nuts**
- **Band and shrink-boot ready**
- **Metal and composite thermoplastic materials**

composite thermoplastic feed-thru fitting

metal conduit-to-connector adapter

composite thermoplastic conduit-to-connector adapter

Direct-attach multibranch transitions

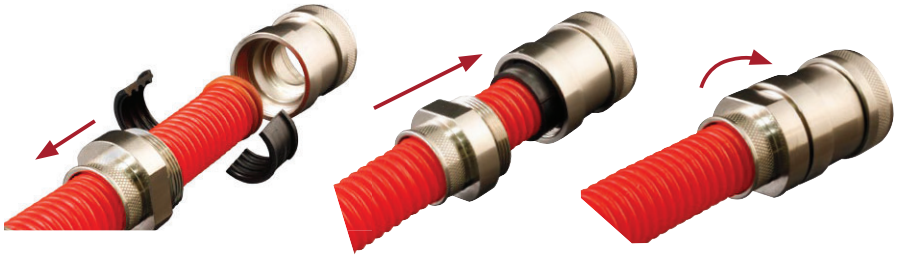
Easy installation:

1. Install pair of provided O-Rings on the two forwardmost tubing convolutes
2. Insert tubing into fitting
3. Run provided retaining clip into slot, aligned with the third convolution of conduit, behind the 2 O-Rings.

## SENTRY SERIES HEAVY-DUTY CONDUIT SYSTEM

- **Economical, heavy-duty wire protection system**
- **Stainless steel and aluminum fittings**
- **Integrated environmental bushing and compression nut sealing**
- **Band and shrink-boot ready**
- **Compact, low-profile design**

Complete range of metal conduit-to-connector adapters and feed-thrus



Easy installation:

1. Remove bushing and slide compression nut on conduit.
2. Reinstall bushing and bring nut forward.
3. Thread nut into rear of fitting body


*QPL AND COMMERCIAL*

# Connector Backshells and Accessories

## Environmental sealing·wire management· strain relief · EMC shield termination

Nowhere else under one roof does any manufacturer build and stock such a broad range of high-performance backshells and interconnect accessories for military-standard type circular and rectangular connectors. Glenair is the recognized leader in this industry and has more qualified and commercial accessories to choose from than any other supplier. Innovative, signature solutions such as Swing-Arm™ and Meta-Loc™ have become high-performance standards on both commercial and military aircraft and defense systems.

- **High-performance circular connector accessories for every environmental, mechanical and electromagnetic shielding requirements**
- **QPL'd AS85049 backshells**
- **Tens of thousands of popular part numbers in inventory ready for same-day shipment**
- **Fast turnaround on non-standard and made-to-order accessories, typically only two to three weeks**
- **RoHS compliant plating options**

Composite

### LIGHTWEIGHT COMPOSITE THERMOPLASTIC BACKSHELLS AND ACCESSORIES

**Band-in-a-Can EMI/RFI composite backshell**

**Composite EMI/RFI backshell with attached lightweight braid**

**Swing-Arm™ Flex with drop-in wire shield adapter**

**Split-shell low profile composite banding backshells**

*QPL AND COMMERCIAL*

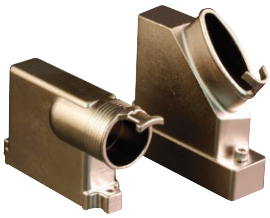
# Connector Backshells and Accessories

## Environmental sealing·wire management· strain relief · EMC shield termination

### M24308 D-SUB SOLUTIONS: HIGH PERFORMANCE, RUGGEDIZED D-SUBMINIATURE PRODUCTS

Split-shell D-subminiature composite backshell

Split-shell M24308 composite backshell

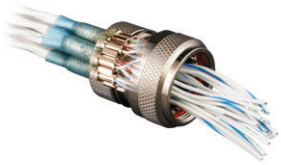


Composite D-subminiature backshells

Flex-D composite M24308 backshell

M24308 EMI/RFI backshell

### BACKSHELL AND CONNECTOR ACCESSORY INNOVATION SHOWCASE



StarShield™ zero-length shield termination backshell

Spring-loaded "flop-lid" protective cover

Space-grade Qwik Clamp backshell

Ultra low-profile backshell

BacNav OFS™ repositionable EMI/EMP backshell

Backshell connector saver

Self-locking, anti-decoupling protective covers

Meta-Loc™ series quick-lock, quick-release backshells

Mil-grade RF protective covers and accessories

EMI/RFI split-shell metal feed-thru

### STANDARD AND PRESSURE BOUNDARY FEED-THRUS

High-performance, weight saving composite feed-thrus

Pressure-barrier firewall feed-thrus

- **High-grade engineering thermoplastic or machined metal**
- **Six pressure-boundary feed-thru layouts with accommodation for 1 – 6 cables**
- **Split-shell jam nut versions with EMI/RFI shield termination porch**
- **O-ring sealed panel and box mounting interface**
- **Conductive and non-conductive finish options**

*WEIGHT / COST-SAVING*

# Dummy Contact Sealing Plugs (DCSP)

## For reliable sealing of unused contact cavities—without the use of electrical contacts

The use of color-coded M27488 type plastic sealing plugs in unused contact cavities is a requirement in all environmental interconnect applications (IAW NA01-1A-505-1, WP 007 00 or 020 00). Conventional sealing plugs, combined with the connector grommet seal, provide reliable dust and moisture ingress protection. But common contact sealing plugs still require that a properly-sized electrical contact be first inserted into the cavity, followed by the plastic plug. Glenair innovative Dummy Contact Sealing Plugs (DCSP) eliminate the need to use expensive electrical contacts as part of the sealing regimen. Fast and easy-to-install, these longer form-factor Dummy Contact Sealing Plugs (DCSP) are a one-piece solution to contact cavity sealing that results in significant weight reduction, material cost reduction, and assembly labor. Available in Size #22 to Size #8, for connector series D38999, EN4165, Series 800 Mighty Mouse, EN4644 and ARINC 600, Glenair Dummy Contact Sealing Plugs reduce weight as much as 90% compared to conventional contact/sealing plug configurations.

- **Powerful tool in Electrical Wire Interconnect System weight reduction**
- **Eliminates use of expensive electrical contacts for sealing-only applications**
- **Leverages connector contact clip for secure retention of the sealing plug—no possibility of FOD**
- **Easy-to-install single piece design**
- **Visible quality control / confirmation of cavity fill from back of connector**
- **EWIS compliant test report available, ref. GT 15-106**

*WEIGHT / COST-SAVING*

# Dummy Contact Sealing Plugs (DCSP)

## for reliable sealing of unused contact cavities weight savings information

**Dummy Contact Sealing Plug (DCSP) Weight Savings: Size #20 Contact Arrangements**

| MIL-DTL-38999 Insert Arrangment | | | | | Spare Socket Cavity Components | | | | Spare Pin Cavity Components | | | | Mated Pair |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shell Size | Arrangment | Available Cavities | Filled Cavities | Percent Fill | Socket Contact M39029/56-351 | Sealing Plug MS27488-20-2 | Dummy Contact 680-116-20 | Weight Savings | Pin Contact M39029/58-363 | Sealing Plug MS27488-20-2 | Dummy Contact 680-116-20 | Weight Savings | Weight Savings |
| | | | | | (grams) | (grams) | (grams) | (grams) | (grams) | (grams) | (grams) | (grams) | (grams) |
| 9 | 98 | 3 | 2 | 67 | 0.50 | 0.08 | 0.06 | 0.52 | 0.14 | 0.08 | 0.06 | 0.15 | 0.67 |
| 11 | 98 | 6 | 4 | 67 | 1.00 | 0.16 | 0.12 | 1.04 | 0.27 | 0.16 | 0.12 | 0.31 | 1.34 |
| 13 | 98 | 10 | 8 | 80 | 1.00 | 0.16 | 0.12 | 1.04 | 0.27 | 0.16 | 0.12 | 0.31 | 1.34 |
| 15 | 19 | 19 | 14 | 74 | 2.50 | 0.39 | 0.30 | 2.59 | 0.68 | 0.39 | 0.30 | 0.77 | 3.36 |
| 17 | 26 | 26 | 20 | 77 | 3.00 | 0.47 | 0.36 | 3.11 | 0.82 | 0.47 | 0.36 | 0.92 | 4.03 |
| 19 | 32 | 32 | 24 | 75 | 4.00 | 0.62 | 0.48 | 4.14 | 1.09 | 0.62 | 0.48 | 1.23 | 5.38 |
| 21 | 41 | 41 | 32 | 78 | 4.50 | 0.70 | 0.54 | 4.66 | 1.22 | 0.70 | 0.54 | 1.39 | 6.05 |
| 23 | 55 | 55 | 44 | 80 | 5.50 | 0.86 | 0.66 | 5.70 | 1.50 | 0.86 | 0.66 | 1.69 | 7.39 |
| 25 | 61 | 61 | 48 | 79 | 6.50 | 1.01 | 0.78 | 6.73 | 1.77 | 1.01 | 0.78 | 2.00 | 8.74 |

**Weight Savings per 1,000 Dummy Contact Sealing Plugs (DCSP)**

| Number of Spare Contact Cavities Sealed | Spare Socket Cavity Components | | | | | Spare Pin Cavity Components | | | | | Mated Pair | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Socket Contact M39029/56-351 | Sealing Plug MS27488-20-2 | Dummy Contact 680-116-20 | Weight Savings | | Pin Contact M39029/58-363 | Sealing Plug MS27488-20-2 | Dummy Contact 680-116-20 | Weight Savings | | Weight Savings | |
| | (grams) | (grams) | (grams) | (grams) | (lbs) | (grams) | (grams) | (grams) | (grams) | (lbs) | (grams) | (lbs) |
| 1000 | 500.0 | 78.0 | 60.0 | 518.0 | 1.14 | 136.0 | 78.0 | 60.0 | 154.0 | 0.34 | 672.0 | 1.48 |

**Dummy Contact Sealing Plug (DCSP) Weight Savings: Size #22 Contact Arrangements**

| MIL-DTL-38999 Insert Arrangment | | | | | Spare Socket Cavity Components | | | | Spare Pin Cavity Components | | | | Mated Pair |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shell Size | Arrangement | Available Cavities | Filled Cavities | Percent Fill | Socket Contact M39029/56-348 | Sealing Plug MS27488-22-2 | Dummy Contact 680-116-22 | Weight Savings | Pin Contact M39029/58-360 | Sealing Plug MS27488-22-2 | Dummy Contact 680-116-22 | Weight Savings | Weight Savings |
| | | | | | (grams) | (grams) | (grams) | (grams) | (grams) | (grams) | (grams) | (grams) | (grams) |
| 9 | 35 | 6 | 4 | 67 | 0.50 | 0.06 | 0.07 | 0.49 | 0.14 | 0.06 | 0.07 | 0.13 | 0.62 |
| 11 | 35 | 13 | 10 | 77 | 0.75 | 0.09 | 0.11 | 0.73 | 0.22 | 0.09 | 0.11 | 0.20 | 0.93 |
| 13 | 35 | 22 | 16 | 73 | 1.49 | 0.18 | 0.22 | 1.46 | 0.43 | 0.18 | 0.22 | 0.40 | 1.85 |
| 15 | 35 | 37 | 28 | 76 | 2.24 | 0.27 | 0.32 | 2.19 | 0.65 | 0.27 | 0.32 | 0.59 | 2.78 |
| 17 | 35 | 55 | 44 | 80 | 2.74 | 0.33 | 0.40 | 2.67 | 0.79 | 0.33 | 0.40 | 0.73 | 3.40 |
| 19 | 35 | 66 | 52 | 79 | 3.49 | 0.42 | 0.50 | 3.40 | 1.01 | 0.42 | 0.50 | 0.92 | 4.33 |
| 21 | 35 | 79 | 62 | 78 | 4.23 | 0.51 | 0.61 | 4.13 | 1.22 | 0.51 | 0.61 | 1.12 | 5.25 |
| 23 | 35 | 100 | 80 | 80 | 4.98 | 0.60 | 0.72 | 4.86 | 1.44 | 0.60 | 0.72 | 1.32 | 6.18 |
| 25 | 35 | 128 | 102 | 80 | 6.47 | 0.78 | 0.94 | 6.32 | 1.87 | 0.78 | 0.94 | 1.72 | 8.03 |

**Weight Savings per 1,000 Dummy Contact Sealing Plugs (DCSP)**

| Number of Spare Contact Cavities Sealed | Spare Socket Cavity Components | | | | | Spare Pin Cavity Components | | | | | Mated Pair | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Socket Contact M39029/56-348 | Sealing Plug MS27488-22-2 | Dummy Contact 687-116-22 | Weight Savings | | Pin Contact M39029/58-360 | Sealing Plug MS27488-22-2 | Dummy Contact 680-116-22 | Weight Savings | | Weight Savings | |
| | (grams) | (grams) | (grams) | (grams) | (lbs) | (grams) | (grams) | (grams) | (grams) | (lbs) | (grams) | (lbs) |
| 1000 | 249.0 | 30.0 | 36.0 | 243.0 | 0.54 | 72.0 | 30.0 | 36.0 | 66.0 | 0.15 | 309.0 | 0.68 |

**Reference Weights**

| Component | Weight (g) | Component | Weight (g) |
|---|---|---|---|
| MS27488-22-2 | 0.030 | MS27488-16-3 | 0.140 |
| M39029/58-360 | 0.072 | M39029/58-364 | 0.333 |
| M39029/56-348 | 0.249 | M39029/56-352 | 0.769 |
| Glenair DCSP 660-116-22 | 0.036 | Glenair DCSP 660-116-16 | 0.140 |
| MS27488-20-2 | 0.078 | MS27488-12-3 | 0.260 |
| M39029/58-363 | 0.136 | M39029/58-365 | 0.681 |
| M39029/56-351 | 0.500 | M39029/56-353 | 1.600 |
| Glenair DCSP 660-116-20 | 0.060 | Glenair DCSP 687-116-12 | 0.280 |
| | | Glenair DCSP 687-821-8 | 1.800 |

*WEIGHT / COST-SAVING*

# Dummy Contact Sealing Plugs (DCSP)

## for reliable sealing of unused contact cavities

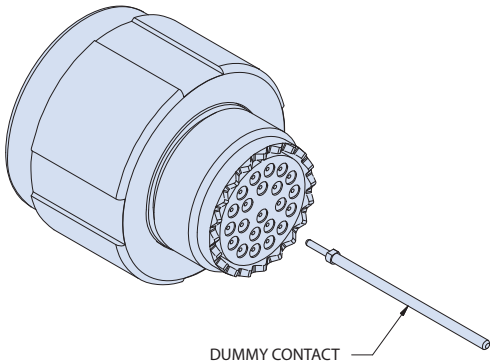
| Connector Series / Size / Color Code / Part Number Selection | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Connector Series | Crimp Removable Contact Cavity Size | | | | | | | | |
| | 23 | 22HD | 22 | 20HD | 20 | 16 | 12 | 8 | 8 w/ Boot |
| HiPer-D / M24308 | | | 680-116-22 | | 680-150-20 | | | 680-150-8P/S | 680-150-8P/SB |
| D38999 / EN4165 | 680-116-23 | | | | 680-116-20 | 680-116-16 | 680-116-12 | 680-116-8 | 680-116-8B |
| Mighty Mouse Series 800-805 | | | | 680-120-20HD | | | | | |
| Series 806 Mil-Aero | | 680-120-22HD | | | | | | 680-120-8 | 680-120-8B |
| Micro Crimp Series 79 | 680-116-23 | | | | | | | | |
| EPX | | | 680-117-22 | | 680-117-20 | | | 680-117-8 | 680-117-8B |
| ARINC 600 | | | | | | | | | |

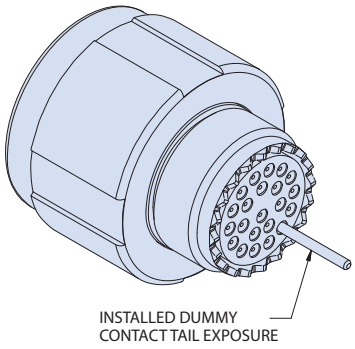
## INSTALLATION OF DUMMY CONTACTS

1. Insert Dummy Contacts into unused contact cavities.
   A. Dummy Contacts may be installed using contact insertion tool, needle nose pliers or by hand (space permitting).
   B. Isopropyl alcohol may be used to facilitate insertion of Dummy Contacts.
2. Push Dummy Contact into cavity until flange locks into contact retention clip.
3. Attempt to pull Dummy Contact from connector body to ensure full retention.

***Important note: Size #22 Dummy Contacts In 38999 socket cavities***

4. Dummy Contact shall only be inserted into cavity far enough to engage retention clip.
5. Pull Contact back for maximum tail exposure.



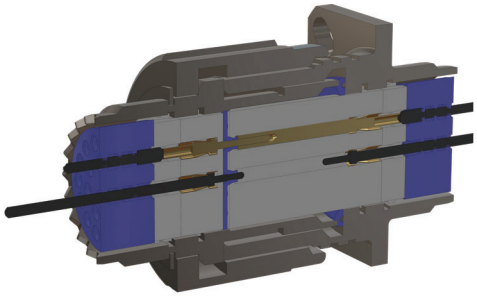
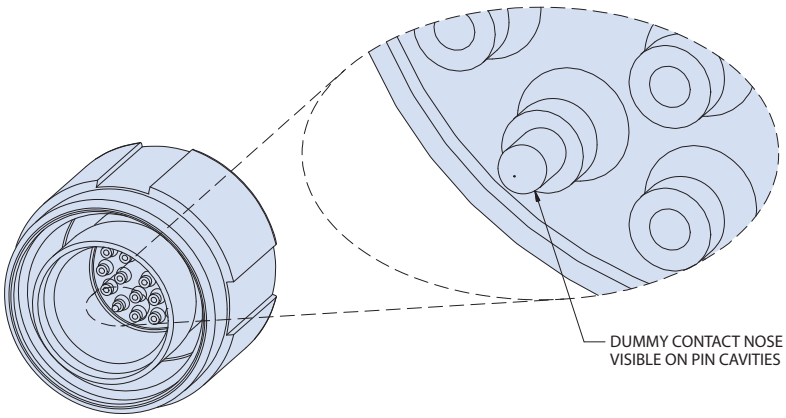



**Illustration shows conventional sealing plug / contact configuration (top) and long form-factor Dummy Contact Sealing Plugs (bottom).**



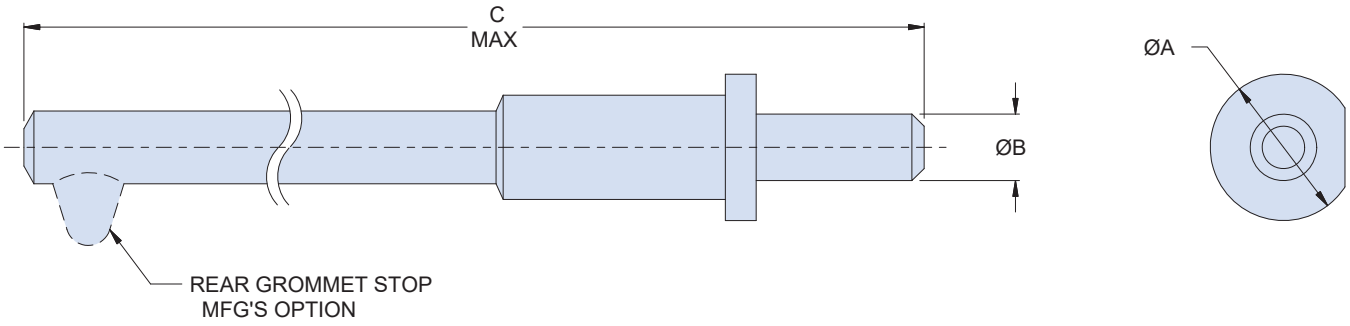
*WEIGHT / COST-SAVING*

# Dummy Contact Sealing Plugs (DCSP)

## for reliable sealing of unused contact cavities for D38999, Mighty Mouse, and EN4165 connectors

### 680-116 DUMMY CONTACT SEALING PLUG FOR D38999, MIGHTY MOUSE SR. 800, 801, 802, 803, 805, AND EN4165

| Part Number Development | | | | |
|---|---|---|---|---|
| **Sample Part Number** | | **680-116** | **-8** | **B** |
| **Series** | **680-116** = Dummy contact sealing plug | | | |
| **Dash No.** | See Table I | | | |
| **Boot Option** | **B** = Boot supplied with assembly (dash **-8** only)<br>Omit for none | | | |




| Table I | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Contact Cavity Size/Dash Number | Color Code | ØA | | ØB | | C Max | | Extraction Tool | Standard Pkg. Size |
| | | in. | mm | in. | mm | in. | mm | | |
| **-8** | Green | .315 | 8.00 | .218 | 5.54 | 1.51 | 38.35 | M81969/14-06 | 100 |
| **-12** | Orange | .181 | 4.60 | .094 | 2.39 | 1.18 | 29.97 | M81969/14-04 | 100 |
| **-16** | Violet | .128 | 3.25 | .062 | 1.57 | 1.18 | 29.97 | M81969/14-03 | 500 |
| **-20** | Red | .093 | 2.36 | .040 | 1.02 | 1.18 | 29.97 | M81969/14-10 | 1000 |
| **-22** | Black | .061 | 1.55 | .030 | .76 | 1.18 | 29.97 | M81969/14-01 | 1000 |
| **-23** | Bone | .054 | 1.37 | .027 | .69 | 1.18 | 29.97 | M81969/1-05 | 1000 |

1. Molded plastic material, 200° minimum temp. limit
2. Designed to seal the unused contact cavities of the following connector series:
   - MIL-DTL-38999 Ser. I, II, III, IV
   - EN 4165
   - Series 800, 801, 802, 803, and 805 Mighty Mouse
3. Size 8 dummy contact requires a boot (ref P/N 859-165-02) to seal the cavity of the grommet, supplied by selecting option "B" in the part number
4. Dummy contacts are bagged and tagged in standard package quantities per Table I. Special rates will apply for alternative package qualities.

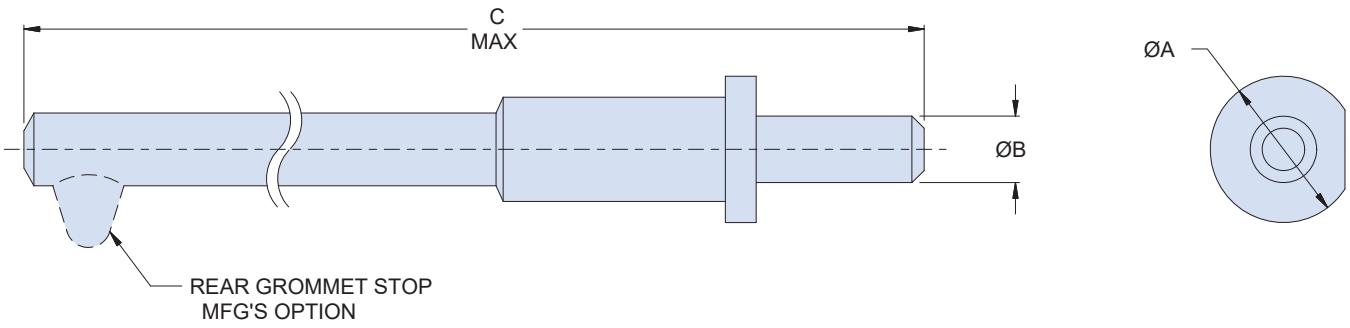
*WEIGHT / COST-SAVING*

# Dummy Contact Sealing Plugs (DCSP)

## for reliable sealing of unused contact cavities for Series 806 Mighty Mouse Mil-Aero connectors

### 680-120 DUMMY CONTACT SEALING PLUG FOR SERIES 806 MIGHTY MOUSE MIL-AERO CONNECTORS

| Part Number Development | | | |
|---|---|---|---|
| **Sample Part Number** | | **680-120** | **20HD** |
| **Series** | **680-116** = Dummy contact sealing plug | | |
| **Dash No.** | See Table I | | |




| Table I | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Contact Cavity Size/Dash Number | Color Code | ØA | | ØB | | C Max | | Extraction Tool | Standard Pkg. Size |
| | | in. | mm | in. | mm | in. | mm | | |
| **-20HD** | Brown | .084 | 2.13 | .040 | 1.02 | 1.18 | 29.97 | 809-203 | 1000 |
| **-22HD** | Bone | .054 | 1.37 | .027 | 0.69 | 1.18 | 29.97 | 859-150 | 1000 |

1. Molded plastic material, 200° minimum temperature limit
2. Designed to seal the unused contact cavities of Series 806 Mighty Mouse Mil-Aero connectors
3. Dummy contacts are bagged and tagged in standard package quantities of 1000. Special rates will apply for alternative package qualities.

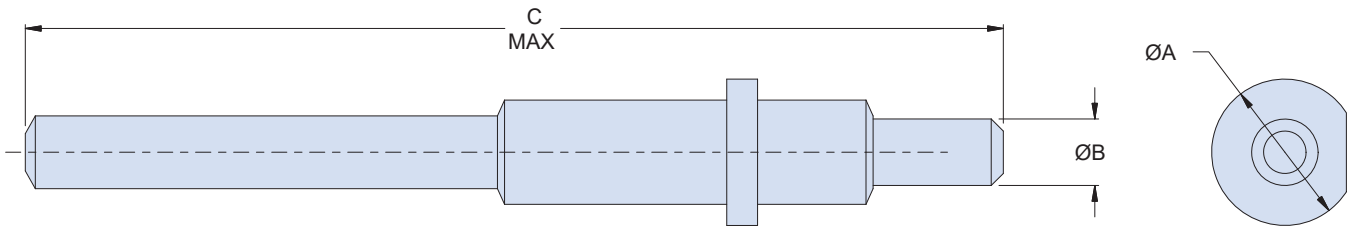
*WEIGHT / COST-SAVING*

# Dummy Contact Sealing Plugs (DCSP)

## for reliable sealing of unused contact cavities for EN4644 and ARINC 600 connectors

### 680-117 DUMMY CONTACT SEALING PLUG FOR EN4644 AND ARINC 600

| How to Order | | | | |
|---|---|---|---|---|
| **Sample Part Number** | | **680-117** | **-8** | **B** |
| **Series** | **680-117** = Dummy contact sealing plug | | | |
| **Dash No.** | See Table I | | | |
| **Boot Option** | **B** = Boot supplied with assembly (dash **-8** only)<br>Omit for none | | | |




| Table I | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Contact Cavity Size/Dash Number | Color Code | ØA | | ØB | | C Max | | Extraction Tool | Standard Pkg. Size |
| | | in. | mm | in. | mm | in. | mm | | |
| **-8** | Green | .315 | 8.00 | .218 | 5.54 | 1.51 | 38.35 | M81969/14-06 | 100 |
| **-20** | Pink | .083 | 2.11 | .040 | 1.02 | 1.26 | 32.00 | M81969/1-01 | 1000 |
| **-22** | Grey | .069 | 1.75 | .030 | .076 | 1.26 | 32.00 | M81969/1-01 | 1000 |

1. Molded plastic material, 200° minimum temp. limit
2. Designed to seal the unused contact cavities of the following connector series:
   - EN4644
   - ARINC 600
3. Size 8 dummy contact requires a boot (ref P/N 859-165-02) to seal the cavity of the grommet, supplied by selecting option "B" in the part number
4. Dummy contacts are bagged and tagged in standard package quantities per Table I. Special rates will apply for alternative package qualities.


*GroundControl*

# Earth Bond / Ground Stud Installation System

## Fast · Clean · Weld-Free · Corrosion-Resistant

The GroundControl Earth Bond system is designed for easy attachment of weldless ground studs to metal plate. The complete system includes hydraulic hand tools, a range of available ground studs, and ground strap fastening hardware. Easy one-hand operation setting tools are available for both thick and thin plate. Studs are a conductive bilaminar (copper core) design with extremely low electrical resistance. The system supports both through hole and blind hole installation. No surface preparation of the plate is required, conductive ground path is via the internal drilled surface. Both UNC and metric thread studs are available.

- **Fast installation equals cost savings**
- **Universal application: may be applied to any suitable chassis location**
- **Bond installed from one side**
- **No surface preparation of bonding area required**
- **Minimal operator training needed**
- **Professional appearance and aesthetic**

*GroundControl*

# Earth Bond / Ground Stud Installation System

## Fast, clean, weld-free, corrosion-resistant

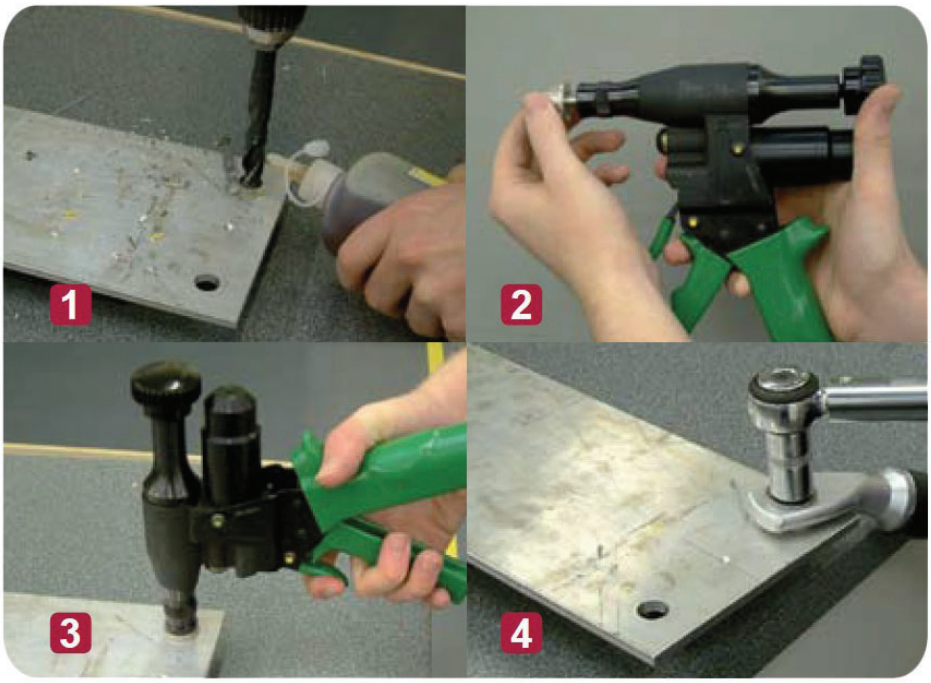
### HYDRAULIC SETTING TOOLS

| Hydraulic Setting Tool | | | | |
|---|---|---|---|---|
| **Part Number** | **Pulling Force** | **Weight** | **Length** | **Optional Test Gauge** |
| PMT6 | 10KN | 1.28 kg | 185mm | 80928 |
| PMTC6 | 10KN | 1.28 kg | 185mm | 80928 |
| PMT8 | 18KN | 1.28 kg | 185mm | 80928 |
| PMT10 | 25KN | 1.28 kg | 185mm | 80928 |

### FOUR-STEP INSTALLATION PROCEDURE

1. Drill a hole, diameter dependent on thickness and size of bonding stud
2. Screw the bond into the nose of the tool
3. Position stud in hole and repeatedly press tool lever until calibrated end point is reached. Unthread tool from stud.
4. Attach the cable to the bond and tighten the nut

**The installation is complete!**



# El Ochito®24: The Ultimate High-Speed Contact

## Superior size/weight reduction and signal integrity for the 10G Ethernet datalink protocol—optimized for rugged #24 AWG wire

El Ochito®24 contact modules are intended for harsh environment military and aerospace data networks utilizing popular high-speed Ethernet protocols. El Ochito®24 contact modules provide up to 50% total weight savings compared to quadrax contact solutions. El Ochito®24 contact modules are equipped with eight crimp-termination signal pins in a machined, gold plated outer housing. A patented metal spline isolates data pairs for improved signal integrity in controlled-impedance data applications. Optimized for use with aerospace-grade 24 AWG cables with unshielded or shielded data pairs. El Ochito®24 contacts snap into Series 80 Mighty Mouse and Series 23 SuperNine® connectors with keyed quadrax inserts. Supplied as an unassembled kit with outer body, (8) inner contacts, cable shield retaining nut, contact isolator sub-assembly, and termination instruction sheet. Factory-terminated jumpers also available.

### Technical Data

#### Specifications

- Operating temperature: -65°C. to +175°C.
- Operating frequency: DC – 4 GHz
- Characteristic Impedance: 100 ohms
- Dielectric withstanding voltage, inner to inner contact: 1000 Vrms sea level, 250 Vrms 70,000 feet.
- Dielectric withstanding voltage, inner to outer contact: 500 Vrms sea level, 250 Vrms 70,000 feet.
- Insulation resistance: 5000 megohms min.
- Durability: 500 mating cycles
- Vibration: MIL-DTL-38999 Series III
- Shock: MIL-DTL-38999 Series III

#### Construction

- **Inner contacts, outer contact, shield crimp ferrule**: copper alloy, 50 microinches gold over nickel plating
- **Front, middle and rear insulator**: PPS
- **Shrink tube**: M23053/8

#### Connector Compatibility

- **El Ochito®24 contacts have an alignment key and are not suitable for use in non-keyed connectors**
- Glenair Series 80 Mighty Mouse
- Glenair 233-217 SuperNine®

**Pin Contact**

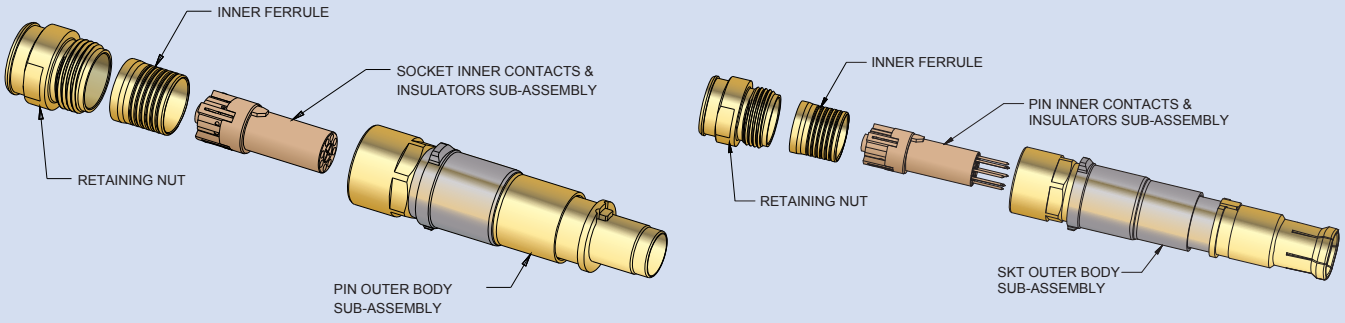
**Socket Contact**

- **For rugged mil-aero grade #24 AWG wire**
- **DC – 4 GHz frequency range**
- **100 ohms**
- **Data pair isolation technology**
- **50% size and weight savings compared to quadrax contacts**
- **Snap-in, rear release**
- **Integrated removal tool**
- **Gold plated copper alloy**
- **10GBase-T compatible**

# El Ochito®24: The Ultimate Shielded High-Speed Data Contact

## for use in Mighty Mouse and SuperNine® series connectors

## El Ochito®24 High-Speed Octaxial Contact Construction Details




**Pin Contact** **Socket Contact**

| How To Order | | | | |
|---|---|---|---|---|
| **Sample Part Number** | | | **858 -005** | **-01** |
| **Basic Part Number** | **858-005** El Ochito 24 pin contact<br>**858-006** El Ochito 24 socket contact | | | |
| **Cable Dash No.** | **Dash No.** | **Cables Accommodated** | **Ref. Cable O.D.** | **Assembly Inst.** |
| | **-01** | **963-003-26** | .220 | AI85096 |
| | **-02** | **963-033-26** | .220 | AI85097 |
| | **-03** | **963-003-24** | .260 | AI85096 |
| | **-04** | **963-033-24** | .260 | AI85097 |
| | **-05** | **963-038-24** | .295 | AI85098 |

## Crimp Tools

| Contact PN | Inner Contacts | | Outer Body | |
|---|---|---|---|---|
| | Crimper | Positioner | Crimper | Hex Die |
| 858-005<br>858-006 | **809-015**<br>(M22520/2-01) | **859-101**<br>(K1906) | **809-129**<br>(M22520/5-01) | **859-007**<br>(M22520/5-45) |

## Size #8 El Ochito® Contacts for Aerospace High Speed Ethernet Cable

| Connector Type | Cable Type | Cable Description | Cable Mfgr. Part Number | Cable Glenair Part No. | Pin Contact | Socket Contact |
|---|---|---|---|---|---|---|
| Series 80 Mighty Mouse<br>233-217 SuperNine® | S/UTP | Unshielded twisted pairs, 26 AWG | PIC E6A3826 | 963-003-26 | **858-005-01** | **858-006-01** |
| | S/FTP | Foil shields on individual twisted pairs, 26 AWG | Gore RCN9047-26 | 963-033-26 | **858-005-02** | **858-006-02** |
| | S/UTP | Unshielded twisted pairs, 24 AWG | PIC E6A0824 | 963-003-24 | **858-005-03** | **858-006-03** |
| | S/FTP | Foil shields on individual twisted pairs, 24 AWG | Gore RCN9034-24 | 963-033-24 | **858-005-04** | **858-006-04** |
| | | | | 963-038-24 | **858-005-05** | **858-006-05** |

FILTER
EMI / EMP
CONNECTORS

# EMI / EMP Filter connectors


## A full range of filter connectors for use in EMC/EMP management of electronic systems and interconnect cabling

**Table I: Capacitor Array Code / Capacitance Range**

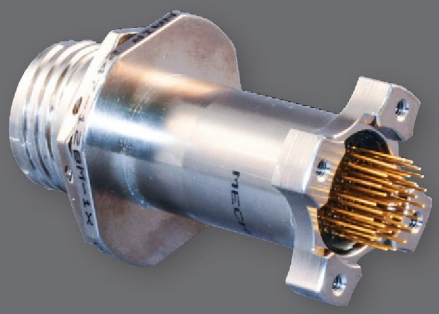
| Class | Pi - Circuit (pF) | C - Circuit (pF) |
|---|---|---|
| X | 160,000 - 240,000 | 80,000 - 120,000 |
| Y | 80,000 - 120,000 | 40,000 - 60,000 |
| Z | 60,000 - 90,000 | 30,000 - 45,000 |
| A | 38,000 - 56,000 | 19,000 - 28,000 |
| B | 32,000 - 45,000 | 16,000 - 22,500 |
| C | 18,000 - 33,000 | 9,000 - 16,500 |
| D | 8,000 - 12,000 | 4,000 - 6,000 |
| E | 3,300 - 5,000 | 1,650 - 2,500 |
| F | 800 - 1,300 | 400 - 650 |
| G | 400 - 600 | 200 - 300 |
| J | 70-120 | 35-60 |

ARINC 600 size 2 filter connector. Glenair also manufactures narrow-profile size 1 and double-wide size 3. All configurations are environmentally sealed for rugged airframe applications.

- **Planar, multilayer ceramic capacitive filters, with and without transient voltage suppression diodes**
- **C and Pi electrical configurations**
- **PC tail, crimp or solder cup termination**
- **35 – 240,000 pF capacitance**
- **Fast and reliable diode burn-in and test services**
- **Turnkey in-house manufacturing of all filter connector elements and processes**

# EMI/EMP Filter connectors

## Innovative desigins · total vertical integration

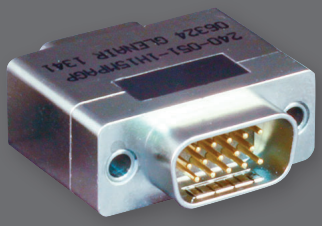


Extended-shell
PC-tail cylindrical with
threaded standoff

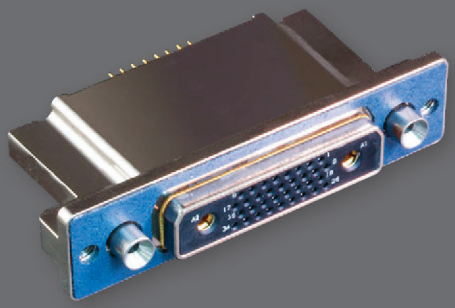
Special-purpose
filter connector cable
adapter


Series 80 Mighty Mouse
PC-tail filter receptacle

MIL-DTL-83513 type
micro-D filter connector



MIL-DTL-24308 type
D-sub filter connector



Series 79 Micro-Crimp
filter connector


MIL-STD-1760 filtered
umbilical connector


Filter plug with
crimp contacts

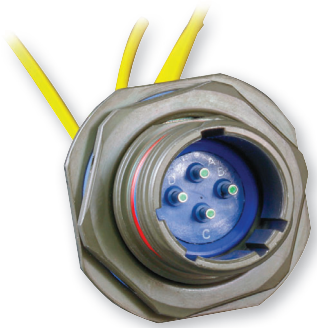
MIL-DTL-38999 series III type
EMP transient-voltage diode-
equipped connector

*EXPANDED-BEAM*

# Eye-Beam®GLT

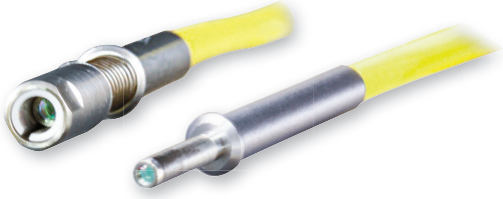
## Fiber optic connection system

### Innovative expanded beam termini and factory-terminated jumpers deliver optimal performance in harsh environments



Eye-Beam™ Expanded Beam fiber optic termini integrated into a tight-tolerance D38999 Series III type jam-nut receptacle connector

Factory terminated GRIN lens pin termini and GRIN lens socket termini on pigtail fibers allow for easy fusion splicing in the field.



- **All the benefits of an expanded beam connection system built into a discrete, removable F/O terminus**
- **Factory-terminated F/O Eye-Beam™ termini easily integrated into any connector package**
- **Innovative expanded beam GRIN lens terminus expands signal 27X from a standard 9.3 micron fiber core**
- **Revolutionary design delivers low dB loss (1.5 dB multimode, 2.0 dB singlemode) performance while reducing maintenance, inspection and test costs**
- **Ultra-high precision ceramic sleeves and custom designed terminus bodies ensure perfect axial alignment**

*EXPANDED-BEAM*

# Eye-Beam®GLT

## Fiber optic connection system

EYE-BEAM® GLT

**Basic Part Number**

**Operating Wavelength**
85 = 850nm
13 = 1300/1310nm
15 = 1550nm

**End B**
*(See Table II)*

**Temperature Rating:**
A = -40°C to +85°C
B = -55°C to +125°C
C = Customer Specified*

**FA1000 - 50 - 85 A 1 - XXXX A**

**Fiber Size**
09 = 9.3/125 Singlemode
50 = 50/125 Multimode
62 = 62.5/125 Multimode

**End A**
*(See Table I)*

**Length in Inches**
*(Omit for Standard 36 Inches)*
*Ex: -0040 = 40 inches*

**Note: For customer specific connectors and fiber, Glenair will assign a unique part number for the cable assembly.*

**Table I: Eye-Beam™ Termini**

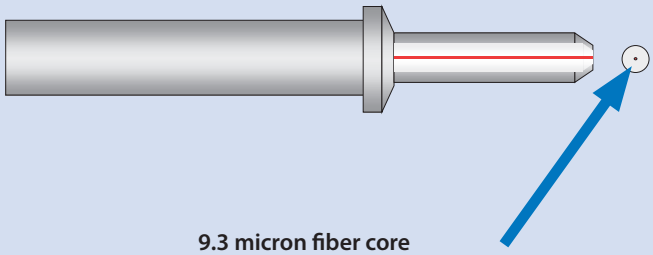
| Designator | Description | Connector Series |
|---|---|---|
| A | M29504/04 Style Pin (181-070) | MIL-DTL-38999 Series III |
| | Mighty Mouse Size 16 Pin (181-070) | Series 80 Mighty Mouse |
| B | M29504/05 Style Socket (181-071) | MIL-DTL-38999 Series III |
| F | Mighty Mouse Size 16 Socket (181-083) | Series 80 Mighty Mouse |
| G | GFR Pin (181-082) | Glenair GFR System |
| H | GFR Socket (181-081) | Glenair GFR System |
| J | GFOCA Termini (181-067) | GFOCA (hermaphroditic) |

**Table II: Eye-Beam™ Termini and Commercial Connectors**

| | |
|---|---|
| A | M29504/04 Style Pin (181-070) |
| | Mighty Mouse Size 16 Pin (181-070) |
| B | M29504/05 Style Socket (181-071) |
| F | Mighty Mouse Size 16 Socket (181-083) |
| G | GFR Pin (181-082) |
| H | GFR Socket (181-081) |
| J | GFOCA Termini (181-067) |
| 1 | LC Connector |
| 2 | LC APC Connector |
| 3 | FC Connector |
| 4 | FC APC Connector |
| 5 | ST Connector |
| 6 | SC Connector |
| 7 | SMA 905 Connector |
| 8 | SMA 906 Connector |
| 9 | Customer Specified* |

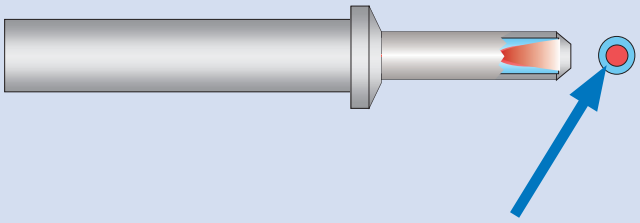
**Eye-Beam termini and factory-terminated jumpers may be integrated into a broad range of circular and rectangular connector packaging**

### *Butt-Joint Fiber Optic Terminus*



**9.3 micron fiber core**
**Fiber surfaces exposed and susceptible to damage**
**Must be cleaned prior to mating**

### *Eye-Beam™ Expanded Fiber Optic Terminus*



**9.3 micron core expanded 27X**
**Fiber surfaces protected from contamination**
**Easy clean lens surface**

Eye-Beam® GMA Expanded Beam connectors utilize a precision-machined ball lens insert. These sealed assemblies are easy to clean, and insensitive to contamination—ideally suited for harsh environments where optical connectors are subjected to repeated mating cycles.

*EYE-BEAM® GMA SERIES 185-002*

# HMA type ball lens expanded beam connectors and cables

## Featuring the industry's best performance—from insertion loss and return loss to mating durability

Ideally suited for use in harsh application environments such as geophysical exploration, military communications, industrial data transmission, and video broadcasts, Eye-Beam® GMA expanded beam connectors and cables are built in accordance with MIL-DTL-83526/20 and /21 and are fully intermateable with industry standard HMA type solutions. Sealed expanded beam interconnect technology resists water, mud, dust, oil and other chemicals contaminating the optical path and deteriorating system performance. The hermaphroditic design of the GMA interconnect eliminates the need for in-line adapters, and the environmentally resistant packaging reduces field maintenance and repair costs.

- **Field-deployable system for both indoor and outdoor applications**
- **Beam expansion dramatically reduces loss due to contamination**
- **Large ball lens facilitates easy cleaning**
- **Fully intermateable with all MIL-DTL-83526 /20 and /21 compliant connectors**
- **2 and 4-channel insert arrangements**
- **Singlemode and multimode versions, plus broad support for a wide range of standard and tactical military cables**

*SERIES 185-002 EYE-BEAM GMA™*

EYE-BEAM® GMA

# MIL-DTL-83526 /20 & /21 compliant hermaphroditic expanded beam connectors

Available cable reels and field-deployment technologies including man-packable units

M83526/21 type Panel mount Configuration


M83526/20 type Hermaphroditic Cable Plug Configuration

## SERIES 185-002 EYE-BEAM® GMA MATERIALS/FINISHES

**Plug**

| | |
|---|---|
| Front housing, shell, and coupling nut | Aluminum Alloy / hard anodize |
| Insert body | Copper-nickel-zinc alloy |
| Guide pin | Stainless steel / passivate |
| Strain relief boot, facial seal, and grip sleeve | Fluorosilicone |
| Dust cap | Thermoplastic |
| Lanyard | Stainless steel / coated |

**Receptacle**

| | |
|---|---|
| Front housing | Aluminum alloy / hard anodize |
| Insert body | Copper-nickel-zinc alloy |
| Guide pin | Stainless steel / passivate |
| Shell, jam nut and back nut | Aluminum Alloy / Zinc-Nickel black |
| Facial seal and panel seal | Fluorosilicone |
| Dust cap | Thermoplastic |
| Lanyard | Stainless steel / coated |

## SERIES 185-002 EYE-BEAM® GMA PERFORMANCE SPECIFICATIONS


| | |
|---|---|
| Insertion Loss | Multimode: ≤1.5 dB typical at 850/1300nm<br>Singlemode: ≤2.0 dB typical at 1310/1550nm |
| Return Loss | Singlemode: Better than 31 dB typical mated<br>Better than 34 dB typical unmated |
| Operating Temperature | -55°C to +85°C |
| Storage Temperature | -57°C to +85°C |
| Mating Durability | 3000 mating cycles minimum |
| Cable Retention | 1500N (cable dependent) |
| Bump | 4000 bumps at 40g acceleration |
| Impact | 8 drops from 0.9m per TIA/EIA-455-2, Method C, Service Class: Severe |
| Drop (Free Fall) | 500 falls onto concrete from 1.2m |
| Vibration - Sinusoidal | 10g Peak per TIA/EIA-455-11, Test Condition III |
| Vibration - Random | 9g RMS per TIA/EIA-455-11, Test Condition VI-C, for 1.5 hours |
| Physical Shock (Half-sine Pulse) | 50g Peak, 5 shocks per axis (30 shocks total) per TIA-455-14, Test Condition A |
| Water Immersion | Depth of 15m for 24 hours per TIA-455-74 |

Glenair®

*HARSH-ENVIRONMENT*

# GFOCA Hermaphroditic

## Ground tactical, field-deployable fiber optic connection system

The GFOCA hermaphroditic field deployable connection system is genderless, ruggedized, corrosion-resistant and environmentally sealed. Utilizing low insertion loss butt-joint termini and a ruggedized coupling mechanism for reliable, repeatable mating, the GFOCA system is used by the Army for long-run battlefield communications, and is also well suited to dockside naval communications, down-hole drilling and other harsh environment applications. All products are designed to meet or exceed MIL-DTL-83526 connector and MIL-PRF29504/16 termini requirements.

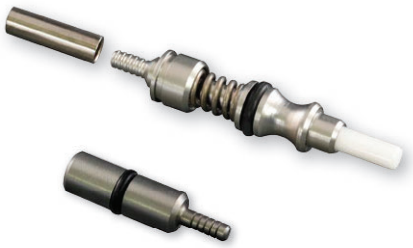
- **Low insertion loss genderless termini**
- **2.5 mm dia ceramic ferrules and alignment sleeves**
- **4 channel singlemode and multimode configurations**
- **Designed to meet the requirements of MIL-PRF-29504/16 and MIL-DTL-83526 military specifications**
- **Discrete components or complete cable-on-reel solutions available**

*HARSH-ENVIRONMENT*

# GFOCA Hermaphroditic

## Ground tactical, field-deployable 4-channel fiber optic system

### M29504/16 TYPE GENDERLESS GFOCA FIBER OPTIC TERMINI • M29504 /17 TYPE DUMMY TERMINUS • TERMINUS ACCESSORIES



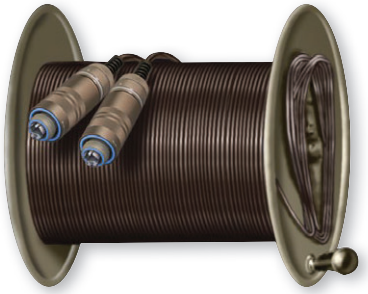
| Part Number Development | | |
|---|---|---|
| **Part Number** | **Ø A (Microns)** | **Fiber Type (Typical)** |
| 181-050-1250C | 125.0 | Singlemode |
| 181-050-1255C | 125.5 | Singlemode |
| 181-050-1260C | 126.0 | Singlemode and multimode |
| 181-050-1270C | 127.0 | Multimode |
| 181-050-1420C | 142.0 | Multimode |
| 181-050-2300C | 230.0 | Multimode |
| Consult Factory for Additional Sizes | | |
| **Terminus Accessories** | | |
| 181-050-S | Alignment sleeve, split, ceramic | |
| 265-008 | Crimp sleeve | |

### GFOCA CONNECTOR CONFIGURATIONS

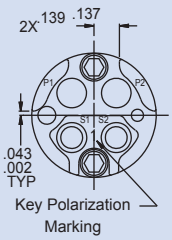
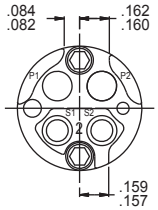
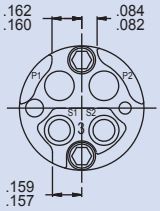
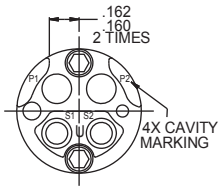
Hermaphroditic straight and 90° plug connectors available with or without lanyard-attached dust cover

Square flange receptacles, and jam nut receptacles in internal mount or panel mount configurations

Protective dust covers available in male (for plugs), female (for receptacles), or genderless configuration



Available cable reels for field deployment in harsh environment conditions

| GFOCA Insert Cap Key Configurations | | | | |
|---|---|---|---|---|
| **Dash No:** | **1** | **2** | **3** | **4** |
| **Config.** | **Key 1** | **Key 2** | **Key 3** | **Key U (universal)** |
| |  |  |  |  |

GLENAIR SIGNATURE

# FIBER OPTIC CONNECTION SYSTEMS

Rugged Fiber Optic CONNECTORS

## SuperNine® Tight-Tolerance **MIL-DTL-38999 Sr. III** Fiber Optic Connection System

**The high-perfomance D38999 type fiber optic interconnect system with qualified MIL-PRF-29504 /4 and /5 termini, successfully deployed in hundreds of commercial and military aerospace and other applications — from F-16 upgrade systems to the revolutionary F-35 Joint Strike Fighter.**

Terminated and tested point-to-point and multibranch D38999 type fiber optic cable assemblies

- **Composite, aluminum and stainless steel shells available**
- **Qualified size #16 MIL-PRF-29504 /4 and /5 precision ceramic termini**
- **Singlemode and multimode fiber, from 9/125 to 1000 microns**
- **Ultra-low insertion loss, <.50dB typical**
- **From 2 to 37 Termini**
- **Plug and In-Line, Jam Nut and Square Flange Receptacles**
- **Patented MIL-DTL-38999 fiber optic test probes and adapters**

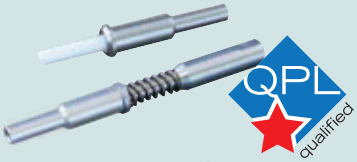
*SuperNine® TIGHT-TOLERANCE*

# MIL-DTL-38999 Series III Type

## Advanced fiber optic connection system

MIL-DTL-38999 type fiber optic connection system termination, inspection, test, and cleaning tools are available now from Glenair. We also offer comprehensive F/O training services for assembly and maintenance technicians.

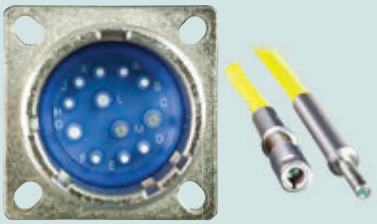
Glenair optical fiber test probes and connector adapters provide accurate and repeatable testing of MIL-DTL-38999 F/O assemblies



Glenair M29504/04 and /05 QPL termini are in stock and ready for immediate, same-day shipment

A complete range of metal and composite backshells and protective covers is available

Hybrid electrical/optical layouts are available including the MIL-STD-1560 17-8 layout shown above

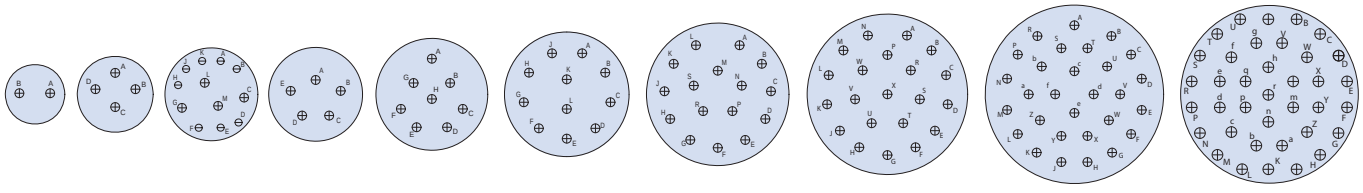


Eye-Beam GLT termini and jumpers are easily integrated into Glenair MIL-DTL-38999 type connector packaging

| MIL-PRF-29504/04 and /05 Fiber Optic Termini Performance Data | |
|---|---|
| **Test Type** | **Performance Requirement** |
| Operating Temperature | -55°C to +165°C (dependent on epoxy and cable) |
| Temperature Cycling | -65°C to +175°C |
| Thermal Shock | -55°C to +150°C, 5 cycles |
| Temperature Life | +150°C for 1,000 hours |
| Random Vibration | 20-2,000 Hz, 42.2 g's |
| Shock (Half-sine Pulse) | 300 g Peak Load |
| Mechanical Shock | MIL-S-901, Grade A, Type B, Class I |
| Mating Durability | 500 cycles (cleaning after 100 matings) |
| Salt Spray | 48 hours (Terminus only) |
| Cable Retention Force | 22.0 lbs (dependent on cable construction) |

| Table I: Material and Finish | | |
|---|---|---|
| **Code** | **Material** | **Finish Description** |
| **M** | Aluminum Alloy | Electroless Nickel |
| **MT** | | Nickel - PTFE, Grey |
| **NF** | | Cadmium, Olive Drab |
| **ZNU** | | Zinc-Nickel, Black |
| **ZR** | | Zinc-Nickel, Black (RoHS) |
| **XM** | Composite | Electroless Nickel |
| **XMT** | | Nickel - PTFE, Grey |
| **XW** | | Cadmium, Olive Drab |
| **XZN** | | Zinc-Nickel, Black |
| **ZL** | Stainless Steel | Electro-Deposited Nickel |
| **Z1** | | Passivate |

## INSERT ARRANGEMENTS



**11-2** **13-4** **15-97 Hybrid** **15-5** **17-8** **19-11** **21-16** **23-21** **25-29** **25-37**

Per MIL-STD-1560. Mating face of pin insert shown.

### M29504/04 AND /05 TYPE, STYLE 1 PIN AND SOCKET TERMINI FOR MIL-DTL-38999 SERIES III

**181-002-XXX**
Pin Terminus

**181-001-XXX**
Socket Terminus

**181-048-16**
Size 16 Dummy Terminus reduces weight and cost versus standard termini

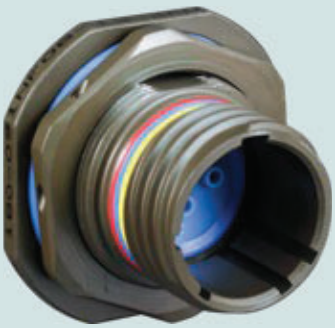
| Part Number | Fiber Size Core/Cladding/ Coating (Microns) | Ferrule Hole Size | Ref. M29504/04-XXXX | Ref. M29504/05-XXXX |
|---|---|---|---|---|
| 181-00X-125 | 9/125 (Singlemode) | 125.5 | M29504/04-4208 | M29504/05-4237 |
| 181-00X-126S | 9/125 (Singlemode) | 126.0 | M29504/04-4209 | M29504/05-4238 |
| 181-00X-126 | 50/125 & 62.5/125 | 126.0 | M29504/04-4210 | M29504/05-4239 |
| 181-00X-127 | 50/125 & 62.5/125 | 127.0 | M29504/04-4040 | M29504/05-4046 |
| 181-00X-142 | 100/140 | 142.0 | M29504/04-4043 | M29504/05-4049 |
| 181-00X-144 | 100/140 | 144.0 | N/A | N/A |
| 181-00X-145 | 100/140 | 145.0 | M29504/04-4044 | M29504/05-4050 |
| 181-00X-156 | 62.5/125/155 (Polyimide) | 156.0 | M29504/04-4211 | M29504/05-4240 |
| 181-00X-157 | 62.5/125/155 (Polyimide) | 157.0 | M29504/04-4212 | M29504/05-4241 |
| 181-00X-173 | 100/140/172 (Polyimide) | 173.0 | M29504/04-4087 | M29504/05-4088 |
| 181-00X-175 | 100/140/172 (Polyimide) | 175.0 | M29504/04-4213 | M29504/05-4242 |
| 181-00X-231 | 200/230 | 231.0 | N/A | N/A |
| 181-00X-236 | 200/230 | 236.0 | N/A | M29504/05-4243 |
| 181-00X-286 | 200/280 | 286.0 | N/A | M29504/05-4244 |
| 181-00X-448 | 400/440 | 448.0 | N/A | M29504/05-4245 |
| 181-00X-533 | 486/500 | 533.0 | N/A | N/A |

### SUPERNINE FIBER OPTIC CONNECTORS

| Part Number Developement | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **180-091** | **XW** | **06** | **-17-8** | **P** | **N** |
| **Series / Basic Part No.** | D38999 Series III Type | | | | | |
| **Material/Finish** | See Material/Finish Table | | | | | |
| **Connector Style** | **06** = Plug Connector | | | | | |
| **MIL-STD-1560 Shell Size/Insert Arr.** | **11-2**, **13-4**, **15-97** (combo), **17-8**, **19-11**, **21-16**, **23-21**, **25-29**, **25-37** | | | | | |
| **Insert Designation** | **P** = Pin **S** = Socket | | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999 | | | | | |

| Part Number Developement | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **180-091** | **XW** | **05** | **-17-8** | **P** | **N** |
| **Series / Basic Part No.** | D38999 Series III Type | | | | | |
| **Finish** | See Material/Finish Table | | | | | |
| **Connector Style*** | **05** = In-Line Receptacle | | | | | |
| **MIL-STD-1560 Shell Size/Insert Arr.** | **11-2**, **13-4**, **15-97** (combo), **17-8**, **19-11**, **21-16**, **23-21**, **25-29**, **25-37** | | | | | |
| **Insert Designation** | **P** = Pin **S** = Socket | | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999 | | | | | |

## How to order Connectors



| Part number development | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **180-091** | **XW** | **08** | **-17-8** | **P** | **N** |
| **Series / Basic Part No.** | D38999 Series III Type | | | | | |
| **Material/Finish** | See Material/Finish Table | | | | | |
| **Connector Style** | **08** = Jam Nut Receptacle | | | | | |
| **MIL-STD-1560 Shell Size/Insert Arr.** | **11-2**, **13-4**, **15-97** (combo), **17-8**, **19-11**, **21-16**, **23-21**, **25-29**, **25-37** | | | | | |
| **Insert Designation** | **P** = Pin **S** = Socket | | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999 | | | | | |

| Part number development | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **180-091** | **XW** | **H7** | **-17-8** | **P** | **N** |
| **Series / Basic Part No.** | D38999 Series III Type | | | | | |
| **Material/Finish** | See Material/Finish Table | | | | | |
| **Connector Style** | **H7** = Wall Mount Receptacle with Round Holes (Std) | | | | | |
| **MIL-STD-1560 Shell Size/Insert Arr.** | **11-2**, **13-4**, **15-97** (combo), **17-8**, **19-11**, **21-16**, **23-21**, **25-29**, **25-37** | | | | | |
| **Insert Designation** | **P** = Pin **S** = Socket | | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999 | | | | | |

| Part number development | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **180-091** | **XW** | **S7** | **-17-8** | **P** | **N** |
| **Series / Basic Part No.** | D38999 Series III Type | | | | | |
| **Material/Finish** | See Material/Finish Table | | | | | |
| **Connector Style** | **S7** = Wall Mount Receptacle with Slotted Holes | | | | | |
| **MIL-STD-1560 Shell Size/Insert Arr.** | **11-2**, **13-4**, **15-97** (combo), **17-8**, **19-11**, **21-16**, **23-21**, **25-29**, **25-37** | | | | | |
| **Insert Designation** | **P** = Pin **S** = Socket | | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999 | | | | | |

| Part number development | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **180-091** | **XW** | **T7** | **-17-8** | **P** | **N** |
| **Series / Basic Part No.** | D38999 Series III Type | | | | | |
| **Material/Finish** | See Material/Finish Table | | | | | |
| **Connector Style** | **T7** = Wall Mount Receptacle with Threaded Insert Holes | | | | | |
| **MIL-STD-1560 Shell Size/Insert Arr.** | **11-2**, **13-4**, **15-97** (combo), **17-8**, **19-11**, **21-16**, **23-21**, **25-29**, **25-37** | | | | | |
| **Insert Designation** | **P** = Pin **S** = Socket | | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999 | | | | | |

*QPL AND COMMERCIAL*

# MIL-PRF-28876

## Fiber optic connection system

**Qualified MIL-PRF-28876 fiber optic connectors and MIL-PRF-29504 termini—Navy approved, in stock, and ready for immediate shipment**

M28876/11 jam nut receptacle

M28876/7 plug with backshell

M28876/2 receptacle with backshell

- **Connectors qualified to the complete requirements of mil-prf-28876 including plugs, wall-mount receptacles, jam-nut mount receptacles and in-line receptacles**
- **Multiple shell sizes and insert arrangements, including 2, 4, 6, 8, 18 and 31 channel layouts**
- **Backshells in straight, 45° and 90° configurations**
- **Corrosion-resistant and environmentally sealed**
- **Qualified mil-prf-29504/14 and /15 pin and socket termini and /03 dummy terminus**
- **Connectors, backshells and protective covers available for immediate, same-day shipment**

# Qualified MIL-PRF-28876
# Shipboard Fiber Optic Connection System



## AVAILABLE CONNECTOR AND BACKSHELL ASSEMBLIES

| Connector Type | Backshell Type | MIL-Spec | Commercial |
|---|---|---|---|
| Wall Mount Receptacle | None | M28876/1 | 180-040 (030 |
| | Straight | M28876/2 | 180-040 (13) |
| | 45° | M28876/3 | 180-040 (23) |
| | 90° | M28876/4 | 180-040 (33) |
| In-Line Receptacle | None | N/A | 180-040 (05) |
| | Straight | M28876/5 | 180-040 (15) |
| Plug | None | M28876/6 | 180-040 (06) |
| | Straight | M28876/7 | 180-040 (16) |
| | 45° | M28876/8 | 180-040 (26) |
| | 90° | M28876/9 | 180-040 (36) |
| Jam Nut Receptacle | None | M28876/11 | 180-040 (04) |
| | Straight | M28876/12 | 180-040 (14) |
| | 45° | M28876/13 | 180-040 (24) |
| | 90° | M28876/14 | 180-040 (34) |

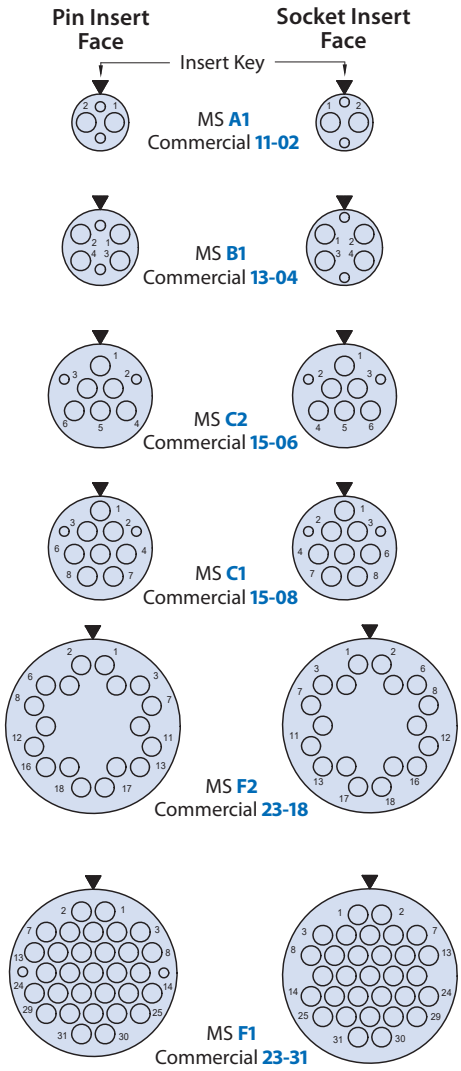
| TEST DESCRIPTION | PERFORMANCE REQUIREMENTS/ SPECIFICATIONS |
|---|---|
| Optical Insertion Loss, Multimode | -0.3 dB Typical (62.5/125) |
| Optical Insertion Loss, Singlemode | -0.3 dB Typical (9/125) |
| Optical Back Reflection, Singlemode | Better than -40 dB - PC Polish • Better than -50 dB - Enhanced PC Polish |
| Operating Temperature | -28°C to +65°C (MIL-Spec Epoxy and Cable)<br>-55°C to +125°C (alternative Epoxy and Cable) |
| Temperature (Thermal) Shock | -40°C to +70°C, 5 Cycles |
| Temperature Cycling | -28°C to +65°C, 5 Cycles |
| Temperature/Humidity Cycling | -10°C to +65°C, 10 Cycles, 240 hours, 98% RH |
| Temperature Life Aging | +110°C, 240 hours, Dry Air |
| Mating Durability | 500 cycles |
| Vibration - Sinusoidal | 10 g Peak, 5-500 Hz sin./ 10.2 g RMS, 50-2000 Hz random |
| Impact | 8 Drops from 8 feet |
| Crush Resistance | 281 lbs, 7 Cycles |
| Cable Pull Out Force - Termini | Termini: 22 lbs min for 1 minute<br>Connector: 162 lbs min for 10 minutes |
| Fluid Immersion | Turbine Fuel, Isopropyl Alcohol, Hydraulic Fluid, Lubricating Oil, Coolant, Tap- and seawater, 24 hrs |
| Water Pressure | 32 feet for 48 hours at +10°C to +35°C |
| Mechanical Shock (High Impact) | MIL-S-901, Grade A, Type B, Class I |
| Corrosion Resistance (Salt Spray) | 500 hours |
| Sand and Dust | 12 hours |
| Flammability | 0.75 inch flame for 10 sec. mated, 1.50 inch flame for 60 sec. unmated |

*Performance Specifications/Requirements based on the use of MIL-PRF-24792 Epoxy and MIL-PRF-85045 Simplex and Breakout Shipboard Optical Fiber.

## QUALIFIED FIBER OPTIC TERMINI

| Type | Military Part Number | A Dia (Microns) | Typical Fiber Type |
|---|---|---|---|
| Pin Termini | M29504/14-4131C | 126.0 | Multimode |
| | M29504/14-4132C | 127.0 | Multimode |
| | M29504/14-4135C | 142.0 | Multimode |
| Socket Termini | M29504/15-4171C | 126.0 | Multimode |
| | M29504/15-4172C | 127.0 | Multimode |
| | M29504/15-4175C | 142.0 | Multimode |
| Dummy Terminus | M29504/03-4038 | | |

## SHELL SIZE / INSERT ARRANGEMENTS



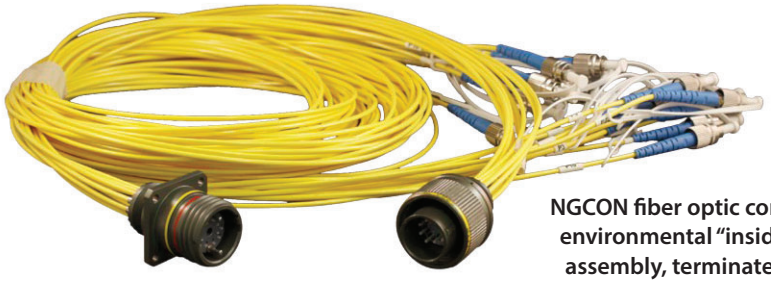
Glenair®

*FIBER OPTIC CONNECTION SYSTEM*

# Next Generation High-Density (NGCON)

## Sea and Air

The Glenair Next Generation MIL-PRF-64266 (NGCON) fiber optic connection system is a high-performance solution for air, sea, and space applications. Developed with the NGCON design consortium, the system combines proven technology from standard MIL-PRF-28876 and MIL-DTL-38999 Series III designs with new innovations including rear-release genderless contacts, high-density packaging, and removable alignment sleeve retainers (ASR).



NGCON fiber optic connectors in a non-environmental "inside-the-box" cable assembly, terminated to commercial fiber optic connectors

- **Conforms to MIL-PRF-64266 (NGCON) military standard.**
- **M28876 Double-start ACME mating threads, D38999 Series III style rear accessory threads.**
- **Multimode and singlemode capable**
- **Removable alignment sleeve retainer (ASR) for easy maintenence**
- **Rear release precison genderless termini, IAW MIL-PRF-29504/18, /19, /20**
- **1.25 mm diameter ceramic ferrules and alignment sleeves**
- **Environmental o-ring sealing on terminus**
- **Receptacles compatible with M28876 panel cutouts**
- **Anti-decoupling (ratchet) mechanism on plug connector**
- **Keyed connectors and termini available for singlemode APC**

*MIL-PRF-64266 COMPLIANT*

# NGCON Next Generation

## Fiber optic connection system

Rear-release precision genderless termini IAW MIL-PRF-29504 with integral environmental O-ring

Plug, wall-mount, and jam-nut receptacle configurations

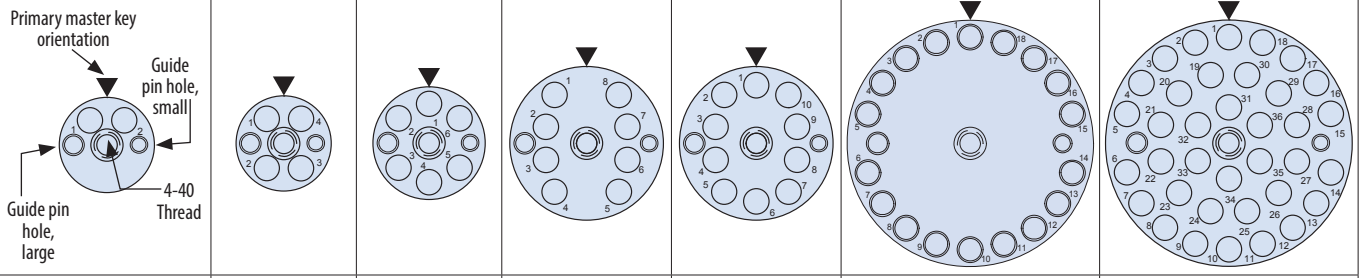
Removable alignment sleeve retainer (ASR) for easy maintenance with integrated guide pins for superior axial aignment

| Genderless Termini IAW MIL-PRF-29504 and Supported Fiber Media | | | | | | |
|---|---|---|---|---|---|---|
| P/N Non-Keyed | P/N Keyed | ØA (Micron) | Typical Fiber Type | Typ. Fiber Size (Core/ Cladding/Coating) [Micron] | Ref. M29504/18 Non-Keyed | Ref. M29504/20 Keyed |
| 181-043-1250C | 181-043K-1250C | 125.0 | SM | 9/125 | M29504/18-01Y | M29504/20-01Y |
| 181-043-1255C | 181-043K-1255C | 125.5 | SM | 9/125 | M29504/18-02Y | M29504/20-02Y |
| 181-043-126SC | 181-043K-126SC | 126.0 | SM/MM | 9/125, 50/125, 62.5/125 | M29504/18-03Y | M29504/20-03Y |
| 181-043-126C | 181-043K-126C | 126.0 | MM | 50/125, 62.5/125 | M29504/18-26Y | M29504/20-26Y |
| 181-043-127C | 181-043K-127C | 127.0 | MM | 50/125, 62.5/125 | M29504/18-27Y | M29504/20-27Y |
| 181-043-142C | 181-043K-142C | 142.0 | MM | 100/140 | M29504/18-42Y | M29504/20-42Y |
| 181-043-145C | 181-043K-145C | 145.0 | MM | 100/140 | M29504/18-45Y | M29504/20-45Y |
| 181-043-156C | 181-043K-156C | 156.0 | MM | 62.5/125/155 | M29504/18-56Y | M29504/20-56Y |
| 181-043-157C | 181-043K-157C | 157.0 | MM | 62.5/125/155 | M29504/18-57Y | M29504/20-57Y |
| 181-043-173C | 181-043K-173C | 173.0 | MM | 100/140/172 | M29504/18-73Y | M29504/20-73Y |
| 181-043-175C | 181-043K-175C | 175.0 | MM | 100/140/172 | M29504/18-75Y | M29504/20-75Y |

| NGCON Materials and Finishes | | |
|---|---|---|
| Code | Material | Description |
| ME | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel-PTFE, Grey |
| ZN | | Zinc-Nickel, Olive Drab |
| ZR | | Zinc-Nickel, Black |
| Z1 | Stainless Steel | Passivate |

| NGCON Connector Sizes, Insert Arrangements, Thread Specificaitons | | | | |
|---|---|---|---|---|
| Shell Size | Shell Size Code (Ref) | Insert Arrangement | AA Thread | BB Thread |
| 11 | B | 2 or 4 | M15 x 1.0-6g 0.100R | .7500-.1P-.2L-DS |
| 13 | C | 6 | M18 x 1.0-6g 0.100R | .8750-.1P-.2L-DS |
| 15 | D | 8 or 10 | M22 x 1.0-6g 0.100R | 1.0625-.1P-.2L-DS |
| 23 | H | 18 or 36 | M34 x 1.0-6g 0.100R | 1.5000-.1P-.2L-DS |

**Figure I: Insert Arrangements**




| Shell Size 11 Arrangement 2 | Shell Size 11 Arrangement 4 | Shell Size 13 Arrangement 6 | Shell Size 15 Arrangement 8 | Shell Size 15 Arrangement 10 | Shell Size 23 Arrangement 18 | Shell Size 23 Arrangement 36 |
|---|---|---|---|---|---|---|

Plug front face shown. Receptacle front face - opposite

FIBER OPTIC

# Termination, Inspection, and Troubleshooting Tools and Kits



## The right fiber optic tools for the job

Fiber optic connectors are designed to be connected and disconnected many times without affecting the optical performance of the fiber circuit. Optimal performance can be achieved by following the correct process for termination of the fiber circuit—a task which requires the use of a wide range of specialized tooling. Glenair's extensive experience in building fiber optic interconnect cables has enabled us to select the right tools for each step in the termination and assembly process. Our Fiber Optic Termination and Test Probe Kits allow field technicians the convenience of completing final termination of precision termini on location for easy and efficient cable routing and installation. Each kit contains pin and socket polishing tools, jacket strippers, shears, scribes—literally all the tools and supplies required for ongoing termination and test of fiber optic systems. Polishing tools are also sold separately for factory use or as replacement parts in field termination kits.

- **Configurable termination, inspection, cleaning and testing kits**
- **Polishing pucks**
- **Insertion, extraction, and crimping tools for fiber termini**
- **Test probes, adapters, and patch cords for all Glenair fiber optic connection systems**
- **Video bore scope inspection system**
- **Dry-action cleaning tools**
- **Cleaning swabs**
- **Fiber optic training and certification**

*FIBER OPTIC*

# Tools, Kits, and Training

## Termination · inspection · troubleshooting · cleaning training and certification

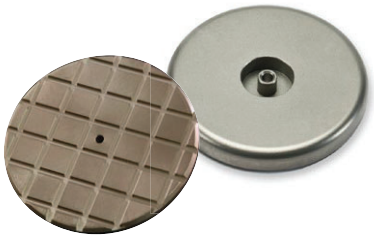
### GLENAIR: YOUR SOURCE FOR FIBER OPTIC TOOLS, KITS, AND TRAINING

Glenair offers a full range of kits for fiber optic interconnect systems. Kits include components for all aspects of fiber optic system management including termination, inspection, cleaning, and testing. Kits can be configured to your specifications with components designed for your specific fiber optic interconnect system. Contact the factory for details.

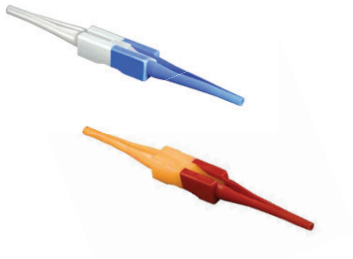

Glenair's fiber optic team offers training and certification programs for Fiber Optic technicians in inspection, cleaning, termination, and operation—at your location or at our factory,

### FIBER OPTIC PREPARATION AND TERMINATION EQUIPMENT

Termination, testing, cleaning, and inspection kits



Polishing pucks



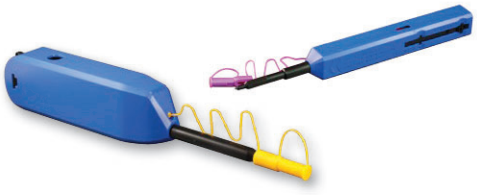
Terminus and alignment sleeve insertion and extraction tools, and crimping tools

### FIBER OPTIC INSPECTION AND TEST EQUIPMENT

Test probes, feedthrough probe adapters, plug and receptacle test adapters, patch cords—and complete kits

### FIBER OPTIC CLEANING AND TROUBLESHOOTING EQUIPMENT

Portable video bore scope inspection system



Dry action cleaning tools for all fiber optic connection systems

Fiber optic cleaning swabs

SERIES 22

# Geo-Marine®

## High-pressure harsh-environment connectors and overmolded cables for towed array and other high-pressure/submersible applications

Designed for use in oceanographic, geophysical and other severe industrial environments, Glenair Series 22 Geo-Marine® Connectors and Cables are the ultimate harsh-environment power and signal connector solution. Built to withstand hydrostatic pressures up to 5,000 PSI and exposure to extreme temperatures and corrosives, the Series 22 Geo-Marine® is ideally suited for applications such as US Navy towed array sonar systems, military land vehicles, submersibles and ROV's, offshore-oil drilling equipment, seabed exploration, pipeline inspection systems, well monitoring equipment, and digital seismic streamers.

**Geo-Marine® plugs are equipped with arctic coupling nuts—made from marine-grade naval bronze—with easy-to-grip castellated knurling and a powerful ratcheted anti-decoupling mechanism which guarantees reliable mating and demating performance in even the harshest environments. Supplied as discrete connectors—or more typically in build-to-print overmolded cable assemblies.**

Geo-Marine®

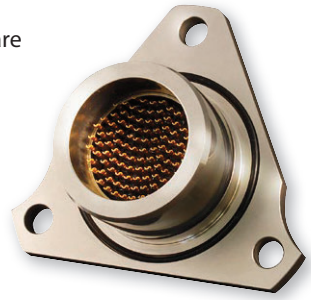
- **5000 psi pressure rated**
- **Marine Grade 316 stainless steel machined shells and Naval Bronze coupling rings**
- **High-pressure environmental and hermetically sealed receptacles for field applications**
- **Power and signal contact arrangements from 2 to 128 contacts**
- **Anti-vibration ratcheted coupling nuts with castellated knurling**
- **Available Viton® overmolded cable assemblies**

*SERIES 22*

# Geo-Marine® Connectors

## High-pressure environmental and hermetic connectors

## Range of Offerings



Series 22 Geo-Marine® connectors are supplied with either fused-glass ("H" hermetic class) or high grade thermoplastic ("E" environmental class) insulators. Both classes of connectors are supplied with rugged, corrosion-resistant materials. Low-profile and scoop-proof cable plugs and receptacles, as well as bulkhead feed-thrus are available. Specially-designed cable sealing backshells as well as EMI/RFI shield termination backshells and environmentally-sealed protective covers complete the range of discrete product offerings. 35 insert arrangements (contact sizes #12, #16, #20 and #22) are tooled and fully available.

## WIDE RANGE OF PLUG CONFIGURATIONS WITH ANTI-GALLING ARCTIC COUPLING NUTS

Cable plug with accessory threads

Cable plug with overmold adapter

Panel-mounted plug

Factory overmolded plug

## HIGH-PRESSURE ENVIRONMENTAL AND HERMETIC RECEPTACLE CONFIGURATIONS

Jam Nut

In-Line

Square Flange

Solder-Mount

Bulkhead Feed-Through

## RUGGEDIZED STAINLESS STEEL BACKSHELLS AND OTHER CONNECTOR ACCESSORIES

Environmental strain relief backshell

Overmolding adapter

Right-angle strain relief backshell

Environmentally sealed protective covers

*HIGH-RELIABILITY*

# Glass-sealed Hermetic Connectors

## Resolve gas, moisture and particle ingress problems with advanced-performance glass-sealed hermetic connectors

### Helium Leak Testing

All hermetic connectors are 100% tested prior to shipment. A helium leak test is performed to certify the hermetic seal. This test is conducted by inducing a 1 ATM vacuum on one side of the connector. Helium gas is released on the other side, and a mass spectrometer "counts" the number of helium molecules that penetrate the connector seal. Helium leak testing takes advantage of the small size of a helium molecule compared to air or water vapor. Helium is inert, rare in our atmosphere, and is easy to detect with a mass spectrometer.

### VITREOUS GLASS TECHNOLOGY ADVANTAGES

- **Superior pressure resistance to 32,000+ PSI**
- **Higher resistance to extreme operating temperatures to 260°+ C**
- **Superior mechanical strength**
- **No material breakdown or aging over time**
- **Helium leak rate <1X10$^{-7}$ cc/sec to 1X10$^{-10}$**

| Std cc/sec Approximate | Approximate Bubble Equivalent |
|---|---|
| 1 x 10-1 | 1 cc/10 sec |
| 1 x 10-2 | 1 cc/100 sec |
| 1 x 10-3 | 1 cc/hour |
| 1 x 10-4 | 1 cc/3 hours |
| 1 x 10-5 | 1 cc/24 hours |
| 1 x 10-6 | 1 cc/2 weeks |
| 1 x 10-7 | 3 cc/year |
| 1 x 10-8 | 1 cc/3 year |
| 1 x 10-9 | 1 cc/30 years |
| 1 x 10-11 | 1 cc/3000 years |

### CIRCULAR GLASS-SEALED HERMETIC CONNECTORS AVAILABLE WITH ACCELERATED LEAD TIMES

MIL-DTL-26482

MIL-DTL-83723

MIL-DTL-38999 (QPL)

MIL-DTL-5015

Series 80 Mighty Mouse

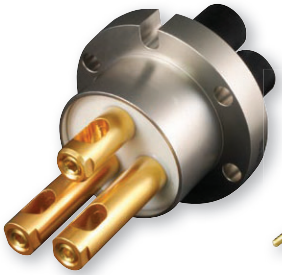
*MIL-DTL-38999 AND OTHER*

# Glass-Sealed Hermetic Connectors

GLASS-SEALED Hermetic CONNECTORS

## GEOPHYSICAL AND OFFSHORE CONFIGURATIONS

GeoMarine® double-start hermetic connector



Hermetic power connector

Single-way tool joint hermetic connector

Hermetic probe connector

Hermetic bulkhead penetrator

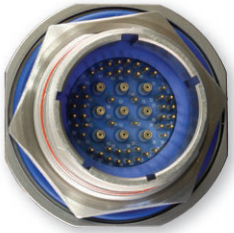
## HIGH-SPEED/SHIELDED DESIGNS

Triax hermetic

Hybrid coax/signal hermetic

Quadrax hermetic

MT ribbon fiber optic hermetic



Hybrid coax/signal hermetic

## RECTANGULAR PACKAGES

MIL-DTL-24308 QPL hermetic

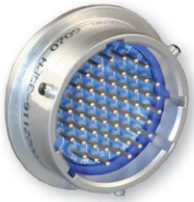
Series 79 Micro-Crimp hermetic

MIL-DTL-83513 type micro-D hermetics

Sealed panel-mount micro-D hermetic

## MIL-DTL-38999 QPL PIN AND SOCKET HERMETICS

Series I
Scoop-proof
3 Point Bayonet Coupling



Series II
Low-profile
3 Point Bayonet Coupling

Series III
Scoop-proof
Triple Start, Self-Locking

Series IV
Scoop-proof
Breech Lock

*MISSION-CRITICAL*
**INTERCONNECT SOLUTIONS**

Glenair®

Glenair
SIGNATURE SERIES

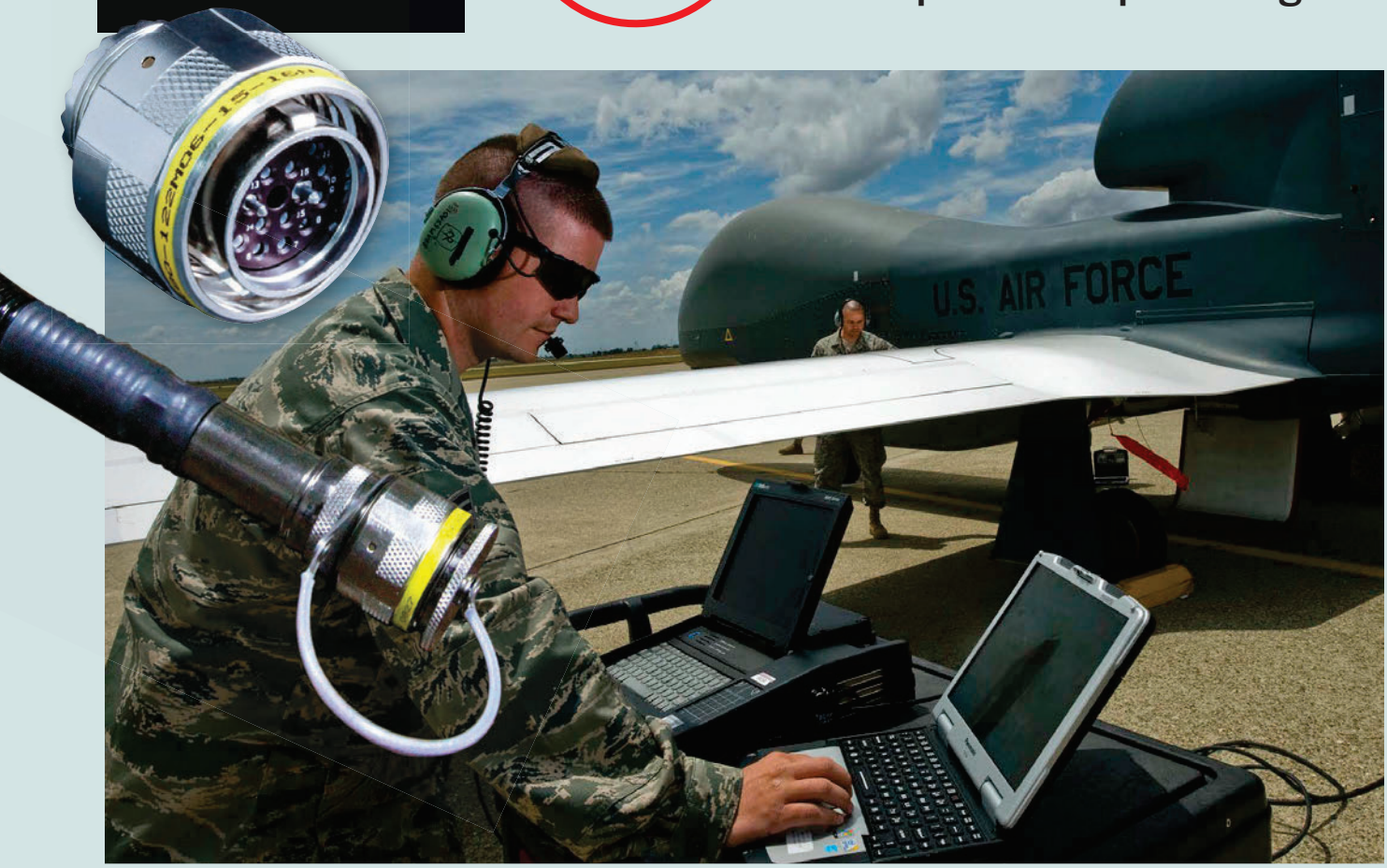
# Glenair High Density (GHD) Fiber Optic Datalinks

## Double the Density of D38999 Fiber Optic Solutions

GLENAIR
SIGNATURE
# FIBER OPTIC CONNECTION SYSTEMS

Rugged Fiber Optic CONNECTORS

## **Glenair High Density (GHD)**: nearly double the density of standard mil-spec fiber optic designs




## The system of choice for military and commercial air and space applications. Outstanding optical and environmental performance with nearly double the density of standard mil-spec, butt-joint solutions.

GHD plug connector with alignment sleeve retainer, and square flange receptacle. Termini available in keyed and non-keyed styles

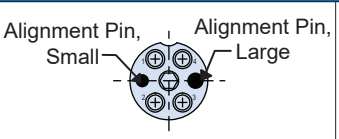
- **Innovative #18 (1.25mm ferrule) front-release genderless termini accommodate 900µ to 2.0mm jacketed fiber**
- **M85045/16 cable accommodation**
- **Composite, aluminum or stainless steel shells**
- **Single key termini for APC polish available**
- **Better optical performance than D38999 with nearly double the density**
- **Precision alignment sleeve retainer with integrated guide pins**

*SIZE- AND WEIGHT-SAVING*

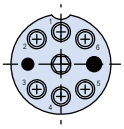
# Glenair High Density (GHD)

## Signature HD fiber optic connection system

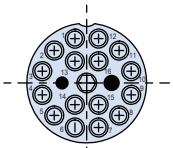
### Glenair High Density (GHD) Insert arrangements



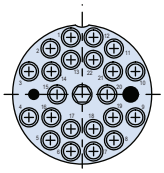

Shell Size 11
Arrangement 4



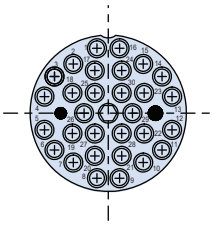
Shell Size 13
Arrangement 6



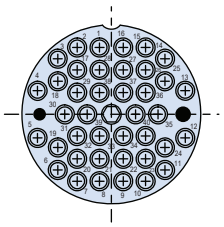
Shell Size 15
Arrangement 16



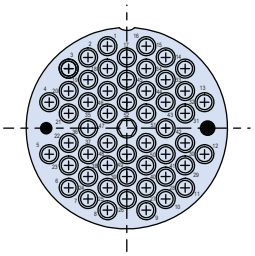
-Shell Size 17
Arrangement 22



Shell Size 19
Arrangement 30



Shell Size 21
Arrangement 40



Shell Size 23
Arrangement 52

Plug face marking with removable alignment sleeve retainer (ASR) shown. Receptacle face - opposite.
ASR includes two guide pins and a threaded center jackscrew.

### Fiber Optic Pin Termini Specifications

| Assembly Dash Number | | Fiber Size Core/Cladding | A Dia. [microns] |
|---|---|---|---|
| Keyed | Non-Keyed | | |
| 181-047-1253C | 181-056-1253C | 9/125 (Singlemode) | 125.3 |
| 181-047-1255C | 181-056-1255C | 9/125 (Singlemode) | 125.5 |
| 181-047-1260C | 181-056-1260C | 9/125, 50/125, 62.5/125 | 126.0 |
| 181-047-1315C | | 15/130 (Singlemode) | 131.5 |
| 181-047-1420C | 181-056-1420C | 100/140 | 142.0 |
| 181-047-2250C | | 200/220 | 225.0 |
| | 181-056-2310C | 200/230 | 231.0 |
| | 181-056-4350C | 400/425 | 435.0 |
| | 181-056-4480C | 400/440 | 448.0 |

Crimp Sleeve is supplied with Terminus Assembly, and may be ordered separately.
For terminus less crimp sleeve, omit **C** from end of part number (e.g. **181-056-1260**)

### GHD Fiber Optic Part Number Reference

| Glenair Dwg. Number | Product Description |
|---|---|
| 181-047 | #18 Pin Terminus, Keyed for APC Polish |
| 181-056 | #18 Pin Terminus, non-keyed (standard) |
| 181-058 | #18 Dummy Terminus |
| 180-122 (05) | In-Line Receptacle Connector |
| 180-122 (06) | Plug Connector with Alignment Sleeve Retainer |
| 180-122 (08) | Jam Nut Mount Receptacle Connector |
| 180-122 (H7) | Square Flange Receptacle with Round Holes |
| 180-122 (S7) | Square Flange Receptacle with Slotted Holes |
| * See fiber optic catalog for complete part number information | |

### Pin Density Comparison: GHD Versus D38999 and M28876 and ARINC 801

| Connector Style / Size | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 |
|---|---|---|---|---|---|---|---|---|
| D38999 Cavity Count | 2 | 4 | 5 | 8 | 11 | 16 | 21 | 29/37 |
| ARINC 801 Cavity Count | 2 | 4 | 6 | 8 | 12 | 16 | 24 | 32 |
| M28876 Cavity Count | 2 | 4 | 8 | N/A | N/A | N/A | 31 | N/A |
| GHD Cavity Count | 4 | 6 | 16 | 22 | 30 | 40 | 52 | N/A |

### Table I: Material and Finish

| Code | Material | Finish Description |
|---|---|---|
| M | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel - PTFE, Grey |
| NF | | Cadmium, Olive Drab |
| ZNU | | Zinc-Nickel, Black |
| ZR | | Zinc-Nickel, Black (RoHS) |
| XM | Composite | Electroless Nickel |
| XMT | | Nickel - PTFE, Grey |
| XW | | Cadmium, Olive Drab |
| XZN | | Zinc-Nickel, Black |
| ZL | Stainless Steel | Electro-Deposited Nickel |
| Z1 | | Passivate |

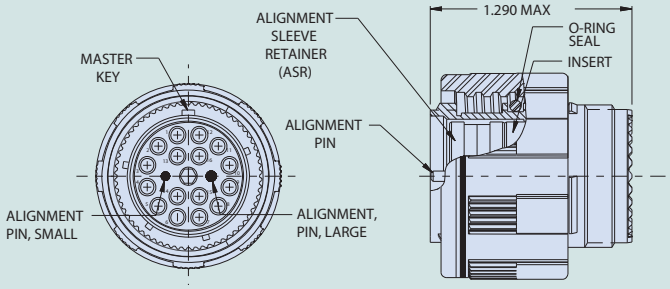
Glenair High Density (GHD)
fiber optic conduit assembly

*SIZE- AND WEIGHT-SAVING*

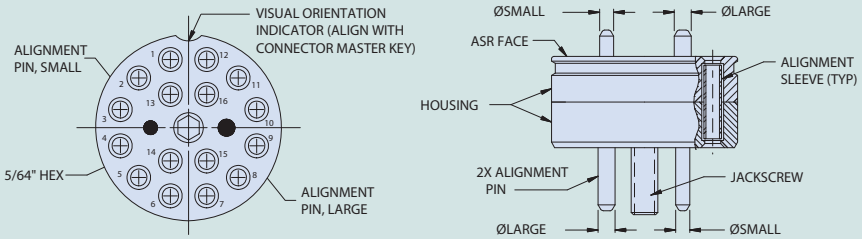
# Glenair High Density (GHD)

## Signature HD fiber optic connection system
## How to order connectors

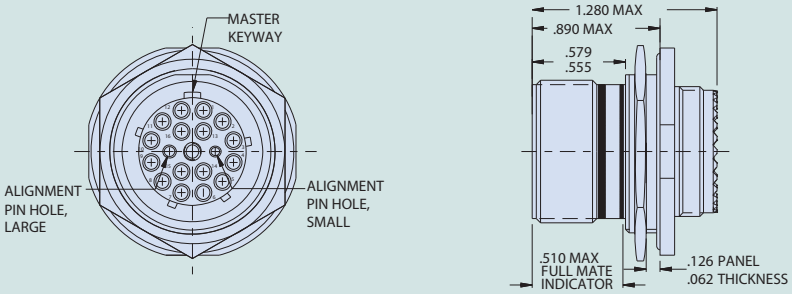
| Part Number Developement | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **180-122** | **NF** | **06** | **-15-16** | **N** | **C** |
| **Series / Basic Part No.** | Glenair High Density Fiber Optic Connector | | | | | |
| **Material/Finish** | See Material/Finish Table | | | | | |
| **Connector Style** | **06** = Plug with Alignment Sleeve Retainer | | | | | |
| **Shell Size/Insert Arr.** | **11-4**, **13-6**, **15-16**, **17-22**, **19-30**, **21-40**, **23-52** | | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal | | | | | |
| **O-Ring Option** | **C** = Conductive O-Ring **Omit** = Standard O-Ring | | | | | |



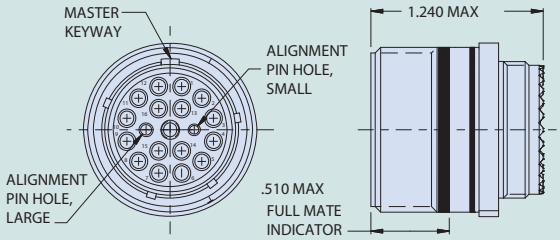

| Part Number Developement | | | | |
|---|---|---|---|---|
| **Sample Part Number** | **180-122** | **ASR** | **-15-16** | |
| **Series / Basic Part No.** | Glenair High Density Fiber Optic Connector | | | |
| **Connector Style** | **ASR** = Alignment Sleeve Retainer | | | |
| **Shell Size/Insert Arr.** | **11-4**, **13-6**, **15-16**, **17-22**, **19-30**, **21-40**, **23-52** | | | |



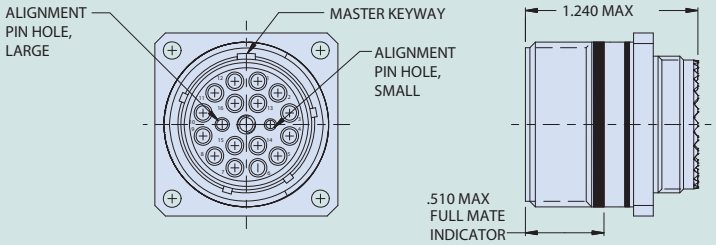

| Part Number Developement | | | | | |
|---|---|---|---|---|---|
| **Sample Part Number** | **180-122** | **NF** | **08** | **-15-16** | **N** |
| **Series / Basic Part No.** | Glenair High Density Fiber Optic Connector | | | | |
| **Material/Finish** | See Material/Finish Table | | | | |
| **Connector Style** | **08** = Jam Nut Receptacle | | | | |
| **Shell Size/Insert Arr.** | **11-4**, **13-6**, **15-16**, **17-22**, **19-30**, **21-40**, **23-52** | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal | | | | |



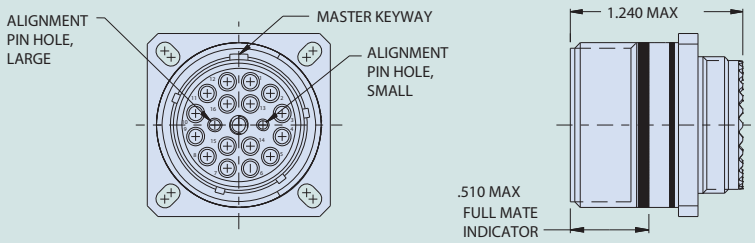
| Part Number Developement | | | | | |
|---|---|---|---|---|---|
| **Sample Part Number** | **180-122** | **NF** | **05** | **-15-16** | **N** |
| **Series / Basic Part No.** | Glenair High Density Fiber Optic Connector | | | | |
| **Material/Finish** | See Material/Finish Table | | | | |
| **Connector Style** | **05** = In-Line Receptacle | | | | |
| **Shell Size/Insert Arr.** | **11-4**, **13-6**, **15-16**, **17-22**, **19-30**, **21-40**, **23-52** | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal | | | | |




| Part Number Developement | | | | | |
|---|---|---|---|---|---|
| **Sample Part Number** | **180-122** | **NF** | **H7** | **-15-16** | **N** |
| **Series / Basic Part No.** | Glenair High Density Fiber Optic Connector | | | | |
| **Material/Finish** | See Material/Finish Table | | | | |
| **Connector Style** | **H7** = Wall Mount Receptacle with Round Holes | | | | |
| **Shell Size/Insert Arr.** | **11-4**, **13-6**, **15-16**, **17-22**, **19-30**, **21-40**, **23-52** | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal | | | | |




| Part Number Developement | | | | | |
|---|---|---|---|---|---|
| **Sample Part Number** | **180-122** | **NF** | **S7** | **-15-16** | **N** |
| **Series / Basic Part No.** | Glenair High Density Fiber Optic Connector | | | | |
| **Material/Finish** | See Material/Finish Table | | | | |
| **Connector Style** | **S7** = Wall Mount Receptacle with Slotted Holes | | | | |
| **Shell Size/Insert Arr.** | **11-4**, **13-6**, **15-16**, **17-22**, **19-30**, **21-40**, **23-52** | | | | |
| **Alternate Key Position*** | **A**, **B**, **C**, **D**, **E**, **N** = Normal | | | | |



*MISSION-CRITICAL*

# INTERCONNECT SOLUTIONS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# HD STACKER™

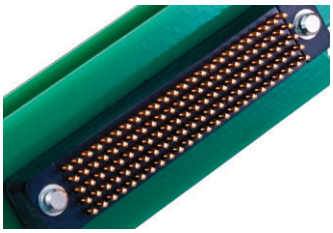
## High-density, solder-free, PCIe-ready board-to-board stackable connectors

Mission-critical board-to-board connector applications demand fail-safe signal integrity as well as rugged and reliable harsh-environment performance. The HD Stacker™ brings Glenair innovation to stacking board-to-board connectors with several significant design improvements: Ultra high-density .0625" Chevron Contact System provides 55% more contacts per connector size, or a 31% size reduction for the same number of contacts as compared to current industry solutions. Polarized connector bodies and available polarized guide pins prevent accidental mismating. The solder-free press-fit compliant pin contacts are removable, repairable, and available in custom lengths. HD Stacker™ connectors may also be ordered with pre-wired cable or flex jumper terminations. High-speed signal integrity test reports are available upon request. Choose HD Stacker™ for the ultimate in high-density, rugged board-to-board stackable connector performance.

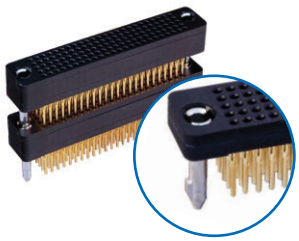
- **High-density .0625" pitch Chevron Contact System**
- **PCIe 3.0 capable**
- **Performance up to 10.5 Gbps**
- **Polarized insulator and hardware options**
- **Solder free "eye of the needle" compliant tail for press fit installation**
- **High-temp PPS insulator meets NASA outgassing requirements**
- **Available wired / flex jumpers**
- **Available between-board spacers up to 1 inch**

### HD STACKER™ FOR MISSION-CRITICAL BOARD-TO-BOARD APPLICATIONS

**Solder-free press-fit (compliant pin) board mounting**



**.0625" pitch contact spacing: highest available density**



**Polarized shells and keyed guide pin hardware prevent mis-mating**

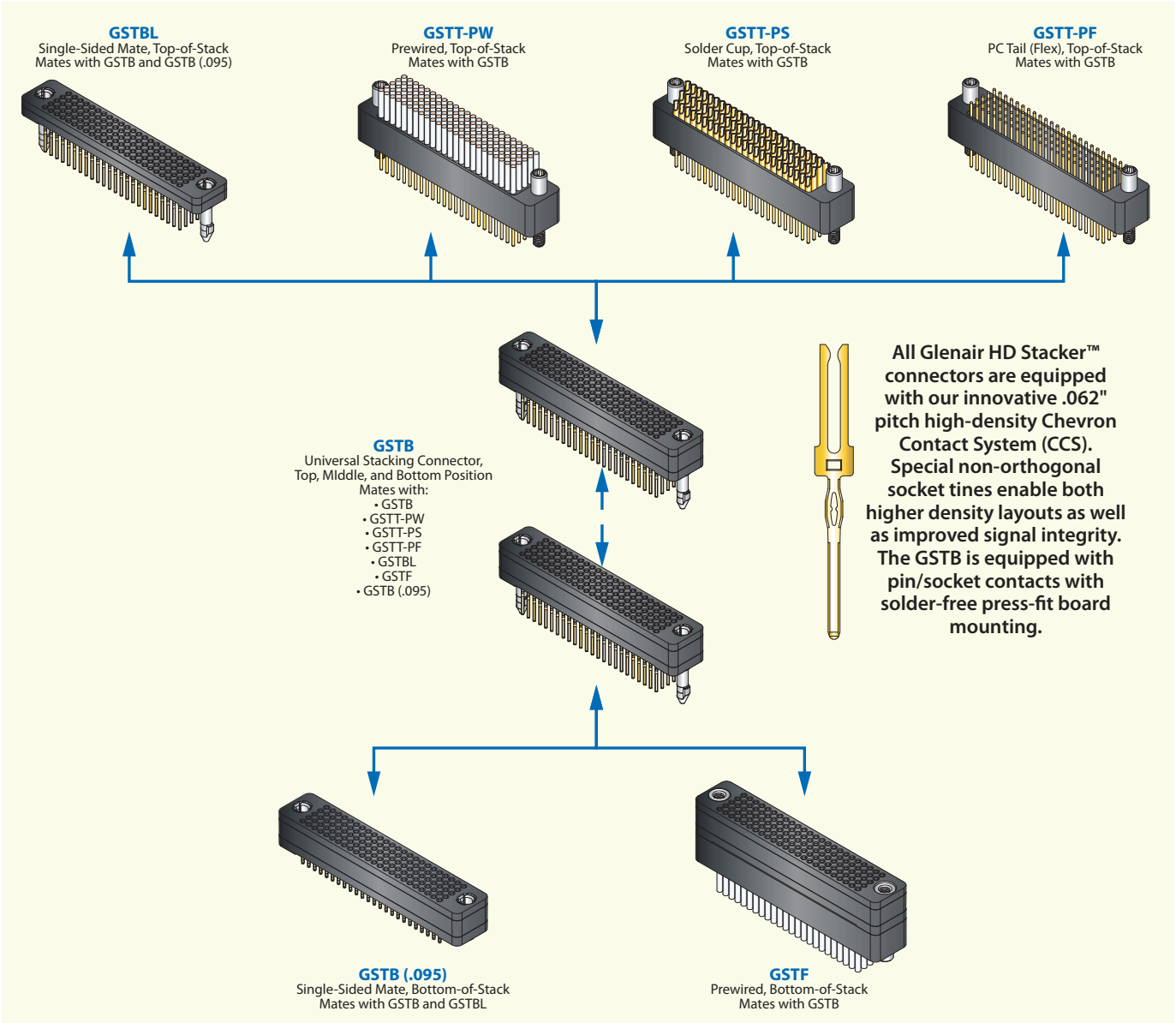
**Controlled signal integrity for differential applications (test reports available)**

*.0625” PITCH COMPLIANT PIN*

# High-Density Stacker™

## Rugged board-to-board stackable connectors

## HD STACKER™ POSITION AND MATING COMPATIBILITY GUIDE




## QUALIFICATION TESTING / HIGH-SPEED PERFORMANCE

Stacker connectors were qualified in accordance with MIL-DTL-55302G testing for:

- Contact engagement/separation
- Contact retention
- DWV
- Electrical resistance
- Mechanical vibration and shock
- Insulation resistance
- Thermal shock
- Contact resistance
- Humidity


High-frequency electrical performace tests were performed for: Insertion loss, return loss, crosstalk, and time domain performance metrics including impedance and eye pattern. Complete test reports are available at **www.glenair.com/technical_information_test_reports**

SERIES 77

# Heat Shrink Boots, Sleeves, and Adapters

Heat shrink boots provide mechanical and environmental protection to connector-to-cable transitions. Specially formulated polymers are injection-molded, then heated and expanded. The shape-memory property of the material allows it to return to its original shape when heated with a hot air gun. Glenair Series 77 Heat Shrink Boots are available in six material types, including Zero Halogen Polyolefin for regulated environmental safety applications and Low Outgassing Fluoropolymer Alloy that meets NASA requirements. Series 77 boots are also TACOM qualified to SC-X15111D specifications and our Type 1 high-performance material can be ordered in 10 optional colors to match cable colors or provide color coding. Properly applied, these adhesive-lined shrink boots provide a dependable, leak-proof seal for interconnect cable assemblies. The following shapes/types are available in stock for immediate, same-day shipment:

- Lipped adapter shrink boots
- Lipless adapter shrink boots
- "Wye" and "tee" transitions
- Piggyback boot adapters

## EXPANDED VS. RECOVERED BOOTS

**Shrink boots are supplied in expanded form. The boot is heated, stretched on a mandrel, then cooled. The boot retains its expanded form until heat is applied. Application of heat restores the boot to its original dimensions.**

## APPROVALS

- **RoHS Compliant: All Series 77 Shrink boots are fully RoHS compliant, including adhesive-lined versions**
- **Airbus Defense & Space, Bomabardier, Gulfstream, TACOM, NAVSEA 5617649, and AS85049: M85049/140 (straight boots, /141 (90 degree boots) and /142 (wide-body transition including T, Y, and 1-to-3)**

Recovered Right Angle Boot

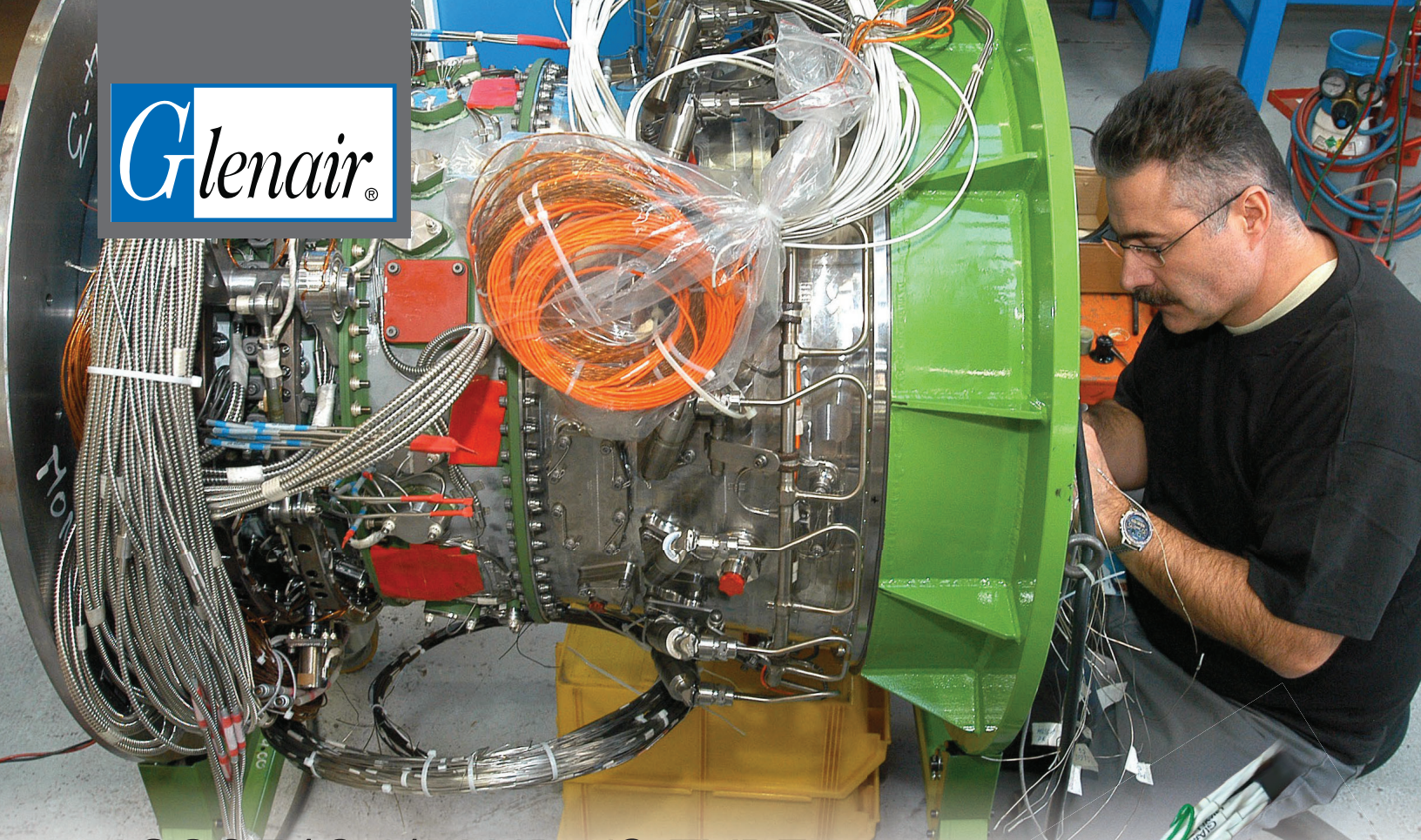
Expanded Right Angle Boot

*SERIES 77*

# Heat Shrink Boots, Sleeves and Adapters

| Shrink Boot Typical Material Properties | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Property** | **Type 1** High Performance Elastomer | **Type 2** Zero Halogen Polyolefin | **Type 3** General Purpose Polyolefin | **Type 5** Viton Fluoroelastomer Blend | **Type 6** High Performance Elastomer Alloy | **Type 7** Flexible Polyolefin | **Type 8** Low Outgassing Fluoropolymer Alloy | **Type 9** Low Temp Flexible Polyolefin |
| Flexibility | Semi-rigid | Semi-flexible | Flexible | Flexible | Flexible | Highly Flexible | Semi-rigid | Flexible |
| Operating Temperature Range | -75°C to +150°C | -40°C to +130°C | -55°C to +135°C | -55°C to +150°C | -55°C to +135°C | -55°C to +135°C | -50° C to +175° C | -40° C to +100° C |
| Shrink Temperature (min.) | 135°C | 120°C | 120°C | 135°C | 135°C | 120°C | 135° | 70° |
| Tensile Strength (psi) | 1700 | 1100 | 1400 | 2200 | 1500 | 1400 | 1700 | 1700 |
| Elongation (% min.) | 400 | 250 | 400 | 400 | 300 | 250 | 300 | 500 |
| Thermal Endurance (Elongation 50% min) | 3000 hrs, 150°C | 3000 hrs, 130°C | -- | -- | -- | -- | -- | -- |
| Heat Shock | 4 hrs, 215°C | 4 hrs, 200°C | 4 hrs, 225°C | 4 hrs, 225°C | 4 hrs, 220°C | 4 hrs, 250°C | 4 hrs, 225°C | 4 hrs, 150°C |
| Heat Aging | 168 hrs, 160°C | 168 hrs, 175°C | 168 hrs, 175°C | 168 hrs, 150°C | 168 hrs, 150°C | 168 hrs, 175°C | 168 hrs, 150°C | 168 hrs, 175°C |
| Dielectric Strength (V/mil) | 300 | 380 | 250 | 200 | 200 | 300 | 200 | 200 |
| Volume Resistivity (ohms-cm) | $10^{13}$ | $10^{12}$ | $10^{12}$ | $10^{10}$ | $10^{10}$ | $10^{12}$ | $10^{10}$ | $10^{10}$ |
| Water Absorption (%) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Flammability | Burn Time <15 sec Burn Length <25mm | Burn Time <15 sec Burn Length <25mm | Burn Time <120 sec Burn Length <25mm | Burn Time <120 sec Burn Length <25mm | Burn Time <120 sec Burn Length <25mm | Burn Time <90 sec Burn Length <25mm | Burn Time <60 sec Burn Length <25mm | Burn Time <120 sec Burn Length <25mm |
| RoHS Compliant | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Oxygen Index (% min.) | -- | >30% | -- | -- | -- | -- | -- | -- |
| Temperature Index (°C) | -- | >250° C | -- | -- | -- | -- | -- | -- |
| Smoke Index (max.) | -- | <20 | -- | -- | -- | -- | -- | -- |
| Toxicity Index (max.) | -- | <3 Per 100 gms | -- | -- | -- | -- | -- | -- |
| Outgassing | -- | -- | -- | -- | -- | -- | CVCM <0.1% TML <1% | -- |

| Shrink Boot Fluid Resistance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Fluid** | **Type 1** High Performance Elastomer | **Type 2** Zero Halogen Polyolefin | **Type 3** General Purpose Polyolefin | **Type 5** Viton Fluoroelastomer Blend | **Type 6** High Performance Elastomer Alloy | **Type 7** Flexible Polyolefin | **Type 8** Low Outgassing Fluoropolymer Alloy | **Type 9** Low Temp Flexible Polyolefin |
| Lubricating Oil | Very good | Good | Good | Excellent | Excellent | Good | Excellent | Fair |
| Hydraulic Fluid | Very Good | Good | Good | Excellent | Excellent | Good | Excellent | Fair |
| Aviation Fuel | Very Good | Good | Good | Excellent | Excellent | Fair | Excellent | Fair |
| Gasoline | Very Good | Fair | Fair | Excellent | Excellent | Good | Excellent | Fair |
| De-Icing Fluid | Excellent | Very Good | Good | Excellent | Excellent | Good | Excellent | Fair |
| Automotive Diesel | Good | Fair | Very Good | Excellent | Excellent | Fair | Excellent | Fair |



*AS83519/1 AND /2 TYPE*

# Heat Shrink Termination (HST) Sleeves


## For EMI shield-to-ground termination

Reliable termination of EMI/RFI shielding (to ground) in wire harness applications is universally accomplished with AS83519/1 and /2 type heat shrink termination (HST) sleeves. These devices, supplied in five different sizes—with or without pre-installed ground lead wires—provide environmental encapsulation and insulation of the shield termination site. Transparent heat shrink tubing allows for easy inspection and supplies additional strength and strain-relief. The preflux solder preform delivers a fast and controlled solder joint each and every time. Designed to meet SAE AS83519 performance requirements, Glenair Heat Shrink Termination (HST) shield to ground termination sleeves are fabricated from special transparent cross-linked polyvinylidene fluoride tubing to deliver optimal environmental shield termination in aerospace and defense industry applications. Each HST device is equipped with a pre-fluxed solder preform and thermally stabilized thermoplastic sealing rings that encapsulate and protect the shield-to-ground termination. Glenair HST devices are tested to perform from -55°C to 125°C IAW SAE AS83519. Best of all, these HST devices are made in the USA and stocked for immediate same-day shipment.

- **Designed to meet SAE AS83519 performance requirements**
- **Fabricated from transparent cross-linked polyvinylidene fluoride tubing for optimal environmental shield termination**
- **Pre-fluxed solder preform and thermally stabilized thermoplastic sealing rings to encapsulate and protect the shield-to-ground termination**
- **-55°C to 125°C temperature range IAW SAE AS83519**

*AS83519/1 AND /2 TYPE • M81824/1-1 QUALIFIED*

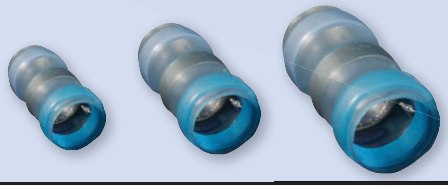
# Heat Shrink Termination Sleeves and Splices

## HEAT SHRINK TERMINATION SLEEVES PRODUCT SELECTION GUIDE

**077-010**
**AS83519/1 Type HST Sleeve**
**No Lead Wire**

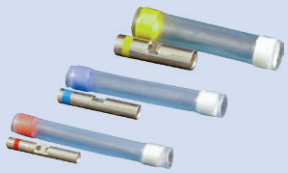
**077-020**
**AS83519/2 Type HST Sleeve**
**Pre-Installed Lead Wire**


**GS83519/1**
**AS83519/1 Type HST Sleeve**
**No Lead Wire**



**GS83519/2**
**AS83519/2 Type HST Sleeve**
**Pre-Installed Lead Wire**


**M81824/1-1**
**Mil-Qualified Splice**
**In-Line, Insulated, Environmental**



## AUTOMATED HST CELL ENSURES RELIABLE, REPEATABLE FABRICATION QUALITY

Glenair Heat Shrink Termination (HST) devices are supplied with pre-tinned leads including industry-standard nickel-copper per A-A-59569, Tin Copper Braid per A-A-59569, and ultra lightweight ArmorLite™ plated stainless steel microfilament.

### MATERIAL/FINISH:

- Insulation sleeve - Heat-shrinkable, radiation crosslinked, modified polyvinylidene fluoride per MIL-I-23053/8. Color - Translucent blue.
- Sealing ring - Thermally stabilized thermoplastic. Color - blue.
- Solder - Sn63 per ANSI-J-STD-006.
- Flux - ROM1 per ANSI-J-STD-004 (to be used on nickel plated shields only).
- Optional thermal indicator - changes from color to colorless.

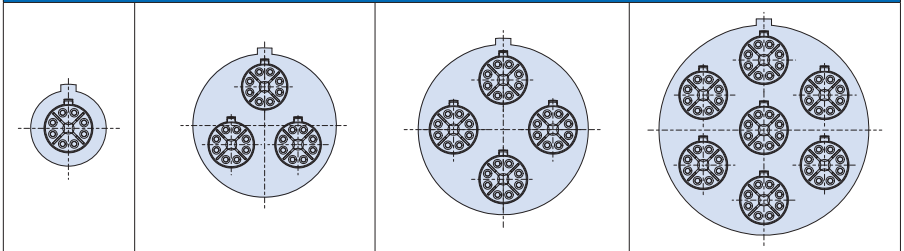

*HERMETIC*

# SpeedMaster 10G

## High-speed, hermetic connection system

Newly developed hermetic SpeedMaster 10G is optimized for high-speed Cat 6A Ethernet performance in a glass sealed configuration. The SpeedMaster 10G system offers industry-leading NEXT, return loss and insertion loss performance due to its highly-engineered isolation and separation architecture. SpeedMaster contacts meet the broad range of aerospace industry requirements for random vibration, shock, temperature cycling, durability, and safe, reliable performance. Hermeticity is rated at 1 x $10^{-7}$ ccHe/sec at 1 ATM delta pressure. Available in wall mount, jam-nut, double o-ring jam-nut, and weld mount configurations.

**Insert Arrangements**



| 11-1 | 19-3 | 21-4 | 25-7 |
|---|---|---|---|

**FEATURES**

- **1 x $10^{-7}$ ccHe/sec at 1 ATM**
- **Optimized line density over RJ45 connectivity.**
- **Superior temperature and shock and vibe**
- **Significant weight reduction compared to Quadrax solutions (reduces cable requirement by 1/2)**
- **High-density solution—ideally suited for today's networked IFE environments**
- **Maintains signal integrity through a hermetic barrier.**

Glenair®

Contact Glenair at
**818-247-6000** or
visit us at **www.glenair.com**
U.S. CAGE code 06324

*NEXT-GENERATION*

# Supernine Hermetic connectors with SpeedMaster™ 10G high-speed contacts

## 10GBase-T Cat 6A Compliance Testing Contacts

| Part Number Development | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **233-263** | **–H7** | **ZL** | **25** | **-7** | **S** | **N** | **-2** |

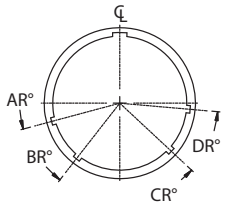
| | |
|---|---|
| **Series - Basic Part No.** | **233-263** = SuperNine Hermetic High-Speed Bulkhead Feedthru |
| **Connector Style*** | **H2** = Square Flange Mount **H7** = Jam-Nut Mount<br>**DH7** = Dual O-ring Jam-Nut Mount **H8** = Weld Mount |
| **Material/Finish** | **Z1** = 300 Series CRES; Passivated **ZL** = 300 Series CRES; Electroless Nickel |
| **Shell Size** | **11**, **19**, **21**, **25** |
| **Insert Arrangement** | See Insert Arrangement Table |
| **Module Type** | **P** = Pin **S** = Socket **A** = Connector Less Contacts |
| **Alternate Polarization** | **A**, **B**, **C**, **D**, **E**, **N** = Normal (IAW MIL-DTL-38999 Series III); see alternate keyway positions table. |
| **Panel Thickness** | **2** = .250 |

### NOTES

1. Contact factory for other plating options
2. SpeedMaster insert arrangements are exclusive to SpeedMaster™ and are unrelated to other insert patterns of the same name
3. Glenair 233-263 is only designed to mate with Glenair 233-219-G6 connector of the same shell size, polarization, and opposite gender
4. Hermeticity: less than 1 x $10^{-7}$ ccHe/sec at 1 atmosphere differential.
5. 233-263 connector is only available as pin to socket or socket to pin
6. Contacts are non removable
7. Material / Finish

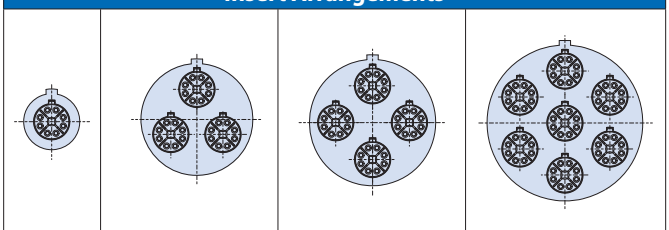
- Shell and jam-nut: CRES/passivate or CRES/nickel plate
- Contacts pin: nickel/iron alloy/gold
- Contacts sockets: copper alloy/gold
- Insulator hermetic: full glass/N.A
- Insulator socket: high grade dielectric/N.A
- Grounding members: copper alloy/electroless nickel
- Seals: fluorosilicone blend/N.A.

### Receptacle, Alternate Keyway Positions




| Shell Size Code | Shell Size | Alternate Position Code | AR° | BR° | CR° | DR° |
|---|---|---|---|---|---|---|
| B | 11 | N | 95 | 141 | 208 | 236 |
| | | A | 113 | 156 | 182 | 292 |
| | | B | 90 | 145 | 195 | 252 |
| | | C | 53 | 156 | 220 | 255 |
| | | D | 119 | 146 | 176 | 298 |
| | | E | 51 | 141 | 184 | 242 |
| F G J | 19 21 25 | N | 80 | 142 | 196 | 293 |
| | | A | 135 | 170 | 200 | 310 |
| | | B | 49 | 169 | 200 | 244 |
| | | C | 66 | 140 | 200 | 257 |
| | | D | 62 | 145 | 180 | 280 |
| | | E | 79 | 153 | 197 | 272 |

### Insert Arrangements



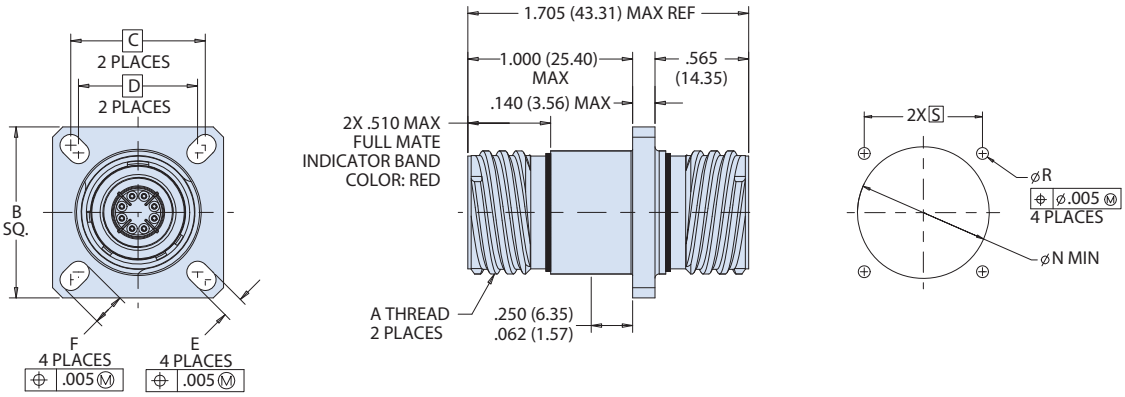
| 11-1 | 19-3 | 21-4 | 25-7 |
|---|---|---|---|

*NEXT-GENERATION*

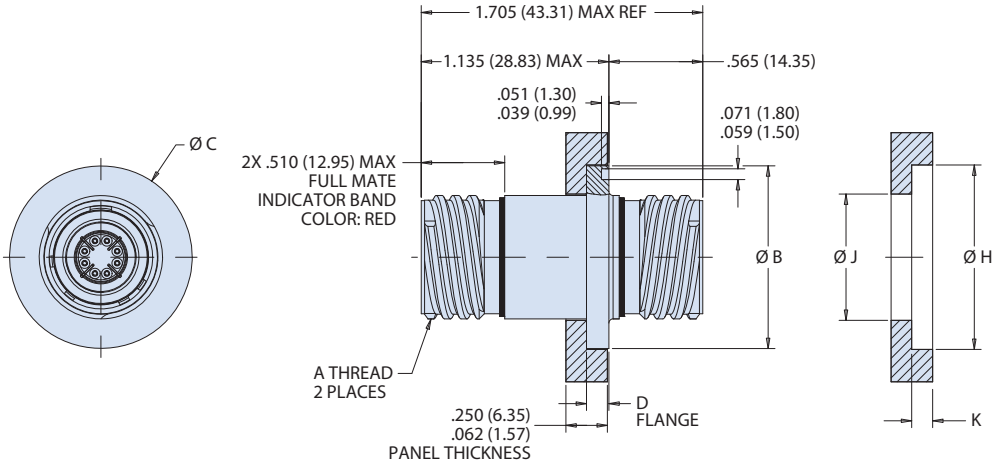
# Supernine Hermetic connectors with SpeedMaster™ 10G high-speed contacts

## Shell Style Dimensions

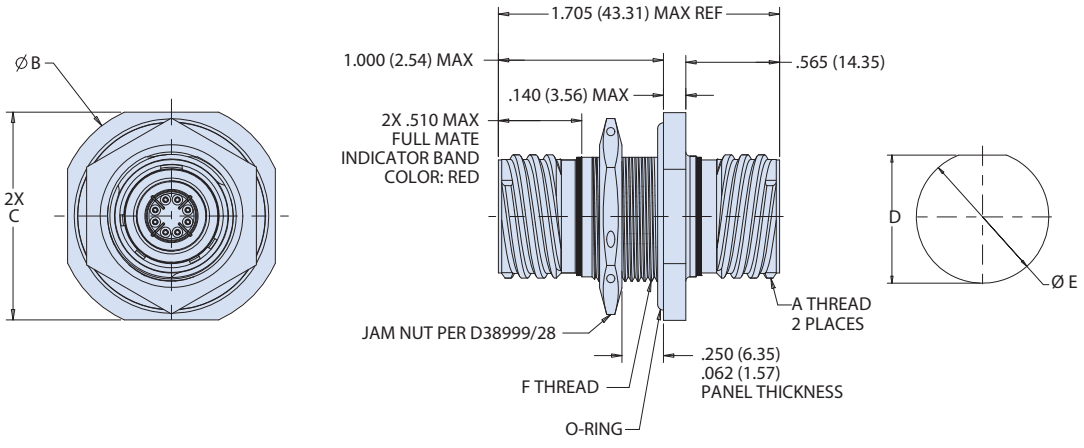
### H2 - SQUARE FLANGE MOUNT BULKHEAD FEED-THRU




### H8 - WELD MOUNT BULKHEAD FEED-THRU




### H7 - JAM-NUT MOUNT BULKHEAD FEED-THRU



*NEXT-GENERATION*

# Supernine Hermetic connectors with SpeedMaster™ 10G high-speed contacts

## Shell Style Dimensions

| 233-263-H2 Square Flange Mount Dimensions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Shell Size | A THREAD | B | C Basic | D Basic | E | F | ØR Holes | S Basic |
| 11 | .7500-.1P-.3L-TS-2A | 1.040 (26.42)<br>1.016 (25.81) | 0.812<br>(20.62) | 0.719<br>(18.26) | 0.136 (3.45)<br>0.120 (3.05) | 0.198 (5.03)<br>0.190 (4.83) | 0.133 (3.38)<br>0.123 (3.12) | 0.812 (20.62) |
| 19 | 1.2500-.1P-.3L-TS-2A | 1.449 (36.80)<br>1.425 (36.20) | 1.156<br>(29.36) | 1.062<br>(26.97) | | 0.202 (5.13)<br>0.186 (4.72) | | 1.156 (29.36) |
| 21 | 1.3750-.1P-.3L-TS-2A | 1.575 (40.00)<br>1.551 (39.40) | 1.250<br>(31.75) | 1.156<br>(29.36) | | | | 1.250 (31.75) |
| 25 | 1.6250-.1P-.3L-TS-2A | 1.823 (46.30)<br>1.799 (45.69) | 1.500<br>(38.10) | 1.375<br>(34.92) | 0.162 (4.11)<br>0.146 (3.71) | 0.250 (6.35)<br>0.234 (5.94) | 0.155 (3.94)<br>0.145 (3.68) | 1.500 (38.10) |

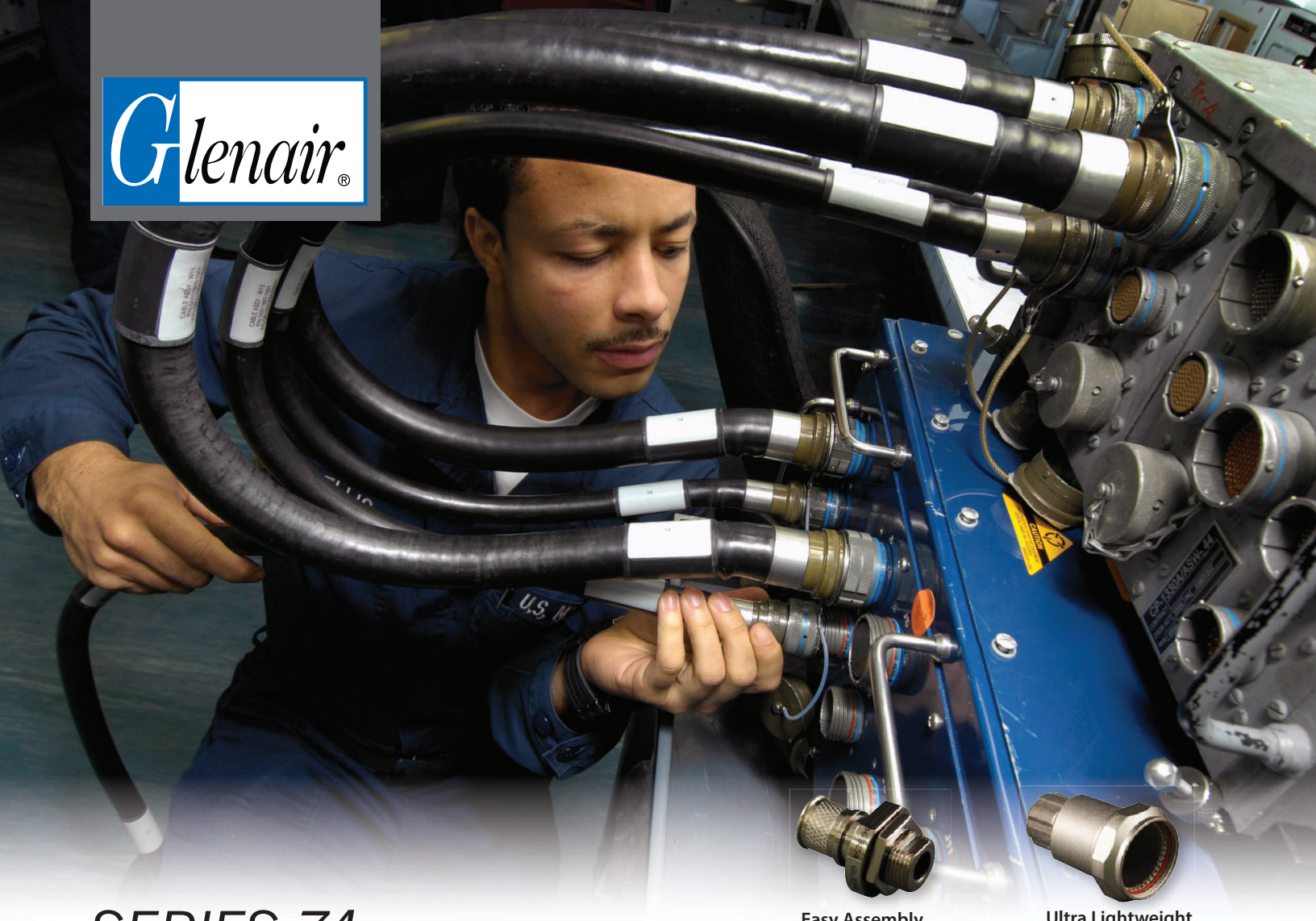
| 233-263-H8 Weld Mount Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|
| Shell Size | A Thread | B | C | D | ØH | ØJ | ØK ±.005 (0.13) |
| 11 | .7500-.1P-.3L-TS-2A | 1.063 (27.00)<br>1.051 (26.70) | 1.106 (28.09)<br>1.094 (27.79) | 0.134 (3.40)<br>0.118 (3.00) | 1.112 (28.24)<br>1.107 (28.12) | .760 (19.30) | .126 (3.20) |
| 19 | 1.2500-.1P-.3L-TS-2A | 1.547 (39.29)<br>1.535 (38.99) | 1.591 (40.41)<br>1.579 (40.11) | | 1.597 (40.56)<br>1.592 (40.44) | 1.260 (32.00) | |
| 21 | 1.3750-.1P-.3L-TS-2A | 1.689 (42.90)<br>1.677 (42.60) | 1.732 (43.99)<br>1.720 (43.69) | | 1.738 (44.15)<br>1.733 (44.02) | 1.385 (35.18) | |
| 25 | 1.6250-.1P-.3L-TS-2A | 1.941 (49.30)<br>1.929 (49.00) | 1.984 (50.39)<br>1.972 (50.09) | 0.165 (4.19)<br>0.149 (3.78) | 1.990 (50.55)<br>1.985 (50.42) | 1.635 (41.53) | .15 (3.81) |

| 233-263-H7 Jam-Nut Mount Dimensions | | | | |
|---|---|---|---|---|
| Shell Size | A Thread | Ø B | C Max | F Thread |
| 11 | .7500-.1P-.3L-TS-2A | 1.375 (34.92) | 1.252 (31.80) | M20x1.0-6g 0.100R |
| 19 | 1.2500-.1P-.3L-TS-2A | 1.937 (49.20) | 1.811 (46.00) | M35x1.0-6g 0.100R |
| 21 | 1.3750-.1P-.3L-TS-2A | 2.063 (52.40) | 1.937 (49.20) | M38x1.0-6g 0.100R |
| 25 | 1.6250-.1P-.3L-TS-2A | 2.311 (58.70) | 2.189 (55.60) | M44x1.0-6g 0.100R |

| Dual O-Ring Jam-Nut Mount Dimensions | | | | |
|---|---|---|---|---|
| Shell Size | A Thread | Ø B | C Max | F Thread |
| 11 | .7500-.1P-.3L-TS-2A | 1.625 (41.28) | 1.500 (38.10) | M20x1.0-6g 0.100R |
| 19 | 1.2500-.1P-.3L-TS-2A | 2.189 (55.60) | 2.063 (52.40) | M35x1.0-6g 0.100R |
| 21 | 1.3750-.1P-.3L-TS-2A | 2.311 (58.70) | 2.189 (55.60) | M38x1.0-6g 0.100R |
| 25 | 1.6250-.1P-.3L-TS-2A | 2.625 (66.68) | 2.400 (60.96) | M44x1.0-6g 0.100R |

| Jam-Nut Panel Cut-Out Dimensions | | |
|---|---|---|
| SHELL SIZE | ØD | E FLAT |
| 11 | 0.835<br>(21.21)<br>0.825<br>(20.96) | 0.771<br>(19.58)<br>0.761<br>(19.33) |
| 19 | 1.395<br>(35.43)<br>1.385<br>(35.18) | 1.335<br>(33.91)<br>1.325<br>(33.65) |
| 21 | 1.520<br>(38.61)<br>1.510<br>(38.35) | 1.460<br>(37.08)<br>1.450<br>(36.83) |
| 25 | 1.770<br>(44.96)<br>1.760<br>(44.70) | 1.710<br>(43.43)<br>1.700<br>(43.18) |

Glenair®





Easy Assembly Hat Trick System



Ultra Lightweight Composite AeroLite System

Super Durable Internal Braid System

# SERIES 74

# High-performance helical convoluted tubing, backshells, fittings and assemblies

## Hat Trick: Compact, Versatile “3-in-1” Design

Glenair’s unique and versatile “Hat Trick” conduit system features cleverly designed fittings that provide three key functions—conduit attachment, shield termination and boot attachment—in one easy-to-use compact fitting. These do-it-yourself fittings are equipped with a threaded inner shell, banding porch and shrink boot groove as well as a self-locking coupling nut. Helical Series 74 convoluted tubing threads directly into the shell cavity for easy attachment without restricting the conduit’s inner diameter. Available in composite plastic and aluminum versions. Banding is fast and reliable with Glenair Band-Master™ ATS bands. Add a shrink boot for IP66 environmental sealing.

- **Lightweight, flexible helical polymer-core materials and easy to install fittings, transitions and adapters**
- **Choice of five materials: ETFE, FEP, PFA, PTFE, and low-smoke, halogen-free PEEK**
- **Choice of turnkey, factory-terminated assemblies or user-installable configurations**
- **All popular part numbers in stock and ready for same-day shipment**

SERIES 74

# High-Performance Helical Conduit Systems

## tubing · backshells · fittings · assemblies

CONDUIT SYSTEMS

| Series 74 Helical Convoluted Tubing Material Choices | | |
|---|---|---|
| E | ETFE Fluoropolymer (Series 74 standard) | Highest tensile strength and lubricity. Combines mechanical toughness with outstanding chemical, dielectric and thermal properties, improved radiation resistance. This is our standard material for a reason: ETFE delivers the best performance and best value in high-performance polymer resins. |
| F | FEP | Economical with relatively high thermal stability, excellent dielectric properties. Unaffected by virtually all solvents and chemicals, good adhesion resistance. |
| P | PFA | Outstanding lubricity and resistance to corrosives, -95°F to 500°F temperature rating. Melt-extruded for better cold flow and greater long-term sealing than PTFE; more economical. |
| T | PTFE | Outstanding resistance to corrosives, -95°F to 500°F temperature rating. Somewhat better folding endurance than PFA. However, this paste-extruded fluoropolymer material is more difficult to process and so costs more than PFA with virtually equal performance. |
| K | PEEK | Low-smoke, zero-halogen with high strength and superior crush resistance. Lightest weight of all the tubing polymers, but also the highest material cost. |


### *Outstanding mechanical wire protection and lubricity for non-environmental and non-EMI/RFI applications*

Helical plastic convoluted tubing , available in a choice of 5 materials. Choose standard black or clear color.


### *Adds EMI/RFI braided shielding for use in non-environmental applications*

Helical plastic convoluted tubing, available in a choice of 5 materials, with a single braided shield for EMI/RFI protection.


### *Adds a second layer of high dB EMI/RFI shielding for use in non-environmental applications*

Helical plastic convoluted tubing, available in a choice of 5 materials, with double braided shield for high frequency shielding applications.


### *A jacketed configuration with one EMI/RFI shield for use in environmental applications*

Helical plastic convoluted tubing, available in a choice of 5 materials, with braided shielding for EMI/RFI protection and a ruggedized jacket for environmental protection.


### *Double-braided and jacketed configuration for environmental and high dB EMI/RFI shielding protection*

Helical plastic convoluted tubing, available in a choice of 5 materials with double shielding and jacket for optimum EMI/RFI protection and environmental sealing.


### *For environmental applications without EMI shielding requirements*

Helical convoluted tubing in choice of 5 materials with a ruggedized jacket for environmental protection.


### *Internal braid configuration for harsh chemical environment applications, with EMI/RFI shielding*

Chemical- and UV-resistant plastic conduit tubing with internal braid for weight savings and harsh-environment EMI/RFI protection.

# Advanced-performance, aerospace-grade M24308 intermateable connectors

**The HiPer-D is a M24308 intermountable and intermateable D-Sub with superior design features: one-piece machined shells, 200 °C continuous operating temperature-rating, aerospace-grade fluorosilicone grommets and face seals, and EMI/RFI ground springs.**

- **Advanced temperature, vibration and EMC shielding performance**
- **11 standard and 20 combo insert arrangements**
- **High-temperature epoxy insulators**
- **Watertight sealing**
- **Rugged machined one-piece shell**
- **Complete family of high-performance backshell accessories**
- **Space-grade platings and outgas processing available**

Series 28 HiPer-D:
the D-Sub for mission-critical
applications

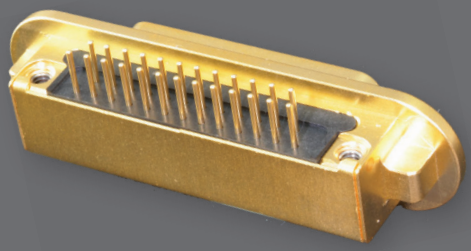
*ADVANCED PERFORMANCE*

# Series 28 HiPer-D Connectors

## The aerospace-grade D-subminiature

### HiPer-D ADVANCED FEATURES COMPARED TO STANDARD MIL-DTL-24308

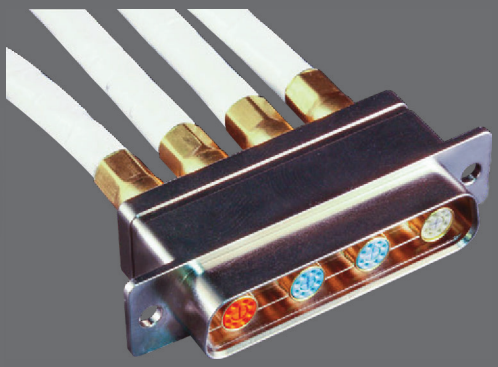

Improved panel mount and sealing design compared to standard



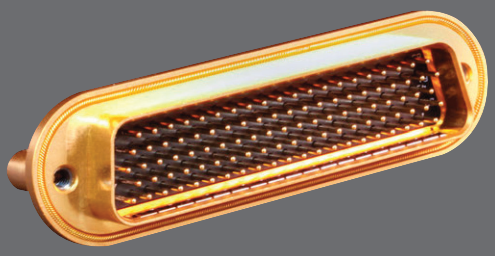
Improved board mount design compared to standard


Improved EMI / RFI backshell designs compared to standard


Precision-machined shells



High-speed contact arrangements including El Ochito®



Space-grade materials, finishes, and outgassing

Improved ground spring technology compared to standard

improved triple-ripple wire grommet seal compared to standard

improved interfacial seal compared to standard

*SERIES 928*

# HMI Lighting Connectors

## Quarter-turn bayonet connectors for head-to-ballast HMI lighting

Theatrical lighting demands reliable, built-to-last connectors and cables. Glenair Series 928 quarter-turn bayonet connectors meet demanding European "VG" standards for performance, durability and ruggedness. Available in all standard lighting industry configurations, these connectors feature electrocoated aluminum housings, neoprene inserts and machined copper alloy contacts.

- **High quality, extremely durable and safe, reliable connections between ballast and lamps**
- **Robust coupling mechanism for the area most affected by wear and tear**
- **Arctic Coupling nut and RadGrip**
- **A snag-less clamp and seal mechanism for every cable type and/or size (EZ-Clamp)**
- **Connectors compatible with all major HMI Lamp manufacturers from 400w to 24kW**

*SERIES 928*

# HMI Lighting Connectors

## Quarter-turn bayonet connectors for head-to-ballast HMI lighting

Available in Black, Yellow, Red, Blue, Light Green, Orange and Grey.

### RADGRIP™ COUPLING RINGS

## For better grip, improved durability

Glenair Series 928 plugs with RadGrip™ rubber coupling rings feature wide, easy-to-grip castellations as well as a raised thumb tab. Built for maximum durability and mechanical protection, RadGrip™ is the perfect solution for advanced protection against shock and other forms of mechanical damage. In addition, RadGrip™ facilitates rapid mating and demating of connectors. The highly durable rubber compound may be specified in seven different colors for improved connector and cable identification.

### HEAVY DUTY COUPLING RINGS

## Extended length aluminum ring with oversized flutes for easy mating and damage resistance

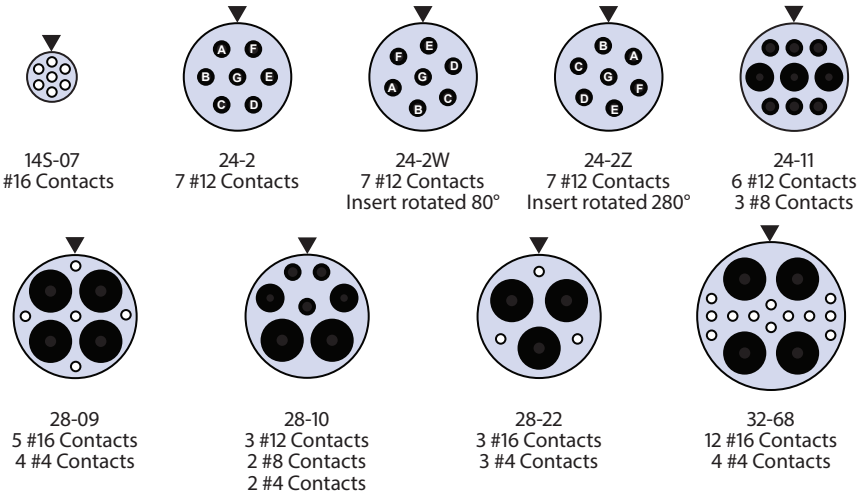
Glenair Series 928 plugs with heavy-duty aluminum coupling ring are electrocoated with scratch-resistant black polymer. These rings feature a lengthened profile with enlarged flutes for easy mates and de-mates.

### UL LISTED, ROHS COMPLIANT

## Series 928 connectors are part of Glenair's ITS power product family

VG approved Series ITS quarter-turn bayonet connectors are available in hundreds of arrangements and dozens of styles. Used worldwide for urban rail systems , construction equipment, and military equipment, the ITS connector is recognized as a "go to" solution wherever there is a need for rugged power interconnects. Glenair's ITS connectors are recognized under the Component Recognition Program of UL, file number E328968.

**Available contact arrangements**




### Features and specifications

- ¼ turn bayonet lock for secure attachment
- Intermateable, interchangeable with "VEAM" type connectors
- Machined contacts
- Durable polymer electrocoat finish
- UL #E328968 recognized
- IP67 ingress protection
- Operating temperature: -55°C to +125°C.
- Suggested maximum operating voltage: 500 VAC
- Current rating: size #4 contact 80 A, size #8 46 A, size #12 23 A, size #16 13 A
- Meets mechanical, electrical and environmental requirements of MIL-DTL-5015 and VG95234

Glenair®

## *MISSION-CRITICAL UNDERWATER*
# INTERCONNECT SOLUTIONS

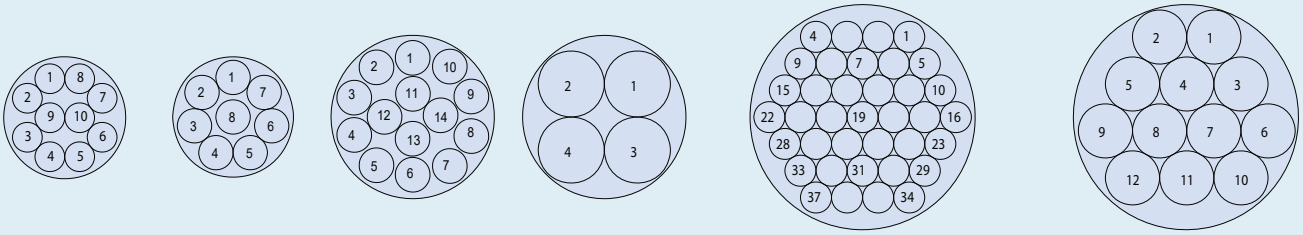
Most aggressive lead times in the industry · Vertically integrated and made in the USA
Custom solutions, no miniumum order quantities
Accessible and responsive engineering support · Obsessed with quality and qualification
Superior technical designs for extended durability and performance

# HotShot Cables

## As fast as 2 weeks

**Glenair's vertically-integrated US manufacturing offers the most aggressive lead times in the industry. HotShot cables are produced with our rigorous quality and qualification standards from in-stock component parts and materials, and can be delivered as fast as 2 weeks.**

**HOTSHOT ASSEMBLY CONTACT ARRANGEMENTS** (Plug Socket Insert shown)




| Size G | | Size K | | Size M | |
|---|---|---|---|---|---|
| **G10** | **G8** | **K14** | **K4** | **M37** | **M12** |
| 10 Size #22 Contacts | 8 Size #20 Contacts | 14 Size #20 Contacts | 4 Size #16 Contacts | 37 Size #22 Contacts | 12 Size #16 Contacts |

| Plug Assembly: Preferred Wiring Configurations | | | |
|---|---|---|---|
| **Contact Arrangement** | **Maximum Wire Gauge** | **Furnished Cable P/N** | **Configuration** |
| G8 | #20 | 000532 | 8X20 AWG Unshielded |
| G10 | #22 | 000542 | 4x22 AWG shielded twisted pairs, Cat 5e includes drain wire |
| K4 | #16 | 000536 | 4X16 AWG Unshielded |
| K14 | #20 | 000534 | 14 X20 AWG Unshielded |
| M12 | #16 | 000538 | 12X16 AWG Unshielded |
| M37 | #22 | 000540 | One 8X22 AWG (Cat 5e)<br>20X22 AWG (six twisted triads, one twisted pair<br>8X22 AWG (four twisted pairs), Cat 5e, includes drain wire |

*SUPER-FAST TURNAROUND*

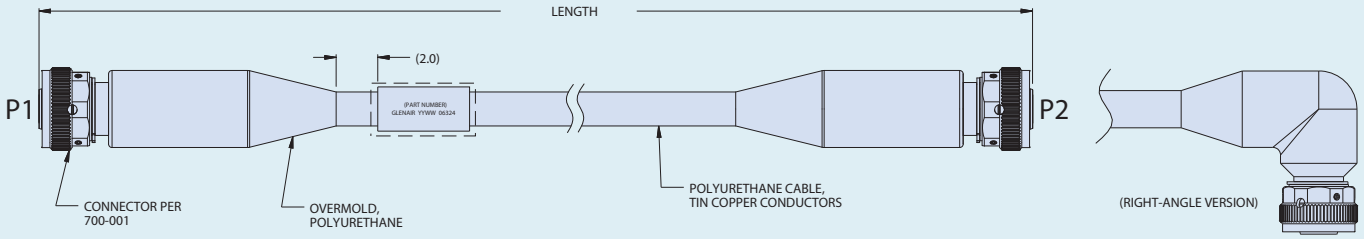
# HotShot Cables
# High-Pressure Underwater Assemblies

## Delivered as fast as 2 weeks

## HOTSHOT CABLE - SEAKING PLUG ASSEMBLY

| HotShot SeaKing Plug Assembly - How To Order | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | | **7071-9001** | **-S** | **R** | **-6** | **K14** |
| **Product Series** | HotShot Cable, SeaKing™ Plug | | | | | |
| **P1 Connector** | **S** = Straight **R** = 90° N = None | | | | | |
| **P2 Connector** | **S** = Straight **R** = 90° N = None | | | | | |
| **Cable Length** | In feet. Standard Lengths: **-2**, **-4**, **-6**, **-10**, **-15**, **-20** | | | | | |
| **Insert Arrangement** | **G8**, **G10**, **K4**, **K14**, **M12**, **M37** | | | | | |

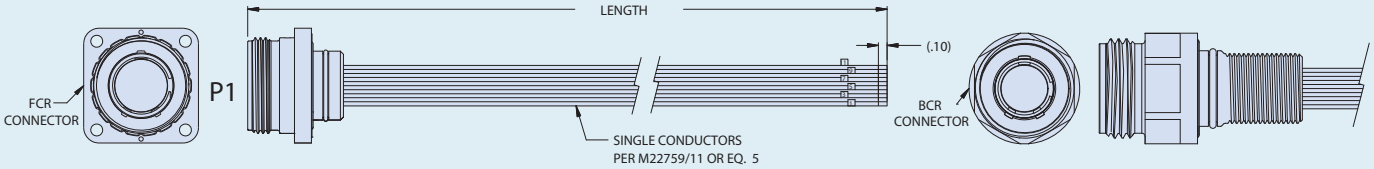
- **100% hydrostatic pressure tested**
- **Connector pressure ratings 10K psi mated**
- **100% Electrical test for shorts, dielectric withstanding voltage and insulation resistance IAW MIL-STD-202**
- **Also available as single-ended whips**




## HOTSHOT CABLE - SEAKING RECEPTACLE ASSEMBLY

| HotShot SeaKing Receptacle Assembly - How To Order | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | | **7071-9002** | **-1** | **K14** | **-1** | **-A** |
| **Product Series** | HotShot Cable, SeaKing™ Receptacle | | | | | |
| **Receptacle Style** | **-1** = 700-006 **-2** = 700-007 **-3** = 700-026 **-4** = 700-027 | | | | | |
| **Insert Arrangement** | **G8**, **G10**, **K4**, **K14**, **M12**, **M37** | | | | | |
| **Cable Length** | In feet. Standard Lengths: **-1**, **-2**, **-3** | | | | | |
| **Wire Coloring** | **-A** = All White **-B** = 10 Color Repeating (IAW MIL-STD-681) | | | | | |

- **100% hydrostatic pressure tested**
- **Connector pressure ratings 10K psi mated**
- **100% Electrical test for shorts, dielectric withstanding voltage and insulation resistance IAW MIL-STD-202**
- **Also available as single-ended whips**



*CABLE SHOP/MRO*

# Interconnect Assembly Tools

## Banding · grounding · crimping · mounting · termination · testing

### GROUNDCONTROL EARTH BOND

Hydraulic Earth Bond setting tools for aluminum and stainless steel plate

Bi-laminar (copper core) earth bonds

Available dynamometer

Used for ground strap bonding and equipment rack installation

### FIBER OPTIC TERMINATION AND TEST TOOLKITS

Turnkey fiber optic termination and maintenance kits

Inspection and test probes and adapters

Dry-wipe fiber optic cleaning tools

Fiber optic polishing pucks

Video scope inspection kits

*CABLE SHOP / MRO*

# Interconnect Assembly Tools

## Banding · grounding · crimping · mounting · termination · testing

### CRIMP TOOLS

M22520/01 and /02
Wire-to-contact crimp tools

Locators and
accessories

Crimp contact insertion
and removal tools

### BACKSHELL-TO-CONNECTOR MOUNTING TOOLS

TG70 Universal
strap wrench

Circular backshell
assembly wrenches

Connector holding tool
kits and wrenches

Soft jaw pliers

Bench-mount tools
for volume production

## Band-Master ATS® EMI/RFI CABLE SHIELD TERMINATION SYSTEM


Nano banding tool for use with
ultraminiature connectors and
banding backshells


Micro banding tool for use with most
subminiature connectors and
banding backshells


Standard and Slim Standard banding tools
for use with large form-factor connectors
and banding backshells

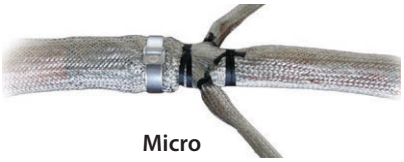
Each tool accommodates a specific width
of band (nano, micro, or standard)

Bands are available precoiled for
high-volume assembly operations

Special high-volume pneumatic tool
for bench use, available for all sizes

The only banding tool with a built-in
calibration counter

Nano

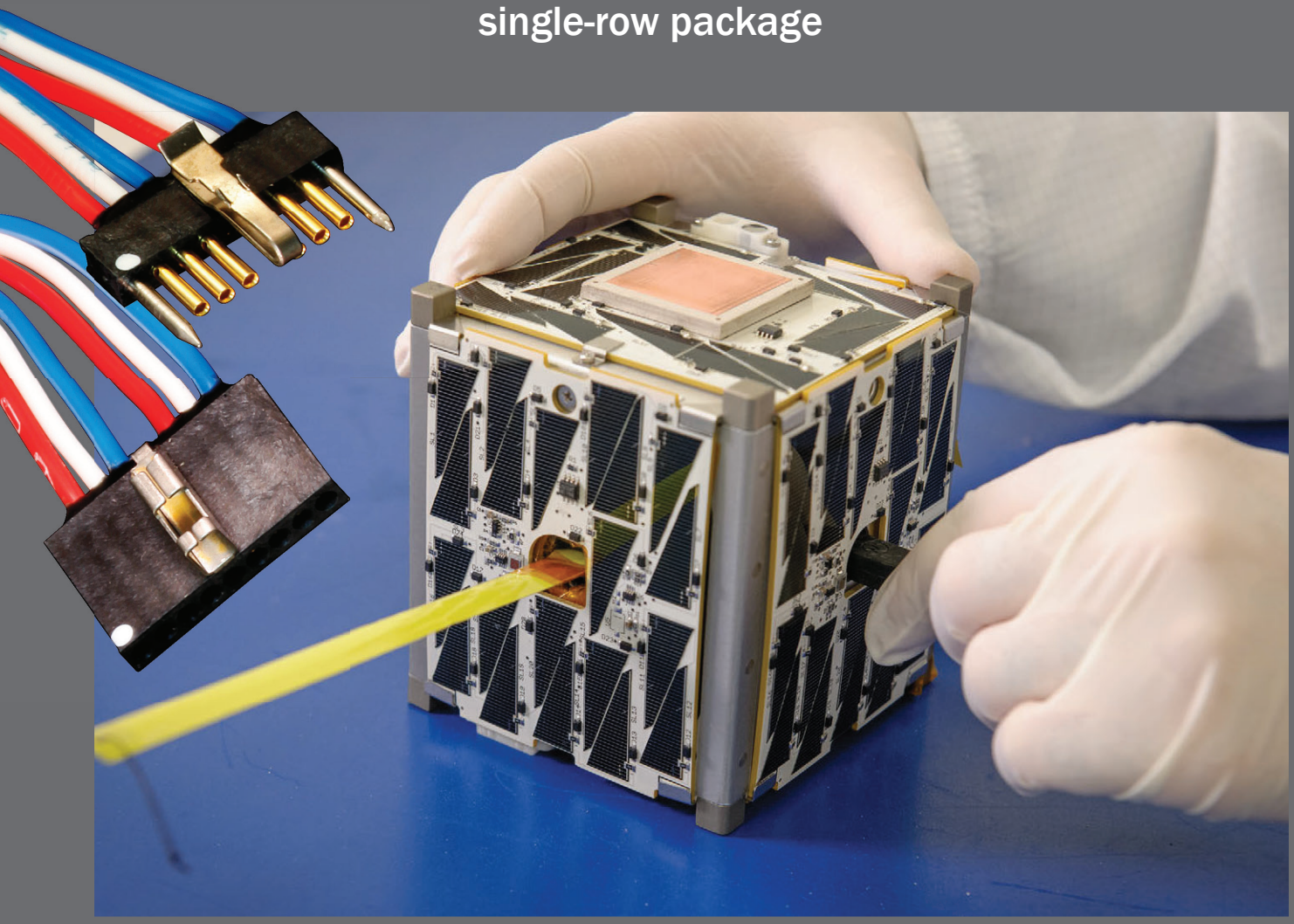


Micro

Standard

Bands and tools optimized for size and weight reduction across the complete range of
connector, backshell, and cable form factors

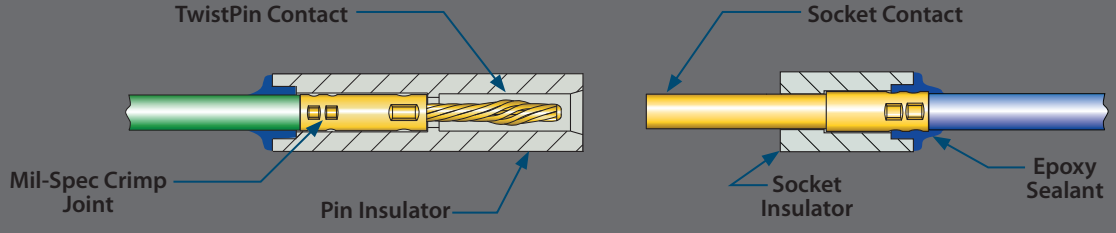
# Latching MicroStrips™: TwistPin performance and durability in a lightweight, space-saving single-row package



Series 171 MicroStrips™ are made for high-reliability wire-to-board and wire-to-wire applications. These high-density strip connectors are typically used in ruggedized 3 Amp signal applications, where higher-performance contacts, precision machined shells and space-grade dielectrics offer significant advantages compared to commercial-grade headers and jumpers. Glenair's rugged, high force TwistPin contact accepts up to #24 gage wire, the current rating is 3 Amps, the voltage rating is 600 Vac, and the temperature rating is -55C to +150C. The Series 171 Latching MicroStrip connector meets all applicable requirements of MIL-DTL-83513. Choose solder cup, pre-wired, or printed circuit board versions. A stainless steel latch provides secure coupling.

- **High-reliability TwistPin contact system**
- **#24-30 AWG wire size**
- **.050" pitch contact spacing**
- **Solder cup, pre-wired or PCB header terminations**
- **3 Amps, +150C, 600 Vac**

## LATCHING MICROSTRIP™ CROSS-SECTIONAL VIEW

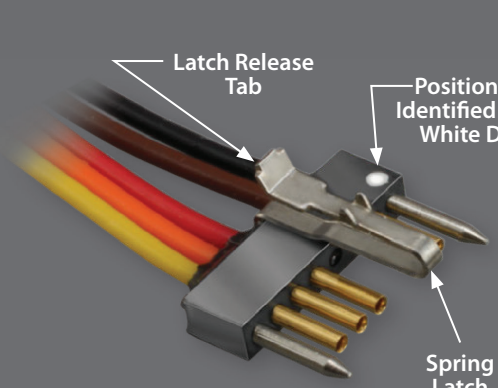


# Latching MicroStrips™

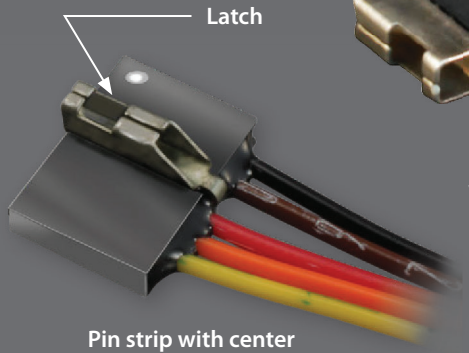
## Superior TwistPin contact performance

### ABOUT SPRING LATCHES, GUIDE PINS AND MOUNTING HOLES

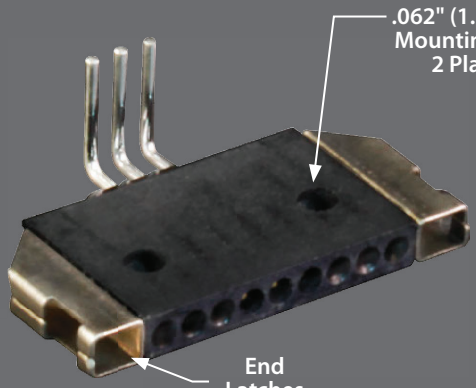
Optional stainless steel latch clips provide secure mating when subjected to shock and vibration. A single center latch is suitable for most applications. Dual end latches are also available. The spring latch is always installed on the socket strip. The latch receiver is installed on the pin strip. To unmate the connectors, simply press the release tab while pulling the connectors apart. MicroStrips™ are available with stainless steel guide pins. A single guide pin provides circuit polarization. A guide pin on each end helps to align connectors when mating and prevents damage to contacts. For most applications the preferred configuration is a single center latch with no guide pins. Mounting holes are now available. Attach strips to circuit boards with size 0-80 screws (customer-supplied).




Socket strip with center latch



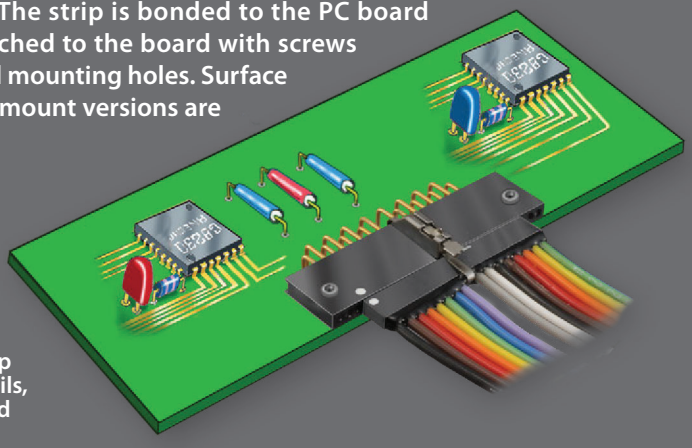

Pin strip with center latch and guide pins at both ends




Right Angle PCB Header with End Latches and Mounting Holes.

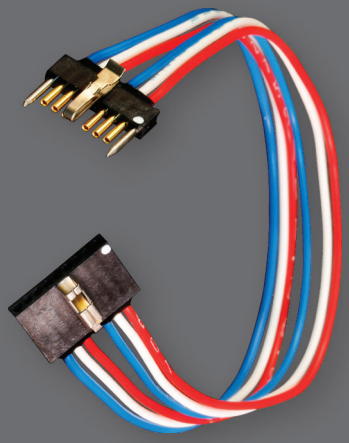
### ABOUT BOARD MOUNT STRIPS

Space customers typically use MicroStrips™ for high reliability board-to-wire I/O applications. The pin strip is usually configured with right angle thru-hole PC tails. The strip is bonded to the PC board with epoxy, or attached to the board with screws installed in optional mounting holes. Surface mount and vertical mount versions are also available.

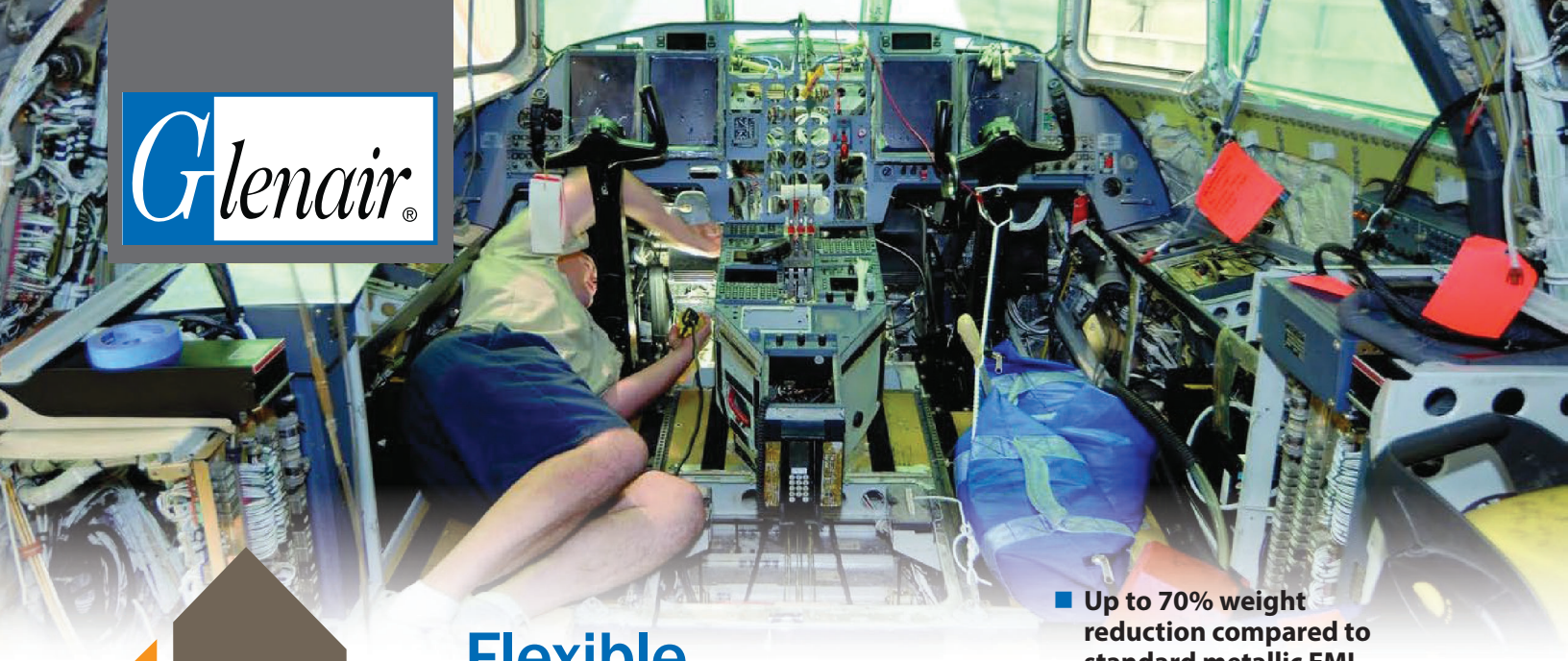


Right angle pin strip with staggered PC tails, mounting holes and center latch

### SINGLE ROW BACK-TO-BACK MICROSTRIPS



.050" pitch single row surface mount back-to-back microstrip

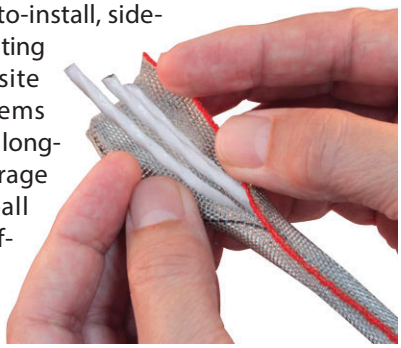


Glenair®

MasterWrap™

# Flexible, lightweight wraparound EMI/RFI shielding and abrasion protection

Tubular braided sleeving meets the broad range of EMC shielding and mechanical protection requirements of aircraft harness assemblies. But the need to apply conductive shielding materials over installed aircraft wire and cable bundles requires new technology. Legacy self-wrapping cable braid has long been available for EMI/RFI applications and abrasion protection, albeit with poor performance due to its heavy weight, inflexibility, and "windowing," which results in poor shielding performance. MasterWrap™, a lightweight, easy-to-install, side-entry, self-wrapping shielding solution —incorporating Glenair microfilament ArmorLite™ and composite thermoplastic PEEK fibers—solves these problems and more. MasterWrap™ is ideally suited for both long-run wire harness protection as well as spot coverage and maintenance of EMC cable applications—all with outstanding weight reduction and ease-of-assembly. MasterWrap™ is qualified for use at major aircraft manufacturers for both long cable runs and spot coverage and repairs.



- **Up to 70% weight reduction compared to standard metallic EMI shielding**
- **Replaces harder-to-install tubular EMI/RFI sleeving**
- **Fast and easy side-entry installation and removal**
- **Reduces windowing and coverage gaps**
- **Superior flexibility, durability and repairability**
- **Temperature tolerant from -65°C to 200°C**
- **High-frequency EMI shielding performance comparable to standard metallic and lightweight tubular braid**
- **Outstanding abrasion and mechanical protection**
- **Halogen-free and RoHS compliant**
- **500 hour salt spray corrosion resistance**
- **50,000 cycle 90°–120° bend flex tested**
- **Outstanding caustic chemical and corrosive fluid resistance**

## MATERIAL CONSTRUCTION AND HANDLING PERFORMANCE

*Flexible material eliminates kinking and windowing · Spring members ensure shielding stays tight to wire bundle*

**Material design provides uniform surface with limited interference to structures and clamps. Reduces kinking and windowing compared to full metal braid solutions for excellent shielding performance**

**Interwoven with high-temperature PEEK composite thermoplastic spring members that ensure up to 95% optical coverage**

*WITH ARMORLITE™ TECHNOLOGY*

# MasterWrap™ flexible, lightweight wraparound EMI/RFI shielding and abrasion protection

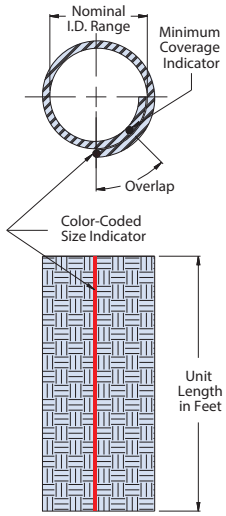
## for spot EMI/RFI shielding coverage and repair of wire harnesses

### HERE'S WHAT YOU NEED TO KNOW ABOUT WEIGHT

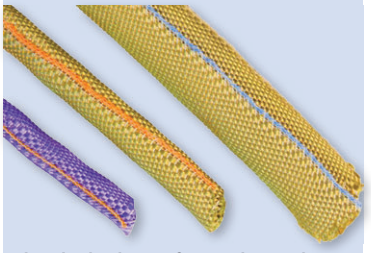
| Weight of standard metallic tubular braided cable shielding | | |
|---|---|---|
| EMI Braided Shielding Type (measured samples all 1/2" diameter) | Weight g/ft | Weight g/m |
| **Glenair nickel-clad copper braid** | 21.6 | 70.9 |
| Raychem RAY-103-12.5 nickel-clad copper braid | 21.9 | 72.0 |
| **Weight of lightweight tubular (LWB) braided cable shielding** | | |
| **AmberStrand® 100%** | 3.7 | 12.1 |
| **AmberStrand® 75% / NiCu 25%** | 4.9 | 16.1 |
| **ArmorLite™ 100%** | 4.4 | 14.4 |
| **ArmorLite™ 75% / NiCu 25%** | 5.4 | 17.7 |
| Raychem INSTALITE | 13.4 | 44.0 |
| **Weight of side-entry self-wrapping braided cable shielding** | | |
| **MasterWrap™** | 6.2 | 20.3 |
| Federal Mogul ROUNDIT® EMI FMJ | 18.0 | 59 |
| Federal Mogul ROUNDIT® EMI C27 XWS | 23.5 | 77 |

| Mechanical and Environmental Performance Summary | | |
|---|---|---|
| **Vibration** | No evidence of wear or visible defect | DO-160G Cat S and H |
| **Abrasion** | No evidence of wear, visible defect or electrical degradation | EN-3475-511:2002 |
| **High Temperature Exposure** | 168 hours at 200°C; no visual or electrical degradation | EN 6059-302 part 302 |
| **Rapid Change of Temperature** | 10 hour hot and cold cycling; no evidence of wear or visible defect | EN 6059-308 part 308 |
| **Vertical Flammability** | Pass | 14 CFR part 25.853 |
| **Fluid Immersion Testing** | No visual or electrical degradation | DO-160G |
| **Bending Properties** | 25000 cycles; no breakage, no plating delamination | EN 6059-402 |
| **Salt Fog 500 Hours** | No evidence of base metal on braid | ASTM B117-03 NaCl 5% |

MasterWrap is compatible with most aerospace industry fluids. Consult factory for specifics.
DuPont™ Nomex® is a registered trademark of E.I. duPont de Nemours and Company.




### ALSO AVAILABLE: MASTERWRAP™ (NOMEX®)



*The ideal solution for mechanical abrasion protection of wire bundle harnessing. Available color selections allow for easy identification and labeling of wire circuitry.*

### WHAT YOU NEED TO KNOW ABOUT EMI/RFI SHIELDING PERFORMANCE

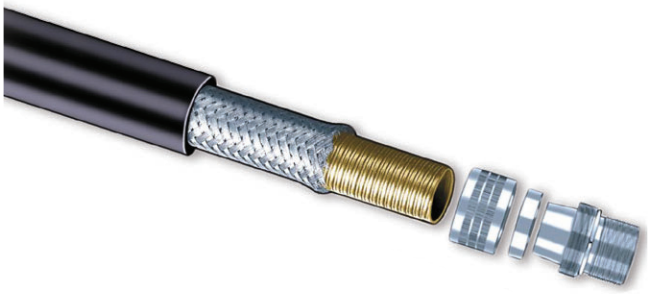
| | NiCu | Armorlite™ | Amberstrand® | MasterWrap™ |
|---|---|---|---|---|
| TRANSFER IMPEDANCE (Per IEC 62153-4) • (Max values for 1/2 inch diameter shields) | | | | |
| **FREQUENCY** | | | | |
| 10 KHz | 5 mΩ/m | 50 mΩ/m | 60 mΩ/m | 40 mΩ/m |
| 100 KHz | 5 mΩ/m | 50 mΩ/m | 60 mΩ/m | 40 mΩ/m |
| 1 MHz | 12 mΩ/m | 50 mΩ/m | 60 mΩ/m | 40 mΩ/m |
| 10 MHz | 80 mΩ/m | 50 mΩ/m | 80 mΩ/m | 40 mΩ/m |
| 100 MHz | 130 mΩ/m | 30 mΩ/m | 110 mΩ/m | 80 mΩ/m |
| SHIELDING ATTENUATION (Per IEC 62153-4) • (Min values for 1/2 inch diameter shields) | | | | |
| **FREQUENCY** | | | | |
| 1 GHz | 38 dB | 55 dB | 48 dB | 40 dB |
| 3 GHz | 40 dB | 60 dB | 55 dB | 35 dB |
| 5 GHz | 44 dB | 60 dB | 60 dB | 45 dB |
| 8 GHz | 40 dB | 50 dB | 60 dB | 40 dB |
| | | | | |
| **WEIGHT** | **70.9 g/m** | **14.4 g/m** | **12.1 g/m** | **20.3 g/m** |

This table is a useful summary of MasterWrap™ shielding performance compared to NiCu and lightweight braid. Transfer impedance and shielding attenuation data is supplied for 1/2" diameter test samples. At high frequencies, both LWB and MasterWrap™ provide comparable and even superior performance to nickel-copper due to reduced windowing and superior optical coverage with significant reduction in weight. Further improvements in high-frequency shielding attenuation can be achieved using conductive tape wraps and/or via hybrid blends of LWB and NiCu.

SERIES 75

# Helical Metal-Core Conduit

## The ultimate in highly flexible, crush-proof EMI/EMP protection



- **Hermetically sealed, flexible metal-core conduit for interconnect applications**
- **Choice of three materials: Brass, Stainless Steel, and Nickel Iron Alloy**
- **Turnkey, factory-terminated assemblies for landing gear and other rugged aerospace applications**
- **All materials deliver superior EMC performance as well as crush resistance and environmental sealing**


***Select for superior crush resistance and corrosion protection***

Highly flexible crush-proof metal conduit in stainless steel with Viton, Neoprene, or Bluejacket protective covering


***Select for low-frequency EMC protection in and around motors and control equipment***

Nickel-iron conduit material plus shielding and jacketing

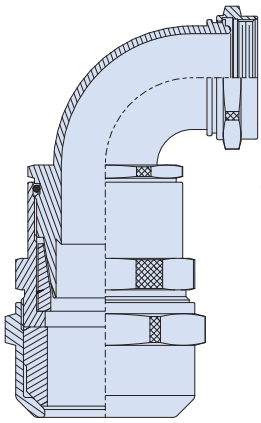
*SERIES 75*

# Metal-Core Conduit Systems

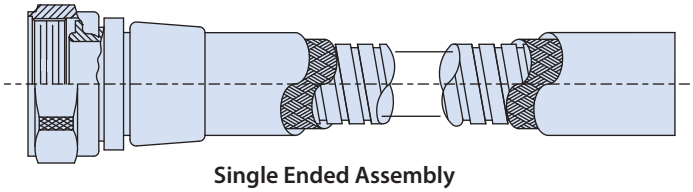
## US Navy Qualified CRES, Nickel-Iron, and Bluejacket systems

- **Qualified to MIL-PRF-24758A(SH)**
- **User-installable and factory terminated configurations**
- **Innovative stainless steel fittings with advanced environmental sealing, EMI shield termination and rotatable coupling nut**
- **Adapters for all shipboard interfaces—fully compatible with legacy MIL-C-24758 conduit system components**

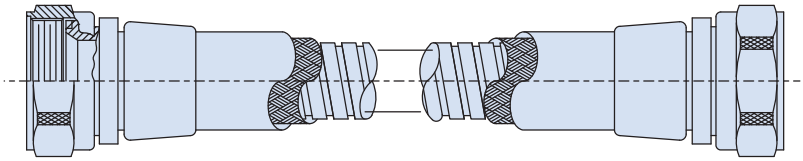
## Do it once, do it right with Glenair MIL-PRF-24758 wire protection conduit systems



90°

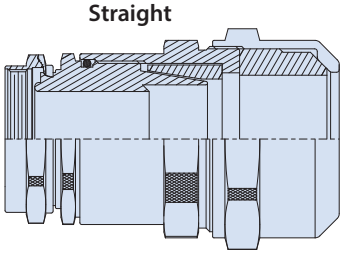


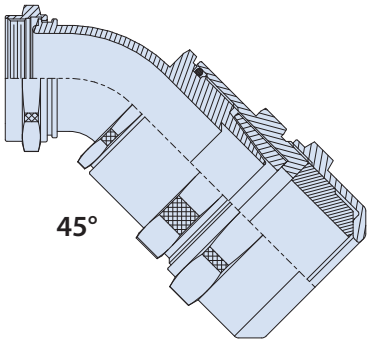
Single Ended Assembly



Double Ended Assembly

Straight





45°

**MIL-PRF-24758 Configuration Options:** Choose from high-performance user-installable fittings or lighter weight factory terminated assemblies

### SERIES 75 FITTINGS AND ADAPTERS FOR METAL-CORE CONDUIT

Composite conduit splice fitting

Stainless steel conduit feed-thru fitting

Low-Profile RP Plus System

Heavy-duty environmental conduit-to-panel fitting

Heavy-duty environmental conduit-to-connector fitting

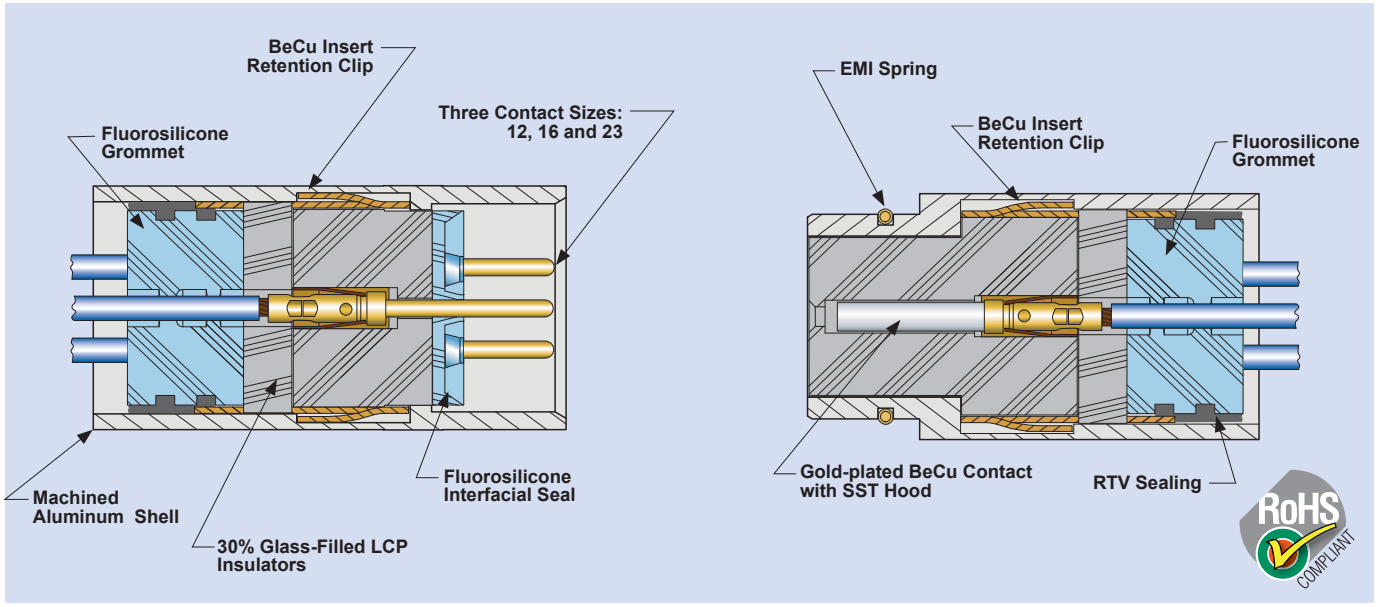
Astronaut Rick Linnehan prepares a segment of the Kibo module for installation on the ISS

*ADVANCED-PERFORMANCE*

# Series 79

## The ultraminiature crimp contact rectangular with advanced environmental and EMC performance

- Crimp, PCB, fiber optic, coax, power and pitot
- Precision machined aluminum shells sealed to IP67
- High-density #23 contact arrangements set on .076 centers
- Blind mating for rack and panel applications
- Environmental, hermetic and filter versions
- Integrated ground spring for improved EMI shielding



*SERIES 79*

# Micro-Crimp

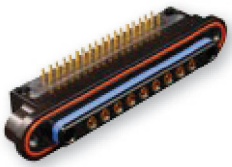
## Ultraminiature crimp contact rectangular

SERIES 79 SEVENTY-NINE

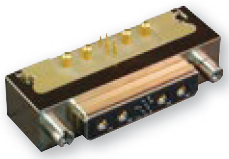
## SERIES 79 MICRO-CRIMP PRODUCT SELECTION GUIDE

Crimp Terminated Cable Connectors

Crimp Terminated Panel Mount Connectors



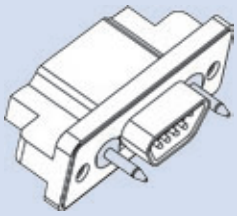
Panel Mount Connector with Auxiliary Sealing



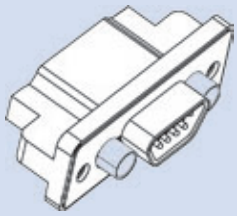
Right Angle PCB Panel Mount and Free-Standing Connectors

Backshells and Accessories, EMI Adapters and Protective Covers

### Blind Mate Guide Pins and Sockets



**Guide Pins**
Connector may be supplied with stainless steel non-removable guide pins.



**Guide Sockets**
Connector may be supplied with stainless steel non-removable bushings.

### *Selected Contact Types*

Standard Signal

Power

Coaxial

Differential Twinax

Fiber Optic

Pitot Tube

| Shell Size | Contact Arrangement | Contact Quantity | | |
|---|---|---|---|---|
| | | #23 | #16 | #12 |
| A | A-5 | 5 | — | — |
| B | B-2P2 | — | 2 | — |
| | B-9 | 9 | — | — |
| C | C-13 | 13 | — | — |
| D | D-15 | 15 | — | — |
| | D-3P3 | — | 3 | — |
| | D-7P2 | 5 | 2 | — |
| E | E-11P2 | 9 | 2 | — |
| | E-19 | 19 | — | — |
| | E-7P3 | 4 | 3 | — |

| Shell Size | Contact Arrangement | Contact Quantity | | |
|---|---|---|---|---|
| | | #23 | #16 | #12 |
| F | F-15P2 | 13 | 2 | — |
| | F-23 | 23 | — | — |
| | F-5P5 | — | 5 | — |
| G | G-33 | 33 | — | —— |
| H | H-10P4 | 6 | — | 4 |
| | H-29P7 | 22 | 7 | — |
| | H-36P2 | 34 | — | 2 |
| | H-54P2 | 52 | 2 | — |
| | H-5P5 | — | — | 5 |
| | H-66 | 66 | — | — |

| Shell Size | Contact Arrangement | Contact Quantity | | |
|---|---|---|---|---|
| | | #23 | #16 | #12 |
| J | J-17P4 | 13 | 4 | — |
| | J-25P2 | 23 | 2 | — |
| | J-33 | 33 | — | — |
| | J-7P7 | — | 7 | — |
| K | K-27P4 | 23 | 4 | — |
| | K-35P2 | 33 | 2 | — |
| | K-43 | 43 | — | — |
| | K-9P9 | — | 9 | — |
| L | L-6P6 | — | — | 6 |
| | L-78 | 78 | -- | -- |
| M | M-102 | 102 | -- | -- |

| Performance Specifications | |
|---|---|
| Current rating | Contact size #23 5 Amps, size #16 13 Amps, size #12 23 Amps maximum |
| Voltage rating (DWV) | Contact size #23 500 VAC rms. size #16 and #12 1800 VAC rms. Sea level. |
| Insulation resistance | 5000 megohms minimum |
| Operating temperature | -65° C. to +150° C. |
| Contact resistance | 5 milliohms maximum |
| Water ingress protection | IP67 |
| Shielding effectiveness | >75 dB attenuation from 100 MHz to 1000MHz, >60dB 1GHz to 4GHz, >40dB 4GHz to 10GHz. |

Glenair®

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

Glenair®

## *MISSION-CRITICAL UNDERWATER*
# INTERCONNECT SOLUTIONS

Most aggressive lead times in the industry · Vertically integrated and made in the USA
Custom solutions, no miniumum order quantities
Accessible and responsive engineering support · Obsessed with quality and qualification
Superior technical designs for extended durability and performance


# Micro-PSI

## Microminiature high-pressure connectors and cables

- **Glass-to-metal seal 10,000 PSI pressure rated, open-face and mated**
- **Special-purpose high-density (.050" contact spacing) intelligent inspection (PIG) connector series**
- **3 Amp high-speed Gigabit Ethernet-ready, Coax layout for 5GHz performance**
- **-20° to +150°C temperature range**
- **High-density, small form-factor design**
- **Serviceable O-rings on plugs and dual piston and face O-rings on receptacles provide high-reliability sealing.**
- **Available as overmolded plug cordsets with Viton or Polyurethane jacketing**

*10K PSI SOLUTION*

# Micro-PSI

## Microminiature, high-pressure Specifications and insert arrangements

## MICRO PSI HOW TO ORDER, SPECIFICATIONS, MATERIALS AND FINISHES

| MIcro-PSI - How To Order | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **707-0264** | **-7** | **ME4** | **Z1** | **S** | **N** |

| | |
|---|---|
| **Series / Basic P/N** | **707-0264** = Series and Basic Part Number |
| **Connector Style** | **1** = CCP (Cable Connector Plug)<br>**5** = CCR (Cable Connector Receptacle)<br>**6** = FCR (Flange Mount Receptacle)<br>**7** = BCR (Bulkhead Mount Receptacle) |
| **Shell Size / Layout** | See Insert Arrangements |
| **Shell Material** | **Z1** = Stainless Steel |
| **Contact Type and Termination Style** | **Plugs**<br>**P** = Pin / Solder Cups<br>**B** = Pin / Flying Leads (6 inches long)<br>**C** = Pin / PCB Terminals<br>**Receptacles**<br>**S** = Socket / Solder Cups<br>**F** = Socket / Flying Leads (6 inches long)<br>**D** = Socket / PCB Terminals |
| **Clocking Position** | **N** = Normal, **A**, **B**, **C** (See Key and Keyway Positions table below) |

### Performance Ratings

**Connector Pressure Ratings:**
10,000 PSI (Open face receptacle)
10,000 PSI (Mated CCP)

**Pressure Tested To:**
10,000 PSI per ISO 13628-6

**Electrical Performance:**
Insulation Resistance: 1000 Meghohms at 100 VDC per EIA-364-21
Coax Performance: DC to 5 GHz
Temperature Range: -20°C to +150°C

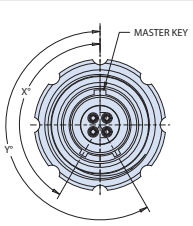
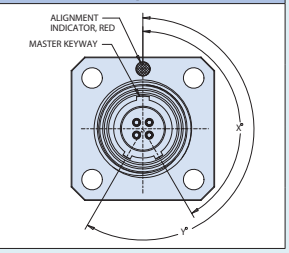
**Hermeticity:**
<1 x 10^-7 scc He / sec @ 1 ATM pressure differential; receptacles only

### Connector Material / Finish

**Connector Shell:** 316L SST / passivated
**Coupling Ring:** nickel bronze / None
**O-rings:** Viton 90 durometer / none
**Contacts:** nickel-iron alloy / gold over nickel
**Hermetic Seal:** vitreous glass / none

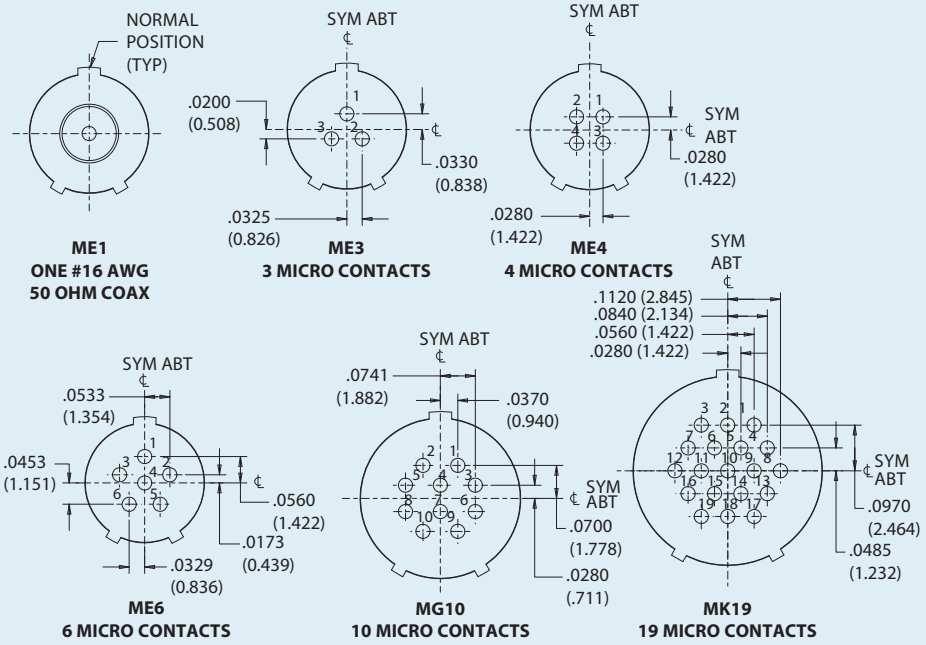
### NOTES

- Plug connectors typically supplied as prewired factory cable assemblies with Viton® overmolding for caustic chemical resistance
- Receptacle connectors commonly supplied as prewired pigtails or flex jumpers for direct connection to printed circuit boards and / or data drives
- High-speed Ethernet up to 1Gbps

| MicroPSI Key and Keyway Positions | | | | |
|---|---|---|---|---|
| | Key Rotation | | | |
| Key Position | X° | Y° | Plug | Receptacle |
| Normal (N) | 150° | 210° |  |  |
| A | 75° | 210° | | |
| B | 95° | 230° | | |
| C | 140° | 275° | | |



### INSERT ARRANGEMENTS




**ME1**
**ONE #16 AWG 50 OHM COAX**

**ME3**
**3 MICRO CONTACTS**

**ME4**
**4 MICRO CONTACTS**

**ME6**
**6 MICRO CONTACTS**

**MG10**
**10 MICRO CONTACTS**

**MK19**
**19 MICRO CONTACTS**


# MIGHTY MOUSE
# Cobra

## The ultra-low profile EMI/RFI plug and backshell assembly


Innovative shielded low profile right angle connector plug and backshell assemblies reduce clearance requirements without compromising ruggedness or shielding performance. Available in Series 801 double-start, Series 804 QDC push-pull, and Series 805 triple-start, Cobra assemblies provide optimal low-profile cable routing and legendary Mighty Mouse connector performance in a single package. Each Cobra assembly is equipped with a removable rear cover and gasket for easy crimp or solder contact termination of the connector. Integrated low-profile backshell is equipped with an EMI/RFI shield termination platform and a shrink boot lip. The ultra-lightweight assembly may be clocked in eight different angle orientations for additional flexibility in cable routing. Connectors are equipped with polarization keying to prevent mis-mating. Glenair Mighty Mouse Cobra mates with available square flange and jam nut receptacles from each respective connector series. Fourteen contact arrangements are available, all with Size #23 contacts from shell size 5 to shell size 21 with 3-130 contacts respectively. Connector shells are aluminum alloy or stainless steel.

### SPECIFICATIONS

- Current Rating: #23 5 Amps
- Test Voltage (DWV) #23: 500 VAC Sea Level
- Insulation Resistance: 5000 megohms minimum
- Contact Resistance: 73 millivolt drop at 5 Amp test current
- Mating Cycles Series 801 and 804: 2000; Series 805: 500
- Operating Temperature: -55° C to +150° C
- Shielding Effectiveness: 50 dB min from 100MHz to 1000MHz.
- Magnetic Permeability: 2.0µ
- Vibration: 37g / Shock: 300g
- Immersion, mated: 1meter water immersion for 1 hour

- **Space-saving design features one-piece machined and brazed connector shell and right angle backshell for minimum height and optimal EMI performance.**
- **Master key clocking enables easy cable entry/exit routing in eight angles**
- **Removable rear cover and gasket provides easy access to end of connector for crimp or solder contact termination**

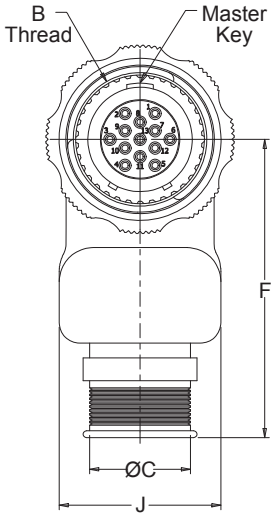
*MIGHTY MOUSE*

# Low-Profile Plug Connectors

805-061 triple-start with self-locking coupling nut, exploded view

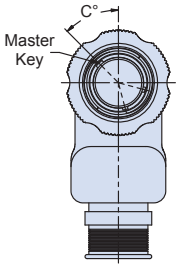
## How To Order Mighty Mouse Cobra Plug Connector and Backshell Assemblies

| Sample Part Number | 801-069-26 | ZNU | 8-13 | P | A | 1 | 05 |
|---|---|---|---|---|---|---|---|
| **Connector Series and Mighty Mouse Cobra Basic Part Number** | **801-069-26** Double-Start self-locking plug with ratchet mechanism (the clicker)<br>**804-066-06** QDC Push-Pull plug<br>**805-061-16** Triple-Start plug with ratcheting anti-decoupling mechanism | | | | | | |
| **Material/Finish** | **M** = Aluminum / Electroless Nickel RoHS Compliant<br>**NF** = Aluminum / Cadmium with Olive Drab Chromate<br>**ZNU** = Aluminum / Zinc-Nickel with Black Chromate<br>**MT** = Aluminum / Nickel-PTFE RoHS Compliant<br>**Z1** = Stainless Steel / Passivated RoHS Compliant | | | | | | |
| **Shell Size - Contact Arrangement** | See Table V - A: 801-069 B: 804-066 C: 805-061 | | | | | | |
| **Contact Style** | **A** = Pin, Solder **B** = Socket, Solder **P** = Pin, Crimp **S** = Socket, Crimp | | | | | | |
| **Polarization Key Position** | **A**, **B**, **C**, **D**, **E**, **F** - See Table II | | | | | | |
| **Cable Exit Direction** | **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8** - See Table I | | | | | | |
| **Cable Entry Size** | See Table VI | | | | | | |




## Table I: Cable Exit Direction

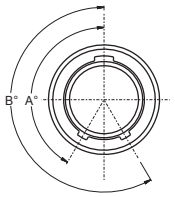
| Cable Exit Direction Code | C° |
|---|---|
| 1 | 0° |
| 2 | 45° |
| 3 | 90° |
| 4 | 135° |
| 5 | 180° |
| 6 | 225° |
| 7 | 270° |
| 8 | 315° |




Cable Exit Direction (Direction 2 Shown)

## Table II: Key Positions

| | A° | B° |
|---|---|---|
| A | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |
| E | 75° | 275° |
| F | 95° | 210° |




## Table VI - Cable Entry

| Code | Entry Size | Code | Entry Size |
|---|---|---|---|
| 02 | .125 | 10 | .625 |
| 03 | .188 | 11 | .688 |
| 04 | .250 | 12 | .750 |
| 05 | .313 | 13* | .813 |
| 06 | .375 | 14* | .875 |
| 07 | .438 | 15* | .938 |
| 08 | .500 | 16* | 1.000 |
| 09 | .563 | 17* | 1.063 |

* Entry codes 13-17 not available for Series 804 Cobra

## Table V - Shell Size/Contact Arrangements

| A: 801-069 | | | B: 804-066 | | | C: 805-061 | | |
|---|---|---|---|---|---|---|---|---|
| Shell Size | Contact Arr. | Max Entry | Shell Size | Contact Arr. | Max Entry | Shell Size | Contact Arr. | Max Entry |
| 5 | 5-3 | 03 | 5 | 5-3 | 03 | 8 | 8-4, 8-6, 8-7 | 04 |
| 6 | 6-4, 6-6, 6-7 | 04 | 6 | 6-4, 6-6, 6-7 | 04 | 9 | 9-10 | 05 |
| 7 | 7-10 | 05 | 7 | 7-10 | 05 | 10 | 10-13 | 06 |
| 8 | 8-13 | 06 | 8 | 8-13 | 06 | 11 | 11-19 | 07 |
| 9 | 9-19 | 07 | 9 | 9-19 | 07 | 12 | 12-26 | 08 |
| 10 | 10-26 | 08 | 10 | 10-26 | 08 | 13 | 13-31 | 09 |
| 11 | 11-31 | 09 | 12 | 12-37 | 10 | 15 | 15-37 | 10 |
| 13 | 13-37 | 10 | 14 | 14-55 | 12 | 18 | 18-55 | 12 |
| 16 | 16-55 | 12 | | | | 19 | 19-85 | 13 |
| 17 | 17-85 | 13 | | | | 21 | 21-100 | 15 |
| 19 | 19-100 | 15 | | | | 23 | 23-130 | 17 |
| 21 | 21-130 | 17 | | | | | | |

## MATERIALS/FINISH

- Contacts: Copper alloy, gold plated
- Backshell Housing, Connector Shell, Coupling Nut and Lid: Aluminum or Stainless Steel
- Backshell Sealing Gasket and Interfacial Seal: Fluorosilicone
- Screws: 300 Series Stainless Steel
- Insulator: LCP

## NOTES

- Rear insulator grommet not supplied.
- Cobra plugs mate with respective series receptacles with same layout, polarization and opposite contact gender.
- Hand crimp tool: P/N 809-015. Positioner for hand tool: P/N 809-005. Insertion/extraction tool P/N 809-088.
- Crimp barrel accommodates 22, 24, 26 and 28 gage wire.
- All Cobra plugs equipped with Size #23 contacts.

QUALIFIED

# MIL-DTL-28840

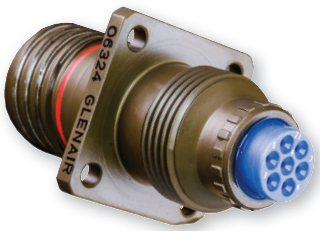
## Connectors and accessories

MIL-DTL-28840 qualified connectors in-stock and ready for immediate, same-day shipment

- **High density, scoop proof contact arrangements**
- **Flange mount, box mount, jam-nut and in-line receptacles**
- **Straight, 45° and 90° strain reliefs and backshell assemblies**
- **Sav-Con® connector savers**
- **MIL-DTL-28840 qualified**
- **Additional glenair commercial part numbers with features not available in the mil-spec**

## Qualified military standard electrical connectors and accessories for shipboard—and all rugged environmental applications

| Performance Specifications | |
|---|---|
| Current Rating (Maximum) | Size #20 Contact with 20AWG wire=7.5Amps, with 22AWG wire=5.0Amps |
| Test Voltage (DWV) | 1000 VAC RMS at sea level. Test per EIA-364-20 |
| Insulation Resistance | 5000 megohms minimum (at ambient temperature) per EIA-364-21 |
| Contact Resistance | Per SAE-AS39029 |
| Operating Temperature | -55° C to +200° C |
| Immersion | per test method EIA-364-09 |
| Shock | in accordance with MIL-S-901 grade A |
| Vibration | per EIA-364-28 test procedure |
| Magnetic Permeability | 2.0 µ (Aluminum), 5.0 µ (Stainless Steel) maximum; ASTM-A342/A342M |

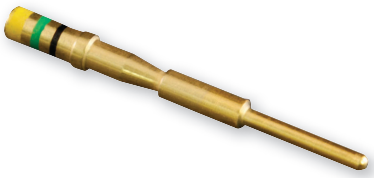



Splined MIL-DTL-28840 connector-to-backshell interface is ideally suited for heavy backshells and cables

*QUALIFIED*

# MIL-DTL-28840
# Connectors and Accessories

## STANDARD PIN CRIMP CONTACT FOR MIL-DTL-28840 CONNECTORS



| Mating End Size | Wire Accomodation | Military Part Number | Glenair Part Number |
|---|---|---|---|
| 20 | 28-32 AWG | M39029/83-451 | 850-004-20-451 |
| 20 | 22-26 AWG | M39029/83-450 | 850-004-20-450 |
| 20 | 20-24 AWG | M39029/83-508 | 850-004-20-508 |

## STANDARD SOCKET CRIMP CONTACT FOR MIL-DTL-28840 CONNECTORS

| Mating End Size | Wire Accomodation | Military Part Number | Glenair Part Number |
|---|---|---|---|
| 20 | 28-32 AWG | M39029/84-453 | 850-005-20-453 |
| 20 | 22-26 AWG | M39029/84-452 | 850-005-20-452 |
| 20 | 20-24 AWG | M39029/84-509 | 850-005-20-509 |

**Crimping Tools**

M22520/34-01 Basic Crimp Tool
M22520/34-02 Positioner
M22520/35 Gage

**Insertion & Removal Tools**

M81969/33-01 Straight Insertion Tool
M81969/33-02 Offset Insertion Tool
M81969/34-01 Removal Tool

**Pin Contact**

M39029/83 Standard Duty Electrical Pin Contact

**Socket Contact**

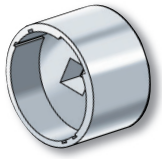
M39029/84 Standard Duty Electrical Socket Contact

**Environmental Backshells**

M28840/6 B Straight
M28840/9 B 45°
M28840/8 B 90°

**EMI/RFI Environmental Backshells**

M28840/6 A Straight
M28840/8 A 90°
M28840/9 A 45°



**Connector Sockets**

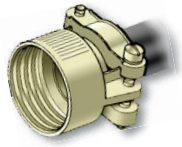
600G005

**"E" Nuts**

**Non-Self-Locking**

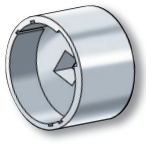
M28840/23

**Strain Reliefs**



**Non-Self-Locking**

M28840/1 Straight
M28840/3 45°
M28840/2 90°



**Dummy Stowage Receptacles**

M28840/7

**Protective Plug Covers**

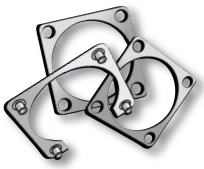
M28840/15

**Protective Receptacle Covers**

M28840/13

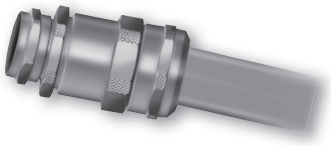
**Jam Nuts**

MS3186



**Mounting Flanges and Gaskets**

M28840/24 Gasket



**MIL-PRF-24758A Conduit Fittings**

M24758-14 Straight
(M24758/14 Straight.)
M28840/5 Straight • M28840/25 90° •
M28840/27 45° • M28840/30 Coupling


*QPL AND COTS EQUIVALENT*

# MIL-DTL-38999 Series III

## The industry standard mil/aero connector backed with Glenair service and availability

Standard environmental-class MIL-DTL-38999 Series III connectors with DLA certification are now manufactured and supplied by Glenair. These industry-standard connectors are ideally suited for the broad range of harsh environmental land, sea, air, and space applications and are backed with Glenair's industry leading service, support, and availability. Marked with D38999 or Glenair COTS part numbering, these environmental crimp-contact connectors are available in cable plug or mounted jam nut / square flange receptacle shell styles. All standard material and finish classes are supported including W (Cad/O.D. over Electroless Nickel), F (Electroless Nickel), T (Nickel-PTFE) and G (Space-Grade Electroless Nickel). Other RoHS-compliant finishes including Glenair ZR (Black Zinc-Nickel) are also available under Glenair commercial part numbers. Contact arrangements per MIL-STD-1560 and all standard and normal and alternate polarizations are fully supported. Best of all, defense and commercial aerospace customers, as well as land and marine engineers and procurement specialists may now specify these mission-critical interconnects directly from Glenair—the recognized service, support, and availability leader for the interconnect industry.

**DLA QPL MIL-DTL-38999 SERIES III NOW AVAILABLE FROM GLENAIR**

- **Qualified environmental plug, jam nut, and square flange receptacles**
- **All 1560 crimp-contact insert arrangements fully supported**
- **W, F, T and G plating classes, plus Glenair COTS equivalents**
- **A 100% made in America interconnect: No foreign-sourced materials, component parts, or assembly labor employed**

*Glenair: Made in America since 1956*

*QPL AND COTS EQUIVALENT*

# MIL-DTL-38999 Series III

## Industry standard harsh environment connectors

### MECHANICAL, ENVIRONMENTAL, AND ELECTRICAL PERFORMANCE

MIL-DTL-38999 Series III (Glenair Series 233-105) offers outstanding interconnect performance for mission-critical military and commercial applications.

- **Electromagnetic compatibility (EMC):** metal-to-metal coupling, plug grounding fingers, and conductive shell finishes deliver excellent shielding performance up to 65 dB at 10 GHz
- **Contact protection:** scoop-proof design prevents inadvertent damage to pin contacts during mating
- **Environmental performance:** interfacial and wire grommet seals deliver IP67 level sealing, even at high altitude
- **Corrosion resistance:** connector shell finishes—from Cad over Nickel to Class T Nickel-PTFE offer outstanding corrosion resistance
- **Mating:** triple-start stub ACME threads provide fast mating and resist galling and cross-threading
- **Anti-Decoupling:** better-than-QPL vibration and shock performance
- **Supported contacts:** from size #22D signal to #12 shielded Coax
- **Advanced COTS versions:** high-performance series (Glenair SuperNine®) available for improved durability, ease of termination, EMI/RFI filtering and more

### CONNECTOR FINISH CLASSES

**Electroless Nickel**
Conductivity +++++
Corrosion Resistance
-65° to +200°C
Glenair Code ME
D38999 Class F

**Space-Grade Electroless Nickel**
Conductivity +++++
Corrosion Resistance
-65° to +200°C
Glenair Code MA
D38999 Class G

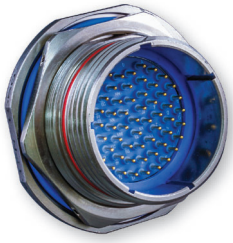
**Cadmium**
Conductivity ++++
Corrosion Resistance
-65° to +175°C
Glenair Code NF
D38999 Class W

**Nickel-PTFE**
Conductivity +++++
Corrosion Resistance
-65° to +175°C
Glenair Code MT
D38999 Class T

**Black Zinc Nickel**
Conductivity +++
Corrosion Resistance
-65° to +175°C
Glenair Code ZR
D38999 Class Z*
*qualification pending

### SUPPORTED CRIMP-CONTACT SHELL STYLES

Plug



Jam Nut Receptacle

Square Flange Receptacle

| Mechanical Performance Features |
|---|
| Threaded Triple-Start Coupling Design |
| Nine Shell Sizes, Range 9 – 25 |
| Scoop-Proof Shell Design |
| Full Mate Visual Indicator |
| Integrated Contact Retention System |
| Interfacial and Grommet Seals |
| Fully Shielded |
| Lightning Strike |
| Shell-to-Shell Bottoming |
| Threaded/Toothed Accessory Interface |
| Full Range of Assembly Tools |

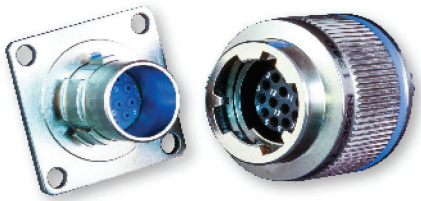
*BREECH-LOCK*

# MIL-DTL-38999 Series IV

## For missile launch controls and other severe vibration applications

From vertical launch fire-control, tracking, and multi-target missile systems to rugged industrial applications such as mining/gas-pressure blasting, the Glenair's DLA qualified MIL-DTL-38999 Series IV connector is the ultimate solution for positive and reliable breech-locking connector performance. MIL-DTL-38999 Series IV plug and receptacle connectors are available in shell sizes 11–25, with all Mil-Std 1560 insert arrangements as well as high-density and hybrid shielded contact arrangements. The heart of the Series IV connector is its coupling nut/locking technology which provides rock solid breech-lock mating augmented with both primary and secondary locking mechanisms. Environmentally sealed, EMI grounded, and outfitted with pin-to-pin mating protection to prevent circuit shorts and mechanical damage, Glenair MIL-DTL-38999 Series IV QPL connectors deliver unsurpassed reliability and anti-demating performance.

- **100% made in America**
- **QPL manufacturer of MIL-DTL-38999 Series IV Class F, W and G connectors**
- **Optimized for SWAMP area applications**
- **Quick-disconnect 90° breech coupling mechanism**
- **Visual, audible and tactile full-mate indicators**
- **Integrated EMI grounding fingers**
- **-65°C to 200°C operating temperature range**



**Series IV solutions are available in environmental and hermetic class configurations in shell sizes from 11–25 supporting the full range of MIL-STD-1560 insert arrangements**

**Glenair's complete Series IV solution includes protective covers and dummy stowage receptacles—available in all sizes, materials, and plating configurations.**

*BREECH-LOCK*

# MIL-DTL-38999 Series IV Type, Breech Coupling

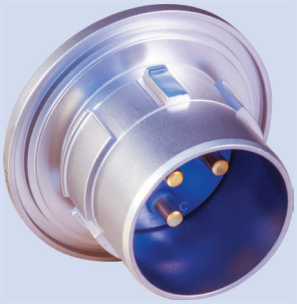
## Anti de-coupling, vibration and shock resistant
## DLA qualified

### MECHANICAL AND ELECTRICAL PERFORMANCE

MIL-DTL-38999 Series IV (and Glenair Series 234-105) offers outstanding interconnect performance for high shock and vibe military and commercial applications.

- **Breech locking connectors with crimp contacts**
- **Electromagnetic compatibility (EMC):** metal-to-metal coupling, plug grounding fingers, and conductive shell finishes deliver excellent shielding performance up to 65 dB at 10 GHz. Grounding occurs before engagement of contacts.
- **Contact protection:** scoop-proof design prevents inadvertent damage to pin contacts during mating
- **Corrosion resistance:** connector shells are made from corrosion-resistant aluminum and are offered with cadmium or electroless nickel finish
- **Supported contacts:** from size #22D signal to #12 shielded Coax
- **Glenair COTS versions** offer equivalent performance with material/finish options not available in QPL parts

### SERIES IV HERMETICS



**Glenair is also a DLA qualified manufacturer for D38999 Series IV Hermetic connectors in jam-nut, weld-mount, solder-mount, and box-mount receptacle designs.**

**Hermetic sealing: $10^{-7}$ cc/second maximum helium leak rate**

### DLA QPL CONNECTOR FINISH CLASSES

**Electroless Nickel**

**Conductivity** +++++

**Corrosion Resistance**

**-65° to +200°C**

**Glenair Code** ME

**D38999 Class** F, G

**Cadmium Olive Drab**

**Conductivity** +++++

**Corrosion Resistance**

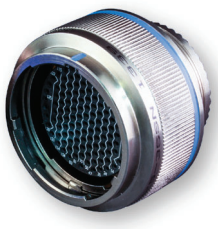
**-65° to +175°C**

**Glenair Code** NF

**D38999 Class** W

**Glenair COTS Series IV type connectors (234-105 series) offer material/finish options not included in the QPL spec, including Nickel-PTFE and black zinc-nickel. Consult factory for ordering information**

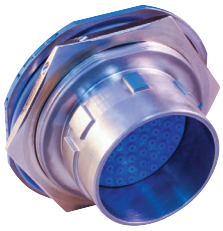
### SUPPORTED CRIMP-CONTACT SHELL STYLES



Plug

Wall-Mount Receptacle

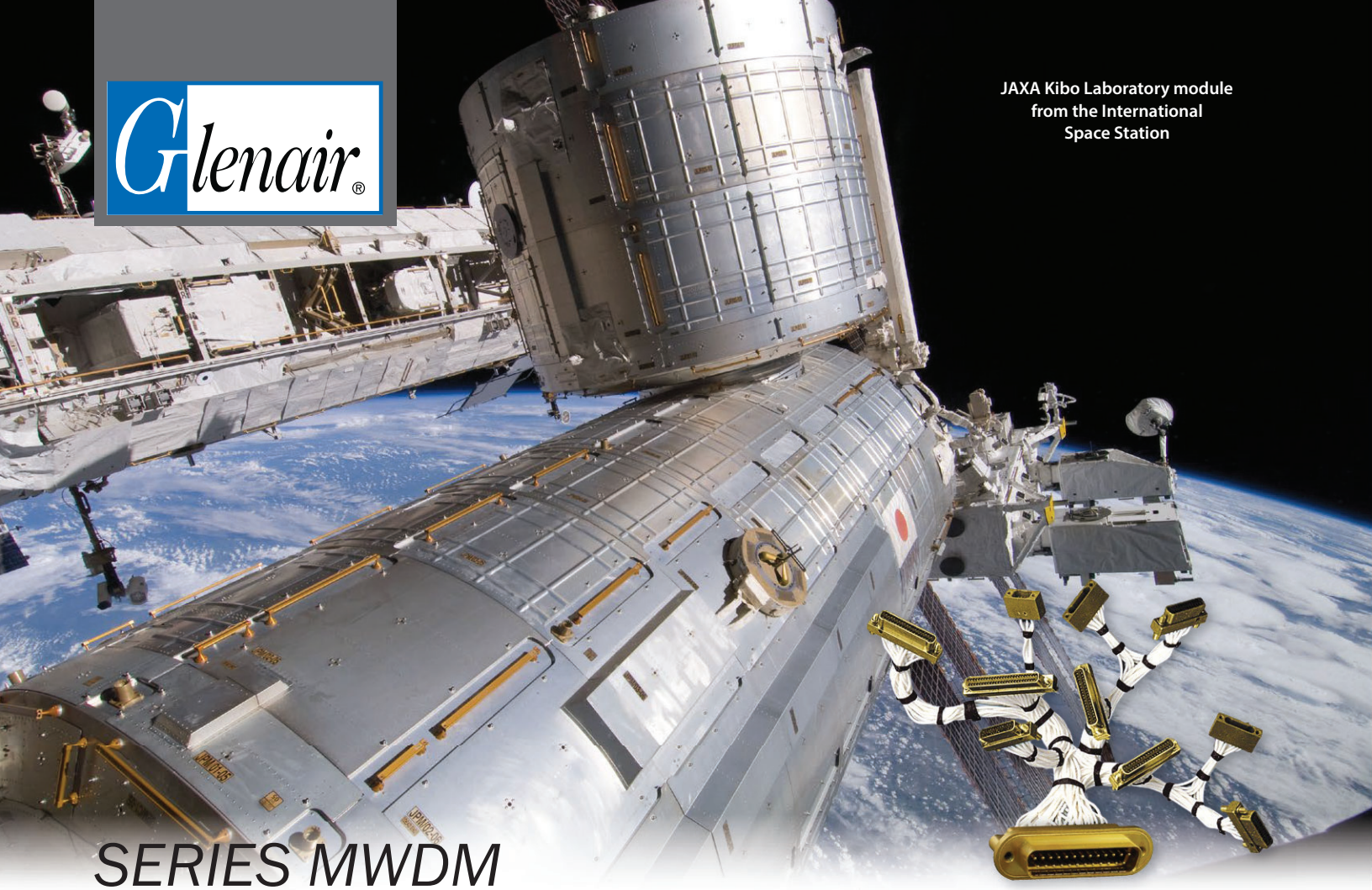
Box-Mount Receptacle



Jam Nut Receptacle

In-Line Receptacle

Glenair®



JAXA Kibo Laboratory module from the International Space Station

## SERIES MWDM

# Micro-D Connectors

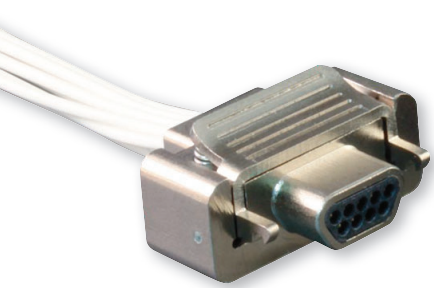
Standard


Hermetic

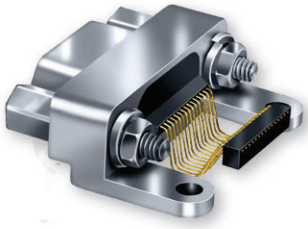
EMI Filter

- High density Micro TwistPin contacts set on .050 centers
- 9 to 130 contact arrangements
- Pigtail, PCB, solder cup, and flex terminations
- Single row, multi-row, low profile and high density insert arrangements
- QPL and commercial versions
- Same-day availability on all part numbers

**TwistPin equipped MIL-DTL-83513 Micro-D connectors offer outstanding mating performance, durability and minimal contact resistance**



MasterLatch™



Surface Mount

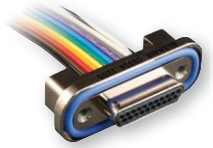
Rear Panel Mount

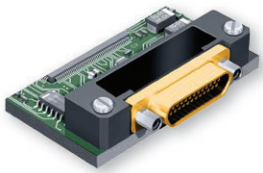
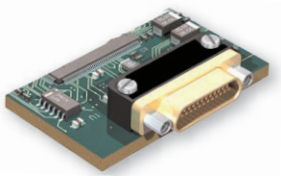
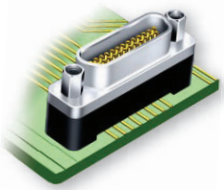
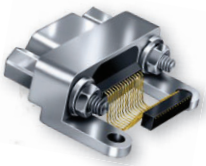
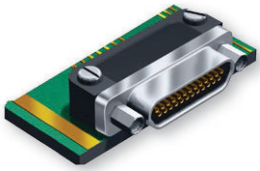
Flex Circuit

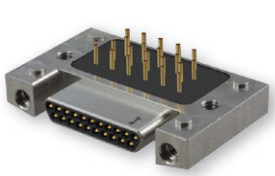
*MIL-DTL-83513 AND COMMERCIAL*

# Micro-D Connectors

## Mission-critical mating performance

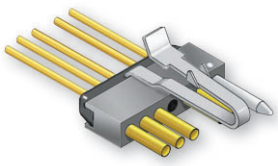
| Metal Shell Micro-D for Harnessing Applications | | | | | |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| GRPM Solder Cup | GRPM Insulated Wire | GRPM Uninsulated Wire | MWDM Solder Cup | MWDM Insulated Wire | MWDM Back-To-Backs |
|  |  |  |  |  |  |
| Shielded Cable Assembly | MWDM Uninsulated Wire | GMDR Insulated Wire | GMDE Environmental | GSWM SpaceWire | GMLM MasterLatch |

| Micro-Ds for Printed Circuit Board | | | |
|---|---|---|---|
|  |  |  |  |
| GRPM-CBS | GRPM-CBR | MWDM-BS | MWDM-BR |
|  |  |  |  |
| MWDM-CBR | MWDM-CBS | 90° Surface Mount | GMR7580 |
|  |  |  |  |
| GMR7590 | GMR7580C | GMR7590C | Right Angle Filter |

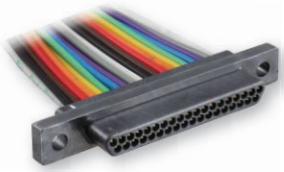


WellMaster™ 260

Sav-Con®



Latching MicroStrip



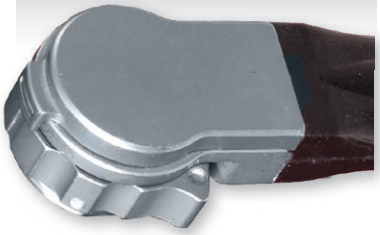
Low Profile

# SERIES 860 MouseBud™

**The Series 860 MouseBud™ is designed for vest-wearable and helmet-mounted cable-to-tactical equipment interconnections. The ultra low-profile spring contact equipped MouseBud™ mated connector stack is less than 1/2 inch, making it the lowest-profile right-angle solution available today.**

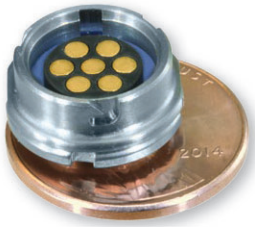
## The snap-lock, trigger-release connector

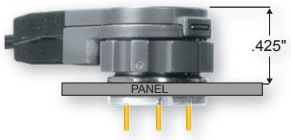
Ultra low-profile MouseBud™ connectors are lightweight, shielded and designed for use in hostile environments. Mating is a snap—simply push to mate and lock. To release, actuate the thumb trigger on the coupling ring (small and large triggers available). Plugs feature spring-loaded gold plated contacts, stainless steel shells and self-actuating bayonet coupling rings. Cable mount versions are fully assembled, shielded, overmolded and 100% tested. MouseBud is fully protected from sand and dust, moisture ingress, electromagnetic interference and a multitude of other environmental stresses. The spring-loaded contact system is rated for 2000 mating cycles. Series 860 connectors are suitable for high-speed data, power, video and audio.



- **Self-locking auto-coupling, trigger-release mechanism**
- **Spring-loaded pins for extended durability and easy cleaning**
- **One meter, one hour water immersion**
- **2000 cycles mechanical life**
- **High-speed data, power, video, and audio applications**
- **Meets MIL-STD-810G shock, vibration, immersion**
- **EMI protected with integral backshell and ground spring**
- **Ultra low-profile and lightweight**

Panel mount MouseBud receptacles with "hot shoe" type contacts are suitable for hostile environments including soldier wearable electronics and tactical gear. Contacts are easy to clean and damage-resistant. These receptacle connectors meet MIL-STD-810G requirements for reliable performance in hostile environments—both mated and unmated. Connector attaches to panel with a stainless steel jam nut. A fluorosilicone O-ring provides panel sealing. Terminate to flex circuits with pc tail terminals, or choose solder cup terminals for wire attachment.






The MouseBud right angle plug features a single piece "cobra style" connector shell and a tightly fitting lid. A rubber gasket is sandwiched between the shell and lid to prevent moisture intrusion. The total height when mated to a rear panel mounted receptacle is well under 1/2 inch.

Overmolded MouseBud cordsets are available in two standard versions. Style 1 cordsets feature thermoplastic polyurethane cable jackets and polyamide overmolding. Style 2 cordsets with thermoplastic rubber (TPV) cable jackets and overmolding offer excellent cold bend performance down to -55° C.

*SERIES 860*

# MouseBud™

## The snap-lock, trigger-release connector for helmets, vests, and other low-profile applications

### MouseBud™ Plugs

**Plug Cordsets**
Overmolded cordsets with rugged tactical-grade shielded cable.

**860-001P** Overmolded Plug Cordset

**860-002P** Plug Cordset for USB+BAT (IAW US Army Personal Area Network, PAN protocol)

**Plug Connector Construction**

- Shell: stainless steel
- Bayonet pins, retainer ring and torsion spring: stainless steel
- Coupling ring: aluminum, 2 trigger sizes
- Lid: aluminum
- Contacts: copper alloy, gold plated
- Insert: glass-filled thermoplastic
- Ground spring: gold-plated stainless steel
- Gasket: fluorosilicone
- Potting compound: RTV silicone

### MouseBud™ Receptacles

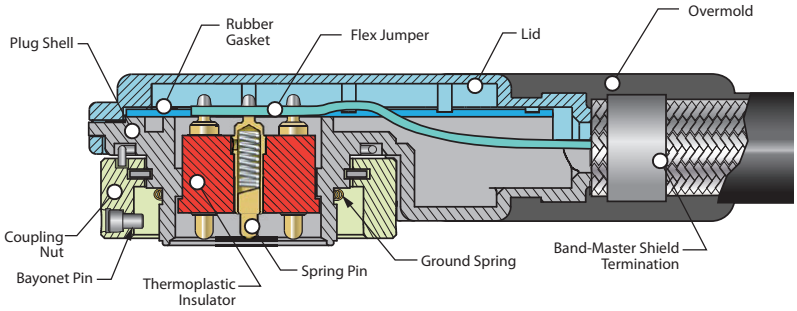
**Panel Mount Receptacles**
Jam nut mounting. Solder cup or printed circuit tails.

**860-004R** Panel Receptacle with PC Tails

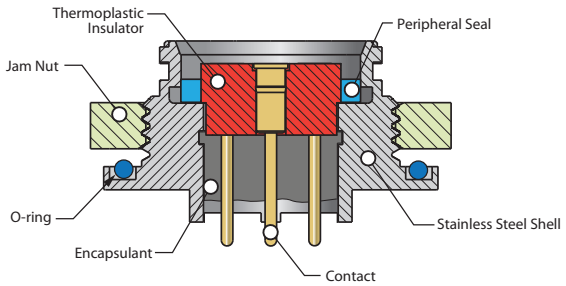
**860-005R** Panel Receptacle,Solder Cups

**Panel Receptacle Construction**

- Shell: stainless steel
- Jam nut: stainless steel
- Contacts: copper alloy, gold plated
- Insert: glass-filled thermoplastic
- O-ring: fluorosilicone
- Peripheral seal: fluorosilicone
- Potting compound: RTV silicone




**Overmolded Plug Cordset**




**Panel Receptacle**

Glenair MouseBud snap-lock, trigger-release connectors feature a spring-loaded contact system for excellent resistance to damage and debris entrapment. The biased plunger is machined from solid copper alloy for improved strength, durability, and electrical performance compared to plungers drawn from sheet metal.

| MouseBud Specifications | |
|---|---|
| Voltage rating | 500 VAC |
| Current rating | 5 amps |
| Contact resistance | 20 milliohms maximum |
| Plug-to-receptacle ground resistance | <5 milliohm |
| Maximum wire size | #24 AWG |
| Insulation resistance | 5000 megohms min. |
| Water immersion | MIL-STD-810 Method 512, one meter for one hour |
| Durability | 2000 mating cycles |
| Corrosion resistance | 1000 hours |
| Sine vibration | EIA-364-28 condition IV, 20g peak |
| Random vibration | EIA-364-28 condition V letter H, 29g rms |
| Shock | EIA-364-27 condition D, 300g peak |
| EMI shielding effectiveness | 40 dB minimum to 10 GHz |

GLENAIR
SIGNATURE
FIBER OPTIC
CONNECTION
SYSTEMS

Rugged Fiber Optic CONNECTORS

# Rugged High-Density **MT Ferrule** Fiber Optic Connection System—With Mil-Grade Miniature Series 79 Packaging


## Single-ferrule high-density MT datalinks in Glenair Signature Series 79 rectangular packaging optimize SWaP in mission-critical mil-aero applications

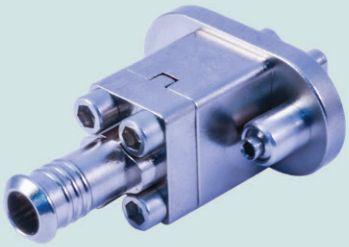
Connector series supports both ribbon and round cable, as well as standard and expanded-beam MT ferrules

- **Small form-factor, high-density fiber optic solution for rugged mil-aero applications**
- **Temperature tolerance from -40°C to +85°C**
- **Optimized for use with parallel optic transceivers in ribbon or round cable applications**
- **Designed for optimal low insertion loss performance in high vibration and shock environments**

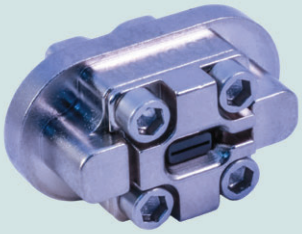
*ULTRA HIGH-DENSITY*

# Rugged MT Fiber Optic Connectors

## Signature fiber optic connection system: miniature Series 79 packaging



**-06 plug, with retaining plate for EMI shield termination and strain relief of ribbon or round fiber cable**



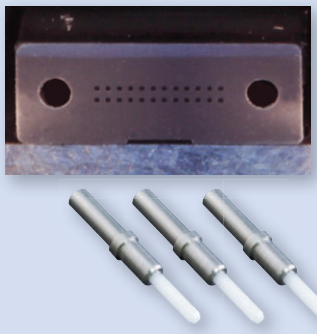
**-S7 receptacle with standard retaining plate**

**-S7 receptacle with conductive EMI gasket**

### ABOUT SERIES 79 MT FIBER OPTIC CONNECTORS

Designed in accordance with rugged mil-aero industry specifications, the Glenair Series 79 MT fiber optic connector is the world's smallest ruggedized MT connector solution. High-density MT ferrules are packaged in precision-machined rectangular aluminum shells with electroless nickel finish, or passivated stainless steel shells for higher temperature applications. Receptacles may be equipped with optional EMI gaskets, and mate bottom-to-bottom with plug assemblies for robust resistance to vibration and shock. Designed for harsh-environment, inside-the-box use in parallel optics, fiber optic backplanes, missile systems, spacecraft and satellites, heads-up displays, and other ribbonized or flex-circuit fiber optic datalinks, the Series 79 MT delivers superior low insertion-loss performance (up to 500 mating cycles). Connectors are supplied in single (consult factory for dual and quad) MT configurations with banding platform or ultra low-profile retaining plate options.

**The MT Ferrule High-Density Advantage**




**Up to 24 fibers in a single** compact, lightweight ferrule (7mm x 3mm / .276" x .118") **—same real estate as three size #16 termini side by side**

### PARALLEL OPTICAL TRANSCEIVERS

**Glenair's rugged, small form-factor parallel optical transceivers are the ideal solution for board-level optical-to-electrical conversion utilizing MT fiber optic ferrules.**

| Series 79 MT Ferrule Fiber Optic Connector Performance Specifications per QTP-773 and Test Report GT-19-111 | |
|---|---|
| Test Description | Test Results |
| Optical Insertion Loss, multimode (consult factory for singlemode) | 50/125 µm fiber @ 850 nm: ≤0.15 dB average; 0.31 dB typical<br>50/125 µm fiber @ 1300 nm: ≤0.21 dB average; 0.38 dB typical |
| Temperature Cycling: per TIA/EIA-455-3, Test Condition C-2 | - 40°C to +85°C, 5 Cycles, 56 hours<br>Max. CIT = .25 dB; Max. IL post-test = .30 dB |
| Mating Durability | First 100 cycles with CIT measured every 10 cycles<br>Max. CIT = 0.12 dB; Max. IL post-test = 0.20 dB<br>(Mating hardware torqued to spec when taking IL measurements) |
| Mating Durability, Extended | From 101st cycle to 500th cycle with CIT measured every 25 cycles<br>Max. CIT = 0.21 dB; Max. IL post-test = 0.30 dB<br>(Mating hardware torqued to spec when taking IL measurements) |
| Physical Shock 1: 50g Peak, 11 ms duration, per TIA/EIA-455-14, Test Condition E | Max. CIT = 0.14 dB; Max. IL post-test = 0.42 dB; discontinuity ≤0.5 dB @ <1 us. |
| Physical Shock 2: 160g Peak, 4 ms duration, per MIL-STD-202, Method 213 | Max. CIT = 0.04 dB; Max. IL post-test = 0.40 dB; discontinuity ≤0.5 dB @ <1 us. |
| Additional Physical Shock: 300g Peak, 0.5 ms duration, per MIL-STD-833E, Method 2002.4 (30 shocks total) | Max. CIT = .15 dB; Max. IL post-test = 0.20 dB; discontinuity ≤0.5 dB @ <1 us. |
| Vibration 1: 5-15 Hz, .12" double amplitude, 2 hours/axis (6 hours total) per MIL-STD-202, test condition 201, Sinusoidal | Max. CIT = 0.06 dB; Max. IL post-test = 0.37 dB |
| Vibration 2 : 20g Peak, 10-2,000 Hz, 4 hours/axis (12 hours total) per TIA-455-11,<br>Test Condition IV, Sinusoidal | Max. CIT = 0.08 dB; Max. IL post-test = 0.43 dB |
| Weight | Plug with Ferrule kit 5.5 grams · Receptacle with Ferrule kit 7.5 grams |

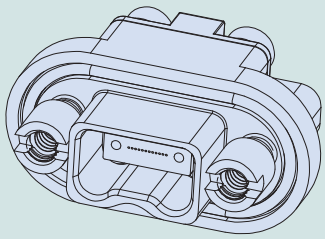
# MT Fiber Optic Connectors

## 183-003 Standard Series 79 MT How To Order

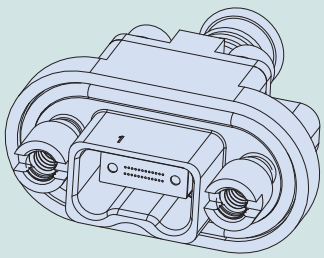
**Glenair is qualified by US Conec to terminate 1 and 2 row PRIZM® MT and MXC® Ferrules for ribbon and round cable fiber.**

| How To Order | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **183-003** | **ME** | **-06** | **-L** | **-1** | **A** | **-APC** |

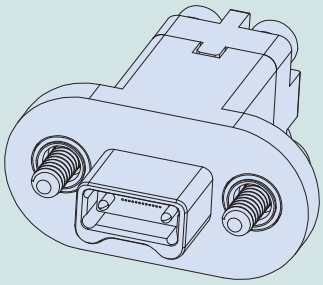
| | |
|---|---|
| **Basic Number** | Series 79 Single MT Fiber Optic Connector |
| **Material / Finish** | **ME** = Al Alloy / Electroless Nickel **MT** = Al Alloy / Nickel PTFE<br>**ZR** = Al Alloy / Zinc Nickel, Black<br>**NF** = Al Alloy / Cadmium, O.D. **Z1** = Stainless Steel / Passivate |
| **Connector Type** | **-06** = Plug (used with male MT ferrule)<br>**-07** = Receptacle (used with female MT ferrule)<br>**-S7** = Receptacle with EMI gasket (used with female MT ferrule) |
| **Mounting Hardware** | Hardware for PLUGS<br>**-L** = Hex Head Jackscrew, non-removable<br>**-K** = Slotted Head Jackscrew, non-removable<br>**-B** = Thru-Hole<br>Rear Panel Mount Jackposts for RECEPTACLES:<br>**-X** = for .031" panel thickness<br>**-W** = for .047" panel thickness<br>**-V** = for .062" panel thickness<br>**-T** = for .094" panel thickness<br>**-R** = for .080" panel thickness |
| **Retaining Plate / Banding Platform** | **-1** = 12 or 24 channel without banding platform<br>**-2** = 12 or 24 channel with banding platform for EMI shield termination and strain relief<br>**N** = No Retaining Plate (For use with standalone retaining plate)<br>See Dwg. 189-168 for various retaining plate designs<br>See Dwg. 189-177 for retaining plate used with Prizm-MT on Jacketed Cable |
| **Polarization Key Position** | **A** or **B** position for Plug; **A**, **B**, or **U** position for Receptacle<br>**Omit** for no Polarization Key. See Table. |
| **APC / Flat MT option** | **-APC** = for use with angled MT Ferrule (MT/APC)<br>**Omit** = for use with flat MT ferrule (MT/PC) including Prizm-MT |



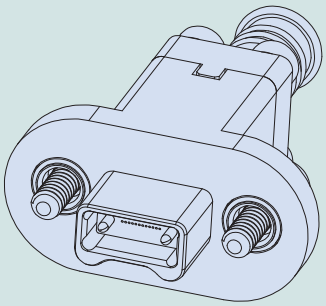
**Receptacle with female MT ferrule, available with or without EMI gasket**



**Receptacle with female MT ferrule, retaining plate, and banding platform**



**Plug with male MT ferrule and retaining plate**



**Plug with male MT ferrule with retaining plate and banding platform**

### MATERIAL/FINISH/NOTES

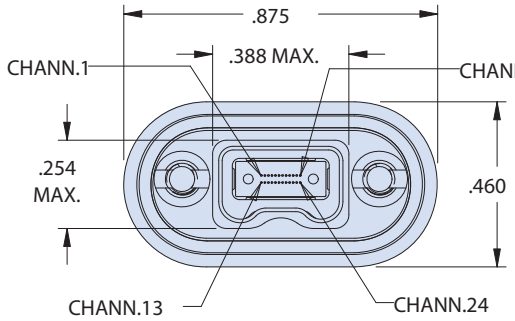
Mounting hardware: stainless steel / passivated
EMI gasket (optional): conductive silicone
Additional materials, finishes, connector configurations (dual and quad layouts), and hardware options are available, consult factory

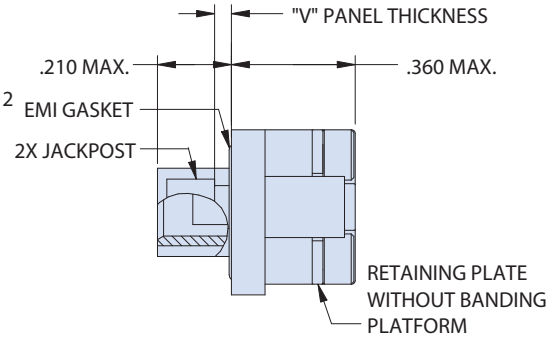
# MT Fiber Optic Connectors

## 183-003 Standard Series 79 MT Connector styles and dimensions

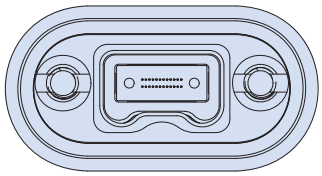
Glenair is qualified by US Conec to terminate 1 and 2 row PRIZM® MT and MXC® Ferrules for ribbon and round cable fiber.

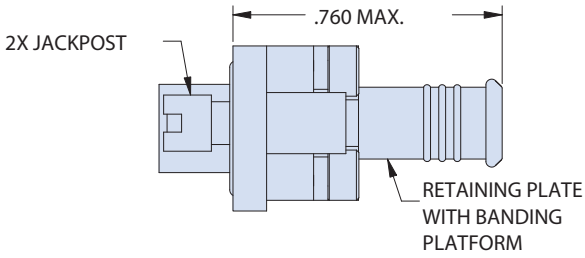
### Receptacle, Low Profile



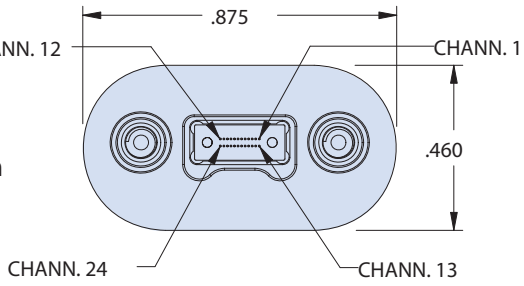



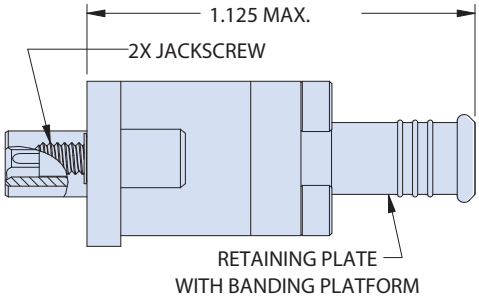

### Receptacle, With Banding Platform



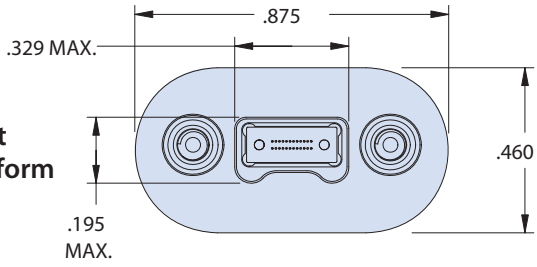


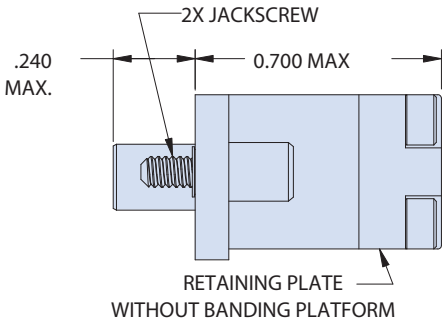

### Plug, With Banding Platform



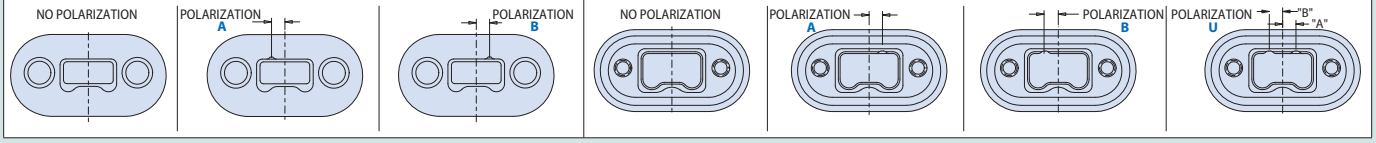

### Plug, Without Banding Platform




**Polarization Key Positions**

| Plug | | | Receptacle | | | |
|---|---|---|---|---|---|---|
| NO POLARIZATION | POLARIZATION A | POLARIZATION B | NO POLARIZATION | POLARIZATION A | POLARIZATION B | POLARIZATION U |





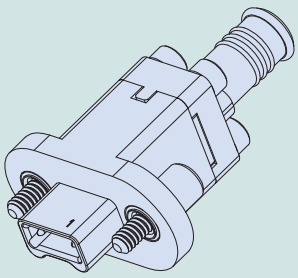
Dimensions in Inches (millimeters) are subject to change without notice.

# MT Fiber Optic Connectors

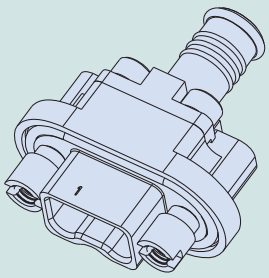
## 183-014 Environmental Series 79 MT
## How To Order

| How To Order | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **183-014** | **ME** | **-06** | **-L** | **-2** | **A** | **-APC** |

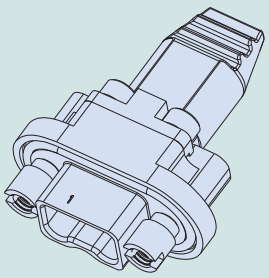
| | |
|---|---|
| **Basic Number** | Series 79 Single MT Environmental Fiber Optic Connector |
| **Material / Finish** | **ME** = Al Alloy / Electroless Nickel **MT** = Al Alloy / Nickel PTFE<br>**ZR** = Al Alloy / Zinc Nickel, Black<br>**NF** = Al Alloy / Cadmium, O.D. **Z1** = Stainless Steel / Passivate |
| **Connector Type** | **-06** = Plug (used with male MT ferrule)<br>**-07** = Receptacle (used with female MT ferrule)<br>**-09** = Receptacle with EPDM O-ring (used with female MT ferrule) |
| **Mounting Hardware** | Hardware for PLUGS<br>**-L** = Hex Head Jackscrew, non-removable<br>**-K** = Slotted Head Jackscrew, non-removable<br>**-B** = Thru-Hole<br><br>Rear Panel Mount Jackposts for RECEPTACLES:<br>**-X** = for .031" panel thickness<br>**-W** = for .047" panel thickness<br>**-V** = for .062" panel thickness<br>**-T** = for .094" panel thickness<br>**-R** = for .080" panel thickness<br>(panel thickness dims ±.002") |
| **Retaining Plate / Banding Platform** | **-2** = 12 or 24 channel for plug or receptacle with banding porch<br>**-3** = 12 channel for receptacle without banding porch only (N/A for plug)<br>**-4** = 24 Channel for receptacle without banding porch only (N/A for plug)<br>**-N** = No Retaining Plate (For use with standalone retaining plate)<br>See Dwg. 189-165 for various retaining plate designs<br>See Dwg. 189-178 for retaining plate used with Prizm-MT on Jacketed Cable |
| **Polarization Key Position** | **A** or **B** position for Plug; **A**, **B**, or **U** position for Receptacle<br>**Omit** for no Polarization Key. See Table. |
| **APC / Flat MT option** | **-APC** = for use with angled MT Ferrule (MT/APC)<br>**Omit** = for use with flat MT ferrule (MT/PC) including Prizm-MT |



**Plug**
**with Banding Porch**



**Receptacle**
**with Banding Porch**



**Receptacle**
**without Banding Porch**

| Additional Components |
|---|
| **181-133** or **181-150** MT Ferrule Kit |
| **601-500 or 601-501** Band-Master ATS® Nano Band for shield termination |
| **189-160** Dust Cap |

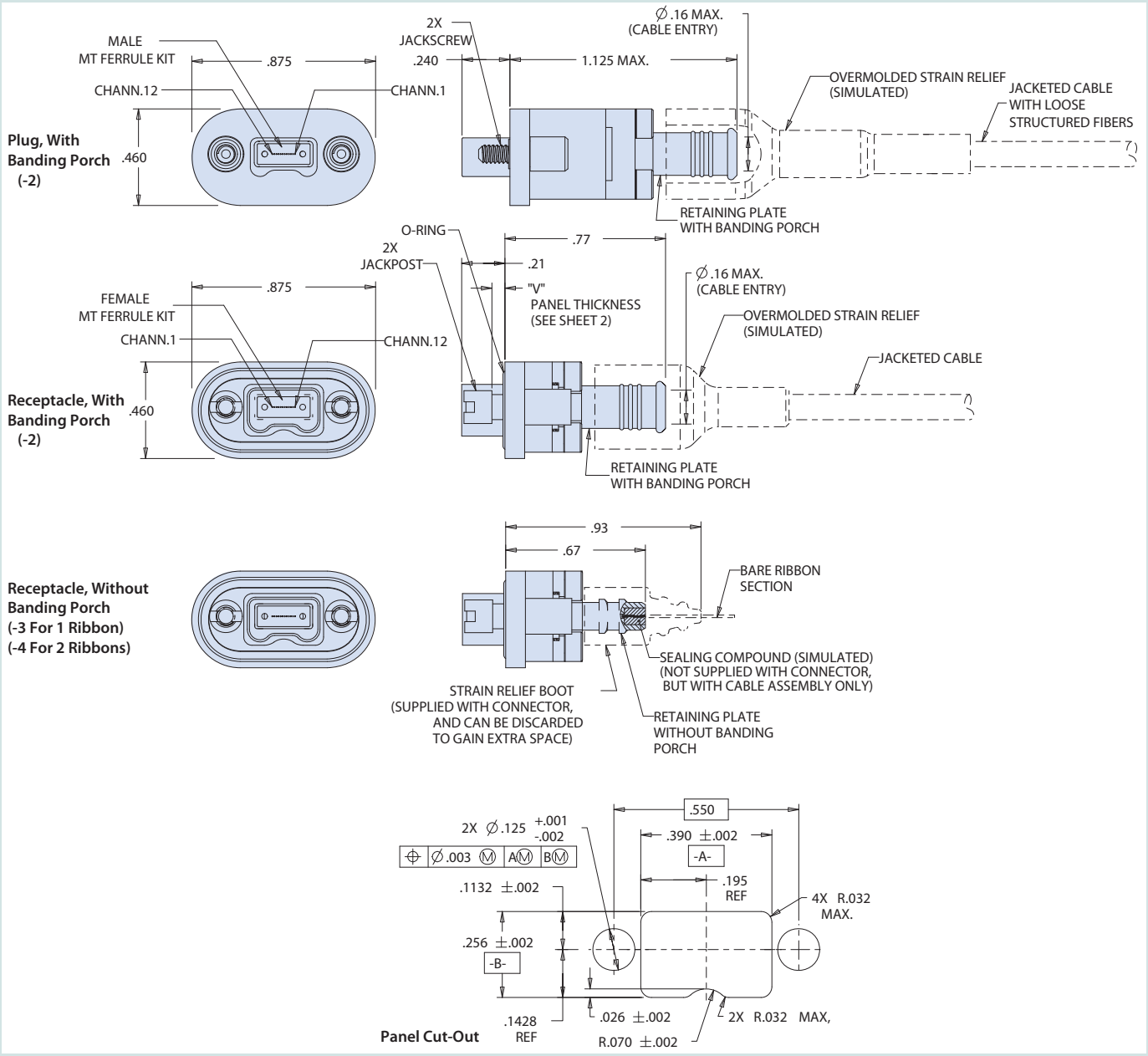
| Seal Materials | | | |
|---|---|---|---|
| Connector Type | Panel O-Ring | Peripheral Seal | Rear Gasket |
| **-06** Plug | N/A | N/A | Fluorosilicone |
| **-07** Receptacle | Fluorosilicone | Fluorosilicone | Fluorosilicone |
| **-09** Receptacle | EPDM | Fluorosilicone | Fluorosilicone |

### MATERIAL/FINISH/NOTES

Mounting hardware: stainless steel / passivated
Additional materials, finishes, connector configurations (dual and quad layouts), and hardware options are available, consult factory
Connectors supplied without MT ferrule kit, purchase separetely per P/N 181-133 or 181-150

# MT Fiber Optic Connectors

## 183-014 Environmental Series 79 MT
## Connector styles and dimensions




**Polarization Key Positions**

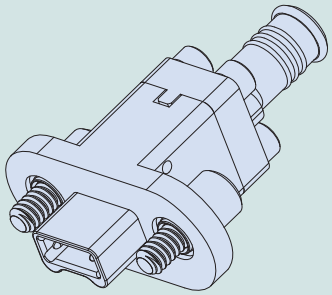
| Plug | | | Receptacle | | | |
|---|---|---|---|---|---|---|
| NO POLARIZATION | POLARIZATION A | POLARIZATION B | NO POLARIZATION | POLARIZATION A | POLARIZATION B | POLARIZATION U "B" "A" |

# MT Fiber Optic Connectors

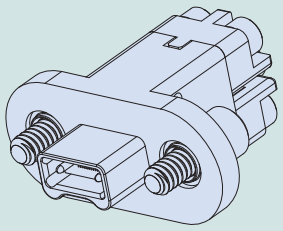
## 183-021 Series 79 MT with expanded polarized keying positions and #4-40 UNC jackscrew · How To Order

| How To Order | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **183-021** | **ME** | **-06** | **-L** | **-1** | **-A13** | **-APC** |

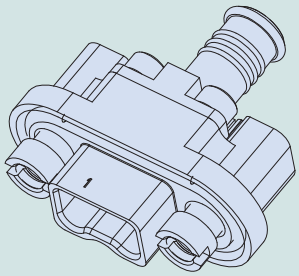
| | |
|---|---|
| **Basic Number** | Series 79 Single MT Fiber Optic Connector |
| **Material / Finish** | **ME** = Al Alloy / Electroless Nickel **MT** = Al Alloy / Nickel PTFE<br>**ZR** = Al Alloy / Zinc Nickel, Black<br>**NF** = Al Alloy / Cadmium, O.D. **Z1** = Stainless Steel / Passivate |
| **Connector Type** | **-06** = Plug (used with male MT ferrule)<br>**-07** = Receptacle (used with female MT ferrule)<br>**-S7** = Receptacle with EMI O-ring (used with female MT ferrule) |
| **Mounting Hardware** | Hardware for PLUGS<br>**-L** = Hex Head Jackscrew, non-removable<br>**-B** = Thru-Hole<br>Rear Panel Mount Jackposts for RECEPTACLES:<br>**-X** = for .031" panel thickness<br>**-W** = for .047" panel thickness<br>**-V** = for .062" panel thickness<br>**-T** = for .094" panel thickness<br>**-R** = for .080" panel thickness<br>(panel thickness dims ±.002") |
| **Retaining Plate / Banding Platform** | **-1** = 12 or 24 channel without banding porch<br>**-2** = 12 or 24 channel with banding porch<br>**-N** = No Retaining Plate (For use with standalone retaining plate)<br>See Dwg. 189-168 for various retaining plate designs<br>See Dwg. 189-177 for retaining plate used with Prizm-MT on Jacketed Cable |
| **Polarization Key Position** | See POLARIZED KEYING POSITIONS Table<br>**-U** = Universal position for Receptacle only<br>**Omit** for no Polarization Key. See Table. |
| **APC / Flat MT option** | **-APC** = for use with angled MT Ferrule (MT/APC)<br>**Omit** = for use with flat MT ferrule (MT/PC) including Prizm-MT |



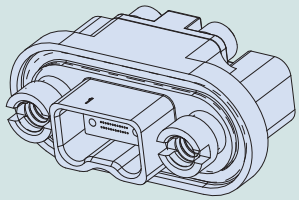
**Plug with Banding Porch**



**Plug without Banding Porch**



**Receptacle with Banding Porch**



**Receptacle without Banding Porch**

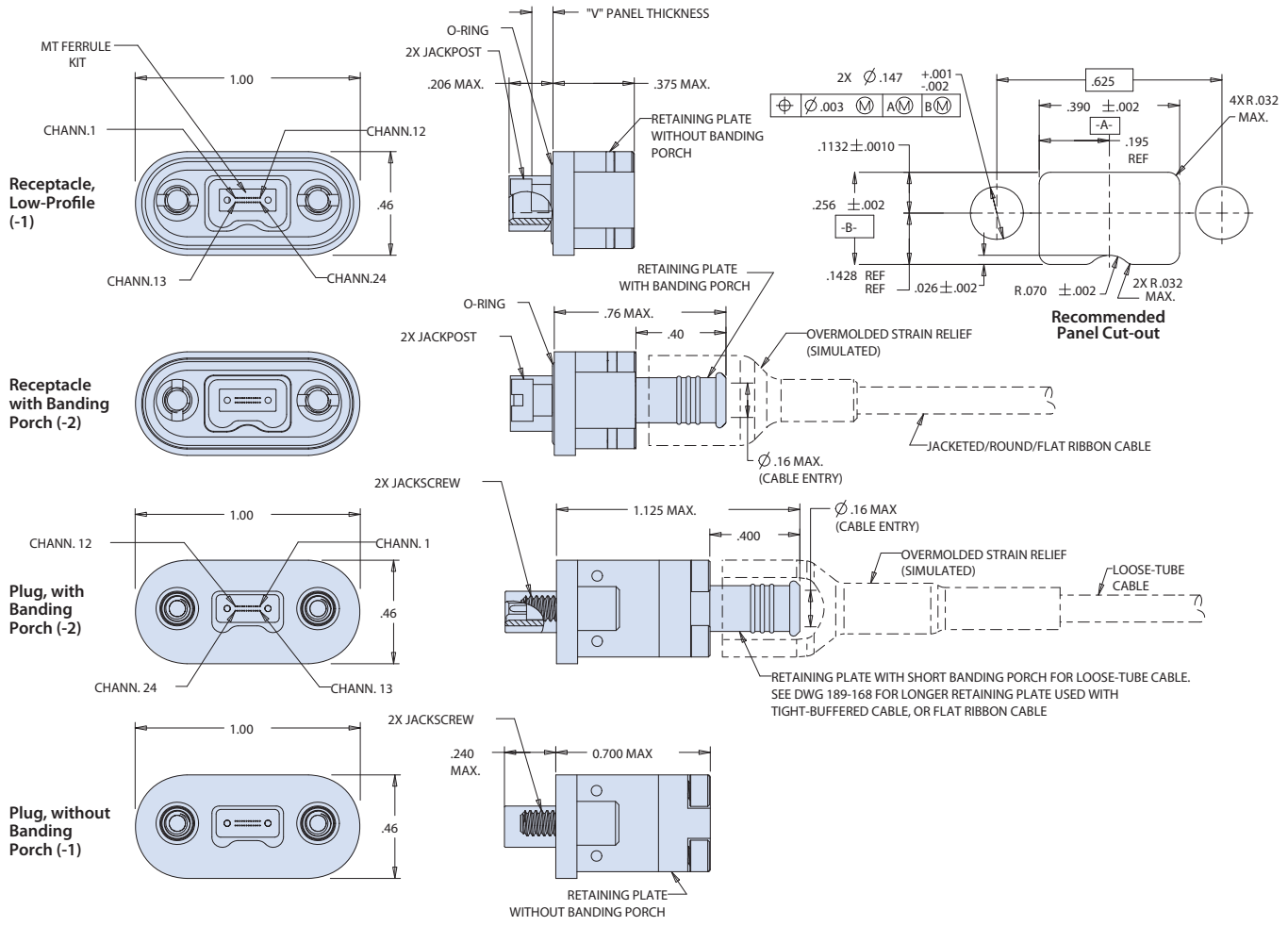
| Additional Components |
|---|
| **181-133** or **181-150** MT Ferrule Kit |
| **601-500 or 601-501** Band-Master ATS® Nano Band for shield termination |
| **189-172** Dust Cap |
| **189-168** or **189-177** Various Retaining Plate Designs |

### MATERIAL/FINISH/NOTES

Mounting hardware: stainless steel / passivated
EMI O-ring: conductibe fluorosilicone Standard O-ring: fluorosilicone/silicone blend
Additional materials, finishes, connector configurations (dual and quad layouts), and hardware options are available, consult factory
Connectors supplied without MT ferrule kit, purchase separetely per P/N 181-133 or 181-150

# MT Fiber Optic Connectors

## 183-021 Series 79 MT with expanded polarized keying positions and #4-40 UNC jackscrew · Connector styles and dimensions




POLARIZED KEYING POSITIONS (Front view, receptacle) CODES and Plug / Receptacle Key Designations

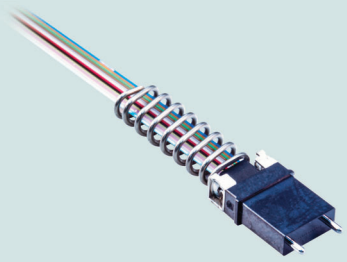
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -A13 | -A23 | -A14 | -A24 | -AD1 | -AD2 | -AD3 | -AD4 |
| -B13 | -B23 | -B14 | -B24 | -BE1 | -BE2 | -BE3 | -BE4 |
| -C13 | -C23 | -C14 | -C24 | -AE1 | -AE2 | -AE3 | -AE4 |
| -D13 | -D23 | -D14 | -D24 | (Omit) No Polarization Key, Plug | A B C D E 4 1 Plug Key designations 3 2 | | E D C B A 1 4 Receptacle Key designations 2 3 |
| -E13 | -E23 | -E14 | -E24 | -U Universal Key Receptacle | | | |



Dimensions in Inches (millimeters) are subject to change without notice.
Rev. 1.12.22

# MT Fiber Optic Connectors

## How To Order MT Ferrule Kits



| How To Order | | | | |
|---|---|---|---|---|
| **Sample Part Number** | **181-133** | **-126** | **-12** | **P** |
| **Basic Part Number** | MT Ferrule kit | | | |
| **Fiber type** | **-126**, **-1253**, **-1253A** (See Table I) | | | |
| **Number of Fibers** | **-12**, **-24** (See Table I) | | | |
| **Ferrule Style** | **P** = Male (use with Plug) **S** = Female (use with Receptacle) | | | |

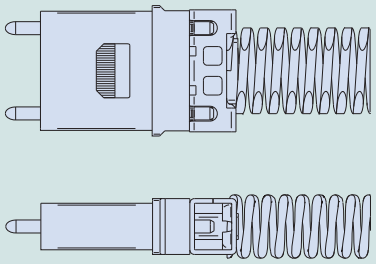


**Table I**

| Dash No. | Fiber Type | End Face | Fiber Size Core/ Cladding | No. of Fibers | Ferrule Identification | Pin Clamp Identification (Male Kit only) |
|---|---|---|---|---|---|---|
| **-126** | MM | PC | 50/125 | 12 | M-ME12 | 1 Through Hole |
| | | | 62.5/125 | 24 | M-ME24 | |
| **-1253** | SM | PC | 9/125 | 12 | E-E12 | 2 Through Holes |
| **-1253A** | SM | APC | 9/125 | 12 | E-E12 | 2 Through Holes |

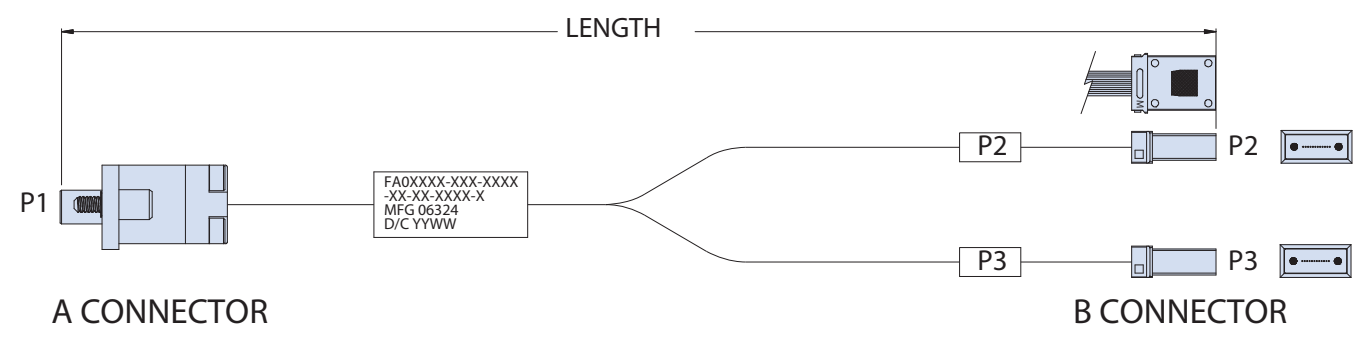
### MATERIAL/FINISH

- Ferrule: Polyphenylene Sulfide Resin
- Pin Clamp, Spring: Stainless Steel
- Boot: TPE

# MT Fiber Optic Connectors

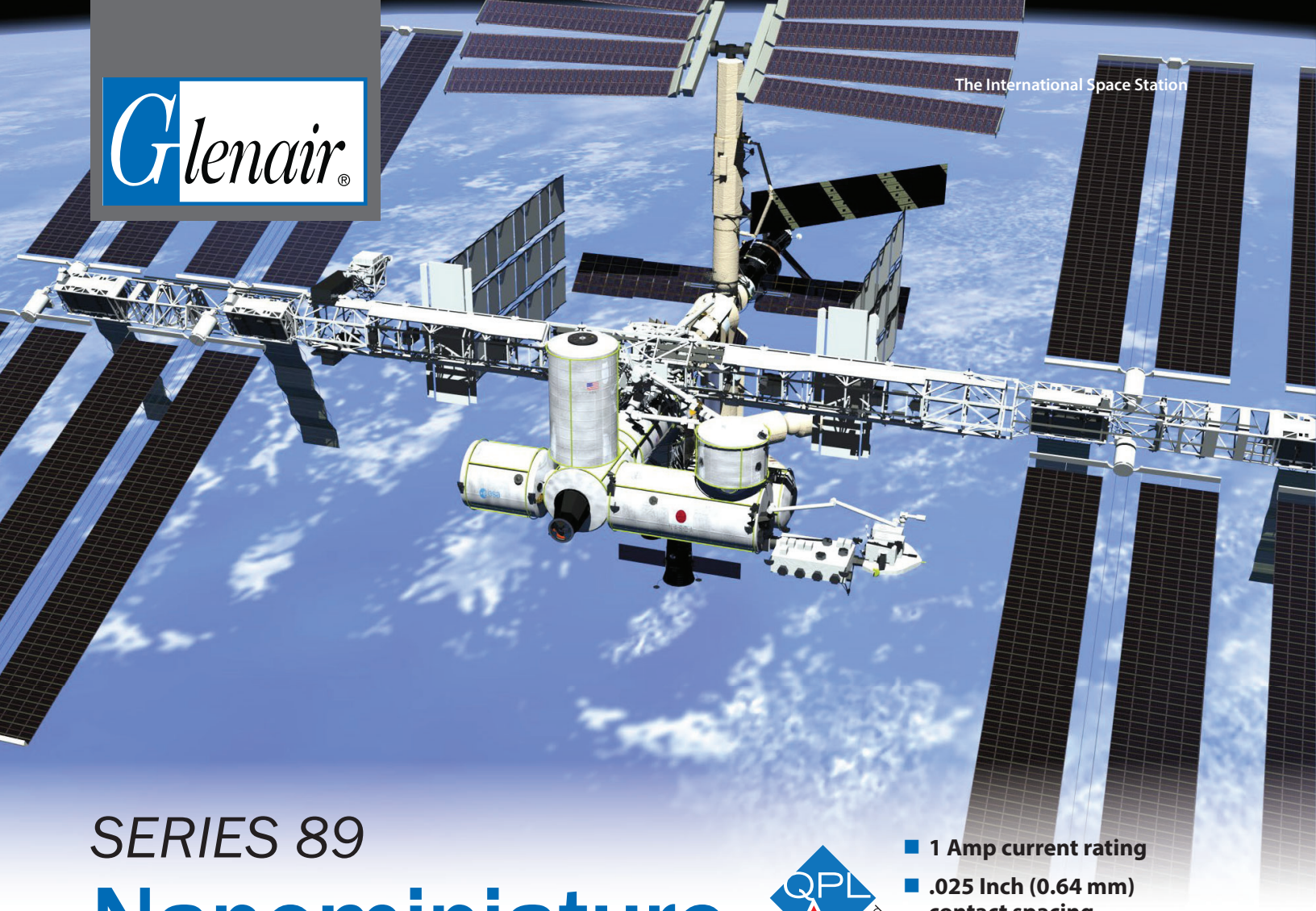
## How To Order Series 79 MT to MT Ferrule Cable Assembly

| How To Order | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **FA07364** | **-06** | **-17** | **ME** | **-B4** | **-50** | **-L** | | **-1** | | **-036** | **L** |
| **Basic Number** | Series 79 MT Ferrule Fiber Optic Cable Asembly | | | | | | | | | | | |
| **A Connector Type** | **-06** = Sr. 79 Plug 183-003 (used with male MT ferrule)<br>**-07** = Sr. 79 Receptacle 183-003 (used with female MT ferrule)<br>**-S7** = Sr. 79 Receptalcle 183-003 with EMI gasket (used with female MT ferrule) | | | | | | | | | | | |
| **B Connector Type** | **-06** = Sr. 79 Plug 183-003 (used with male MT ferrule)<br>**-07** = Sr. 79 Receptacle 183-003 (used with female MT ferrule)<br>**-S7** = Sr. 79 Receptalcle 183-003 with EMI gasket (used with female MT ferrule)<br>**-12** = ST Connector **-13** = FC Connector **-14** = SC Connector<br>**-15** = GC Connector **-16** = LC Connector<br>**-17** = MT Connector (male) **-18** = MT Connector (female)<br>**-19** = MTP Connector (male) **-20** = MTP Connector (female) | | | | | | | | | | | |
| **Material / Finish (-06, -07, -S7)** | **ME** = Al Alloy / Electroless Nickel **MT** = Al Alloy / Nickel PTFE<br>**ZR** = Al Alloy / Zinc Nickel, Black<br>**NF** = Al Alloy / Cadmium, O.D. **Z1** = Stainless Steel / Passivate | | | | | | | | | | | |
| **Fiber Qty. / Type** | **-B2** = 12 bare ribbon fibers **-B4** = 24 bare ribbon fibers<br>**-R2** = 12 round ribbon fibers **-R4** = 24 round ribbon fibers | | | | | | | | | | | |
| **Fiber Size** | **-09** = 9.3/125 Singlemode **-50** = 50/125 Multimode **-62** = 62.5/125 Multimode | | | | | | | | | | | |
| **Mounting Hardware (A Connector)** | Plug<br>**-L** = Hex head jackscrew, non-removable<br>**-B** = Thru-hole<br>Receptacle<br>**-X** = Rear-panel jackpost, .031" thickness<br>**-W** = Rear-panel jackpost, .041" thickness<br>**-V** = Rear-panel jackpost, .062" thickness<br>**-T** = Rear-panel jackpost, .094" thickness<br>**-R** = for .080" panel thickness | | | | | | | | | | | |
| **Mounting Hardware (B Connector, applies to Sr. 79 only)** | Series 79 Plug<br>**-L** = Hex head jackscrew, non-removable<br>**-B** = Thru-hole<br>**-K** = Slotted Head Jackscrew, non-removable<br>Series 79 Receptacle<br>**-X** = Rear-panel jackpost, .031" thickness<br>**-W** = Rear-panel jackpost, .041" thickness<br>**-V** = Rear-panel jackpost, .062" thickness<br>**-T** = Rear-panel jackpost, .094" thickness<br>**Omit** = if not Sr. 79 connector | | | | | | | | | | | |
| **Banding Platform (A Connector)** | **-1** = without banding platform **-2** = with banding platform | | | | | | | | | | | |
| **Banding Platform (B Connector, applies to Sr. 79 only)** | **-1** = without banding platform **-2** = with banding platform **Omit** if not Sr. 79 connector | | | | | | | | | | | |
| **Length** | In inches (e.g. -0036 = 36 inches) | | | | | | | | | | | |
| **Protective Cover** | **L** = supplied less covers **Omit** = supplied with covers | | | | | | | | | | | |





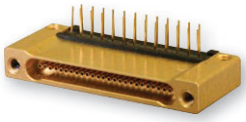

Dimensions in Inches (millimeters) are subject to change without notice.



The International Space Station

*SERIES 89*

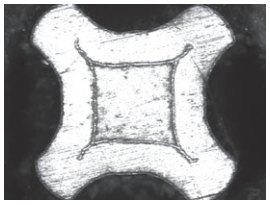
# Nanominiature Connectors



- 1 Amp current rating
- .025 Inch (0.64 mm) contact spacing
- #30 And #32 gage wire accommodation
- Single and double row
- Metal shell, aluminum, titanium or stainless steel
- TwistPin contact system
- Gold alloy contact, unplated
- Thru-hole and surface-mount PCB versions

## MIL-DTL-32139 qualified connectors for mission-critical board-to-wire applications—simply the smallest and lightest mil-spec connector in the business

### THE NANO TWISTPIN ADVANTAGE



Transverse cross-section of a TwistPin contact crimped to solid wire

- Gas-Tight Crimp Joint
- Better Shock and Vibration Performance
- Corrosion Proof Contact Alloy

*SERIES 89*

# Nanominiature Connectors

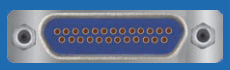
## The smallest and lightest mil-spec connector

| Series 89 Nanominiature Connector Performance Summary | |
|---|---|
| Contact Spacing | .025" (0.64mm) Contact Centers |
| Wire Accommodation | #30-#32 AWG |
| Current Rating | 1 AMP Max |
| DWV | 250 VAC RMS Sea Level |
| Insulation Resistance | 5000 Megohms Minimum |
| Operating Temperature | -55° C. to +125° C. |
| Contact Resistance | 71 Millivolt Drop Maximum |
| Shock, Vibration | 100g's, 20 g's |
| Durability | 200 Mating Cycles |
| Corrosion Resistance | 48 Hours Salt Spray |
| Mating Force | 5 Ounce Max, 0.4 Ounce Min |


**Glenair nanominiature connectors are MIL-DTL-32139 qualified. Series 89 products offer options not covered in the mil-spec.**

## How Small Are They?

***D-Subminiature Connector***
25 Contacts
on 0.109 Inch Spacing

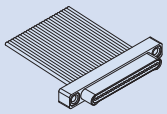


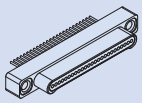
***Micro-D Connector***
25 Contacts
on 0.050 Inch Spacing

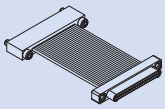
***Nano Connector***
25 Contacts
on 0.025 Inch Spacing

## *Series 89 Nanominiature Product Selection Guide*

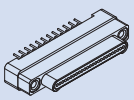
**Pre-Wired Single Row Connectors**

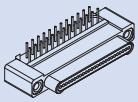

Insulated Wire

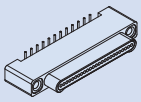

Uninsulated Wire

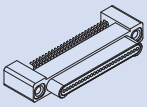

Back-to-Back Cables

**Pre-Wired PCB Connectors**

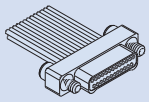

Thru-Hole Vertical

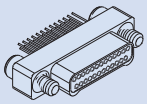

Thru-Hole 90°

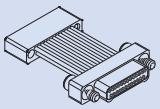

SMT Vertical


SMT 90°

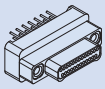
**Pre-Wired Double Row Connectors**

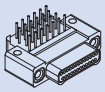

Insulated Wire

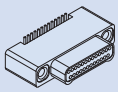

Uninsulated Wire

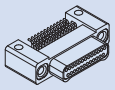

Back-to-Back Cables

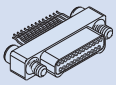
**Double Row PCB Connectors**


Thru-Hole Vertical

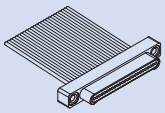

Thru-Hole 90°

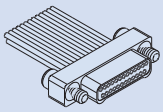

SMT Vertical


SMT 90°


SMT Straddler

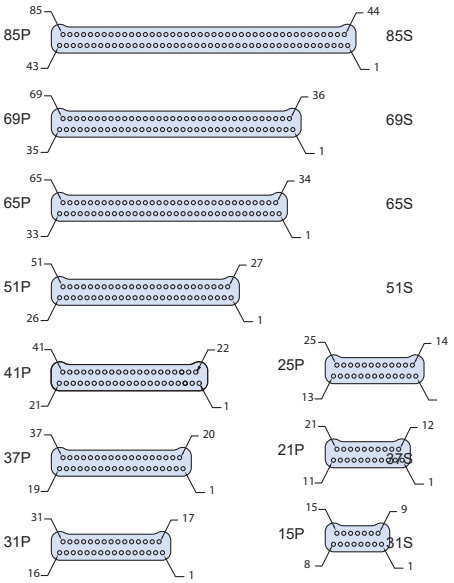
**Pre-Wired MIL-DTL-32139 Connectors**


Single Row, Insulated Wire

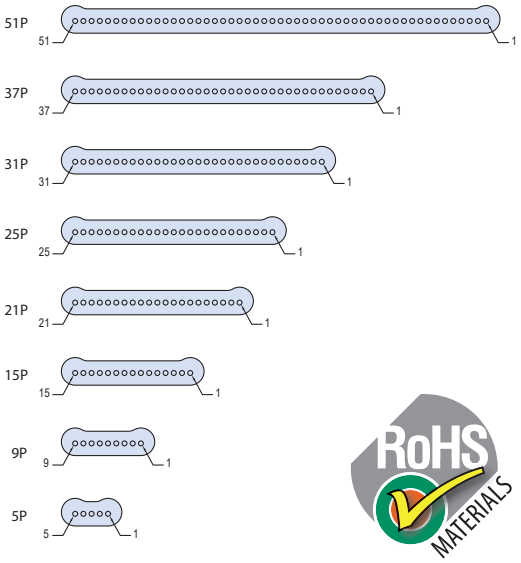

Double Row, Insulated Wire

## NANOMINIATURE CONTACT ARRANGEMENTS

**Double Row Mating Face of Pin (Plug) Connector**




**Single Row Mating Face of Pin (Plug) Connector**



*NAVSEA-APPROVED*

# Shielded Composite Junction Boxes

## Durable, lightweight corrosion-free EMI/RFI shielded composite junction boxes NAVSEA standard drawing 803-6983506 Rev. B

- **Over a dozen different tooled sizes and shapes.**
- **Extremely durable, corrosion-free, high temperature engineering composite thermoplastic**
- **Tested and qualified to U.S. Navy, UK MOD and hundreds of commercial aircraft and marine applications**

Series 316 stainless steel hardware provides long-term durability

Unlimited corrosion resistance compared to metal junction boxes reduces repair and maintenance costs.

IP67 rated seals and gaskets protect equipment from moisture and dust

Glass reinforced composite thermoplastic material is strong and durable and yet extremely lightweight.

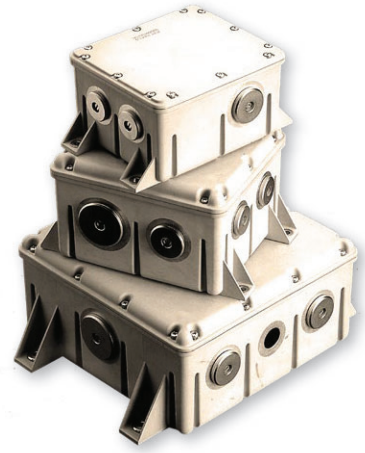
Example box shown: one of a series of NAVSEA-approved signal, switch, sound power, control boxes designed to eliminate corrosion damage and reduce maintenance cost on Navy ships

*NAVSEA-APPROVED*

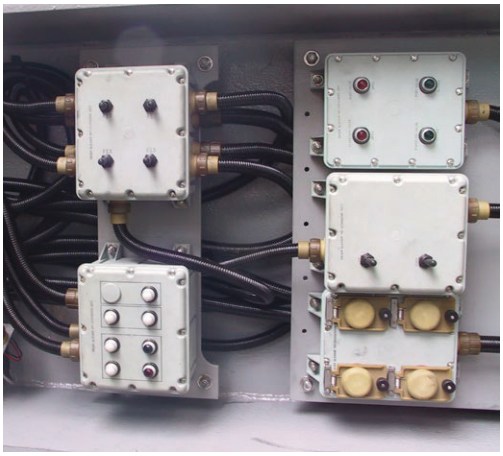
# Composite Junction Boxes

## for Naval applications

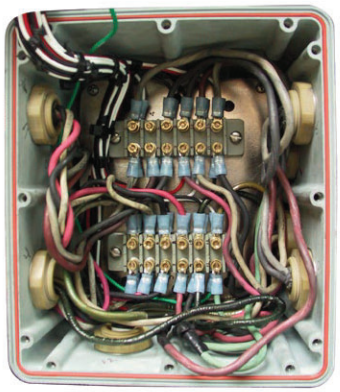
### TESTED AND QUALIFIED THROUGHOUT THE FLEET: GLENAIR CORROSION-FREE COMPOSITE BOXES



Broad range of sizes and shapes



Complex installations fully supported with feed-thru fittings and wire protection conduit



Discrete components or turnkey wired and connectorized systems

| Glenair Composite Box Product Specifications | | |
|---|---|---|
| **Description/Test Report** | **Requirement** | **Procedure** |
| **Plating Adhesion**<br>*Glenair #9-44-18/TN94-159* | Should not exhibit any blistering, peeling or other separation of the units plating. | Tested IAW MIL-DTL-38999. |
| **Vibration**<br>*NTS #973-7369-2* | Should not exhibit loosening of component parts or evidence of damage. | Tested IAW MIL-STD-167 Type 1 for box units and MIL-STD-1344, Method 2004 Condition II for fittings and accessories. |
| **Shock**<br>*MOD #BR8470 Grade C and F* | There shall be no loosening of parts or evidence of damage. | Tested IAW MOD BR 8470 Grade C and F. |
| **Salt Spray**<br>*Glenair #9-44-18/TN94-159* | Should exhibit no exposure of underplate or base material. | Tested IAW MIL-STD-1344, Method 1001. |
| **Dust**<br>*NTS #973-7369-1* | Should conform to required torque limits and functional requirement within 25%. | Tested IAW MIL-STD-202. |
| **UV Light Resistance**<br>*GE RDM88050255-6042* | No degradation of the mechanical properties defined in the specification after testing. | Tested IAW ASTM D2565. |
| **Impact**<br>*MIL-STD-1344, Method 2017* | No evidence of breaking or cracking of components or other damage that could affect the product performance. | Tested IAW MIL-STD-1344, Method 2017. |
| **Temperature Cycling**<br>*NTS #575-9249* | No cracking, peeling or separation of plating or other functional damage. | Tested IAW MIL-STD-1344, Method 1003 at -65°C to 200°C. |
| **Hydrolytic Stability**<br>*NTS #878-536* | No evidence of increased weight greater than 1% and no evidence of cracking, breaking or loosening of component parts. | Tested IAW ASTM D570-81. |
| **Flammability**<br>*MIL-STD-1344, Method 1012, Smoke Index, NES 711 Issue 2, NES 713 Issue 3 and ISO 4589* | The item flame and after flow extinguishing time shall not exceed the defined limits. | Tested IAW Table II of of MIL-STD-1344, Method 1012, Smoke Index, NES 711 Issue 2, NES 713 Issue 3. Burning behavior by Oxygen Index, ISO 4589. |
| **Water Tightness**<br>*EA #0C13513-039514* | Water tightness and internal pressurization is maintained. | Tested IAW EA #0C13513-039514. |
| **Outgassing**<br>*JPL #081892* | Maximum allowable weight loss is 10%. | Tested IAW ASTME 595. |
| **Electromagnetic Shielding**<br>*TRW/ABQ-55C-1186-0* | Should demonstrate shelding effectiveness and transfer impedance conforming to military industry standards and specific customer requirements. | Tested IAW TRW/ABQ-55C-1186-0. |

Glenair®

Artist concept of NASA's Juno spacecraft, exploring Jupiter. Credit NASA/JPL-Caltech

*NON-PYROTECHNIC*

# Hold Down and Release Mechanisms

## High-reliability, non-explosive (split-spool) HDRMs, separation nuts, and pin pullers/ pushers for dependable preload retention and release of deployable space systems

Glenair pyrotechnic-free release mechanisms offer near-simultaneous release time, low shock performance, with relatively low initiation power input.

HDRM Series includes separation nuts, pin pushers, and pin pullers—direct wired or connectorized—with a broad range of preload carrying capacity.

- **Pyrotechnic-free alternative (low-shock fuse-wire) for single-event release of deployable space systems**
- **Configurable electrical initiation with no (amperage) upper limit**
- **Near-simultaneous release dependent on temperature and power**
- **User-serviceable and refurbishable units**
- **Redundant or non-redundant actuation circuit**
- **Not susceptible to transient and noise (EMI/ EMP/ESD/RFI) inputs**
- **Extended temperature ranges: -150°C to +150°C**

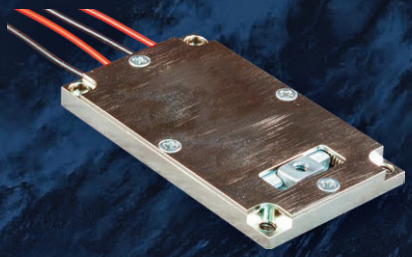
*NON-PYROTECHNIC*

# Hold Down and Release Mechanisms

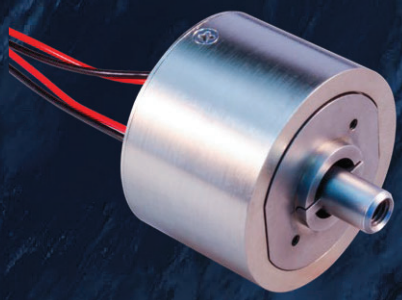
## Separation nut, pin puller, and pin pusher configurations with flight heritage

HDRM HOLD DOWN RELEASE MECHANISM™

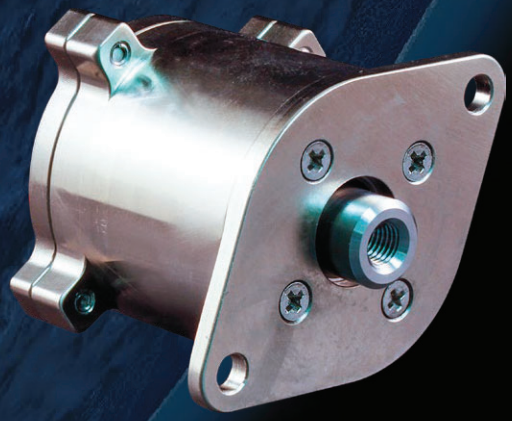
### HDRM DUTY CLASSES



Light-Duty HDRM
Redundant circuit,
5 – 75 lb release preload



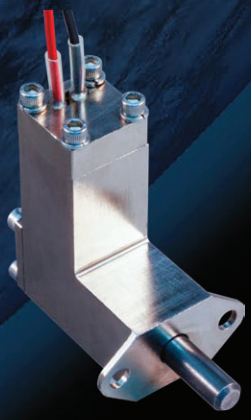
Medium-Duty HDRM
Redundant circuit,
300 – 4000 lb release preload



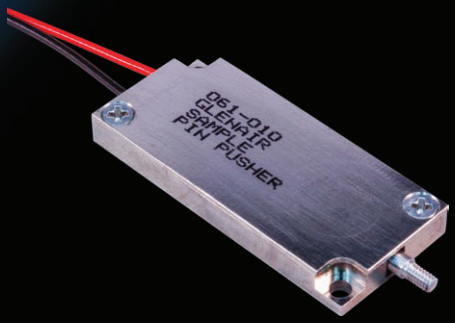
Heavy-Duty HDRM
Redundant circuit,
5000 – 20,000 lb release preload

### HDRM RELEASE TYPES

Separation nut



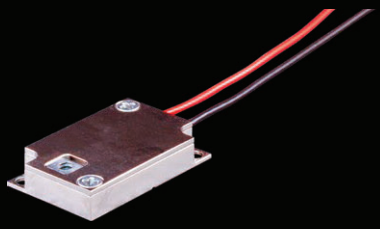
Pin puller




Pin pusher

### NORTH AMERICAN AND EUROPEAN HDRM SOLUTIONS

Glenair®
SPACE SYSTEMS



Glenair is pleased to offer both our North American and European customers access to our innovative hold-down release mechanism technologies. These non-pyrotechnic space mechanisms are ideally suited for satellite, payload fairing, antenna array, solar array, and boom and mast deployment. Glenair medium-duty HDRMs and pin pullers can ship to most customers without an export license, although light- and heavy-duty HDRMs do typically require one. Certain designs may be manufactured by Glenair Space Systems in Salem, Germany. Consult factory for complete information.

Glenair®

# ETHERNET-READY

# Octobyte™

## The faster ruggedized 4/8 pole interconnect system for Ethernet data applications

Glenair series ITH connectors with Ethernet-ready Octobyte™ contacts are available for harsh-environment subsea / naval applications that depend on sealed environmental (IP67) connector performance. Octobyte contacts, packaged in ruggedized ITH reverse-bayonet connectors, deliver both dedicated Ethernet datalink as well as mixed serial databus and power for high-speed data applications

Octobyte™ contacts are vibration resistant and designed to work with Ethernet cables from CAT 5 to CAT 7A, MVB-WTB, and RG58 Coax. Reverse-bayonet ITH series connectors with Octobyte™ contacts are easy and fast to assemble and deliver reliable locking performance in severe vibration and shock applications.

**Tested for compliance IAW EN50173-1 standards for CAT5E and CAT7.**
**Proven performance in numerous rail applications (consult factory for references)**

Octobyte™

- **For harsh-environment transit, industrial, or marine/ subsea applications**
- **RF Coax applications (RG58 and RG59U cables)**
- **High-speed interconnect solution for audio, video, and digital displays**
- **Qualified for use in safety systems, sensors, detection devices, and control panels**
- **Tested in accordance with:**
  **ISO F0 STP: CAT 7A**
  **EN50173-1 F600-STP: CAT 7**
  **EN50173-1 D STP: CAT 5E**

*OCTOBYTE™*

# The faster ruggedized Ethernet interconnect solution

## OCTOBYTE CONTACTS FOR ETHERNET CAT 5 · CAT 6 · CAT 7 · COAX · MVB-WBT

| How To Order Octobyte contacts | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **Q** | **0** | **8** | **P** | **-A** | **B1** | **-XXX** | **-7A** |
| **Product Series** | Octobyte contacts | | | | | | | |
| **Contact Size** | **0** = contact size 0 | | | | | | | |
| **Number of Contacts** | **8** = 8 poles **4** = 4 poles **CX** = Coax | | | | | | | |
| **Contact Gender** | **P** = Male **S** = Female | | | | | | | |
| **Cable O.D. Range/ Coax Cable Type** | **A** = O.D. 6–7 **B** = O.D. 7–8 **C** = O.D. 8–9<br>**RG58** = 50 Ohm **RG59U** = 75 Ohm [Coax only] | | | | | | | |
| **Plating** | **B1** = gold plating | | | | | | | |
| **Alternative Color (Cat 7A only)** | **G14** = Black **G14GN** = Green **G14GY** = Grey<br>**G14R** = Red **G14Y** = Yellow **Omit** for standard | | | | | | | |
| **Ethernet** | **7A** = Cat 7A **AD** = Ethernet MVB - WBT Contacts **Omit** for Cat 5 | | | | | | | |

CAT 5 · CAT 5E · CAT 6 · CAT 6A

RG58

CAT 6A · CAT 7 · CAT 7A

MVB - WTB

## SERIES ITH CONNECTORS FOR OCTOBYTE CONTACTS

# Reverse bayonet-lock connectors

### Rugged environmental performance — the perfect Octobyte packaging solution

Dozens of contact arrangements available including hybrid Octobyte, power, and signal

- **Rugged MIL-DTL-5015 type design with fast reverse bayonet coupling**
- **Rigid dielectric inserts with contact retention clips**
- **Positive lock technology provides reliable vibration and shock resistance**
- **Proven performance in even the most rugged applications**
- **Conforms to the European VG 95234 standard, French (NFF 61030) and British (BS 6853) electrical standards and EEC compliance directives**

Ethernet-ready Octobyte solutions for rail and transit applications are available as discrete contacts, packaged in rugged reverse-bayonet ITH series connectors, or as turnkey inside-the-box or environmental cable assemblies, tested and ready for immediate use.

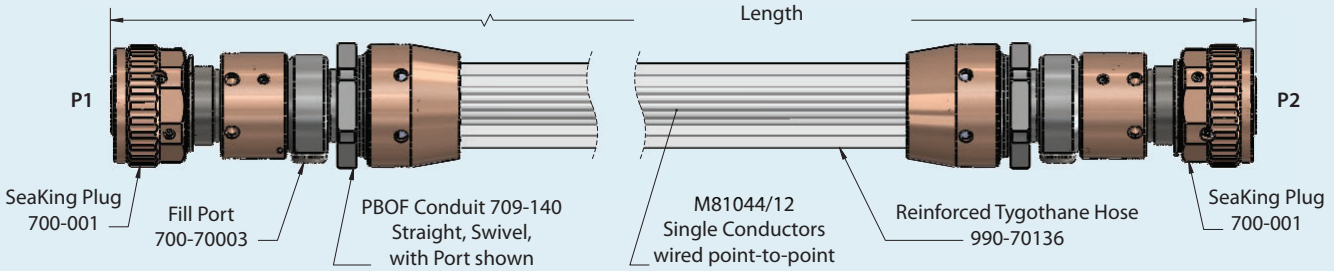
Available flop-lid protective cover

RadGrip rubber coupling nut covers available in a wide range of colors including safety red

# MISSION-CRITICAL UNDERWATER
# INTERCONNECT SOLUTIONS

Most aggressive lead times in the industry · Vertically integrated and made in the USA
Custom solutions, no miniumum order quantities
Accessible and responsive engineering support · Obsessed with quality and qualification
Superior technical designs for extended durability and performance

## FULLY WIRED PBOF ASSEMBLIES




**SeaKing PBOF Wired Assembly - How To Order**

| Sample Part Number | 7071-0348 | -K19 | -L1S | -L1S | -N | -XXX |
|---|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| **Base Part Number** | **7071-0348** = SeaKing™ PBOF wired assembly | | |
| **Insert Arrangement P1 and P2** | **G10**, **G8**, **K19**, **K14**, **K4**, **KC6**, **L9**, **M37**, **M26**, **M12**, **O61**, **O44**, **O19**, **OX49**, **Q109**, **Q30**, **R131** (see catalog or dwg 709-099 for details) | | |
| **End Configuration P1** | **Angle Option**<br>**L** = Straight<br>**M** = 45°<br>**N** = 90° | **Fill Port**<br>**1** = Yes<br>**0** = No | **Swivel/Fixed**<br>**S** = Swivel<br>**F** = Fixed |
| **End Configuration P2** | **Angle Option**<br>**L** = Straight<br>**M** = 45°<br>**N** = 90° | **Fill Port**<br>**1** = Yes<br>**0** = No | **Swivel/Fixed**<br>**S** = Swivel<br>**F** = Fixed |

| **Key Orientation** | **Key Position** | **A°** | **B°** |
|---|---|---|---|
| | **N** | 150° | 210° |
| | **A** | 75° | 210° |
| | **B** | 95° | 230° |
| | **C** | 140° | 275° |

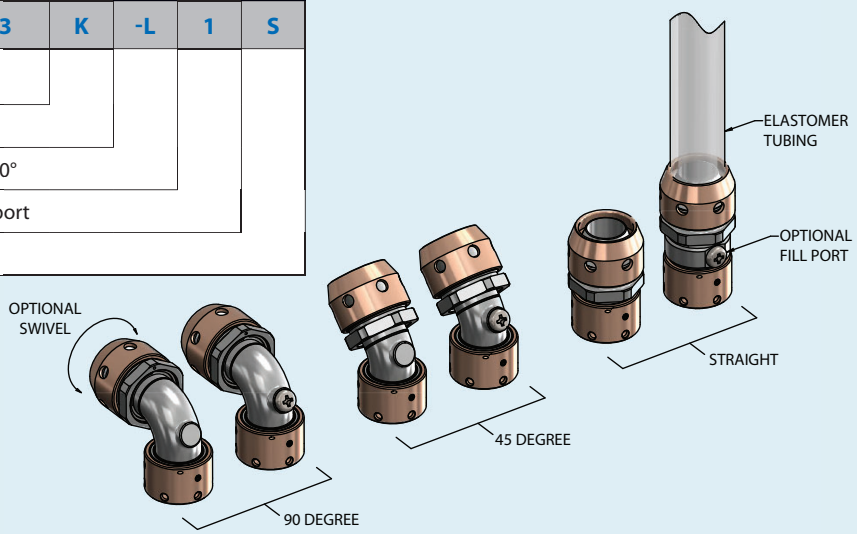
| | |
|---|---|
| **Cable Length** | in Inches |

## PBOF ACCESSORY KITS

**SeaKing PBOF Attachment Accessory Kits - How To Order**

| Sample Part Number | 709-123 | K | -L | 1 | S |
|---|---|---|---|---|---|

| | |
|---|---|
| **Product Series** | **709-003** = SeaKing™ PBOF accessory |
| **Shell Size** | **E**, **G**, **K**, **L**, **M**, **O**, **P**, **Q**, **R** |
| **Angular Function** | **L** = Straight **M** = 45° **N** = 90° |
| **Fill Port Option** | **0** = No fill port **1** = With fill port |
| **Swivel/Fixed Option** | **S** = Swivel **F** = Fixed |

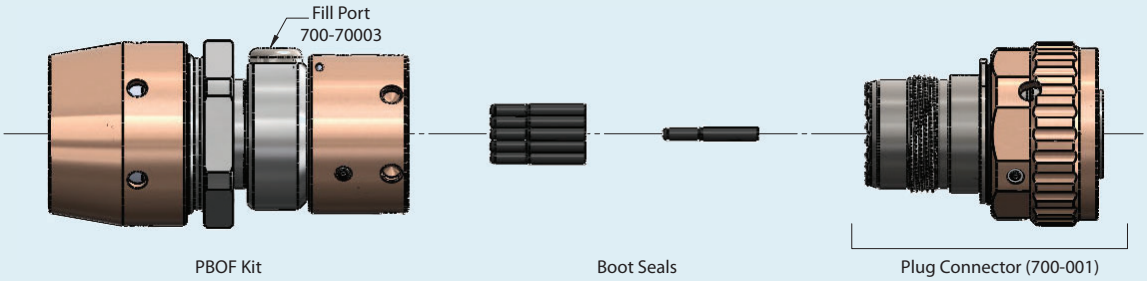


*SERIES 700 10K PSI / 700 BAR / 7000 M*

# SeaKing™ High-Pressure Underwater Connectors, Cables, and PBOF Assemblies

## PBOF assembly fittings and accessories

## CONNECTOR / BACKSHELL / BOOT SEAL ASSEMBLY

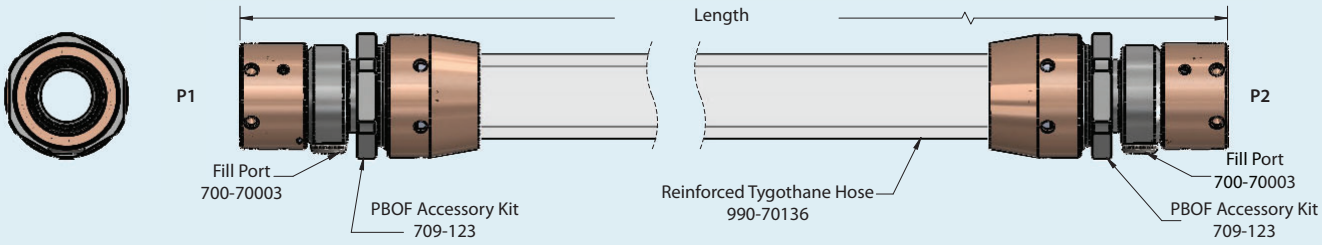



**SeaKing PBOF Connector/Backshell/Boot Seal Assembly - How To Order**

| Sample Part Number | 707-0320 | -K19 | Z1 | S | N | L1S |
|---|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| **Base Part Number** | **707-0320** = SeaKing™ PBOF assembly | | |
| **Insert Arrangement** | **G10**, **G8**, **K19**, **K14**, **K4**, **KC6**, **L9**, **M37**, **M26**, **M12**, **O61**, **O44**, **O19**, **OX49**, **Q109**, **Q30**, **R131** (see catalog or dwg 709-099 for details) | | |
| **Barrel Material** | **Z1** = Stainless Steel **TC** = Titanium | | |
| **Contact Style** | **S** = Socket | | |
| **Key Position** | **Key Position** | **A°** | **B°** |
| | **N** | 150° | 210° |
| | **A** | 75° | 210° |
| | **B** | 95° | 230° |
| | **C** | 140° | 275° |
| **Configuration Options** | **Angle Option** | **Fill Port** | **Swivel/Fixed** |
| | **L** = Straight<br>**M** = 45°<br>**N** = 90° | **1** = Yes<br>**0** = No | **S** = Swivel<br>**F** = Fixed |

## PBOF CONDUIT ASSEMBLIES




**SeaKing PBOF Conduit Assembly - How To Order**

| Sample Part Number | 709-140 | -K | -L1S | -L1S | -XX |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| **Base Part Number** | **709-140** = SeaKing™ PBOF conduit assembly | | |
| **Backshell and Tubing size** | **E**, **G**, **K**, **L**, **M**, **O**, **P**, **Q**, **R** | | |
| **Backshell Configuration P1** | **Angle Option** | **Fill Port** | **Swivel/Fixed** |
| | **L** = Straight<br>**M** = 45°<br>**N** = 90° | **1** = Yes<br>**0** = No | **S** = Swivel<br>**F** = Fixed |
| **Backshell Configuration P2** | **Angle Option** | **Fill Port** | **Swivel/Fixed** |
| | **L** = Straight<br>**M** = 45°<br>**N** = 90° | **1** = Yes<br>**0** = No | **S** = Swivel<br>**F** = Fixed |
| **Cable Length** | in Inches | | |

DLA-QUALIFIED CLASSES J AND M COMPOSITE

# SuperNine®

QPL qualified

## PEEK composite MIL-DTL-38999 Series III DLA-qualified plug and receptacles


Glenair SuperNine versions available with integrated band porch

SuperNine® is a “Better-than-QPL” MIL-DTL-38999 Series I, II, III, and IV connector family. Glenair’s complete capability in this benchmark series now includes qualified Series III plug and wall-mount receptacles in 100% molded composite thermoplastic PEEK, classes J (Cad / O.D.) and M (Electroless Nickel). The series offers outstanding weight savings and unlimited corrosion protection compared to metal versions.

### PRODUCT FEATURES

- DLA-qualified and Glenair signature composite classes J (Cad) and M (Electroless Nickel)
- D38999/26 plug and D38999/20 wall-mount receptacle
- 20% weight savings versus aluminum class connectors
- Band porch designs = 50% weight savings over backshell / connector configurations
- 100% molded composite (not machined) for superior strength and durability
- 40% carbon-filled PEEK

DLA-QUALIFIED

# MIL-DTL-38999 Series III Composite

## Advanced performance mil-aero / defense connectors

### ABOUT GLENAIR 100% MOLDED PEEK COMPOSITE THERMOPLASTIC CONNECTORS

40% carbon-filled PEEK (Polyether Ether Ketone) is a high-performance material used in aerospace-grade connectors due to its superior mechanical strength, thermal stability, and resistance to harsh chemicals and environments. The addition of carbon fibers enhances the material's rigidity and dimensional stability, making it ideal for demanding aerospace applications where high strength-to-weight ratios are crucial. This composite material can withstand extreme temperatures and mechanical stresses, ensuring reliable, lightweight performance in critical interconnect systems in all aircraft zones subject to environmental exposure, high temperatures, vibration and shock.

### MIL-DTL-38999 SERIES III SUPERNINE® COMPOSITE CONNECTOR PERFORMANCE

SuperNine is a high-performance connector family designed for cable-to-panel, I/O and inline applications in military aerospace and other demanding situations. Environmental composite class versions are supplied with crimp removable contacts as well as PC tails in plug and wall-mount receptacle configurations. This table describes the most basic attributes for environmental class products supplied by Glenair.

| | |
|---|---|
| **Series Description** | Scoop-Proof, Triple Start, Self-Locking |
| **Supported Contact Types and Gauges** | 8, 12, 16, 20, and 22D gauge contacts, standard density and 23 gauge high density arrangements; 1 to 187 contacts. Crimp, solder and PCB tails |
| **Coupling/Mating Design** | Triple-start threaded coupling design, rapid advance, self-locking and full-mate indicator, keyed |
| **EMI Shielding** | Shell to shell bottoming, grounding fingers, conductive finish and thick shell wall cross-sections provide effective EMI shielding to 65 dB minimum up to 10 GHz |
| **Vibration and Shock** | Excellent resistance to vibration and shock with no electrical discontinuity and no disengagement of the mated connectors per MIL-DTL-38999 (paragraph 3.27 & 3.28) |
| **Mating Speed** | 360 ° or one full turn to full mate |
| **Materials** | 100% molded PEEK carbon filled shells, Fluorosilicone/Silicone blend seals, Beryllium Copper alloy, Gold-plated contacts |
| **Durability** | 1500 mating cycles |
| **IP Rating** | Receptacles with non-removable PC tail contacts IP67; Removable contacts in mated condition, IP68 |
| **Outgassing** | Available in accordance with NASA standards |

Current Rating

| Contact Size | Maximum Amps Crimp Contact Environmental | Contact Size | Maximum Amps Crimp Contact Environmental |
|---|---|---|---|
| 23 | 5 | 16 | 13 |
| 22D | 5 | 12 | 23 |
| 20 | 7.5 | 8 | 46 |

Glenair®

*FOR FAST, REPEATABLE, RELIABLE INSTALLATION*

# Piggyback Shrink Boot Connector Adapters

The recovery of shrink boots for environmental sealing and strain on all–land or or air–vehicle interconnect cabling is a critical final step in the cable harness assembly process. This time-consuming task relies on each individual technician to correctly position and shrink boots on each of the many connectors found on the aircraft. Glenair composite or metal piggyback shrink boot connector adapters take all of the guesswork out of this time-consuming assembly task. Partially recovered boots, pre-attached to composite or metal adapters, take less than half the time to shrink in place, and are exactingly pre-positioned for optimal sealing and strain relief each and every time the task is completed.

**LIGHTWEIGHT COMPOSITE AND ALUMINUM VERSIONS**

Band-in-a-Can two-piece design provide the simplest cable shield termination solution

Cable bulk-head feed-thrus. Also available for mated pairs

Partially recovered shrink boot adapters reduce installation time

*COMPOSITE AND METAL*

# Piggyback shrink boot connector adapters

## for fast, repeatable, reliable installation

### PIGGYBACK SHRINK BOOT CONNECTOR ADAPTERS PRODUCT SELECTION GUIDE

**310-055**
Metal, Environmental Piggyback Boot Adapter

**310-057**
EMI/RFI Composite, Environmental Piggyback Boot Adapter with Drop-In Banding Porch

**310-058**
EMI/RFI Metal Environmental Piggyback Boot Adapter with Drop-In Banding Porch

**319-183**
Composite Piggyback Boot with integrated Shield Sock

**319-216**
EMI/RFI Metal Backshell with Shielded Piggyback Boot

**443-033**
EMI/RFI Composite Band-in-a-Can Backshell and Piggyback Boot

**443-040**
EMI/RFI Metal Band-in-a-Can Backshell with Self Locking Rotatable Coupling and Piggyback Boot

**630-103**
Composite Environmental Cable Feed-thru with Piggyback Boot

**630-101**
Metal Environmental Cable Feed-Thru with Piggyback Boot

**RoHS Compliant**

All Glenair Piggyback Boot Connector Adapters are fully RoHS compliant

| Boot Material Selection Guide | | | |
|---|---|---|---|
| | Type 1 | Type 2 | Type 3 |
| Attribute | High-Performance Semi-Rigid Elastomer | Zero-Halogen Semi-Rigid Polyolefin | General Purpose Flexible Polyolefin |
| Continuous Operating Temp. | -75° to +150° C | -40° to +130° C | -55° to +135° C |
| Resistance To Fuels, Oils | Excellent | Very Good | Good |
| Low Toxicity, Zero Halogen | No | Yes | No |

HIGH PRESSURE
ROTARY
COUPLING

# Pneumatic Rotary Gas Joints for High-Pressure Pure-Air / Argon Applications and Systems

Glenair high-pressure Pure-Air/Argon Rotary Joint solutions are designed and performance-tested for use in a wide variety of defense and aerospace applications, including cooling of infrared detectors, missile seekers and all high-pressure pneumatic actuation systems. These compact, lightweight rotary devices incorporate small-bore pipe assemblies for low friction and low external-leakage for pure air / argon rotary applications.

These high-pressure, low-torque devices are designed for direct incorporation into Joule Thompson (JT) cryogenic systems and all applications which require reliable pressurization, blow down, actuation, and IR Cooling. The components are designed to meet the broad range of military / aerospace performance requirements and specifications including high and low temperature tolerance, vibration, shock, altitude immersion, and more.

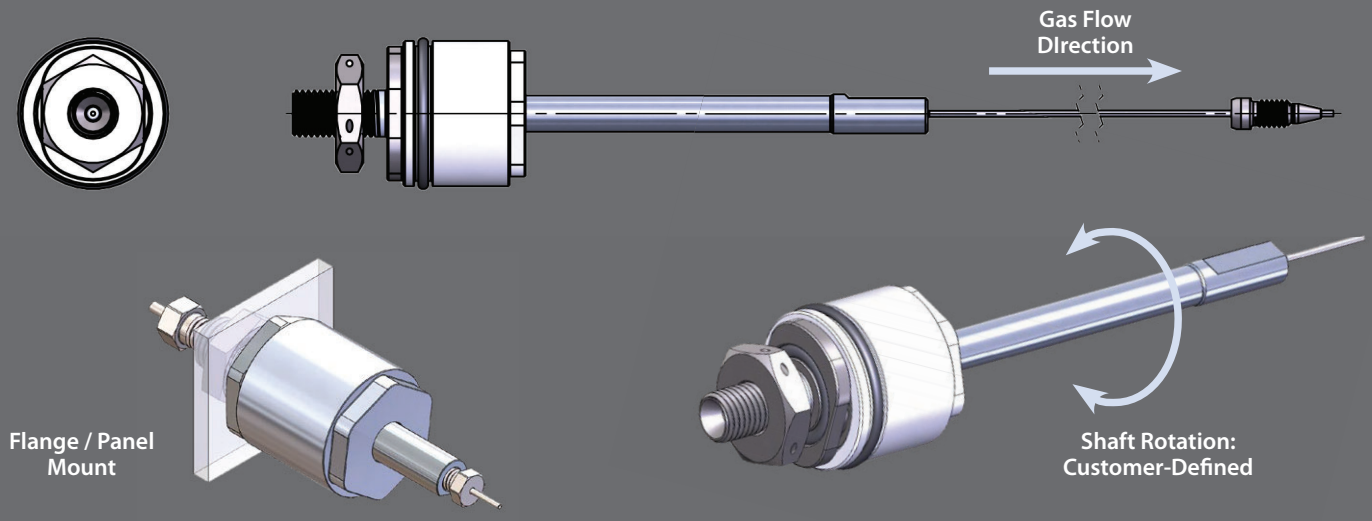
One of the variants shown, can be connected by an M6 nut and nipple to a sealed-for-life or rechargeable gas supply system, the coupling transfers the high-pressure gas axially through small bore tube, to a rotating assembly. All Rotary Gas Joint components are precision machined and manufactured to our drawings and designs.

- **Single passage, compact, low-torque pneumatic rotary unions / joints for pressurized pure air and argon (DEF STAN 58-96) cooling systems**
- **Small-bore stainless steel pipework located inside a compact housing for low leakage and low friction rotary couplings.**
- **Flange / panel mounting**

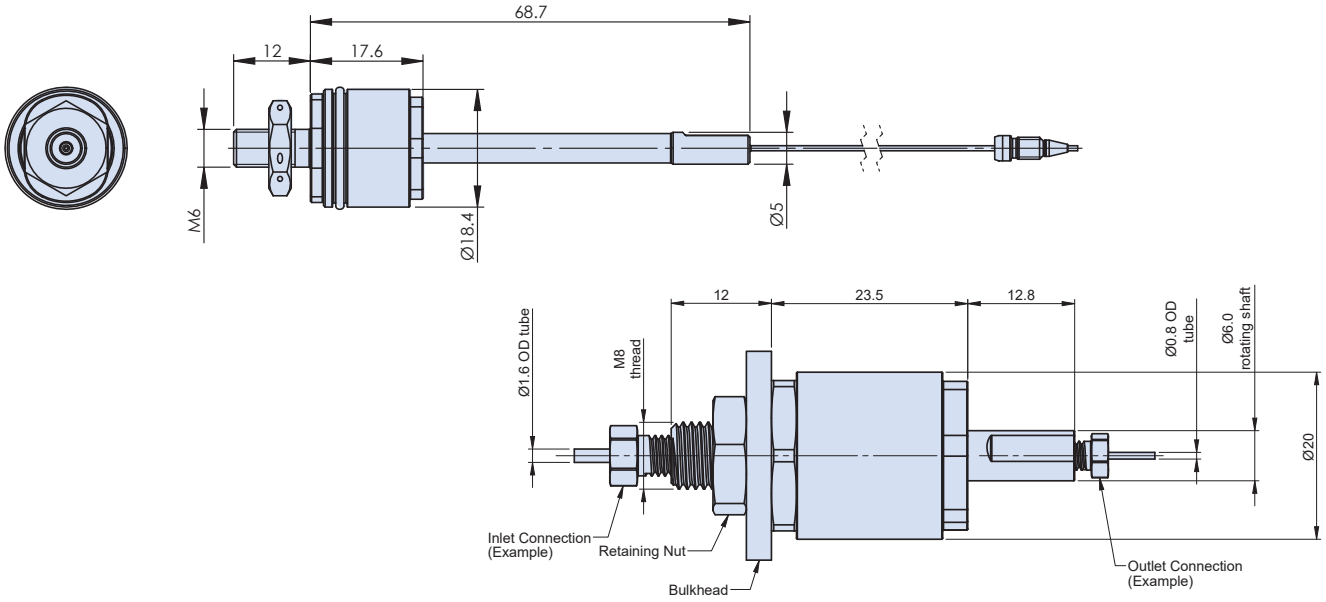
*PURE AIR / ARGON*

# Single-Passage Pneumatic Rotary Joints for Guided Weapons Cooling

## Technical and dimensional specifications




## DIMENSIONAL DRAWINGS, CUSTOM DESIGN (TOP) AND GENERIC CONFIGURATION




| Technical Performance | |
|---|---|
| Nominal Operating Pressure | 480 bar at 20°C |
| Maximum Operating Pressure | 600 bar at 60°C |
| Operating Temperature | -40°C +60°C for all applicable mechanical requirements |
| Normal Rotation Speed | 100 RPM; increasing to 800 RPM |
| Typical Mass | 34 grams |

Glenair®

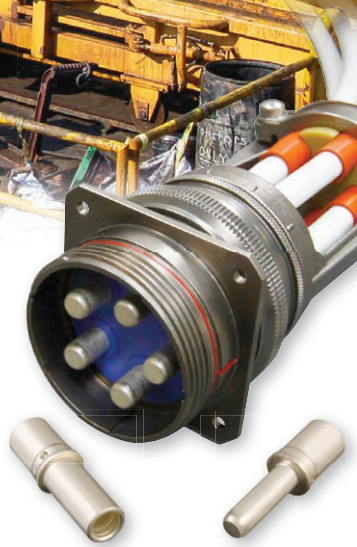
SERIES 970

# PowerTrip™

## Reduced size and weight power connectors

Lightweight plug with ratcheting coupling nut and LouverBand contacts

Keyed receptacle with superior sealing and EMI shielding



- **Fast, easy mating with triple-start ACME thread: 360° turn for full mating**
- **Reduced size and weight compared to 5015/VG95234 solutions**
- **LouverBand sockets for improved current ratings and longer life, up to 2000 mating cycles**
- **Splined backshell interface for improved backshell attachment and EMI shielding**
- **Ratcheting coupling nut for secure mating**
- **Operating temperature -65° C to +200° C**
- **Hermetic and filter options available**

The Series 970 PowerTrip™ offers improved performance compared to standard 5015 type power connectors: higher density and lighter weight packaging, rapid mating and demating triple-start threaded coupling, and extremely rugged splined and threaded backshell attachment interface

*SERIES 970*

# PowerTrip™

## The power connector for extreme environments

POWER TRIP®

## SERIES 970 POWERTRIP™ CONNECTOR STYLES

Plug
970-001

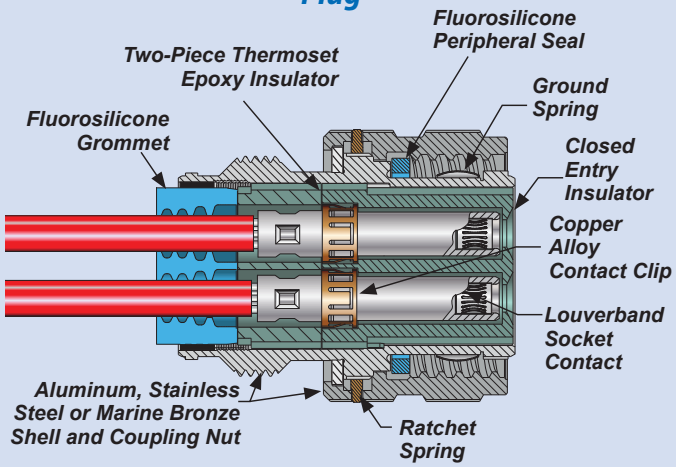
Square Flange Receptacles
970-003

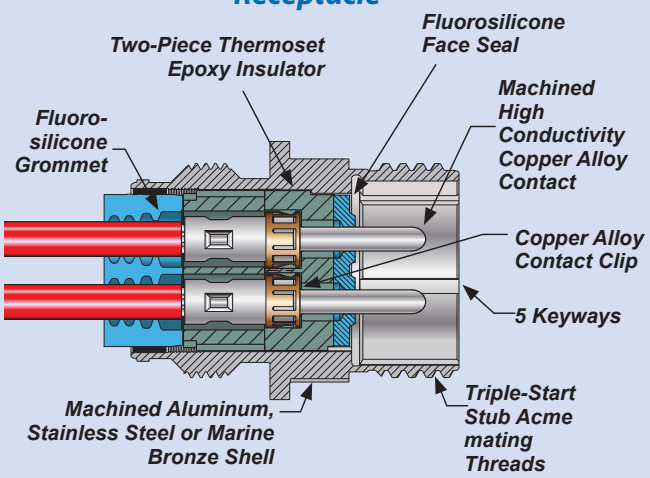
Jam Nut Receptacles
970-004

Cable Receptacles
970-005

Feed-Thru Bulkhead
970-006

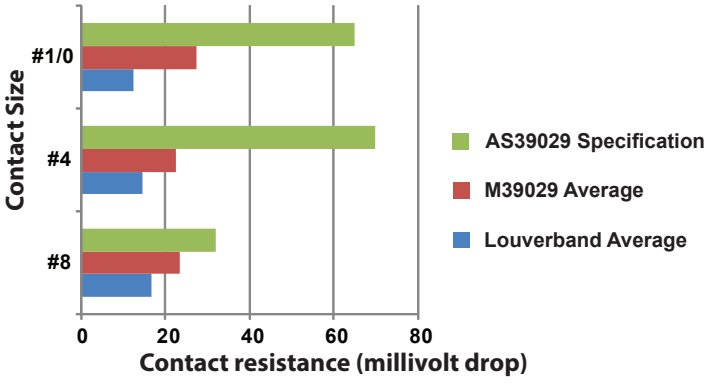
Hermetic Feed-Thru Bulkhead
970-007




| Series 970 PowerTrip™ Specifications | |
|---|---|
| Current Rating | Up to 225 A. |
| Dielectric Withstanding Voltage | 2000 VAC |
| Insulation Resistance | 5000 megohms minimum |
| Operating Temperature | -65° C. to +200° C. |
| Shock | 300 g. |
| Vibration | 37 g. |
| Shielding Effectiveness | 65 dB minimum from 1GHz to 10GHz. |
| Durability | 2000 mating cycles |

## CONTACT RESISTANCE AFTER 1000 MATING CYCLES




## ABOUT THE POWERTRIP CONTACT SYSTEM

Series 970 contacts are precision-machined using high conductivity copper alloy. A stamped and formed spring ("LouverBand") is installed into the socket contact. The spring is made from 6 mil copper alloy. Testing has demonstrated that this contact system outperforms conventional aerospace-grade contact systems. The LouverBand spring provides many points of electrical contact with the mating pin, as opposed to a few "high spots" on a conventional four-finger contact as shown in the figure below. The size #8 Powertrip socket contact has a total of 18 louvers. The #4 has 27 louvers, and the #1/0 has 42 louvers. The LouverBand design offers lower voltage drop for reduced joule heating. In addition to its electrical advantages, the LouverBand also is mechanically superior to four-finger contacts. The LouverBand spring has consistent, stable normal force, even when subjected to thousands of mating cycles and temperature extremes.

Conventional contact on the left, LouverBand contact on the right

LouverBand socket contact cutaway

Glenair®

CONDUIT SYSTEMS

# Purple PEEK Fiber Optic Convoluted Tubing System

## Special-purpose PEEK convoluted tubing and lightweight, durable composite thermoplastic accessories—color-coded purple for aerospace fiber optic interconnect systems

- **Lightweight, halogen-free PEEK convoluted tubing for fiber media routing**
- **Full range of connector-to-conduit adapters and protective covers**
- **"Y", "T", and "+" fittings for multibranch harness installations**
- **FiberCon backshells for the specific routing and strain-relief requirements of optical fiber**

## PURPLE PEEK CONDUIT FOR OPTICAL FIBER

Low-smoke, zero-hal PEEK convoluted tubing

| How To Order Purple PEEK Fiber Media Protection Conduit | | | | |
|---|---|---|---|---|
| **Sample Part Number** | | **120-108** | **16** | **P** |
| **Series** | **120-108** Standard diameter PEEK conduit | | | |
| **Tubing Size** | **06, 09, 10, 12, 16, 20, 24, 28, 32, 40, 48, 56, 64** | | | |
| **Color** | **P** = Purple | | | |

*AEROSPACE-GRADE*

# Purple PEEK Fiber Optic Conduit System

## Tubing and accessories

## FIBERCON CONDUIT ADAPTER BACKSHELLS

Straight, 45°, and 90° adapters for fiber optic PEEK conduit system installation

**How To Order Purple FiberCon Conduit Adapter Backshells**

| Sample Part Number | 377 | H | S | 014 | XV | 11 | 06 | 4 | K |
|---|---|---|---|---|---|---|---|---|---|

| | |
|---|---|
| **Series** | **377** Fiber Con backshell product series |
| **Connector Designator** | **H** = MIL-DTL-38999 Series III |
| **Angle** | **S** = Straight **W** = 90° full-radius elbow **T** = 45° full-radius elbow |
| **Basic Number** | **014** |
| **Finish** | **XV** = Purple |
| **Shell Size** | **11**, **13**, **15**, **17**, **19**, **21**, **23**, **25** |
| **Optional Entry Size** | **03**, **04**, **05**, **06**, **07**, **08**, **10**, **11**, **13**, **15**, **17**, **Omit** for standard. See catalog for full dimensions |
| **Length** | in 1/2 inch increments (e.g. 4 = 2") |
| **Conduit Interface** | **K** = PEEK Conduit termination configuration |

## TRANSITION ADAPTERS

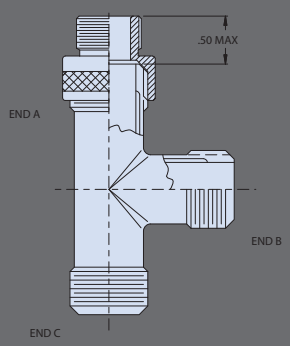

"T", "Y", and "+" adapters for multibranch fiber optic conduit harnesses

**How To Order Purple FiberCon Conduit Adapter Backshells**

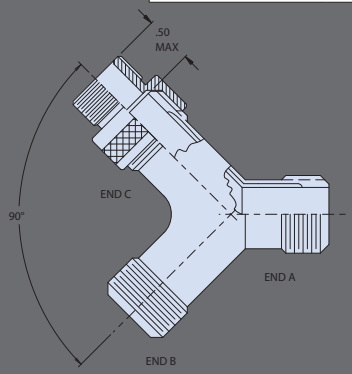
| Sample Part Number | 710 | -318 | XV | 19 | K |
|---|---|---|---|---|---|

| | |
|---|---|
| **Series** | **710** Composite transition adapter |
| **Transition Type** | **-318** = "T" transition **-319** 90° "Y" transition **-320** = 45° "Y" transition **-321** "+" transition |
| **Finish** | **XV** = Purple |
| **Shell Size** | **11**, **13**, **15**, **17**, **19**, **21**, **23**, **25** |
| **End A Dash No.** | **01**, **02**, **03**, **04**, **05**, **06**, **07**, See catalog for dimensions |
| **End B Dash No.** | **01**, **02**, **03**, **04**, **05**, **06**, **07**, See catalog for dimensions |
| **End C Dash No.** | **01**, **02**, **03**, **04**, **05**, **06**, **07**, See catalog for dimensions |
| **End D Dash No.** | **01**, **02**, **03**, **04**, **05**, **06**, **07**, See catalog for dimensions (-321 "+" transition only) |

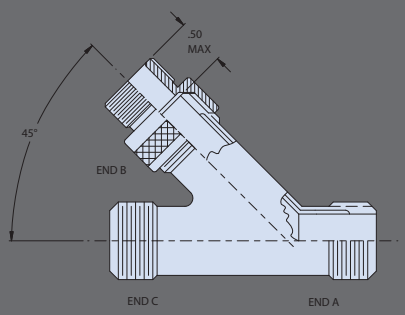
Contact Glenair Engineering for size availability



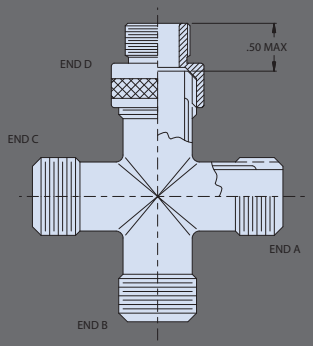

710-318 "T"




710-319 90° "Y"




710-320 45° "Y"



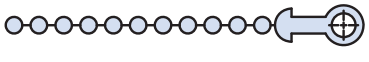

710-321 "+"

## PROTECTIVE COVERS

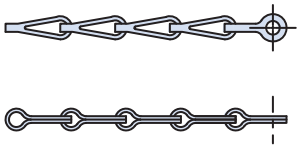
| How To Order Purple Protective Covers | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **660** | **-049** | **XV** | **21** | **R** | **6** | **-04** |
| **Series** | **660** = Composite protective cover | | | | | | |
| **Style Designator** | **-049** = Plug Cover **-050** = Receptacle Cover | | | | | | |
| **Finish** | **XV** = Purple | | | | | | |
| **Shell Size** | **11, 13, 15, 17, 19, 21, 23, 25** | | | | | | |
| **Lanyard Type** | See catalog lanyard code table | | | | | | |
| **Attachment Length** | In Inches | | | | | | |
| **Ring Style** | See catalog tables I, II, III, IV | | | | | | |

| Lanyard Code | |
|---|---|
| **Code** | **Description** |
| D | Bead Chain, CRES, Passivated |
| F | Wire Rope, Nylon Jacket |
| G | Nylon Rope, Black |
| H | Wire Rope, Fluoropolymer Jacket |
| K | Nylon Rope, Olive Drab |
| N | No Lanyard |
| R | Wire Rope, PVC Jacket |
| S | #8 Sash Chain, CRES, Passivated |
| T | Wire Rope, No Jacket |
| U | Wire Rope, Polyurethane Jacket with terminal |
| SK | Nylon Rope (Black) w/Slip Knot |

**Available Lanyard Types**



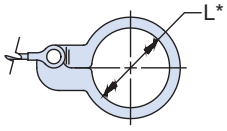
Bead Chain
(Type D)



Sash Chain
(Type S)

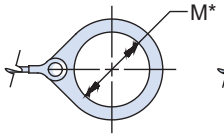
Wire or Nylon Rope
(Types F, G, H, K, R, T, U )

**SPLIT RING**



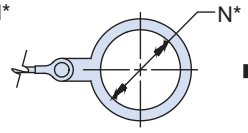

| Table I | |
|---|---|
| **Dash No** | **L Dia ±.015 (0.4)** |
| 50 | .425 (10.8) |
| 52 | .485 (12.3) |
| 54 | .640 (16.3) |
| 56 | .750 (19.1) |
| 58 | .890 (22.6) |
| 60 | 1.015 (25.8) |
| 62 | 1.095 (27.8) |
| 64 | 1.130 (28.7) |
| 66 | 1.250 (31.8) |
| 68 | 1.350 (34.3) |
| 70 | 1.375 (34.92) |
| 72 | 1.485 (37.7) |
| 74 | 1.625 (41.3) |
| 76 | 1.750 (44.5) |
| 78 | 1.875 (47.6) |
| 80 | 1.980 (50.3) |
| 82 | 2.060 (52.3) |
| 84 | 2.235 (56.8) |
| 86 | 2.310 (58.7) |
| 88 | 2.475 (62.9) |
| 90 | 2.655 (67.4) |
| 92 | 2.810 (71.4) |
| 94 | 3.045 (77.3) |

**SOLID RING**



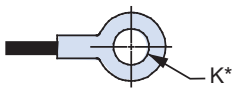

| Table II | |
|---|---|
| **Dash No** | **M Dia ±.015 (0.4)** |
| 08 | .468 (11.9) |
| 10 | .593 (15.1) |
| 12 | .718 (18.2) |
| 13 | .765 (19.4) |
| 14 | .844 (21.4) |
| 15 | .890 (22.6) |
| 16 | .968 (24.6) |
| 17 | 1.015 (25.8) |
| 18 | 1.093 (27.8) |
| 19 | 1.140 (29.0) |
| 20 | 1.187 (30.15) |
| 21 | 1.265 (32.1) |
| 22 | 1.343 (34.1) |
| 23 | 1.453 (36.9) |
| 24 | 1.484 (37.7) |
| 25 | 1.577 (40.1) |
| 27 | 1.640 (41.7) |
| 28 | 1.687 (42.8) |
| 29 | 1.765 (44.8) |
| 30 | 1.890 (48.0) |
| 31 | 1.953 (49.6) |
| 32 | 1.968 (50.0) |
| 33 | 2.077 (52.8) |
| 35 | 2.140 (54.4) |
| 36 | 2.187 (55.5) |
| 40 | 2.406 (61.1) |
| 44 | 2.656 (67.5) |
| 48 | 3.031 (77.0) |

**SOLID RING**




| Table III | |
|---|---|
| **Dash No** | **N Dia ±.015 (0.4)** |
| 100 | .391 (9.9) |
| 101 | .516 (13.1) |
| 102 | .583 (14.8) |
| 103 | .641 (16.3) |
| 104 | .708 (18.0) |
| 105 | .766 (19.5) |
| 205 | .788 (20.0) |
| 106 | .896 (22.2) |
| 206 | .907 (23.0) |
| 107 | 1.016 (25.8) |
| 207 | 1.025 (26.0) |
| 108 | 1.141 (29.0) |
| 308 | 1.188 (30.18) |
| 208 | 1.203 (30.6) |
| 109 | 1.266 (32.2) |
| 209 | 1.312 (33.32) |
| 110 | 1.391 (35.3) |
| 210 | 1.438 (36.53) |
| 111 | 1.521 (38.63) |
| 211 | 1.536 (39.01) |
| 112 | 1.641 (41.68) |
| 113 | 1.766 (44.86) |
| 213 | 1.812 (46.02) |
| 114 | 1.891 (48.03) |
| 214 | 1.938 (49.23) |
| 115 | 2.078 (52.78) |
| 116 | 2.406 (61.11) |
| 117 | 2.510 (63.75) |

**ATTACHMENT RING**




| Table IV | |
|---|---|
| **Dash No** | **K Dia ±.010 (0.25)** |
| 01 | .140 (3.56) |
| 02 | .182 (4.62) |
| 03 | .191 (4.85) |
| 04 | .197 (5.00) |
| 05 | .167 (4.24) |
| 06 | .125 (3.18) |
| 07 | .218 (5.54) |
| 09 | .156 (3.96) |

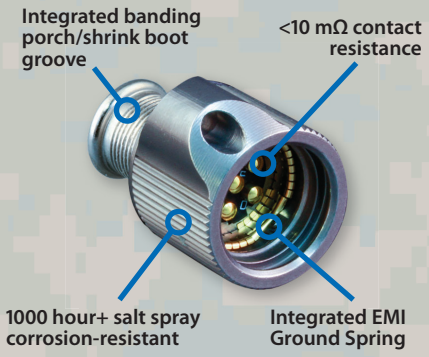
* = Max diameter over which mandrel will rotate freely

GROUND SOLDIER

# HiPer 55116

## QPL and high-performance MCOTS 55116 Audio / Radio Connector Technology


## Series 152 HiPer 55116 connectors offer significant performance advantages for modern soldier communication systems




Fully intermateable and interoperable with MIL-DTL-55116 connectors

- **Intermateable and interoperable with standard MIL-DTL-55116 connectors**
- **Low contact resistance: Less than 10 milliohms**
- **Integrated EMI ground spring provides improved 2.5 milliohm shell-to-shell conductivity performance**
- **IP68 rated sealing in mated and unmated condition, prevents water ingress into radio equipment**
- **1,000 hour+ salt spray corrosion resistance**
- **Integrated cable shield termination band porch**
- **Superior 100 pound cable pull test rating**

### GLENAIR DLA QUALIFIED SERIES 151 STANDARD MIL-DTL-55116 AUDIO CONNECTORS

**151-001** MIL-DTL-55116 QPL audio plug with wire strain relief

**151-002** MIL-DTL-55116 QPL audio plug/overmold adapter

**151-003** MIL-DTL-55116 QPL radio-mount jam nut receptacle

**151-004** MIL-DTL-55116 QPL in-line receptacle, strain relief

# HiPer 55116
# Radio Connectors and Cables

## Superior environmental, EMC, and durability performance

### SERIES 152 HIPER 55116 CONNECTOR SELECTION GUIDE

Audio plug, field serviceable, with wire strain relief and rigid contacts, crimp and solder cup

Overmolded audio plug cordset with wire strain relief

Audio plug with shield termination porch, overmolding adapter and rigid contacts, crimp and solder cup

Overmolded audio plug cordset

In-line receptacle with shield termination porch, overmolding adapter, and non-rigid spring contacts, crimp and solder cup

Overmolded in-line audio receptacle cordset

Radio-mount jam nut audio receptacle with non-rigid spring contacts or PC tails and optional ground pins

*Filtered* radio-mount jam nut audio receptacle with non-rigid spring contacts, solder cup or PC tails

Special adapter configurations and protective covers

ADVANCED
PERFORMANCE
WIRE MANAGEMENT
SOLUTIONS

Composite

# Innovative Rectangular Backshells and Connector Accessories


QPL qualified

## Proven-performance backshells and accessories for rectangular connectors

QWIKSNAP™

Glenair has developed an extensive range of lightweight Split-Shell backshells that completely eliminate assembly hardware in rectangular backshells. The Glenair QwikSnap™ series utilizes innovative composite spring latch technology to reduce weight, FOD, and accelerate assembly.

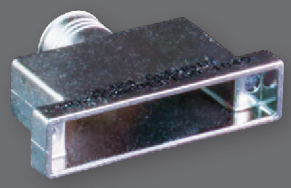
- All forms of rectangular environmental, mechanical and EMC backshells
- Straight, 45° and 90° cable routing
- High-temp composite thermoplastic and metal shell versions
- To fit all current and legacy rectangular connectors
- Innovative split-shell versions for easy access to wire terminations
- Equally large range of protective covers and caps
- Thousands of part numbers in stock and ready for immediate shipment

*METAL AND COMPOSITE*

# Rectangular backshells and accessories

## The world's largest *tooled* selection

### MICRO-D AND NANOMINIATURE BACKSHELLS AND CONNECTOR ACCESSORIES



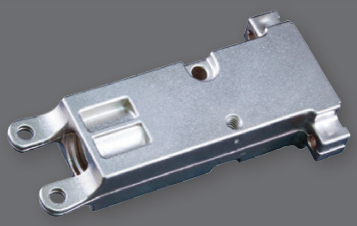
Composite Micro-D banding backshell

Plastic and metal covers for unmated environmental protection

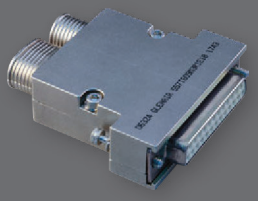
Micro-D backshell with elliptical banding platform

Metal Micro-D banding backshell

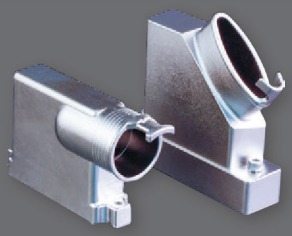
### M24308 D-SUB SOLUTIONS: HIGH PERFORMANCE, RUGGEDIZED D-SUBMINIATURE PRODUCTS



Split-shell D-subminiature composite backshell



Split-shell M24308 dual-banding backshell



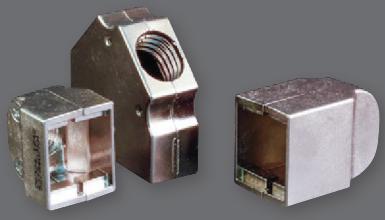
Composite D-subminiature backshells

Flex-D Composite M24308 Backshell

### LARGER FORM FACTOR RECTANGULAR BACKSHELLS

EPX® and EPXB® are registered trademarks of Radiall

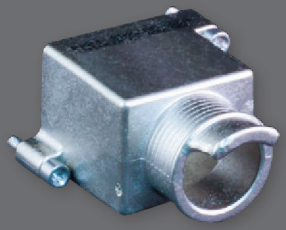
Composite EMI/RFI banding backshell for EPXB® connectors



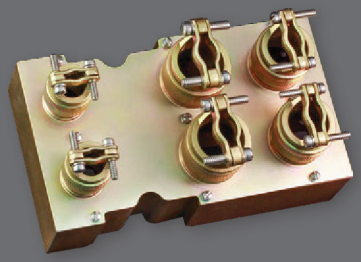
Composite EN4165 fiber optic/electrical backshells

Backshells for EPX® series connectors

ARINC series backshells

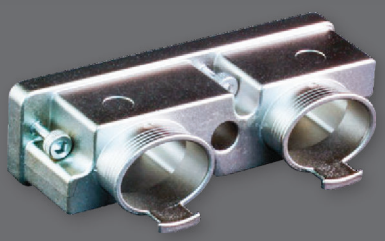


Composite airframe banding backshell



ARINC series backshell with individual wire bundle strain relief

MIL-C-81659



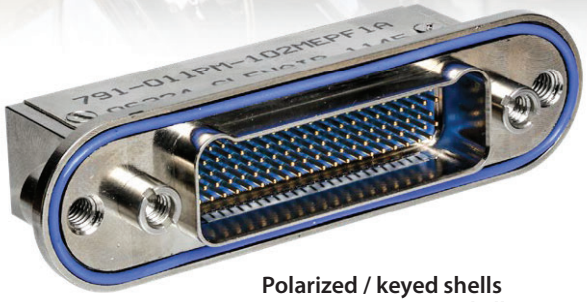
Special Quadrax connector backshell

Glenair®

*HIGH PERFORMANCE*

# Series 791

## The next-generation ultraminiature rectangular connector for demanding aerospace applications




**Polarized / keyed shells prevent mis-mating and allow designers to specify identical layouts side-by-side without risk of circuit damage**

Sometimes the simplest ideas are the best ideas. The Series 791 is a simple idea. Let's create a brand new class of connector – the ultraminiature rectangular. Let's combine the versatility of the Series 790 Micro-D type connector with the rugged features of our popular HiPer-D M24308 type connector. Let's add a unique dual lobe shell and let's recess the pins to eliminate the possibility of scooping damage. Let's add high speed datalink capability.

Originally designed for NASA's Orion project, the 791 is qualified for manned space flight. The 791's small size and blind mate capability make it a perfect choice for 2U and 3U electronics modules. Applications include radars, weapons systems, comms gear, satellites, exoatmospheric vehicles, avionics, power distribution units, instrumentation, and everywhere else in need of a smaller, higher performance interconnect system.

- **Next-generation small form factor aerospace-grade rectangular connector**
- **Scoop-proof recessed pin contacts**
- **37 arrangements, 12 shell sizes for the ultimate in versatility**
- **Rugged aluminum alloy dual lobe shell**
- **Environmental**
- **EMI shielded**
- **Blind mating**

*SERIES 791 MICRO-CRIMP*

# Next-generation ultraminiature rectangular

## for demanding aerospace applications

SERIES 791 SEVEN NINETY-ONE

## About The Series 791

The Series 791 is an aerospace-grade ultraminiature rectangular connector with EMI protection and environmental sealing. Originally developed for NASA's Orion capsule, The 791 is qualified for manned space flight and is ideal for radars, weapons systems and avionics gear.

The Series 791 is available either with crimp pins or with printed circuit terminals. Machined aluminum alloy shells feature dual lobes for polarization. Contact sizes range from size 8 to size 23 in 37 arrangements. Pin contacts are recessed to prevent scooping damage while mating. Crimp contacts conform to M39029 requirements and are rear release.

An optional ground spring reduces susceptibility to EMI problems. Fluorosilicone face seals and wire grommets prevent moisture and contamination. Panel mount versions are available with an O-ring, or for improved panel bonding, a metal spring.

Board mount versions include straight or right angle terminals. Right angle PCB connectors feature an aluminum shroud covering the terminals.

Hardware options include screwlocks, jackscrews or guide pins for blind mate applications.

## Save Size and Weight with Series 791 Connectors

The Next Generation Ultraminiature Rectangular Connector for Demanding Aerospace and Defense Applications

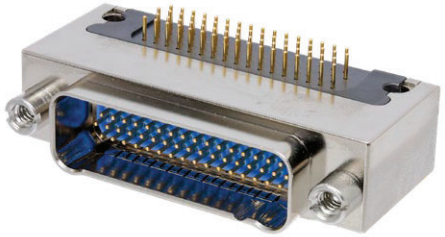
*M-17P17 with size 16 contacts*

- **Two to 102 contacts**
- **Coax, twinax, quadrax and Ochito octaxial contacts**
- **Rugged aluminum shell with dual polarizing lobes**

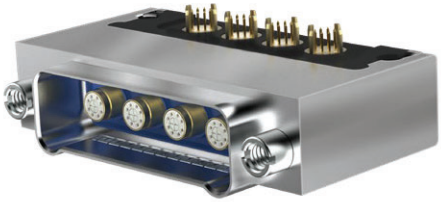
*Shell size A – the smallest 791*

- **Integral band platform for direct attachment of cable braid**
- **-65°C to +150°C**
- **Panel mount versions with O-ring or EMI spring**

- **37 contact arrangements**
- **Crimp-and-poke or epoxy-sealed board mount versions**
- **Scoop-proof recessed pins**
- **Size 23, 16, 12 and 8 contacts**



- **Straight and right angle printed circuit board mounting**
- **12 shell sizes**
- **Guide pins for blind mate modules**



- **Contacts meet SAE AS39029 requirements**
- **Internal ground spring for EMI protection**
- **Approved for manned space flight**

Glenair®

SERIES 85

# RF, Microwave, and Datalink Contacts

## High speed and high availability

Glenair's growing portfolio of high-speed solutions now includes a wide selection of RF, microwave and datalink contacts. Compatible with MIL-DTL-38999 connectors, these contacts also fit Glenair Series 80 Mighty Mouse , Series 79 Micro-Crimp® and Series 23 SuperNine® connectors. Designed in accordance with SAE AS39029 requirements, these contacts are suitable for aerospace and defense equipment subjected to high-vibration and temperature extremes. Glenair's complete high-speed solution also includes a wide variety of standard and modified connectors, cordsets, fiber optic and opto-electronic technologies. Our rapid-response engineering and manufacturing capabilities allow us to quickly design and build customized interconnects and systems.

**Small form-factor Series 80 Mighty Mouse with industry-standard Quadrax contacts**

- **50 and 75 ohm coax contacts**
- **Spring-loaded microwave contacts**
- **Full 10G Ethernet per channel: El Ochito® octaxial contacts**
- **100 Ohm differential Twinax**
- **Industry-standard Quadrax**

### HIGH-REL CONNECTOR PACKAGING

**El Ochito® 10GBase-T Ethernet contacts installed in a high-density rectangular connector**

**El Ochito® contacts installed in a Series 23 SuperNine® connector**

**Custom right angle board mount connector with Twinax contacts**

# RF, microwave, and datalink contacts

## Featuring El Ochito® 10G Ethernet-ready contacts

HighSpeed datalink group

| RF, Microwave, and Datalink Contact Selection Guide | | | |
|---|---|---|---|
|  <br>**Size #8 AS39029 Coaxial**<br>For RG-180 cable. Crimp termination. Snap-in, rear release. Compatible with D38999 Series I, III, and IV, SuperNine, and Mighty Mouse connectors with size 8 cavities. dc – 700 MHz. |  <br>**Size #12 AS39029 Coaxial**<br>For RG-174, RG-179, RG-180 and RG-316 cable. Crimp termination. Snap-in, rear release. Compatible with D38999 Series I, II, III, and IV, SuperNine, Series 79 MicroCrimp and Mighty Mouse connectors with size 12 cavities. dc – 3 GHz. |  <br>**Size #16 AS39029 Coaxial**<br>For RG-174, RG-178, RG-179 and RG-316 cable. Crimp termination. Snap-in, rear release. Compatible with D38999 Series I, II, III, and IV, SuperNine, Series 79 and Mighty Mouse connectors with size 16 cavities. dc – 500 MHz. |  <br>**Size #8 50 Ohm Matched-Impedance**<br>For RG-316 and M17/220-0001 cable. Compatible with D38999, SuperNine and Mighty Mouse connectors. Crimp termination. Snap-in, rear-release. 50 ohm impedance. dc – 6 GHz. |
|  <br>**Size #12 50 Ohm Matched-Impedance**<br>For RG-178, RG-316, and RG-405 flex cable. Compatible with D38999 Series I, II, III and IV, SuperNine, Series 79 and Mighty Mouse connectors. Crimp termination. Snap-in, rear-release. 50 ohm impedance. dc – 3 GHz . |  <br>**Size #8 75 Ohm Matched-Impedance**<br>For RG-179, RS170, SMPTE 292M, SMPTE 424M and other cables. Compatible with D38999 Series I, III, and IV, SuperNine and Mighty Mouse connectors. Crimp termination. Snap-in, rear-release. dc – 4 GHz. |  <br>**Size #12 75 Ohm Matched-Impedance**<br>For high performance RS170, SMPTE 292M and other video cables. Compatible with D38999 Series I, II, III, and IV, SuperNine, Series 79 and Mighty Mouse connectors. Crimp termination. Snap-in, rear-release. dc – 3 GHz. |  <br>**Size #8 Spring-Loaded BMB 18 GHz**<br>Conform to the MIL-STD-348 BMB interface standard. For RG-402-FLEX and RG-405-FLEX cables. Compatible with MIL-DTL-38999 Series I, III, and IV, SuperNine and Mighty Mouse connectors. Solder termination. dc – 18 GHz. |
|  <br>**Size #12 SMPM Style Spring-Loaded 40 GHz**<br>For RG-405-FLEX cable, compatible with D38999, Series 23 SuperNine, Series 79 and Series 80 Mighty Mouse connectors. Solder termination. dc – 40 GHz. |  <br>**Size #8 AS39029 Concentric Twinax**<br>For 77 ohm shielded twisted pair cable. Meet the requirements of M39029/113 and /114. Compatible with D38999, Series 23 SuperNine and Mighty Mouse connectors. Use with M17/176-00002 databus cable, 10 MHz maximum operating frequency. |  <br>**Size #8 100 Ohm Concentric Twinax**<br>For 24 AWG 100 ohm shielded twisted pair data cable. Compatible with D38999 Series I, III, and IV, Series 23 SuperNine and Series 80 Mighty Mouse connectors. Accepts TE/Raychem 0024A0024 and Gore GSC-03-81416-00 cables. |  <br>**Size #12 Concentric Twinax**<br>For 77 ohm shielded twisted pair data cable. Used for MIL-STD-1553 databus applications, Meet the requirements of JN1104, DSCC 02003 and DSCC 02004. For D38999 Series I, III, and IV connectors. Snap-in, rear release, crimp termination. |
|  <br>**Size #8 100 Ohm Differential Twinax**<br>For 68, 75, 77 and 100 ohm shielded twisted pair cable including M17/176-00002 databus cable. For Mighty Mouse connectors and Glenair 233-217 D38999-type Series III connectors with keyed #8 cavities. dc – 3 GHz |  <br>**Size #12 100 Ohm Differential Ultra-Twinax**<br>For multi-gigabit data rate applications such as CML, LVDS. Use high-speed #30 AWG twisted pair cable. For Mighty Mouse connectors with size #12 cavities. dc – 10 GHz frequency range. Solder termination. |  <br>**Size #8 100 Ohm and 150 Ohm Quadrax**<br>100 ohm Ethernet / 150 ohm Fibre Channel. Compatible with Mighty Mouse and Glenair 233-217 D38999-type Series III connectors with keyed #8 inserts. Accept aerospace grade quad cable. |  <br>**Size #8 El Ochito®**<br>1000BASE-T and 10GBASE-T capability. #8 snap-in contact with eight inner contacts. Data pair isolation technology reduces crosstalk between pairs. Accepts flight-grade Cat6a cable with #26AWG conductors. |

Glenair®




*JAM-FREE LAUNCHING*

# AS81703 Series 3 Type Lanyard Connectors

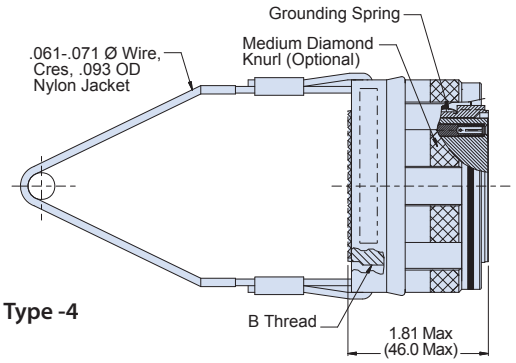
Ideal for high shock / high vibration environments including military space and defense applications such as missile and space payload deployment, the AS81703 provides jam-free, push-on, pull-off operation. Glenair's AS81703 Series 3 type connector series is intermateable and intermountable with currently available AS81703 mil-spec and commercial connectors, and offers several enhancements to the standard design: an integrated band porch for shield termination, 360° saw teeth for rear-end accessory clocking, and a red full-mate indicator stripe. The AS81703 Series 3 type connector is ideally suited for droppable stores, umbilical connect, air launch to orbit, and other extreme vibration and shock environments where rugged and reliable lanyard-release and push-pull mating is a must. Nineteen contact arrangements are available, including hybrid signal/power layouts, and a full complement of backshells and connector accessories is offered—with Glenair's high availability and quick delivery.

- **Intermateable and intermountable with available AS81703 connectors**
- **Signal, power, and high-speed shielded contact arrangements**
- **Reliable fail-safe axial-pull lanyard equipped coupling**
- **Instant disconnect for critical quick-release systems**
- **Available integrated band porch for easy shield termination**
- **360° saw teeth for accessory clocking**
- **Red full-mate indicator stripe**
- **Blind mate and rack-and-panel versions available**
- **Available backshells and accessories IAW AS81703**
- **Polarization keying for mis-mate prevention**

*SPACE-GRADE*

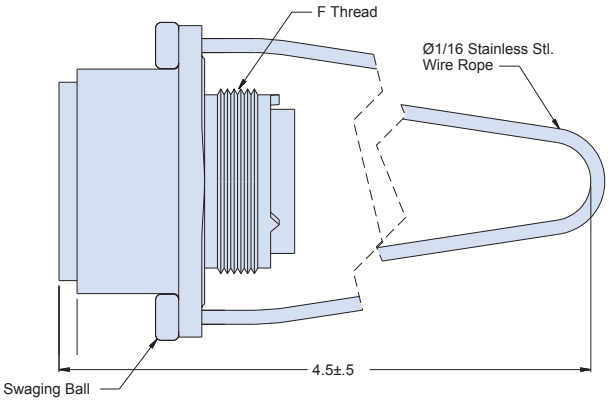
# Lanyard-Release Quick-Disconnect Connectors

| How To Order SuperNine® 233-216 MIL-DTL-38999 Type | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **233-216** | **-G6** | **ME** | **25-35** | **S** | **A** | **E** | **-4** |
| **Series / Basic Part No.** | **233-216** = Lanyard Release Plug | | | | | | | |
| **Connector Style** | **G6** = Plug with EMI Spring | | | | | | | |
| **Finish** | **ZL** = Cres, Electrodeposited Nickel **Z1** = Cres, Passivated<br>**ME** = Al Alloy, Eletroless Nickel | | | | | | | |
| **Size and Arrangement** | Per MIL-STD-1560 plus high density | | | | | | | |
| **Contact Type** | **P** = Pin **S** = Socket; 500 cycles | | | | | | | |
| **Alternate Key Position** | **A**, **B**, **C**, **D**, **E**, **N** = Normal (Per MIL-DTL-38999 Series III) | | | | | | | |
| **Lanyard Length Code** | See Lanyard Length Table | | | | | | | |
| **Connector Type** | **4** = Type 4 (shown below, no accessory threads) **6** = Type 6 (not shown, includes accessory threads) | | | | | | | |




Type -4

| How To Order 253-020 AS81703* Type Push-Pull Lanyard Release | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **253-020** | **-08** | **ME** | **25-35** | **S** | **N** | **812** |
| **Series / Basic Part No.** | **253-020** = AS81703 Type | | | | | | |
| **Connector Style** | **08** = Push-Pull Layard-Release Plug | | | | | | |
| **Finish** | **ZL** = Cres, Electrodeposited Nickel **Z1** = Cres, Passivated<br>**ME** = Al Alloy, Eletroless Nickel | | | | | | |
| **Size and Arrangement** | Per AS81703 | | | | | | |
| **Contact Type** | **P** = Pin **S** = Socket | | | | | | |
| **Alternate Key Position** | **N**, **W**, **X**, **Y**, **B**, **C** | | | | | | |
| **Lanyard Ring Mod Code** | **812** = Lanyard ring rotated 90° from master keyway **Omit** for standard ring | | | | | | |




*The MIL-C-81703 standard was superseded by SAE-AS81703 10-December 2010 per Navair

ADVANCED-
PERFORMANCE
MIL-AERO
CONNECTOR
GO-BETWEENS

# SAV-CON®

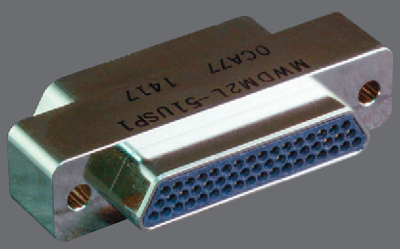
## Connector Savers and Bulkhead Feed-Thrus

Glenair Sav-Con®s protected the umbilical connectors on every Space Shuttle mission

## The smart solution for preventing contact damage and extending the service life of cable assemblies and box and panel-mount receptacles

- **Sav-Con®s for every mil-standard circular and rectangular connector**
- **Hundreds of successful space launch and space flight applications including every Space Shuttle mission**
- **Bulkhead feed-thrus for environmental, filter and hermetic applications**
- **Pin/pin, pin/socket, and socket/socket versions**
- **Traditional plug-receptacle savers, as well as in-line versions and gender changers**
- **Available EMI/EMP filter savers and adapters**

Series changers and gender changers available in both Sav-Con® and bulkhead feed-thru configurations



circular and rectangular configurations available including hermetic and EMI/RFI filter configurations

*HIGH-PERFORMANCE CONNECTOR GO-BETWEENS*

# Sav-Con® Connector Savers and Bulkhead Feed-Thrus

Each Glenair Sav-Con® Connector Saver meets the military specification performance requirements of its mating connector. Glenair manufactures and supplies a Sav-Con® connector saver for every military standard connector currently in use including:

- **MIL-DTL-26482 Series I and II**
- **MIL-DTL-28840**
- **MIL-DTL-38999 Series I, II and III**
- **MIL-DTL-83723**
- **LN 29729 (SJT)**
- **PATT 105 and PATT 602**
- **MIL-DTL-5015**
- **Series 801 and 805 Mighty Mouse**
- **Series 89 Nanominiature**
- **M24308 D-Subminiature**
- **MIL-DTL-83513 Micro-D Subminiature**
- **Series 28 HiPer-D M24308 intermateable**
- **Series 79 Micro-Crimp**

Comprehensive materials, plating, and polarization options available

## TRADITIONAL PLUG-RECEPTACLE SAV-CON® CONNECTOR SAVERS

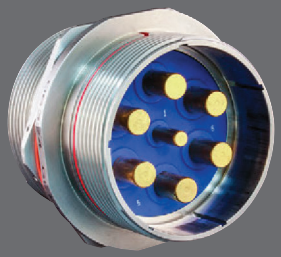
MIL-DTL-38999 series III type


MIL-DTL-5015 threaded and/or reverse-bayonet

MIL-DTL-38999 series II bayonet-coupling saver

Series 80 Mighty Mouse Sav-Con®

## BULKHEAD FEED-THRUS



Special high-voltage power bulkhead feed-thru

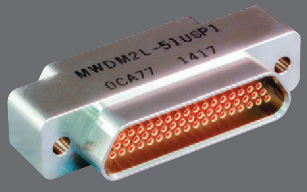
Special wide panel accommodation Mighty Mouse bulkhead feed-thru

MIL-DTL-5015 bulkhead feed-thru

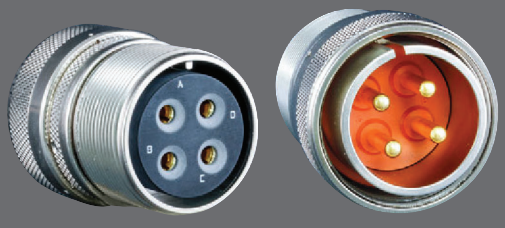
Special non-cadmium plating classes

## SPECIAL-PURPOSE ADAPTERS AND SAVERS

EMI/RFI filter Sav-Con® adapter (D38999 Series III type shown)




Rectangular EMI/RFI filter Sav-Con adapter (MIL-DTL-83513 type shown)



Power distribution connector savers (MIL-D-5015 type shown)

DEEP WATER

*10K PSI OPEN-FACE*

# SeaKing™ 700 Dry-Mate Underwater Connectors

SeaKing™ SEVEN HUNDRED

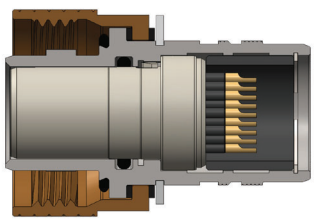
## 10K PSI / 700 Bar / 7000m open-face or mated, dual O-ring equipped, high-density, high-voltage, fiber optic and hybrid electrical/optical subsea connectors

SeaKing is an innovative underwater connector series that eliminates a broad range of mechanical design weaknesses found in many of today's high-pressure subsea connector families. From its double O-ring seals and retractable engaging nut, to its multi-keyed mating interface, the SeaKing underwater connector represents a far more reliable approach to subsea power and signal connectivity.

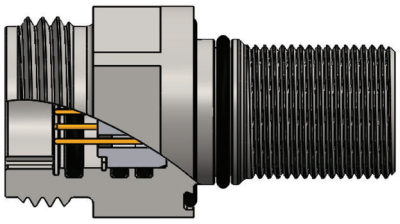
Ideally suited for deep water offshore oil & gas, military/defense, oceanographic research, and other harsh-environment subsea applications, the dry-mate connector series is built for optimal durability and reliability. Available in Glass to Metal Seal (GTMS, rated to 10KSI in both open face and mated conditions), and equipped with integrated dual O-ring seals, marine bronze coupling nuts, corrosion-resistant stainless steel shells and high-pressure contact inserts with gold-plated signal contacts, special RF and fiber optic solutions, the Series 700 SeaKing is today's most advanced high-density signal and standard-density power underwater connector.

- **High density, small form-factor connector**
- **Dual O-ring seals ensure high-pressure performance for every leak path**
- **Signal, power, RF and optical insert arrangements**
- **Stainless steel with anti-galling marine bronze engaging nut, or cathodic delamination-free PEEK**
- **Full-mate inspection ports**
- **Easy O-ring replacement**
- **Key and keyway polarization**

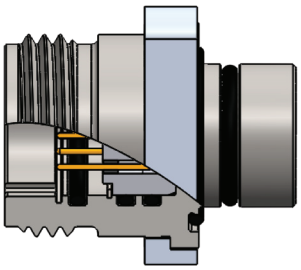
### STANDARD CONFIGURATIONS



Cable Connector Plug (CCP)



Bulkhead Connector Receptacle (BCR)



Flange Connector Receptacle (FCR)




Rev. 01.08.25

SeaKing SEVEN HUNDRED

*SERIES 700 10K PSI / 700 BAR / 7000 M*

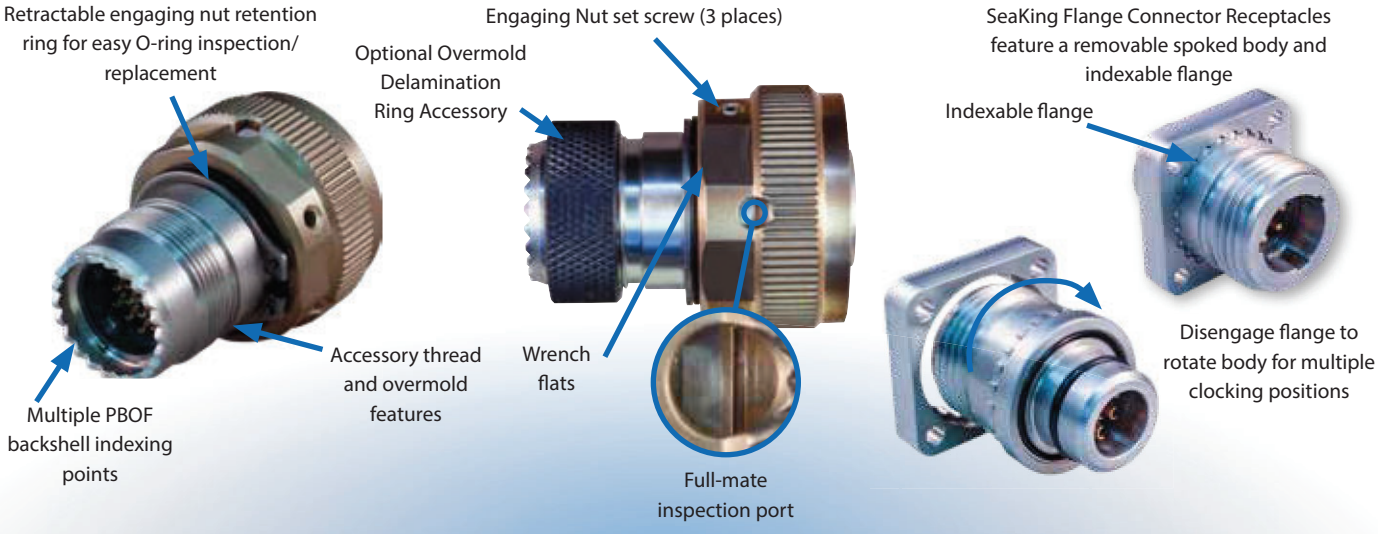
# SeaKing™ High-Pressure Subsea Connectors, Cables, and PBOF Assemblies

## Key mechanical and environmental features

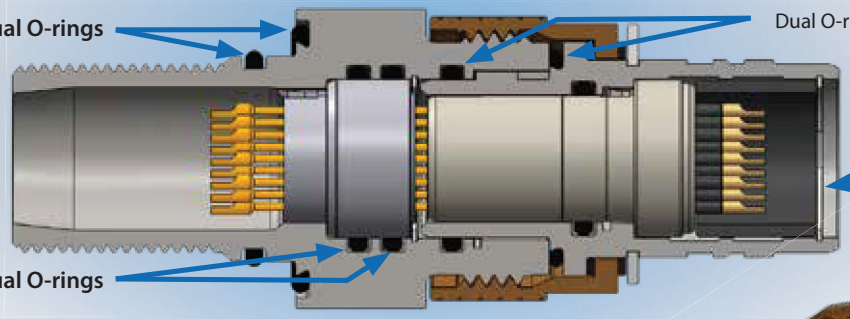
**Sealing:** The Series 700 SeaKing™ is the best sealed subsea connector on the market. All critical interfaces, including bulkhead seals, glass-to-metal insert seals, mating interface bore seals, and face seals are fully redundant ensuring 10K PSI protection, even in the event of a single-seal failure.

**Mating:** SeaKing™ utilizes a modified UNC (coarse) mating interface with added clearance to reduce bio-fouling and facilitate rapid-advance mating. The marine bronze engaging nut on the plug is equipped with wrench flats as well as knurling and is less susceptible to galling than standard steel engaging nuts. Polarized keys and keyways prevent both thread damage and mismating.

**Ease-of-Use:** Multiple PBOF backshell indexing points, indexable flange FCRs, full-mate inspection ports, retractable engaging nuts, and other features make SeaKing™ the most user-friendly subsea connector on the market.



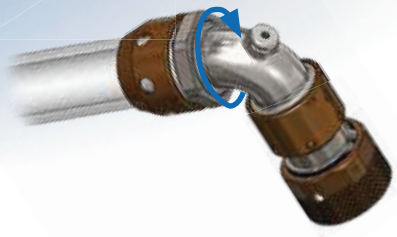

Replaceable Nitrile or Buna-N (NBR) O-ring seals facilitate fast and trouble-free field replacement




Available pressure-balanced oil filled (PBOF) back end for use with oil-filled cables

BCR showing keyway-assisted mating and polarization feature and wrench flats for reliable, secure attachment to pressure bulkheads

Series 700 SeaKing™ cable assemblies are available from the factory with special 10,000 PSI overmolded cable-to-plug connector environmental sealing.

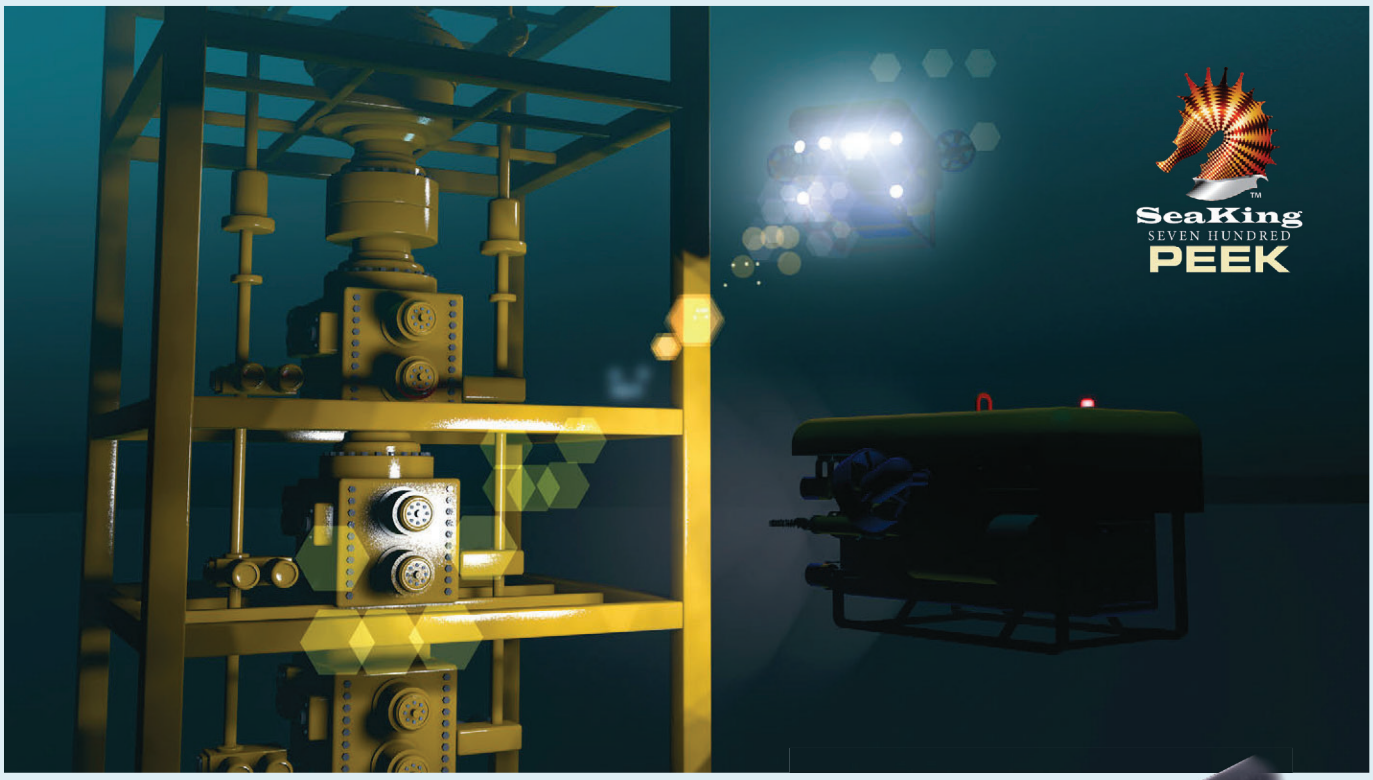


Revolutionary PBOF swivel assembly features kink-proof hose swivel, straight, 45° and 90° routing, and superfast assembly

Glenair®

## *MISSION-CRITICAL UNDERWATER*
# INTERCONNECT SOLUTIONS

Most aggressive lead times in the industry · Vertically integrated and made in the USA
Custom solutions, no miniumum order quantities
Accessible and responsive engineering support · Obsessed with quality and qualification
Superior technical designs for extended durability and performance




# SeaKing 700 PEEK Connectors

## Glass-filled composite subsea connectors

- **Superior corrosion resistance, durability, and immunity from cathodic delamination**
- **Same high-pressure performance as stainless steel**
- **Lighter weight with lower deployment costs**
- **Zero magnetic signature**
- **Galvanically compatible with all metal materials**

**Discrete connectors, overmolded cables, and PBOF assemblies available**

*SERIES 700  10K PSI / 700 BAR / 7000 M*

# SeaKing™ High-Pressure Underwater Connectors, Cables, and PBOF Assemblies

## 700 Series, non-metallic PEEK connectors

### 700-201 CABLE CONNECTOR PLUG (CCP), PEEK

| SeaKing PEEK - How To Order | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **700 -201** | **-1** | **-M12** | **-K** | **S** | **N** |
| **Product Series** | **700-201** = SeaKing™ CCP, non-metallic PEEK | | | | | |
| **Shell Style** | **001** = cable connector plug (CCP) | | | | | |
| **Shell Size-Insert Arrangement** | (see sales drawing for details) | | | | | |
| **Shell Material** | **K** = glass-reinforced PEEK | | | | | |
| **Contact Style** | **S** = socket | | | | | |
| **Polarization** | **A**, **B**, **C**, **N** = normal (see sales drawing for details) | | | | | |

10K PSI available in smaller shell sizes. Contact factory for details.

### 700-206 GLASS REINFORCED EPOXY OR GLASS HERMETIC SEAL INSERT, FLANGE CONNECTOR RECEPTACLES (FCR), PEEK

| SeaKing PEEK - How To Order | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **700** | **-206** | **-E4** | **-K** | **P** | **N** |
| **Product Series** | **700** = SeaKing™, non-metallic PEEK | | | | | |
| **Shell Style** | **206** = FCR, Glass Hermetic Seal Insert (GTMS)<br>**226** = FCR, Glass Reinforced Epoxy Insert (GRE) | | | | | |
| **Shell Size-Insert Arrangement** | (see sales drawing for details) | | | | | |
| **Shell Material** | **K** = glass-reinforced PEEK | | | | | |
| **Contact Style** | **P** = pin | | | | | |
| **Polarization** | **A**, **B**, **C**, **N** = normal (see sales drawing for details) | | | | | |

10K PSI available in smaller shell sizes. Contact factory for details.

### 700-207 GLASS REINFORCED EPOXY OR GLASS-TO-METAL SEAL INSERT, BULKHEAD CONNECTOR RECEPTACLE (BCR), PEEK

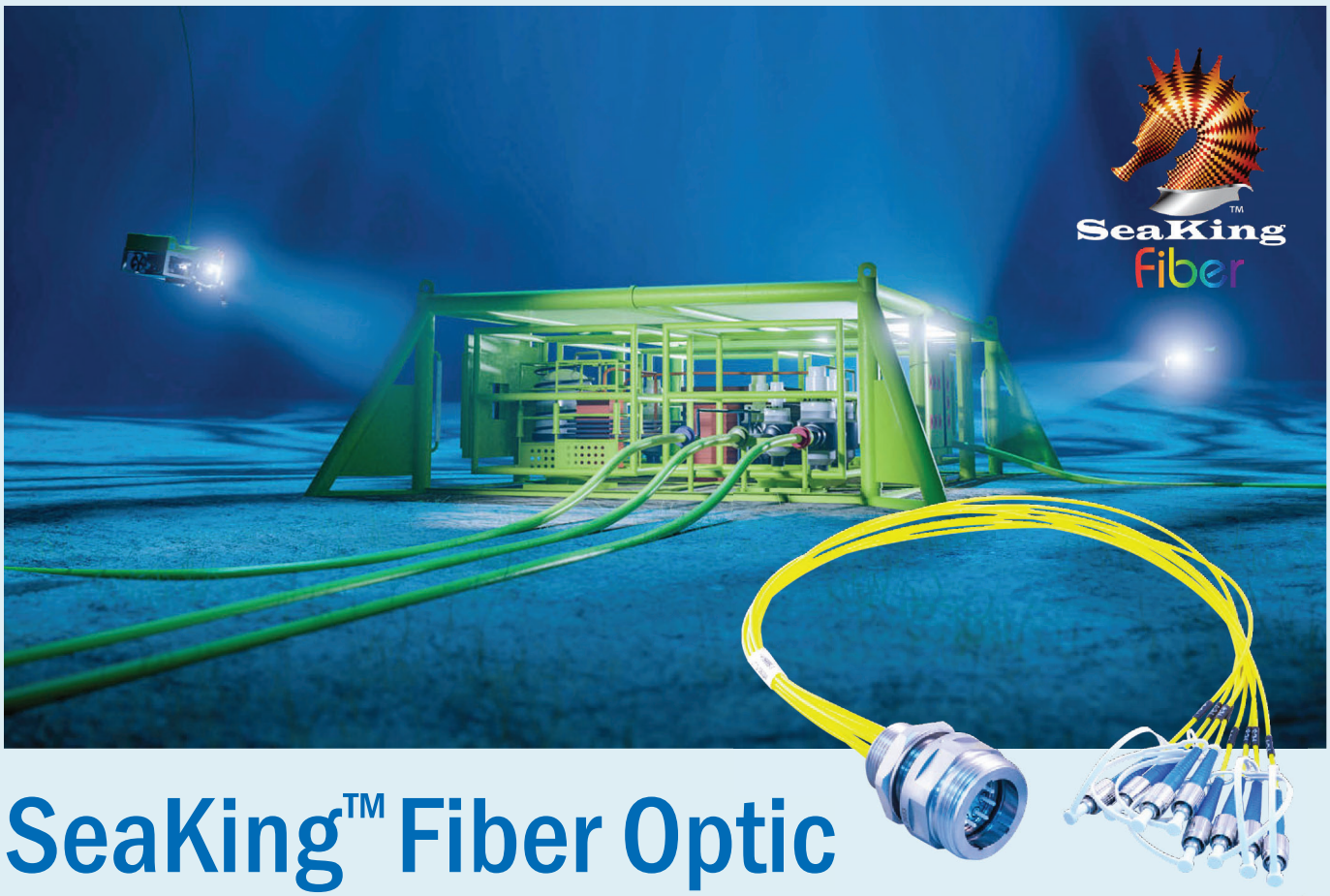
| SeaKing PEEK - How To Order | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Part Number** | **700** | **-207** | **-E4** | **-K** | **P** | **N** |
| **Product Series** | **700** = SeaKing™, non-metallic PEEK | | | | | |
| **Shell Style** | **207** = BCR, Glass Hermetic Seal Insert (GTMS)<br>**227** = BCR, Glass Reinforced Epoxy Insert (GRE) | | | | | |
| **Shell Size-Insert Arrangement** | (see sales drawing for details) | | | | | |
| **Shell Material** | **K** = glass-reinforced PEEK | | | | | |
| **Contact Style** | **P** = pin | | | | | |
| **Polarization** | **A**, **B**, **C**, **N** = normal (see sales drawing for details) | | | | | |

10K PSI available in smaller shell sizes. Contact factory for details.

Glenair®

## *MISSION-CRITICAL UNDERWATER*
# INTERCONNECT SOLUTIONS

Most aggressive lead times in the industry · Vertically integrated and made in the USA
Custom solutions, no miniumum order quantities
Accessible and responsive engineering support · Obsessed with quality and qualification
Superior technical designs for extended durability and performance




# SeaKing™ Fiber Optic

## 10K PSI open-face connectors, cables and jumpers, plus ruggedized transceivers and media converters

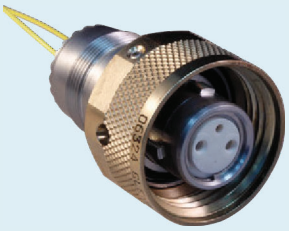
- **Ideal for data-intensive subsea applications: towed-array sonar, well logging and monitoring, and ILI sensors**
- **Overmolded and PBOF butt-joint assemblies**
- **Full hydrostatic qualification test report available**
- **Wide range of fiber and hybrid fiber/electric layouts**
- **Singlemode and multimode**
- **<1.0db data loss for singlemode**

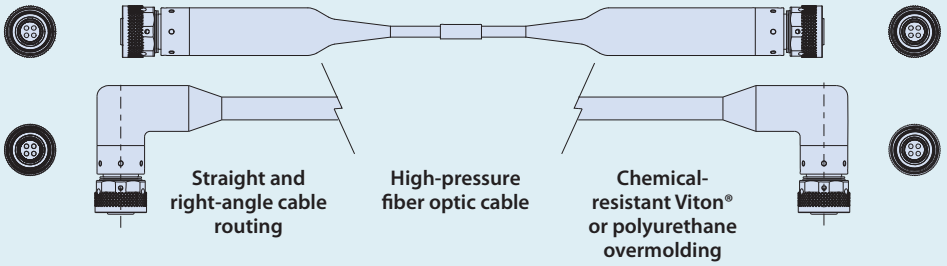
*DEEP WATER*

# SeaKing™ Fiber Optic

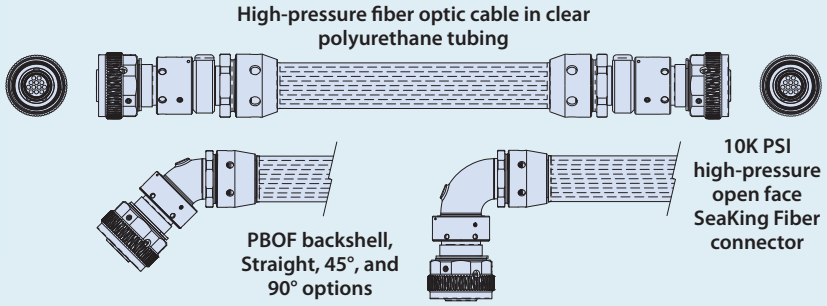
## 10K PSI open-face pressure-rated fiber optic connectors, cables, transceivers, and media converters

### ENVIRONMENTAL OVERMOLDED FIBER OPTIC JUMPERS

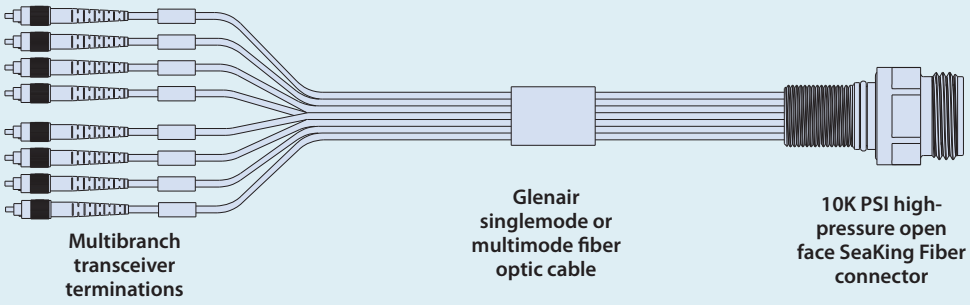





### PRESSURE-BALANCED OIL-FILLED (PBOF) HIGH-PRESSURE FIBER OPTIC ASSEMBLIES

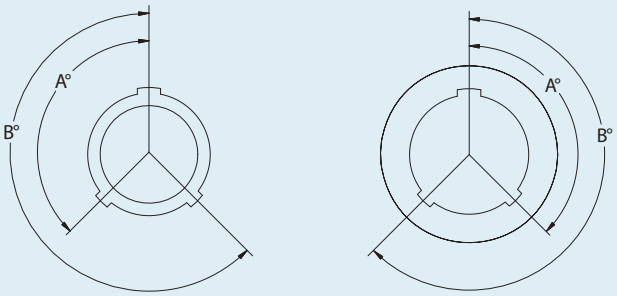



### SEAKING™ BCR OR FCR TO COMMERCIAL FIBER OPTIC PIGTAIL ASSEMBLY FOR I/O-TO-BOARD MODULE APPLICATIONS




### KEY AND KEYWAY POSITONS

| Alternate Keyway Positions | | |
|---|---|---|
| | Key Rotation | |
| Key Position | A° | B° |
| Normal (N) | 150° | 210° |
| A | 75° | 210° |
| B | 95° | 230° |
| C | 140° | 275° |

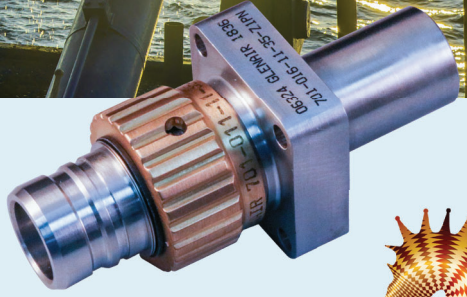


Glenair®

MISSION-DRIVEN DESIGN

## *MISSION-CRITICAL UNDERWATER*
# INTERCONNECT SOLUTIONS

Most aggressive lead times in the industry · Vertically integrated and made in the USA
Custom solutions, no miniumum order quantities
Accessible and responsive engineering support · Obsessed with quality and qualification
Superior technical designs for extended durability and performance



# SeaKing Junior

## High-reliability, dry-mate, harsh-environment connectors and cables

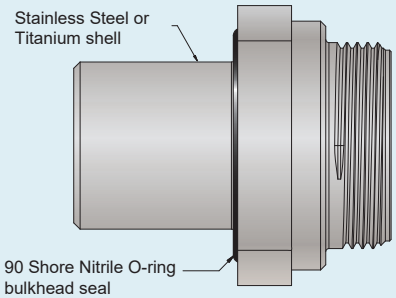
- **For intelligent inline inspection (PIG) applications and subsea instrumentation**
- **5000 PSI (mated condition) pressure-rated connector for overmolded (non-PBOF) applications**
- **High density, small form-factor solution—up to 50% reduction in size and weight compared to industry standard solutions**
- **Piston-seal nitrile O-ring equipped, epoxy potted**
- **Ultraminiature high-density pin configurations: #22D, #20, #20HD, #16, #12, #8 signal, power, fiber optic and high-speed datalink shielded contacts**

*SERIES 701 SeaKing™ Junior*

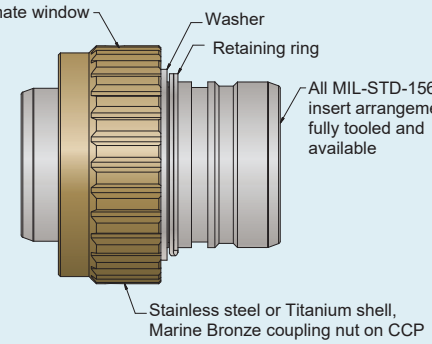
# Harsh-Environment Dry-Mate Connectors

## 6500 psi high-density overmolded cable connectors

## SERIES 701 SEAKING™ JUNIOR MECHANICAL FEATURES AND CONFIGURATIONS




Flange Connector Receptacle




Cable Connector Plug

### Stainless Steel or Titanium shells, Marine Bronze coupling nuts

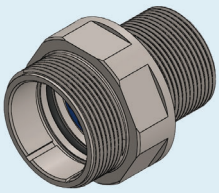
Available in nine sizes from 2 to 128 contacts, Series 701 connectors feature stainless steel or marine bronze shells. Nitrile O-rings resist high temperature and corrosive chemicals.

### 6500 PSI

These connectors withstand up to 5000 PSI hydrostatic pressure in a mated condition.

**Series 701-011 Cable Connector Plug (CCP)**

**Series 701-016 Flange Connector Receptacle (FCR)**



**Series 701-017 Bulkhead Connector Receptacle (BCR)**

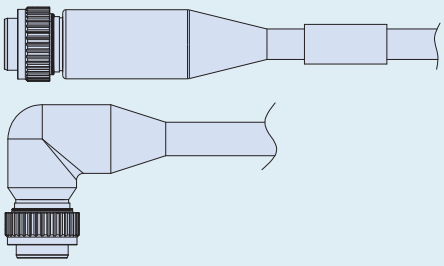
## SEAKING™ JUNIOR SERVICE RATINGS AND PERFORMANCE SPECIFICATIONS

| Service Ratings | | | |
|---|---|---|---|
| Service Rating | Sea Level DWV (VAC) | Operational | |
| | | VAC | VDC |
| M | 1300 | 433.3 | 612.8 |
| N | 1000 | 333.3 | 471.4 |
| I | 1800 | 600.0 | 484.5 |
| II | 2300 | 766.7 | 1084.2 |

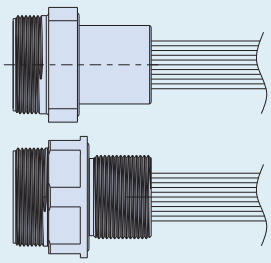
| Current Rating | | |
|---|---|---|
| Contact Size | Amps | Wire Size |
| #8 | 46.0 | 8 AWG |
| #10 | 33.0 | 10 AWG |
| #12 | 23.0 | 12-14 AWG |
| #16 | 13.0 | 16-20 AWG |
| #20 | 7.5 | 20-24 AWG |
| #22D | 5.0 | 22-28 AWG |

| Performance Specifications | |
|---|---|
| Insulation Resistance | 5000 megohms at 500 VDC |
| Operating Temperature | -65° C to +175° C |
| Hydrostatic Pressure | 6500 PSI mated condition, tested per ISO 13628-6 |
| Durability | 300 mating cycles |

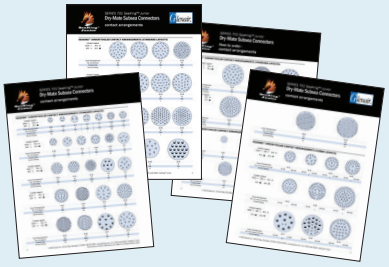
## SEAKING™ JUNIOR OVERMOLDED CABLES AND PIGTAIL ASSEMBLIES



**Harsh-environment polyurethane overmolded point-to-point cables with straight or right-angle ends, one-to-one wiring**



**Pigtail receptacle assemblies, variable cable length, single-conductor M22759/11 wire, environmental back-end potting**



**All featured insert arrangements tooled and available now including high-density and combo layouts for Coax, Twinax, and El Ochito® octaxial contacts**

Glenair®

## *MISSION-CRITICAL UNDERWATER*
# INTERCONNECT SOLUTIONS

Most aggressive lead times in the industry · Vertically integrated and made in the USA
Custom solutions, no miniumum order quantities
Accessible and responsive engineering support · Obsessed with quality and qualification
Superior technical designs for extended durability and performance


# SeaKing™ Power

## 1–6.6kV connectors for deep sea oil & gas primary power junctions

- **For primary power junction applications**
- **High-voltage 1 – 6.6 kV, high-amperage up to 350A**
- **API-compliant with test ports**
- **Fully redundant dual O-ring sealing**
- **Indexable flange or threaded bulkhead designs**
- **Solder-cup contacts**
- **O-ring pressure inspection ports available on all BCR and FCR designs**
- **10K PSI Factory acceptance testing in both mated and open-face conditions**
- **Keyed mating interface for mismate prevention**

*HIGH VOLTAGE SUBSEA*

# SeaKing™ Power connectors for underwater primary power junctions

## Available configurations and applications

### CABLE CONNECTOR PLUG (CCP)

SeaKing™ Power
Cable Connector Plug (CCP)

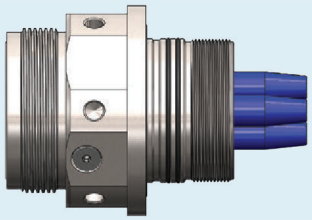
- PBOF and overmold compatible cable connector plug
- Super duplex stainless steel or titanium construction with glass-reinforced thermoplastic insulator
- Accepts various backshell accessories
- Aggressive coupling nut knurling for easy field mating
- Inspection ports, spanner wrench holes, and coupling nut lock set screws ensure reliable foolproof performance
- Mates with SeaKing Power receptacle assemblies with similar contact arrangement
- Conductor sealing boots protect solder cup wire-to-contact terminations in the event of a flooded hose

### FLANGE CONNECTOR RECEPTACLE (FCR)

SeaKing™ Power
API-Compliant
Flange Connector Receptacle (FCR)

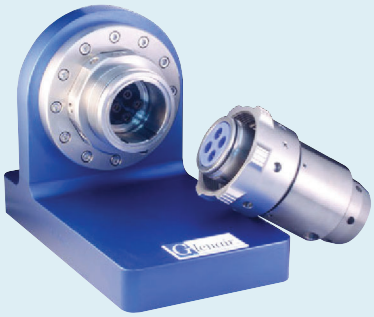
- FCR delivers 10K PSI sealing in both mated and open-face condition
- Indexable flange allows receptacle shell rotation for 360° routing flexibility of right-angle-mating cable plugs
- Available API O-ring pressure test ports ensure reliability prior to deployment to ocean floor
- Super duplex stainless steel or titanium shells for complete compatibility with mating CCP
- Wire sealing boots ensure reliable environmental protection of cable-to-connector interface

### BULKHEAD CONNECTOR RECEPTACLE (BCR)



SeaKing™ Power
API-Compliant
Bulkhead Connector Receptacle (BCR)

- BCR is designed for direct threaded bulkhead mounting
- Supplied washer, mounting nut, and bulkhead-mate O-ring seals ensure secure sealing and grounding to equipment housing
- BCR shell equipped with both wrench flats and spanner wrench holes for convenient installation regardless of tool choice
- Available API O-ring pressure test ports ensure reliability prior to deployment
- Mates with SeaKing Power CCP with similar contact arrangement



| SeaKing™ Power Performance Specifications | | |
|---|---|---|
| Pressure Rating | Plug: 10,000 psi, mated condition<br>Receptacles: 10,000 psi mated and open face | per ISO 13628-6 |
| Electrical | 1–3kV, 350 Amps max per contact | per MIL-STD-202, Method 301 |
| Materials | Salt Spray (corrosion)<br>Humidity (steady state)<br>Thermal Cycle | MIL-STD-202, Method 101<br>MIL-STD-202, Method 103<br>ISO 13628-6 |
| Power Ratings | 3kV, 50 Amp / contact<br>1kV, 50 Amp / contact<br>1kV, 150 Amp / contact<br>1kV, 350 Amp / contact | P/N 700-101-48, 700-106-48<br>P/N 707-0065, 707-0066<br>P/N 707-0088, 707-0089<br>P/N 707-0142 |

Glenair®


ITS POWER™

# SERIES ITS & DERIVATIVES

## Circular industrial power and signal connectors for rugged applications—from mining equipment to monorails

c UL us

RoHS COMPLIANT

- **Dozens of proven connector technologies for harsh application environments**
- **Hundreds of power and signal contact arrangements (crimp and solder)**
- **Threaded, reverse bayonet, and innovative latch-and-lock coupling technologies**
- **Flame-resistant, caustic substance-free material choices for RoHS and other compliance standards**

| Circular Reverse-Bayonet and Threaded Coupling Connectors |
|---|
| ***Series ITS*** *- Reverse-Bayonet Power and Signal* |
| ***Series ITS-RG*** *- RadGrip™ Rubber Coupling Nut Circular* |
| ***Series FRITS*** *- Flame-Resistant Insert for Rail Applications* |
| ***Series IT*** *- Threaded Coupling Power and Signal* |
| ***Series ITH*** *- Rigid Insert / Mechanical Contact Retention* |
| ***Series ITK*** *- High-Temperature Ceramic* |
| ***Series ITZ*** *- Triple-Start Thread Power and Signal* |
| ***Series IFO*** *- Reverse-Bayonet Fiber Optic* |
| ***Series IGE*** *- High Currrent, Low Voltage Single Pole* |
| ***Series 901*** *- High Current Medium Voltage Circular* |
| ***Series 500*** *- Reverse-Bayonet Single-Pole High Voltage* |
| ***Series IPT*** *- Standard Bayonet Power and Signal* |
| ***Series IPT-SE*** *- Standard Bayonet Crimp Contact* |

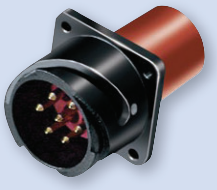
Series IT, ITS and derivative connector families are available with three plug coupling nut designs: Standard, Arctic, and rubber-covered RadGrip™

*INDUSTRY STANDARD AND GLENAIR INNOVATIONS*

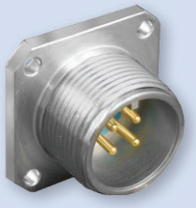
# Industrial/Rail Power and Signal Connectors

## Circular Industrial/Rail Power and Signal Connectors: 5015 Type Derivatives

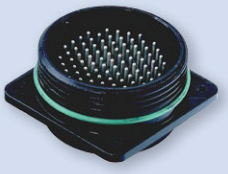
Series ITS
Reverse-Bayonet



Series ITH
Rigid Insert



Series IT
Threaded Coupling



Series ITZ
Triple-Start Coupling

Series ITK
High-Temperature Ceramic
Insert

Seacrow
Marine Bronze

Series 901
Multi-Pin High Voltage

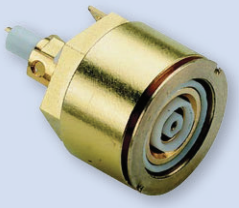
Series 500
Single-Pole High Voltage

Series IGE
Single-Pole Low Voltage

Series ITS Bayonet
with Wing Locks

## High-Speed / Ruggedized Connectors for Industrial and Rail Applications

SuperSeal™
with RJ45 Ethernet



Series CX
High-Speed Coaxial

Octobyte™
Quadrax Contact Ethernet

Series IFO
High-Speed Fiber Optic

## Series ITS-RG RadGrip™ Reinforced Rubber Coupling Nut Connectors

ITS-RG
(Basic Black)

ITS-RG
(Semper Tan)

ITS-RG
(Fiber Optic Blue)

ITS-RG
(Safety Red)

ITS-RG
(Safety Orange)

# SERIES ITS-Ex

## Industrial-strength power and signal connector series qualified for use in hazardous zone interconnect applications

Designed for safe operation in petrochemical refineries, oil & gas drilling platforms, and other explosion zone applications, the Glenair ITS-Ex series connector is optimized for life-of-system durability and reliability. Qualified by the globally-recognized IEC and IECEx standards bodies, the connector series is suitable for use in application areas where flammable gases and vapors are present as a normal condition of operation (group IIC) and with temperature classes T6 and T5, zones 1 and 2; and for applications where potentially flammable dust is present as a normal condition of operation (group IIIC) and with temperature classes T80°C and T95°C in zone 21 and 22.

Series ITS-Ex is designed for easy and repeatable termination of armored and unarmored cables built to IEEE 45, IEC, BS, DIN, and JIC standards. A full range of power and signal contacts, from size #16 to size #0 in over 40 insert arrangements are available to address all common voltage, wire size and connector service class ratings.

Special Ex design attributes of the series include an integral labyrinth flame path cooling zone, 2-part epoxy potting well, fixed in-line receptacles for attachment of cables to cable management brackets and trays, set screw (grub screw) secured protective safety covers, and durable life-of-system Ex marking labels.

- **Utilizes all standard features of 5015 inserts, contacts, tools, etc.**
- **Grub nuts (set screw) to lock coupling nut**
- **Long plug barrels provide cooling zone**
- **Labyrinth gas exit port/ pathway augments cooling**
- **Accessory accommodation for potted glands**
- **Increased wall thickness**
- **Stainless steel and Marine Bronze available**

*SERIES ITS-EX*

# IECEx/ATEx Qualified Explosive Zone Connectors

## RANGE OF APPLICATIONS

- Automotive refuelling or petrol stations
- Oil & gas extraction
- Oil refineries
- Gas pipelines and distribution
- Chemical processing plants
- Aircraft refuelling and hangars
- Transportation
- Pharmaceuticals
- Food processing
- Metal surface grinding
- Sugar refineries
- Grain handling and storage
- Coal mining

Photo: Mikulova

### ATEX Marking

CE 2460 Ex

II 2 G Ex db IIC T6, T5 Gb
II 2 D Ex tb IIIC T80°C, T95°C Db IP68
-40°C ≤ Tamb ≤ +40°C (T6, T80°C) or +55°C (T5, T95°C)

### IECEx Marking

Ex db IIC T6, T5 Gb
Ex tb IIIC T80°C, T95°C Db IP68
-40°C ≤ Tamb ≤ +40°C (T6, T80°C) or +55°C (T5, T95°C)

Glenair ITS-Ex series encompasses both in-line cable plugs and receptacles as well as fixed bulkhead-mountable designs

# RADIATION-PROTECTED
# SGEMP-Resistant Wire

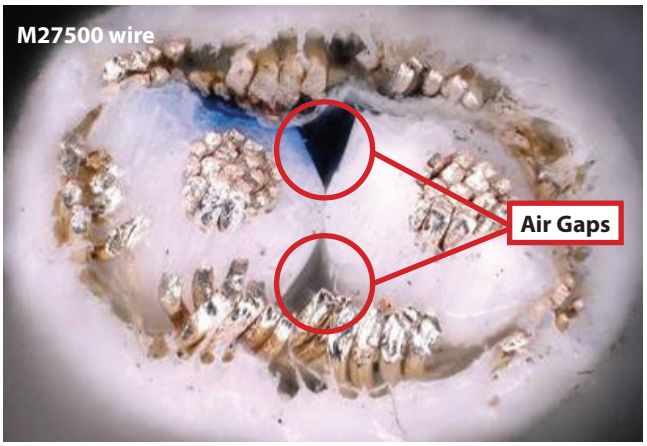
## No air gaps • Duralectric “low-Z” filler material • ArmorLite shielding

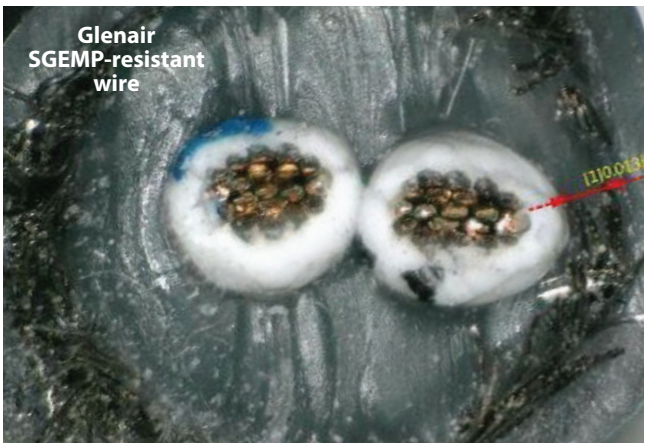
Radiation shielding and hardening is crucial for satellites, missile defense, and avionic systems. A System-Generated ElectroMagnetic Pulse (SGEMP) event is a transient radiation effect produced in an exposure to a nuclear burst that can be devestating to space assets. Low-energy X-rays from the nuclear burst are absorbed, liberating free electrons which create transient electronic currents that deposit in electronic devices, causing data loss, interruption, or physical damage from electrical overstress.

Glenair SGEMP-Resistant Wire is filled with Duralectric EMP low-Z material to eliminate all air gaps in the wire and shield, providing protection from neutrons. A protective layer of lightweight ArmorLite high-Z braided material shields the wire from secondary gamma radiation and electrons. Available as singles, pairs, triples, and quads, as well as controlled-impedance pairs and Cat6A optimized cable, Glenair SGEMP-Resistant Wire is a critical component in protecting mission-critical satellite, missile, and avionic systems from damaging radiation.

- **Duralectric EMP low-Z filling material for neutron shielding**
- **ArmorLite high-Z braid shields secondary gamma radiation and electrons**
- **No air gaps between wires or shield**
- **Minimizes charge induced in wires during high-radiation SGEMP events**
- **30X lower induced charge than stndard M27500 wire per MBS test**

### CLOSE-UP CROSS-SECTION COMPARISON OF 22 AWG TWISTED, SHIELDED PAIRS




**M27500 wire (left) cross-section shows numerous air gaps. Glenair SGEMP resistant wire (right), with Duralectric EMP low-Z filling material has no air gaps. ArmorLite braided shielding with minimum 95% coverage protects against secondary gamma radiation and electrons**

RADIATION-PROTECTED

# SGEMP-Resistant Wire

## No air gaps • Duralectric filler • ArmorLite shielding

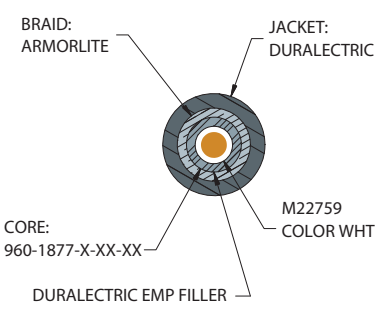
## Wire configurations / How to order

### SGEMP-RESISTANT WIRE, SINGLE-CONDUCTOR OR TWISTED-PAIR • 960-2770

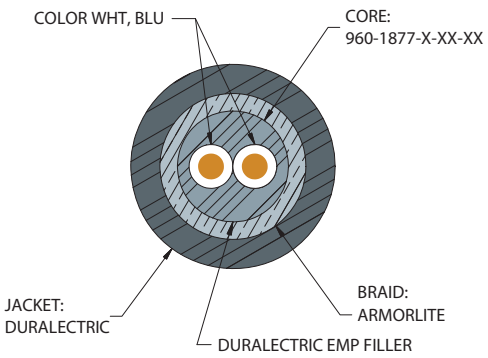
| Table II: Duralectric™ D Jacket Color | | |
|---|---|---|
| Weatherproof, halogen free, flame resistant, functional to 260°C | | |
| 0 | Black | Fed-Std-595C #17038 |
| 1 | Brown | [TBD] |
| 2 | Red | Fed-Std-595C #11120 |
| 3 | Orange | Fed-Std-595C #12300 |
| 4 | Yellow | Fed-Std-595C #13591 |
| 5 | Kelly Green | Fed-Std-595C #14193 |
| 6 | Blue | Fed-Std-595C #15125 |
| 7 | Violet | Fed-Std-595C #17142 |
| 8 | Gray | Fed-Std-595C #26270 |
| 9 | White | Fed-Std-595C #17875 |
| OG | Dark Olive Green | Fed-Std-595C #34094 |
| DT | Desert Tan | Fed-Std-595C #33446 |

| How To Order SGEMP-Resistant Wire | | | | | |
|---|---|---|---|---|---|
| **Sample Part Number** | **960-2770** | **-2** | **-33** | **-26** | **-9** |
| **Basic Part No.** | SGEMP-Resistant Wire | | | | |
| **No. of Conductors** | **-1** = single-conductor **-2** = twisted-pair | | | | |
| **Wire Type** | **33** = RP M22759/33-X etched | | | | |
| **Wire Gauge (AWG)** | **20, 22, 24, 26, 28, 30** | | | | |
| **Duralectric Jacket Color** | See Table II | | | | |

**SINGLE CONDUCTOR:**

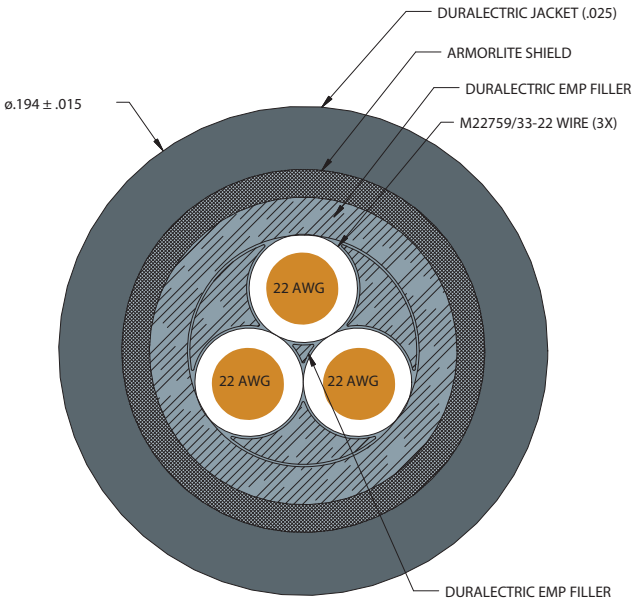



**TWISTED PAIR:**



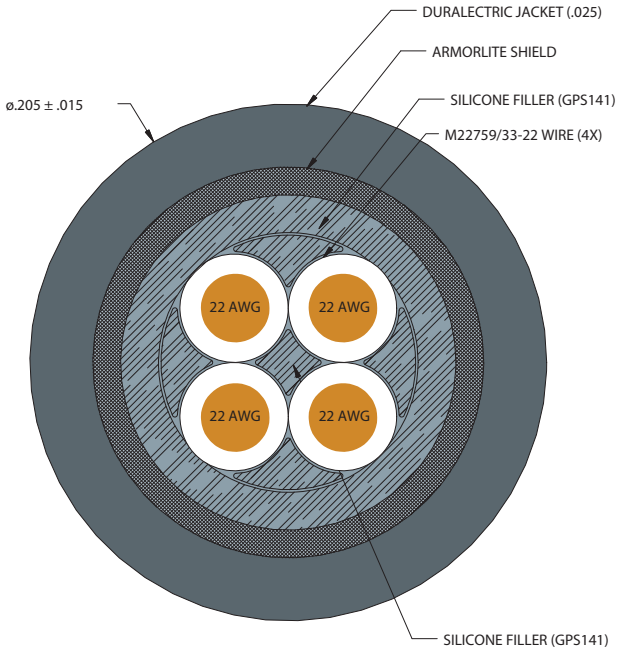

### SGEMP-RESISTANT WIRE, 3-CONDUCTOR TWISTED • 960-2731

| How To Order SGEMP-Resistant Wire | |
|---|---|
| **Sample Part Number** | **960-2731** |
| **Basic Part No.** | SGEMP-Resistant Wire, 3-conductor |




### SGEMP-RESISTANT WIRE, 4-CONDUCTOR TWISTED • 960-2738

| How To Order SGEMP-Resistant Wire | |
|---|---|
| **Sample Part Number** | **960-2738** |
| **Basic Part No.** | SGEMP-Resistant Wire, 4-conductor |

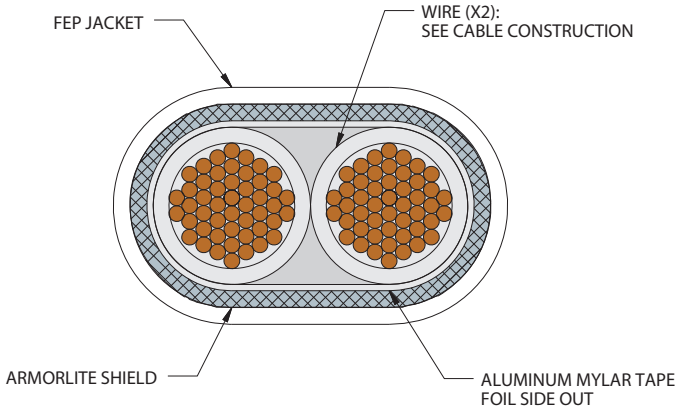


RADIATION-PROTECTED

# SGEMP-Resistant Wire

## 968-014

## Lightweight, SGEMP-Resistant Twisted Pair




**968-014**

- **Wire (X2): Twisted pair (30 - 20 AWG): GS22759-33-* or M22759/33-*; Twisted pair (18 - 12 AWG): GS22759-44-* or M22759/44-* (See table 1 for wire size)**
- **Tape: aluminum mylar**
- **Braid: Armorlite per 103-051-XXX; 90% minimum shield coverage**
- **Jacket: see part number development**

**NOTES**

- Wire is solid white with colored stripes. Stripe color coding per ANSI/NEMA WC 27500 preferred identification method.

| HOW TO ORDER | | | |
|---|---|---|---|
| **Sample Part Number** | **968-014** | **-30** | **-1** |
| **Basic Part Number** | **968-014** | | |
| **Wire Size** | See Table I | | |
| **Jacket Option** | Omit for Fep Jacket (.008 Thk)<br>**1** = No Jacket | | |

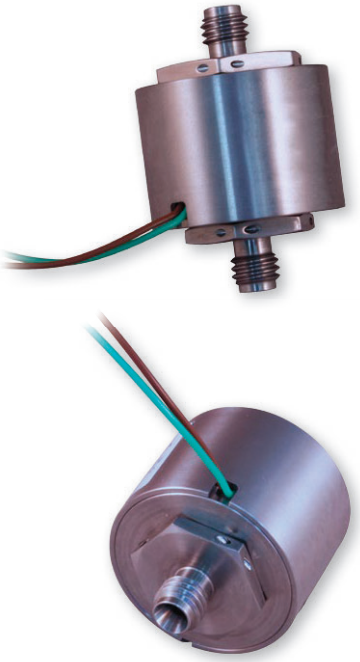
**TABLE 1**

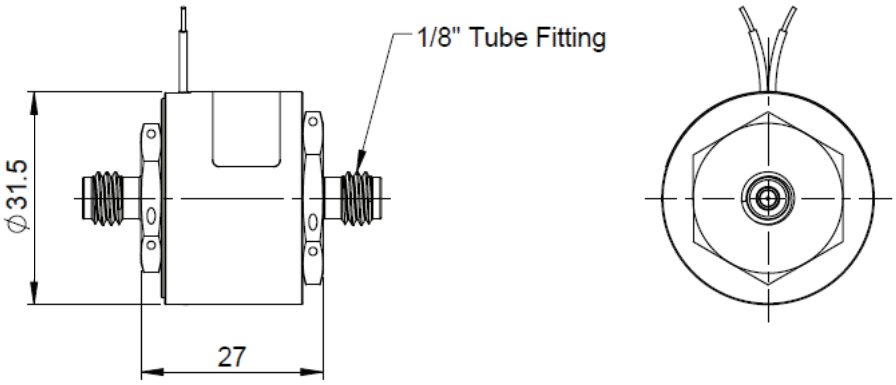
| Wire Size | Jacketed Cable O.d. (Inches) REF | Non-Jacketed Cable O.d. (Inches) REF |
|---|---|---|
| 30 | .075 | .059 |
| 28 | .080 | .064 |
| 26 | .088 | .072 |
| 24 | .097 | .081 |
| 22 | .107 | .091 |
| 20 | .118 | .102 |
| 18 | .134 | .118 |
| 16 | .148 | .132 |
| 14 | .175 | .159 |
| 12 | .205 | .189 |

*OUTLINE SPECIFICATION*

# Solenoid Valve

## NORMALLY-CLOSED, SINGLE-DIRECTION, HIGH-PRESSURE PNEUMATIC SOLENOID VALVE






| | |
|---|---|
| Gases: | Pure Air, Nitrogen, Argon |
| Inlet Pressure: | 500 bar (gauge) |
| Flow Area: | 0.5 mm diameter (through valve) |
| Proof Test Pressure: | 750 bar (gauge) |
| Leakage Test: | To be defined, subject to application (for a specific gas, "bubble" test or maximum flow rate) |
| Temperature Range: | -40°C to 70°C |
| Voltage Range: | 18 - 32 Volts (dc) |
| Coil Resistance: | 105 Ohms (nominal) at 20°C |
| Maximum Power: | 10 W at 20°C |
| Operation: | For continuous operation of the valve illustrated, the current is reduced after opening to a holding value. To operate continuously at the maximum voltage, a longer valve would be required.<br><br>Similar designs are possible, with a different coil resistance and maximum power, affecting the time to open the valve. |
| Fittings (shown): | Tube fitting ends (Swagelok-type) for 1/8" OD tube; other options would be possible, subject to pressure rating |
| Mass: | 116 grams (excluding the flying wires) |

Glenair®

NASA's STEREO
(Solar TErrestrial RElations Observatory),
artist's concept

SuperNine®

# Blind-Mate Connectors

## Rack-and-Panel Sealed, Assisted Kick-off and Feed-Through Blind-Mate to D38999

### Blind-mate, fixed and float-mount interconnects for non-ITAR commercial as well as military/defense applications

**Application:** Glenair Series 253 blind-mate connectors are designed for use in commercial rack-and-panel instrumentation applications, satellite deployment, scientific payloads, interstage, UAV, and munitions release, and more.

- **Available in most symmetrical MIL-STD-1560 insert arrangements with contacts sizes from #23 to #8**
- **Selected materials offer low outgassing properties and high resistance to both corrosion and stress corrosion cracking**
- **NASA outgassing bake-out process available**
- **Designed to withstand the rigors of launch and flight—including shock, vibration, thermal vacuum, acceleration, and temperature extremes**
- **Standard accessory threads and teeth per MIL-DTL-38999 accommodate a wide range of backshell accessories**
- **Crimp-removable contacts standard. PC tails, dual-flange standoffs, hermetically sealed, and custom blind-mate configurations available**

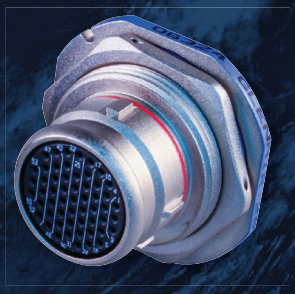
*SPACE-GRADE BLIND MATE*

# SuperNine®

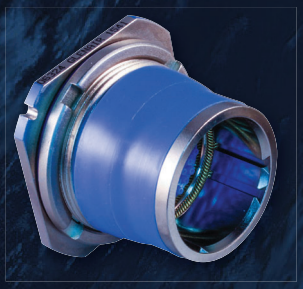
# Float-mount and adjustable separation force connectors

## MIL-DTL-38999 Series III type, environmental, crimp contact

### CRITICAL MECHANICAL FEATURES OF BLIND-MATE AND ADJUSTABLE SEPARATION FORCE (ZEF) CONNECTORS

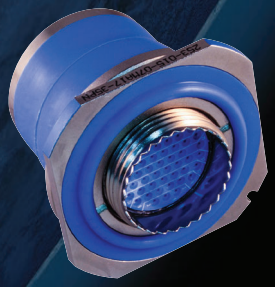


**Roll-off nose:** allows for the smooth disconnection of blind mate plugs and receptacles.

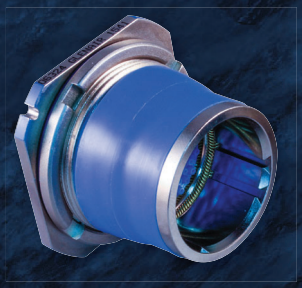


**Float mounting:** allows for coplanar movement of the receptacle during mating, preventing contact and shell damage.

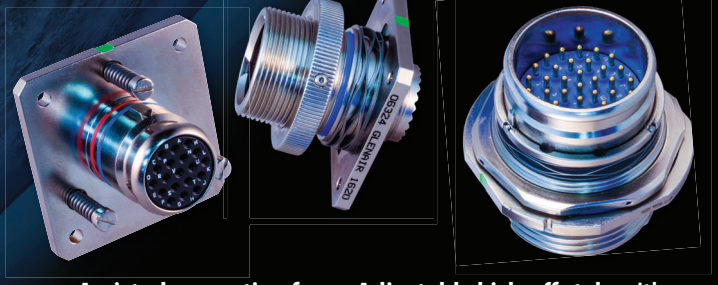

**Misalignment accommodation:** Radial, axial, and angular misalignment during mating is accounted for with integral wave springs.



**Sealing:** Misalignment accommodation makes environmental sealing difficult. The problem is solved with auxiliary external seals.

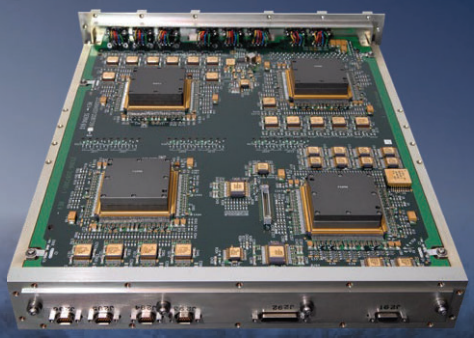


**EMI shielding:** Glenair incorporates ground springs in receptacle connectors and grounding fingers in special coupling nut-equipped plugs to optimize 360° shell-to-shell continuity.



**Assisted separation force: Adjustable kick-off style** with spring-loaded posts and an adjustment ring to calibrate separation force. A second style uses **wave springs** on the shell body.

| Available non-ITAR environmental blind-mate and adjustable separation force solutions | | |
|---|---|---|
| **Basic Part No.** | **Description** | **Mates With** |
| 253-014 | Fixed jam-nut mount plug with roll-on/roll-off nose and accessory threads | 253-015 |
| 253-015 | Floating jam-nut mount receptacle with misalignment accommodation and optional sealing | 253-014 |
| 253-016 | Fixed wall mount plug with spring assist (zero separation force) | 253-017 |
| 253-017 | Floating wall mount receptacle with adjustable separation force and misalignment accommodation | 253-016 |
| 253-018-07 | Blind-mate feed-thru, jam-nut mount plug with B-side D38999 type receptacle mating interface and assisted kick-off (spring force) | 253-019 |
| 253-018-G6 | Blind-mate in-line feed-thru with B-side D38999 type plug mating interface and assisted kick-off (spring force) | 253-019 |
| 253-019 | Floating jam-nut mount receptacle with misalignment accommodation and optional sealing | 253-018 |
| 253-031 | Blind-mate jam-nut mount plug with kick-off spring and accessory threads | 253-032 |
| 253-032 | Floating jam-nut mount receptacle with misalignment accommodation | 253-031 |
| 253-033 | Float mount feed-thru, jam nut mount receptacle to 38999 type Series III plug mating interface | 253-019 |
| 253-025 | Locking circuit and test mate connector | 253-016 |
| 253-022 | Fixed jam-nut mount blind-mate receptacle with roll-on/roll-off nose for rack and panel applications | 253-015 |



Physical layer SpaceWire router aboard the James Webb Space Telescope (NASA)

# SpaceWire Cable Assemblies

## Flight- and lab-grade SpaceWire qualified cable assemblies for IEEE 1355 space network node interconnection of routers, switches, recorders, transceivers, and other physical layer devices

The success of any space mission begins with reliable data transmission and Glenair Spacewire cables, built to meet the strict standards set forth by ECSS-E-ST-50-12C make this a reality. Our Spacewire cables offer bidirectional, high speed data transmission rates up to 400 Mbits/s while significantly reducing cross talk, skew, and signal attenuation. By incorporating a serial, point-to-point cable, with low voltage differential signaling (LVDS) reduced costs are realized through an easily integrated data transmission cable. These features allow Spacewire cables to be incorporated across various satellite data transmission programs without the expense of costly design customization.

Glenair Spacewire assemblies begin with a high performance cable built with expanded polytetraflouroethylene (ePTFE) insulation. This material allows for low-loss transmission of LVDS signals, maximizing data-rates while allowing for the implementation of standard hardware protocols, thus eliminating the need for design customization and long lead time cable projects.

### TYPICAL USES INCLUDE

- EGSE applications
- Radar sensor systems
- Hi-resolution camera equipment
- Sensor, mass-memory unit, and telemetry subsystem interconnections

### APPROVED FOR USE BY:

- ESA
- NASA
- JAXA
- RKA

### CONNECTOR/CABLE

- **Laboratory and space-grade versions available**
- **Qualified MIL-DTL-83513 Micro-D connectors**
- **Gold-plated copper alloy TwistPin contacts**
- **Basic cable, 4 twisted pair cables and a ground**
- **Epoxy resin potting**
- **EMI banding backshell**

### PERFORMANCE

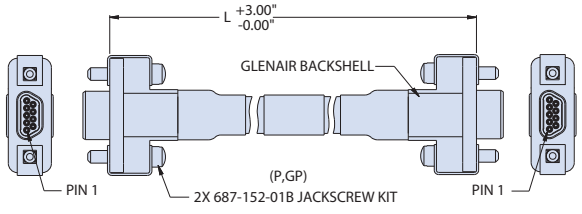
- **3 Amps**
- **Temperature tolerance -200° to 180° C**
- **100 Ω impedance shielded signal pair**
- **Very low skew, signal attenuation and crosstalk**
- **65dB minimum attenuation shielding effectiveness**
- **Low magnetic permeability IAW EIA-364-54**

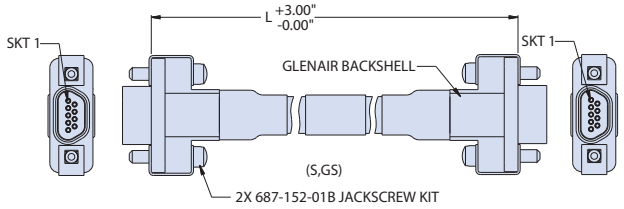
*POINT-TO-POINT AND SINGLE-ENDED*

# SpaceWire cable assemblies

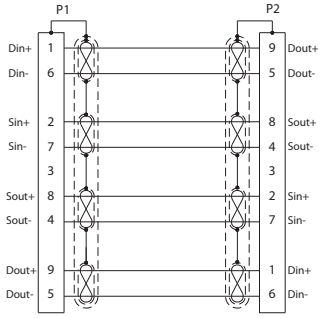
## Technical specifications / how-to-order

| How To Order SpaceWire Cable Assembly | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Part Number** | **GSWM** | **2** | **L** | **-9** | **GP** | **-6** | **F** | **B** | **-16** | **S** | **-A** | **G** |
| **Product Series** | **GSWM** Glenair SpaceWire Micro-D | | | | | | | | | | | |
| **Shell Plating** | | **2** - Electroless Nickel **5** - Gold | | | | | | | | | | |
| **Insulator Material** | | | **L** - LCP | | | | | | | | | |
| **Shell Size** | | | | **9** | | | | | | | | |
| **Connector Type** | | | | | **P** - Single-Ended Pin (Plug) **S** - Single-Ended Socket (Receptacle)<br>**GP** - Pin (Plug) Connector Both Ends **GS** - Socket (Receptacle) Both Ends | | | | | | | |
| **Wire Gauge** | | | | | | **6** - 26 AWG **8** - 28 AWG **0** - 30 AWG (30 AWG–Lab Only) | | | | | | |
| **Cable Type** | | | | | | | **F** - Flight Grade **L** - Lab Grade | | | | | |
| **Termination Option** | | | | | | | | **B** - Backshell | | | | |
| **Cable Length In Inches** | | | | | | | | | **16** - 16 inches (12 inches minimum) | | | |
| **Hardware** | | | | | | | | | | **S** - Male Slotted Jackscrew **P** - Female Jackpost | | |
| **Wiring Schedule Type** | | | | | | | | | | | **-A** - as per ECSS-E-ST-50-12C Rev 1 figure 5-4 **-AL** - as per ECSS-E-ST-50-12C Rev 1 figure 5-5 | |
| **Ground Spring Option** | | | | | | | | | | | | **N** - No Ground Spring **G** - Ground Spring Installed |

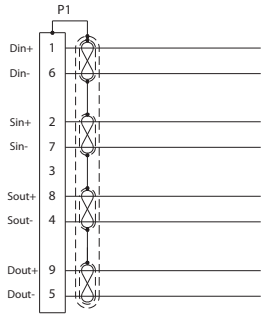



BACK TO BACK WIRING
CABLE ASSY TYPE **-A**
ECSS-E-ST-50-12C REV 1, FIGURE 5-4

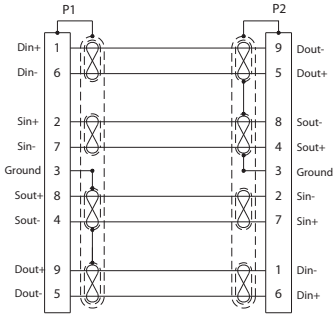



SINGLE ENDED WIRING
CABLE ASSY TYPE **-A**
ECSS-E-ST-50-12C REV 1, FIGURE 5-4

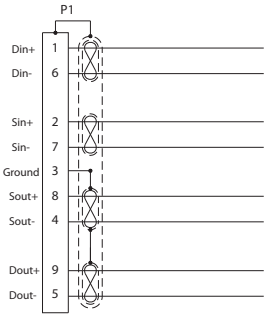



NOTE: Inner shields are tied to one another and connector shell.

BACK TO BACK WIRING
CABLE ASSY TYPE **-AL**
ECSS-E-ST-50-12C REV 1, FIGURE 5-5




SINGLE ENDED WIRING
CABLE ASSY TYPE **-AL**
ECSS-E-ST-50-12C REV 1, FIGURE 5-5




NOTE: Inner shields of Din and Sin pairs are Isolated from one another.
Inner shileds of Sout and Dout are connected and tied to pin 3.

### NOTES:

1. Flight grade (cable Type F) assemblies to be screened IAW NASA EEE-INST-002, Table 2. Level 1 with 100% thermal vacuum outgassing (24 hours/+125°C/$10^{-6}$ torr). Reference Glenair Mod Code 429C.
2. Operating temperature -55°C to +125°C
3. Electrical performance:
   Dielectric withstanding voltage: 600 VAC.
   Insulation resistance: 5000 megohms @500 VDC.

### MATERIALS/FINISH:

- Shells/backshells - aluminum alloy/electroless nickel.
- Insulators - high grade rigid dielectric/N.A.
- Contacts - copper alloy, gold plated.
- Hardware - stainless steel/passivated.

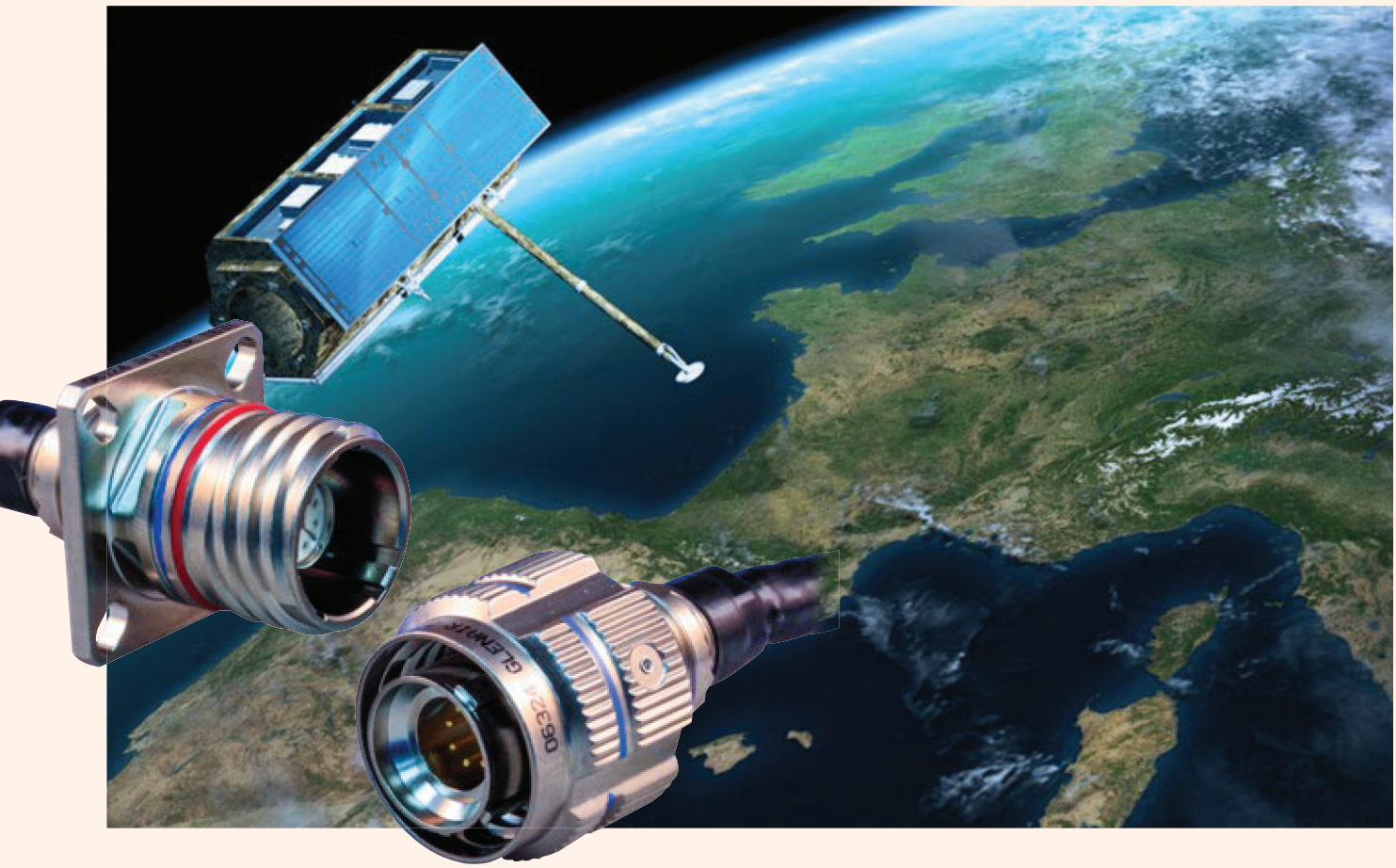


Dimensions in Inches (millimeters) are subject to change without notice.

10G HIGH-SPEED CONTACT MODULES FOR GLENAIR SIGNATURE SERIES CONNECTORS

# SPEEDMASTER™

## High-speed 10G connection system for Glenair SuperNine, Mighty Mouse, and HiPer-D connectors



**SpeedMaster™ is a dedicated contact module and insert package for SuperNine®, Mighty Mouse, and HiPer-D connectors. Optimized for high-speed Cat 6A Ethernet, the SpeedMaster™ 10G system offers industry-leading NEXT, return loss and insertion loss performance**

- **Utilizes aerospace industry standard #22D contacts, tools, and widely available Ethernet flight cable**
- **Significant weight reduction compared to Quadrax solutions (reduces cable requirement by half)**

**SpeedMaster Mighty Mouse Locking Push/Pull Connectors**

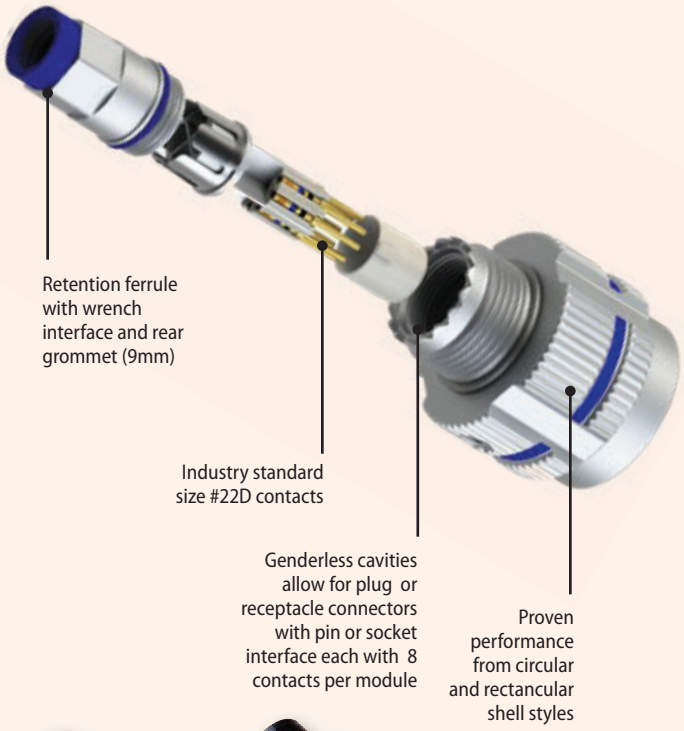
**SpeedMaster HiPer-D Rectangular (M24308 intermountable)**

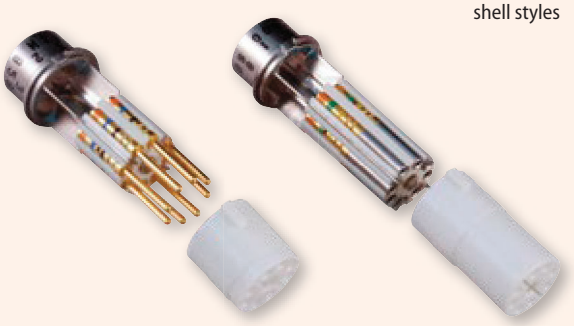
**SpeedMaster SuperNine "better than QPL" connectors**

# SpeedMaster™ High-Speed 10G Connection System

## for Glenair SuperNine, Mighty Mouse, and HiPer-D connectors

### SPEEDMASTER 10G NEXT-GENERATION HIGH-SPEED CONNECTION SYSTEM



**SpeedMaster 10G modular inserts are available for Series 23 SuperNine – 38999, Series 80 Mighty Mouse – Locking Push / Pull and Series 28 HiPer-D – M24308 rectangular D-Sub connectors**

## The SpeedMaster Difference

SpeedMaster, the high-speed multi-contact solution for the Mighty Mouse, HiPer-D and SuperNine 38999 type family of connectors. Each SpeedMaster module consists of 4 pairs of pins or sockets incorporating industry standard size 22D contacts to provide 10G performance. Each module is individually shielded within the shell, and retained in place with a threaded ferrule. Additionally, module cavities are genderless allowing pin or socket interface for plugs or receptacles. Glenair offers these SpeedMaster contacts in 3 connector packages, including our small form factor Mighty Mouse Series 824 Locking Push/Pull, HiPer-D (M24308) hi-performance rectangular D-Sub, and our 38999 type "better than QPL" connectors allowing you to adapt and fit your application needs. These features result in a two fold benefit. An easily removable and repairable, shielded high performance contact packaged within robust industry standard connectors, helping to reduce network downtime and providing a connectorized solution to improve the overall network function and performance. Meet the demand for the next generation Cat 6A networks with SpeedMaster, the next generation contact system from Glenair.

**The SpeedMaster 10G is optimized for high-speed Ethernet performance and incorporates standard M39029 #22D contacts isolated for superior NEXT, return loss and insertion loss performance**

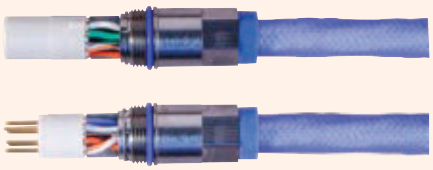
| Cable Size | | | |
|---|---|---|---|
| Cable Size | Cable Ø | Cable Size | Cable Ø |
| 1 | .280 (7.11) | 5 | .240 (6.10) |
| 2 | .270 (6.86) | 6 | .230 (5.84) |
| 3 | .260 (6.60) | 7 | .220 (5.59) |
| 4 | .250 (6.35) | | |

| SpeedMaster™ High-Speed Cable | | | | | |
|---|---|---|---|---|---|
| Cable P/N | Cabel Category | Cable Construction | Wire Gage | Cable Dia. | Assembly Instruction |
| 963-003-24 | Cat 6A | SF/UTP | 24 | .280 | AI85082 |
| 963-003-26 | Cat 6A | SF/UTP | 26 | .220 | |
| 963-037 | Cat 6A | SF/UTP | 24 | .260 | |
| 963-033-24 | CAT 6A | S/FTP | 24 | .260 | |
| 933-033-26 | CAT 6A | S/FTP | 26 | .220 | |

*HIGH-SPEED*

# SpeedMaster™ Pre-wired 10G high-speed contacts

## 858-102 10GBase-T Cat 6A Contacts

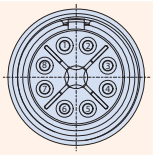


Pre-wired SpeedMaster assemblies are 100% tested and ready for use. Compatible with Glenair Series 80 Mighty Mouse, Series 28 HiPer-D or Series 23 SuperNine connectors with keyed size #8 cavities, these assemblies are available with three termination options: single-ended, SpeedMaster contacts on both ends, or with an RJ45 plug on one end. Contacts are wired per the guidelines of ARINC 664 Part 2 Appendix N.

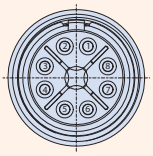
### Connector Compatibility

- Glenair 824-009 and -010 Mighty Mouse
- Glenair 280-098 thru -103 HiPer-D
- Glenair 233-219, 233-220 SuperNine

### Contact Positions



Mating Face of Pin Contacts

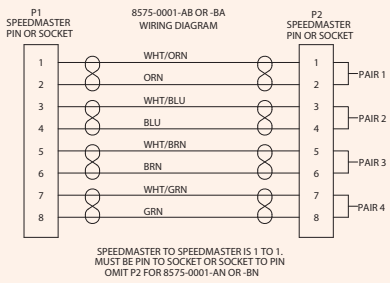


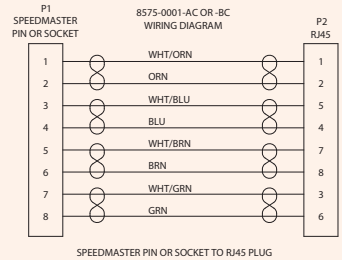
Mating Face of Socket Contacts

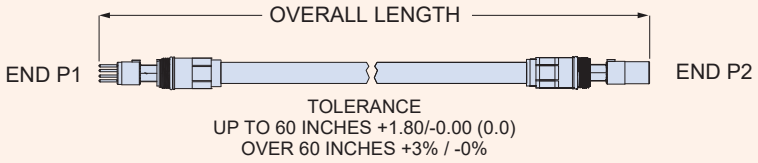
### Part Number Development

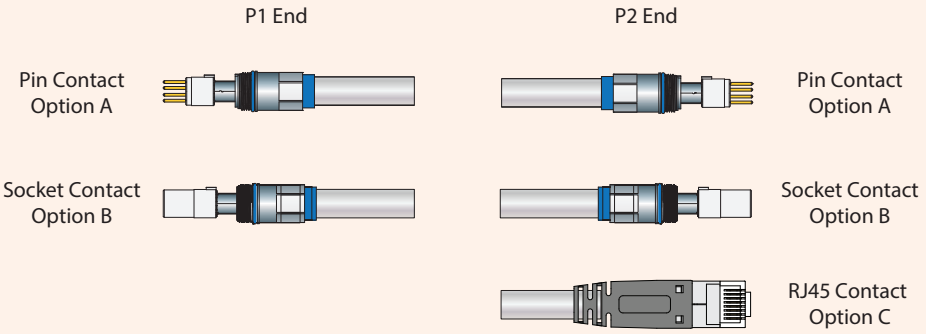
| Sample Part Number | 8575-0001 | -A | C | -1 | -12 |
|---|---|---|---|---|---|
| **Product** | **8575-0001** | | | | |
| **End A Contact Type** | **-A** = 858-101 SpeedMaster pin<br>**-B** = 858-100 SpeedMaster socket | | | | |
| **End B Contact/ Connector** | **A** = SpeedMaster pin<br>**B** = SpeedMaster socket<br>**C** = RJ45 plug<br>**N** = No connector | | | | |
| **Cable Option** | **-1** = 963-003-24 **-5** = 963-033-24<br>**-2** = 963-003-26 **-6** = 963-033-26<br>**-4** = 963-037 | | | | |
| **Length** | Overall length in inches | | | | |

## 8575-0001 SPEEDMASTER™ WIRING DIAGRAMS




### Specifications

- Operating temperature: -65ºC. to +200ºC. (SpeedMaster) or -40ºC. to +85ºC (RJ45); cable dependent
- Meets EIA/TIA 568C.2-10 and IEC 60603-7-51 Cat 6A 500 MHz
- Characteristic Impedance: 100 ohms
- Insulation resistance: 200 megohms min.
- Durability: 500 mating cycles

*HIGH-SPEED*

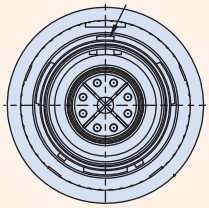
# SpeedMaster™
# Available connector packaging

## MIGHTY MOUSE 824 LOCKING PUSH-PULL

- **Quick-disconnect coupling**
- **Audible, visual, and tactile full-mate indicators**

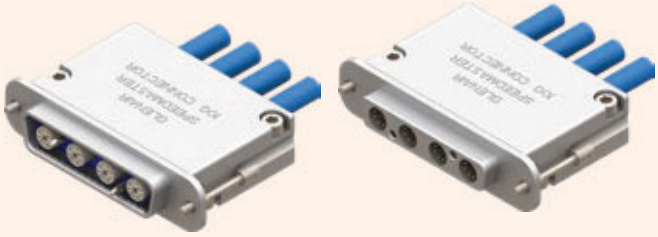
### Available connector configurations

| | |
|---|---|
| 824-009-06 | Plug |
| 824-010-01 | In-line Receptacle |
| 824-010-00 | Front Panel Mount, Jam Nut Receptacle |
| 824-010-07 | Rear Panel Mount, Jam Nut Receptacle |



**Single Contact Module Insert Arrangement**
Ideally suited for CAT5E or CAT6A Ethernet applications

## HIPER-D M24308 INTERMOUNTABLE



- **Advanced temperature, vibration and EMC/ electrical performance**
- **Rugged machined one-piece shell**

### Series 28 In-Line Connectors

| | |
|---|---|
| 280-101M | Plug |
| 280-098F | Receptacle |

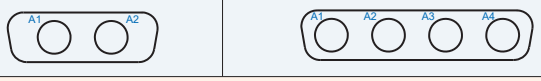
### Series 28 Rear Panel Mount Connectors

| | |
|---|---|
| 280-102M | Plug |
| 280-099F | Receptacle |

### Series 28 Float Mount Connectors

| | |
|---|---|
| 280-103M | Plug |
| 280-100F | Receptacle |

**SpeedMaster HiPer-D Insert Arrangements**




## SUPERNINE D38999 SERIES III TYPE

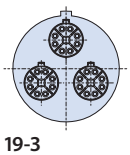
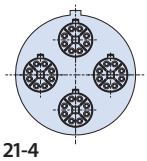
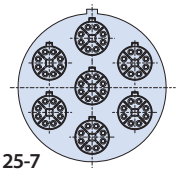
- **Advanced performance, "better than QPL" D38999 Series III type bodies and shells**
- **Optimized for SpeedMaster contact modules**

### 233-219 SpeedMaster SuperNine connectors

**G6** = Plug 38999/26
**05** = Receptacle, in-line
**07** = Receptacle, jam-nut 38999/24
**00** = Receptacle, wall mount 38999/20
**CM** = Receptacle, wall mount, metric clinch nuts
**CS** = Receptacle, wall mount, standard clinch nuts
**D0** = Receptacle, wall mount, thru holes
**HM** = Receptacle, wall mount, metric helicoils
**HS** = Receptacle, wall mount, standard helicoils
**T0** = Receptacle, wall mount, tapped holes

### 233-220 SpeedMaster SuperNine PC Tail connectors

**00** = Wall mount receptacle with slotted holes, standard standoff threads
**10** = Wall mount receptacle with slotted holes, metric standoff threads
**CM** = Wall mount receptacle with metric clinch nuts
**CS** = Wall mount receptacle with standard clinch nuts
**HM** = Wall mount receptacle with metric helicoils
**HS** = Wall mount receptacle with standard helicoils
**07** = Jam-nut receptacle

| SpeedMaster SuperNine Insert Arrangements | | | | |
|---|---|---|---|---|
| |  |  |  |  |
| | 11-1 | 19-3 | 21-4 | 25-7 |

## RECOMMENDED BACKSHELL

**377NS119** Aluminum Alloy Backshell



Dimensions in Inches (millimeters) are subject to change without notice.

SPLICE SAVER™

## Crimp wire termination solution saves time and labor over manual D0150 splicing



## Glenair SpliceSaver™ reduces manual wire splice and terminal block operations

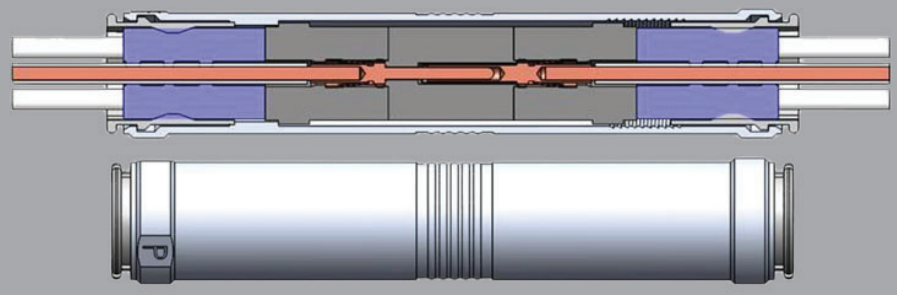
SpliceSaver™ is an innovative interconnect technology developed by Glenair for use in aircraft wiring operations that rely on heat shrink splicing of aircraft signal, sensor, and data transmission wiring. Single-piece SpliceSaver designs allow remote harness assembly facilities to pre-terminate each line with a crimp-and-poke contact. During aircraft wire harness installation, cabling is routed to interconnection points and the contact-equipped wires are quickly and easily installed into the lightweight single-piece SpliceSaver connector. Two-piece Spiralock® SpliceSaver designs enable the harness facility to terminate wires to the small form-factor, lightweight "connector" for subsequent mating on the aircraft. A special bussed version is also available. All SpliceSaver styles feature integrated banding platforms for the termination of EMI shielding utilizing qualified banding technology—one-piece design features three platforms for termination at both ends and in the center. Compared to legacy terminal blocks and wire splice technology, SpliceSaver offers faster, cleaner, and more reliable routing and termination of discrete wiring.

- **Lightweight construction**
- **Conductive (plated) or non-conductive versions**
- **Crimp contact technology: front release/rear removal**
- **Three to eleven circuits per unit**
- **Environmentally sealed**
- **Full-mate indicator**
- **Replaces labor-intensive terminal blocks and splices**

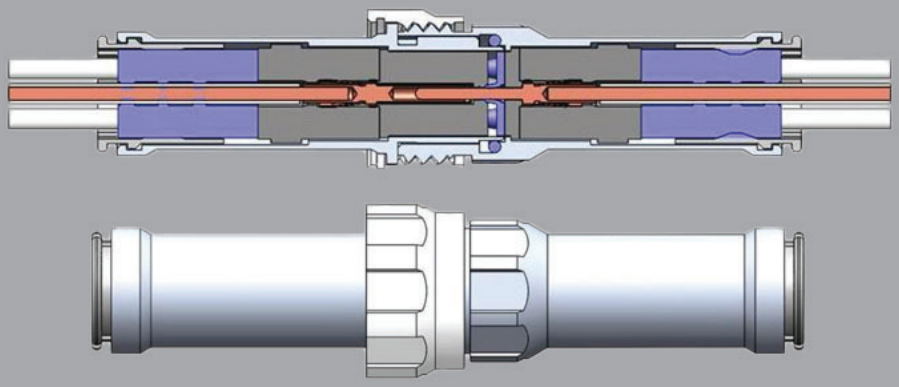
*TIME SAVING · LABOR SAVING · WEIGHT SAVING*

# SpliceSaver™ Fast and reliable replacement for wire splice and terminal block technologies

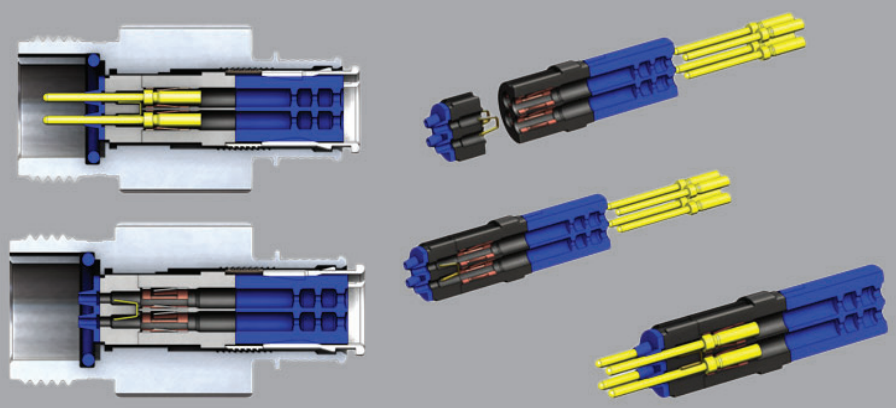
## SPLICESAVER AVAILABLE CONFIGURATIONS—FEATURES AND SPECIFICATIONS



Single-Piece



Spiralock® Threaded



Bussed

- **Triple ripple grommet wire seal for sealing at high altitude**
- **Machined contact utilizes mil-spec crimp tooling**
- **Contacts are removable allowing corrections to circuits during testing if required**

### SpliceSaver™ Specifications

**Altitude immersion:**
75,000 ft.

**DWV rating at altitude:**
>800 V

**Dielectric Withstanding Voltage Ratings:**
22AWG = 5 amps/contact
20AWG = 7.5 amps/contact

**Material and finish options** (for compatibility with available EMI/RFI braid materials)**:**
Cadmium-plated aluminum
Nickel-plated aluminum
Nickel-plated brass

### SpliceSaver™ Weight Analysis

**Receptacle connector:**
1.6 grams including contacts and seals

**Plug connector:**
1.66 grams including contacts and seals

**Total connector mass:**
5.66 grams (all contact locations installed)

**Accessories:** Add the variable mass of two or three nano bands trimmed to length of grooves in the split sleeve

GROUND SOLDIER

**Multiport USB hubs, cables, and peripheral device manager for soldier-worn power / data network applications**


# STAR-PAN™

## Powering soldier connectivity and C4ISR mission success

Ruggedized soldier-worn electronics have revolutionized mission effectiveness. But the ongoing evolution of Digitally Aided Close Air Support (DACAS) missions, including precision targeting, ground and air radio communications, real-time video downlink, GPS/navigation, and personal area network computing has added significant mission weight to the dismounted soldier ensemble. Battery power management for this broad range of electronic gear is a significant challenge in terms of mission time, weight and supply logistics. The Glenair STAR-PAN™ data hub and power distribution system enables soldiers—particularly in Joint Terminal Attack Controller (JTAC) roles—to make the most of C4ISR devices, improving situational awareness, surveillance, intelligence and reconnaissance while optimizing power monitoring, conditioning, and distribution performance. Importantly, all STAR-PAN™ technologies—from the high-density, NATO standard Mighty Mouse quick-disconnect connectors and cables to the low-profile hub enclosure itself—are designed for optimal size, weight, power, and ruggedized mil-spec performance with battle-tested environmental and EMC sealing and shielding.

- **Versatile 2, 4, and 6-port high-speed hub configurations**
- **Compatible with USB 1.1, USB 2.0, and SMBus**
- **Embedded power charging/conditioning electronics in all designs**
- **Smart power monitoring for longer mission life**
- **Robust circuit protection**
- **Sealed IAW the MIL-STD-810 harsh-environment standard**
- **New MISSION MANAGER for on-the-fly device integration to soldier C4ISR networks**

**Glenair's Tactical Interconnect Solutions team is backed by six decades of proven, made-in-America interconnect industry performance in service of US and NATO armed forces—including the United States Marine Corps, our latest STAR-PAN™ adopters and users.**

Export of STAR-PAN™ outside of the U.S. is controlled by the U.S. Department of Commerce Export Administration. See individual product pages for details. Consult factory for technology / hardware licensing information.

*JTAC-TOUGH™*

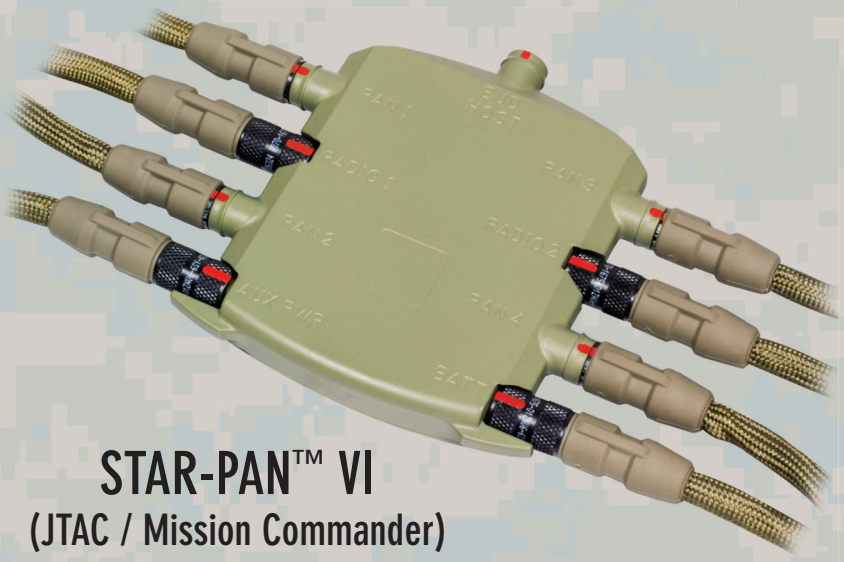
# STAR-PAN™ Scalable Soldier Networks

## Powering soldier connectivity and C4ISR mission success

### STAR-PAN™ SCALABLE SOLDIER NETWORKING HUBS AND DEVICE MANAGERS

**STAR-PAN™ Light**
(Standard Soldier)

**STAR-PAN™ II**
(Advanced Soldier)



**STAR-PAN™ VI**
(JTAC / Mission Commander)

**STAR-PAN™ MISSION MANAGER**
On-the-fly device integration

### OPEN-SYSTEM NETWORK SUPPORT FOR THE COMPLETE RANGE OF C4ISR DEVICES

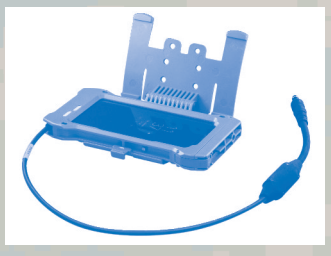
Radios

Batteries

Targeting

Video

GPS



Host / EUD

# STAR-PAN™ MISSION MANAGER

## brings intelligent data networking and on-the-fly device integration to soldier C4ISR networks

## GLENAIR MISSION MANAGER WITH MX QUICK-CONFIGURATION SOFTWARE

Remember when adding a printer or scanner to your office PC meant hours of work, installing drivers or struggling with complicated network configuration protocols? Nowadays, it's far more common for standard network devices—from routers to monitors to printers—to be instantly recognized by the PC operating system for immediate use.

Unfortunately, the same cannot be said for soldier C4ISR networks. Peripheral device configuration for both general use and mission-specific profiles is a complicated and time-consuming process that often must be repeated for each and every mission. The Glenair STAR-PAN™ MISSION MANAGER with MX quick-configuration software solves this problem by providing a plug-and-play bridge between the soldier's End User Device (EUD) and the C4ISR peripherals he depends on for mission success.


The STAR-PAN™ MISSION MANAGER is a Linux OS ARM-based embedded computing device that acts as a full-time host, brokering data between soldier USB peripherals and the EUD. In combination with Stauder Technologies' user-configurable MX application software, the STAR-PAN™ MISSION MANAGER makes connecting multiple devices to any EUD—before, during, or between missions—easier than ever before.

- **End User Device independent—no device rooting or custom ROM images needed**
- **Real-time, plug-and-play device integration**
- **Supports multiple simultaneous Ethernet devices**
- **Dedicated EUD port for connection to downstream EUD**
- **Minimal power demands**
- **Seamless integration into STAR-PAN systems**
- **NATO standard Mighty Mouse connector interface**
- **Mission Manager MX software Android, iOS, Windows and Linux compatible**
- **Export classification EAR99**

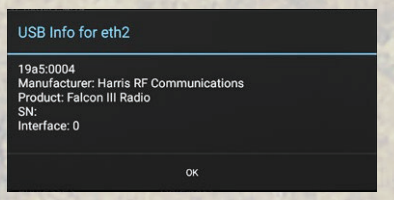
*STAR-PAN™*

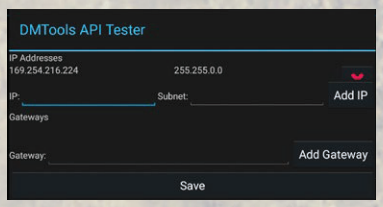
# Mission Manager with MX Software

## Plug-and-play EUD / USB peripheral data exchange

### FULL-TIME HOST TO BROKER DATA EXCHANGE BETWEEN SOLDIER USB PERIPHERALS AND THE EUD

Headless data management and routing for all open-system peripheral devices as shown below (lightweight single-radio configuration also supported for plug-and-play integration between radio and EUD).


STAR-PAN™ MISSION MANAGER MX software runs directly on the soldier's EUD to provide plug-and-play configuration and management of USB / Ethernet datalink connections and radios

### PERFORMANCE SPECIFICATIONS

Storage Temperature:-40°C to +80°C
Operating Temperature: -32° to +49°C
Operation Altitude: 9754 m
Storage Altitude: 15240m
Water Immersion: MIL-STD-810, Method 512; IP67 rated dust and water resistant

### STAR-PAN™ MISSION MANAGER MX SOFTWARE CAPABILITIES

The STAR-PAN™ MISSION MANAGER with Stauder Technologies' MX quick-configuration software eliminates the need for costly EUD OS development, and/or complicated device provisioning, by providing an intelligent interconnection bridge between the soldier's EUD and his C4ISR peripherals. The secure datalink software runs directly on the soldier's EUD providing a graphical user interface for configuration and management of USB / Ethernet datalink connections and radios. STAR-PAN™ MISSION MANAGER with MX software eliminates the need to retest or recertify complex systems after EUD update or replacement.



Contact
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**818-247-6000**

**Andrew Murdoch**
amurdoch@glenair.co.uk
**+44 1623 638100**

www.glenair.com/star-pan

# STAR-PAN™ Power Distribution and Management Architecture

## Symbiotic radio / battery power utilization and management for JTAC and other battery-power-intensive mission profiles

## *Smart Power = Longer Missions and Lighter Loads*

Board-level, embedded system power monitoring, conditioning and charging makes STAR-PAN the most powerful tool for extended mission life and operational effectiveness. *Smart power equals longer missions and lighter loads* by significantly reducing the number of batteries that must be carried by C4ISR-equiped soldiers. Available interconnect cabling and power adapter accessories facilitate accelerated charging of the EUD, radio and peripherals as well as power scavenging from conditioned DC power sources such as vehicles.

STAR-PAN EMBEDDED SYSTEM POWER MANAGEMENT

- **API interface for user-controlled power management**
- **Port priority, charge state, system battery state, and temperature protection**
- **Charge-circuitry for a wide range of smart batteries**

UNIVERSAL POWER AND DATA CONNECTOR INTERFACE

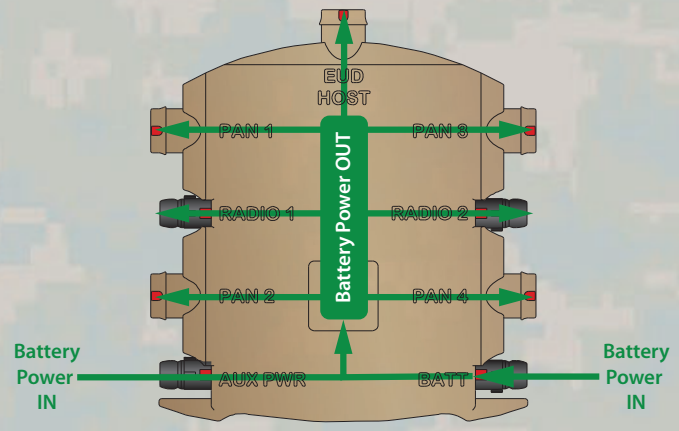
**The STAR-PAN system uses Glenair Mighty Mouse 807 connectors which are fully-compliant to US and NATO standards for EUDs, radios, batteries, and C4ISR peripherals. Many soldier batteries can be directly connected to the STAR-PAN system without adapters using the general-purpose Mighty-Mouse equipped C1 cable.**

*JTAC-TOUGH™*

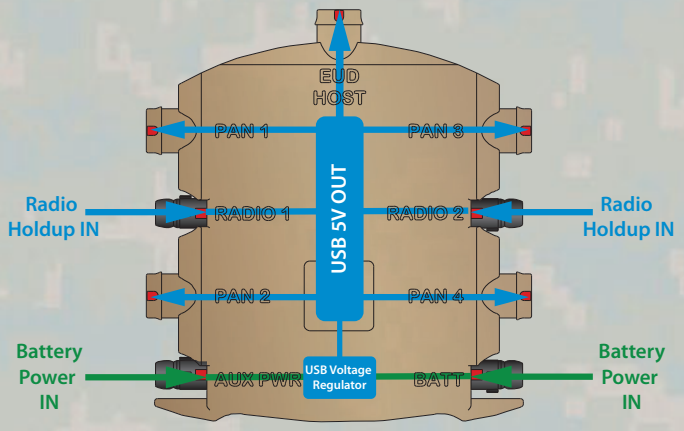
# STAR-PAN™

## Power distribution and management architecture

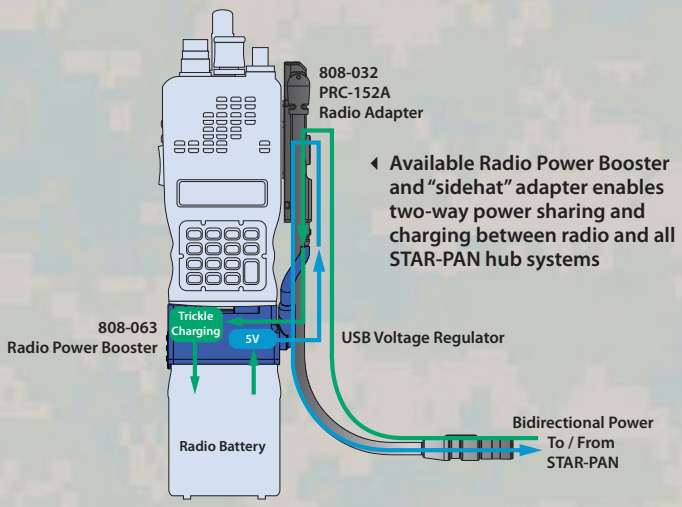
## STAR-PAN POWER DISTRIBUTION / CHARGING ARCHITECTURE (STAR-PAN VI SYSTEM SHOWN)



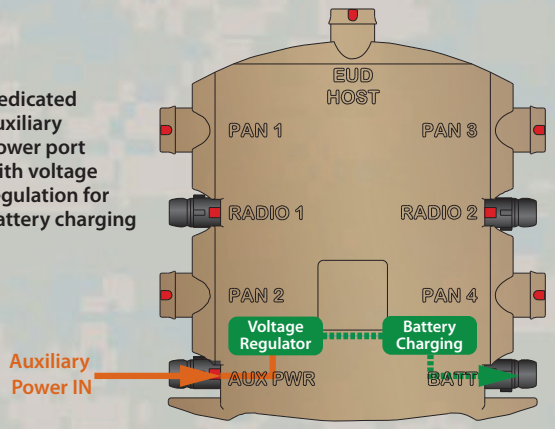

▲ Primary power distribution supports dual hot-swappable battery inputs routed to PAN, EUD, and Radio ports




▲ USB power layer supports regulation of input battery power for distribution to USB 2.0 devices and radio "holdup power IN" functionality




◀ Available Radio Power Booster and "sidehat" adapter enables two-way power sharing and charging between radio and all STAR-PAN hub systems




▶ Dedicated auxiliary power port with voltage regulation for battery charging

## STAR-PAN POWER BOOSTER AND SUPPORTED BATTERIES

The STAR-PAN system utilizes the standard SMBus battery protocol for compatibility with a wide range of military standard batteries, and standards-compliant smart battery charging. Power scavenging is supported from a variety of sources. Trickle charging of radio batteries and radio holdup-to-hub is fully enabled with the STAR-PAN radio power booster.

808-063 Radio Power Booster for two-way power sharing

BB-2590 /BA-5590 batteries

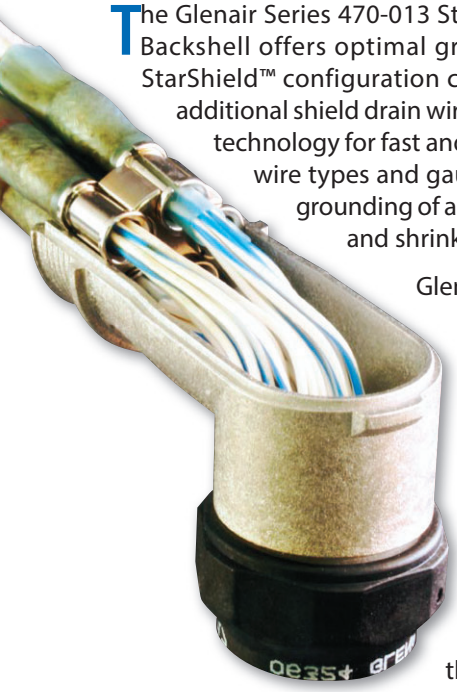
Handheld radio batteries

Conformal wearable batteries

Soldier smart batteries


# StarShield™

## Zero-length individual shield termination backshell



The Glenair Series 470-013 StarShield™ "Zero Length" Individual Shield Termination Backshell offers optimal grounding of EMI/EMP braided shielding. The unique StarShield™ configuration completely eliminates the need for the termination of additional shield drain wires or pigtails. The backshell utilizes familiar solder sleeve technology for fast and reliable termination of shielding—even with dissimilar wire types and gauges. Tightening the coupling nut in place effects 360° grounding of all conductive surfaces. Standard designs include banding and shrink-boot versions.

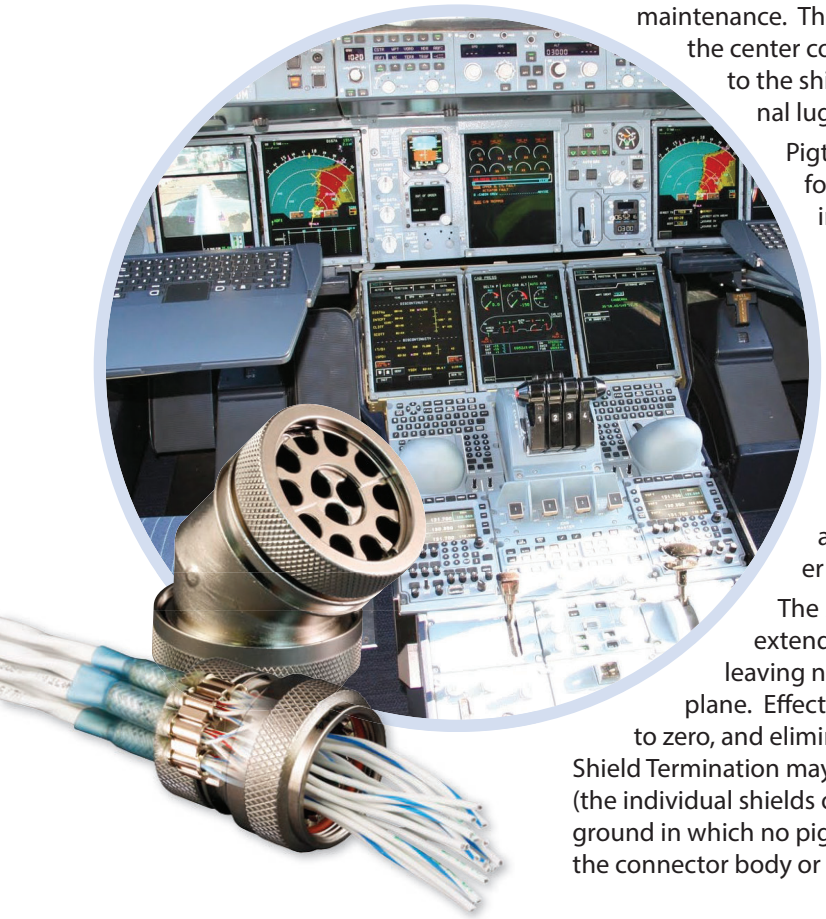
Glenair's StarShield "Zero Length Shield Termination" backshell methodology excludes pigtails or drain-wires altogether by providing termination platforms referred to as "ferrules" which allow individual shields to be terminated by a 360° solder connection in one easy process. The ferrules in-turn lock into a "star" that provide another 360° termination to the encapsulating ground plane of the backshell body. By eliminating the issues associated with pigtails or drain-wires, this system not only offers the highest level of EMC performance, but is also one of the most reliable, repairable individual shield termination methods on the market today.

- **The unique StarShield™ configuration completely eliminates "standing antenna" problems common with pigtail shield termination systems**
- **The backshell utilizes familiar heat shrink termination (HST) sleeve technology for fast and reliable termination of shielding—even with dissimilar wire types and gauges**
- **Standard configurations include threaded compression nut and tapered split-ring that fits snugly into a conical backshell or a lightweight split banding version**

# StarShield™

## Zero-length individual wire shield termination backshell

### WHAT IS STARSHIELD™"ZERO LENGTH SHIELD TERMINATION?"



For decades, bundles of individually shielded cables have been used to solve many electrical system design issues from cross-talk to wire-routing/management and maintenance. These individual shields were frequently "pigtailed" by pulling the center conductors through the outer shield, or by soldering drain-wires to the shield, then terminating these pigtails or drain wires via a terminal lug to the cable-clamp on the back of the connector.

Pigtails or drain wires, suffer from several shortcomings. First, they force shield current to flow in an asymmetrical manner yielding higher transfer impedances. Second, and perhaps more importantly, the pigtail or drain-wire itself creates a "loop in the shield" or "standing antenna" effect. Coupled with the exposed lengths of unshielded wires, this condition acts as a receptor and/or radiator of noise. EMC performance will drop to unacceptable levels at higher frequencies dependent on the length of the pigtail. Over the years, more elegant methods of terminating pigtails or drain-wires have been developed that effectively shorten these lengths, however the underlying issue still exists—particularly in higher-bandwidth and less noise-tolerant applications which demand ever-shorter pigtail lengths for acceptable performance.

The best connection is one in which the individual shields are extended up to and make solid 360° connections to the backshell leaving no length of unshielded wires exposed outside of the ground plane. Effectively, this reduces the length of the pigtails or drain-wires to zero, and eliminates the standing antenna. Said another way, Zero Length Shield Termination may be achieved via a 360° termination of signal group shields (the individual shields over the wires or twisted pairs in a bundle) to an encapsulating ground in which no pigtails or drain wires are necessary to terminate the shields to the connector body or backshell.

| Test Description | StarShield™ Performance Requirements | Procedure |
|---|---|---|
| Magnetic Permeability | Relative permeability less than 2.0 for aluminum and 5.0 for stainless steel. | EIA-364.54 |
| DC resistance | Resistance was measured between connector/fixture, and ferrule or a point near the end of the cable shield. Cable shield resistance was subtracted when measuring to a point near the end of the cable shield. The DC resistance did not exceed 5 milliohms after conditioning. | EIA-364.6 |
| Durability | Backshells subjected to 10 cycles of assembly and disassembly (not including HST device). Showed no evidence of damage detrimental to performance. | GPS470013 |
| Coupling Thread Strength | After testing, backshell showed no evidence of damage detrimental to performance. | SAE AS85049 category 3A |
| Vibration | Backshell was torqued to a suitable test fixture representative of an actual connector. Cable bundle was clamped or otherwise secured at 10.0 +/-.5 inches from the test fixture. After testing, Backshell showed no evidence of loosening or damage detrimental to performance with no discontinuities >1g5. | EIA-364.28<br>Condition VI, letter J<br>8 hrs/axis, monitored |
| Shock | The pulse was approximate half sine wave of 300 G ± 15 percent magnitude with duration of 3 ± 1 milliseconds. The wire bundle was clamped or otherwise secured at 10.0 +/-.5 inches from the test fixture. After testing, Backshell showed no evidence of loosening or damage detrimental to performance with no discontinuities >1g5. | EIA-364.27 |
| Bending Moment | After testing, backshell showed no evidence of loosening or damage detrimental to performance. | AS85049, category 3A (heavy duty) |
| Cable Pull-out | A minimum of one ferrule per backshell was tested and wired with 4 shielded twisted pairs. DC resistance was monitored during the test. DC resistance during the test did not exceed 7 milliohms. | EIA364.38, condition E (25lbs) |
| Shielding effectiveness | One representative medium size StarShield™ backshell was fitted to a brass or copper fixture, wired with copper tubes and tested in accordance with VG95373-41. Shielding effectiveness was greater than 98 dB at 30 MHz and 90 dB at 100 MHz | VG95373-41 |

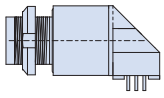
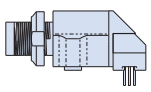
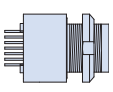
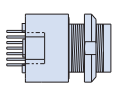
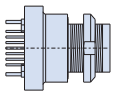
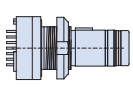
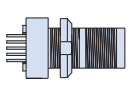
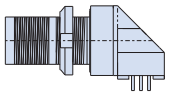
GROUND SOLDIER

# SuperFly® The ultimate nanominiature tactical connector

## Mighty Mouse not small enough? Meet the toughest, smallest, and highest-speed connector we've got—ideal for soldier-wearable C4ISR equipment

- Push-pull version with high / low force release option
- Threaded version for secure mating
- Hybrid contact system
- First mate / last break power contacts
- Layouts and contact spacing optimized for high-speed

### PRINTED CIRCUIT BOARD PLUG AND RECEPTACLES

| Quick-Disconnect | | | | | | Threaded | |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |
| Right Angle, Rear Panel Mount | Right Angle, Rear Panel Mount, PCB Mounting Holes | Vertical, Rear Panel Mount | Vertical, Rear Panel Mount, PCB Mounting Holes | Vertical, Rear Panel Mount, Ground Pins | Vertical Plug, Rear Panel Mount | Vertical, Rear Panel Mount | Right Angle, Rear Panel Mount |

# SuperFly® Ultraminiature Soldier System Connectors and Cordsets

## ULTRAMINIATURE SUPERFLY® CORDSETS AND PIGTAILS

Overmolded threaded plug and receptaclev

Threaded pigtail plug and receptacle

Quick-disconnect overmolded cordset

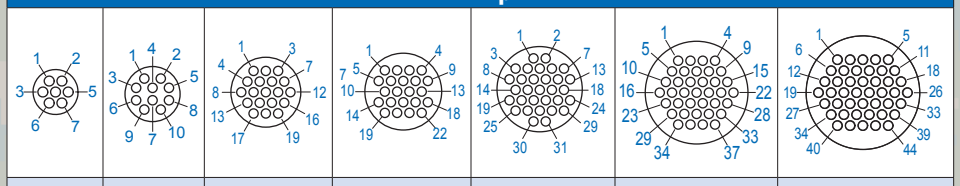
Quick-disconnect pigtail plug and jam nut receptacle

- IP67 immersion rated
- High-reliability contacts: 5 Amp, 3 Amp, and 1 Amp
- High shock and vibration
- Robust EMI shielding
- Designed for high speed data applications
- Pre-wired, epoxy-sealed cordsets
- Straight and 90° PC tail receptacles
- 27 Contact arrangements
- Front or rear panel mounting
- Aluminum or stainless steel
- Accepts #22 to #32 AWG wire

## CONTACT ARRANGEMENTS

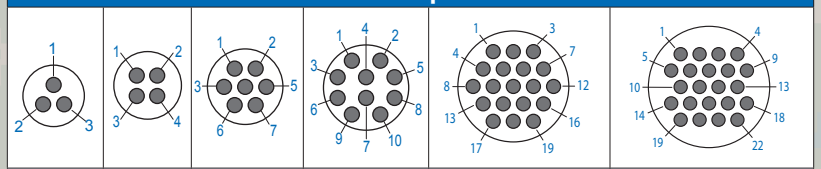
Series 88 SuperFly connectors are available in 27 contact arrangements with 1 Amp, 3 Amp, 5 Amp contacts, and mixed-contact hybrid arrangements

### 1 Amp



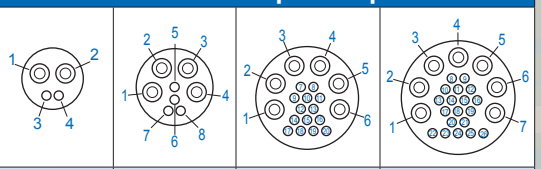
| B7N | C10N | E19N | F22N | G31N | H37N | J44N |
|---|---|---|---|---|---|---|
| (7) 1A | (10) 1A | (19) 1A | (22) 1A | (31) 1A | (37) 1A | (44) 1A |

### 3 Amp



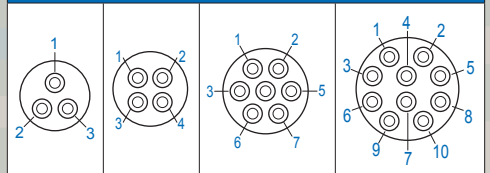
| D3M | E4M | F7M | G10M | K19M | L22M |
|---|---|---|---|---|---|
| (3) 3A | (4) 3A | (7) 3A | (10) 3A | (19) 3A | (22) 3A |

### Combo 1 Amp & 5 Amp



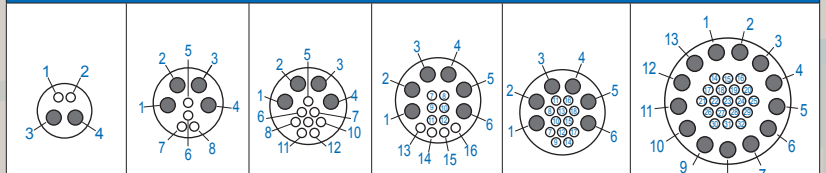
| D2W2N | F4W4N | H6W14N | J7W19N |
|---|---|---|---|
| (2) 1A, (2) 5A | (4) 1A, (4) 5A | (14) 1A, (6) 5A | (19) 1A, (7) 5A |

### 5 Amp Contacts



| E3W | F4W | G7W | H10W |
|---|---|---|---|
| (3) 5A | (4) 5A | (7) 5A | (10) 5A |

### Combo 1 Amp & 3 Amp



| C2M2N | E4M4N | F4M8N | G6M10N | G6M12N | K13M19N |
|---|---|---|---|---|---|
| (2) 1A, (2) 3A | (4) 1A, (4) 3A | (8) 1A, (4) 3A | (10) 1A, (6) 3A | (12) 1A, (6) 3A | (19) 1A, (13) 3A |

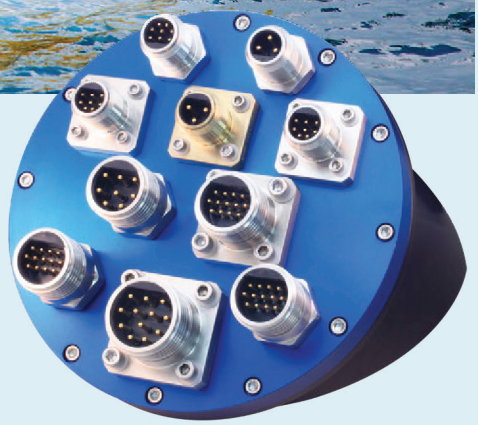
Glenair®

## *MISSION-CRITICAL UNDERWATER*
# INTERCONNECT SOLUTIONS

Most aggressive lead times in the industry · Vertically integrated and made in the USA
Custom solutions, no miniumum order quantities
Accessible and responsive engineering support · Obsessed with quality and qualification
Superior technical designs for extended durability and performance


# SuperG55 Underwater 10K PSI

## Improved-performance “55” series intermateable



High-pressure open face bulkhead (BCR) and flange receptacles (FCR)

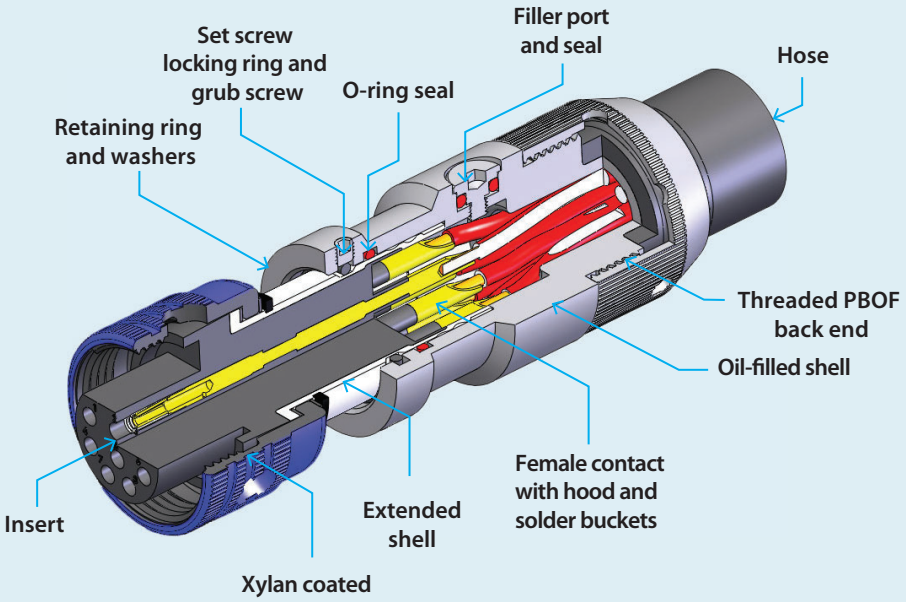
- **10,000 psi mated/unmated (approx. 22,500ft/7,000m)**
- **Recessed socket contacts in plugs for electrical safety**
- **Intermateable and intermountable with other “55” series connectors**
- **4 shell sizes — 15, 20, 24 and 32 with 3 to 39 contacts**
- **PBOF versions available**
- **600 VDC, 5 to 18 Amps (dependent on cable and conductor size and make-up)**

*10K PSI / 700 BAR / 7000M*

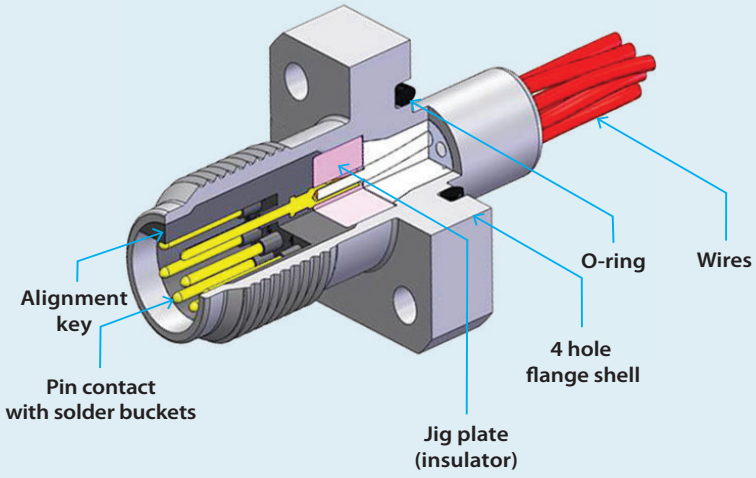
# SuperG55™ High-Pressure, Dry-Mate Underwater Connectors

## Key mechanical and environmental features

### SUPERG55™ PRESSURE-BALANCED OIL-FILLED CABLE CONNECTOR PLUG (CCP)




### SUPERG55™ FLANGE CONNECTOR RECEPTACLE (FCR)



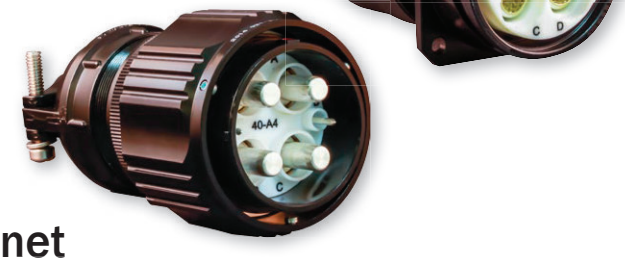

| Material Finish Codes | | | |
|---|---|---|---|
| Code | Material/Finish | Code | Material/Finish |
| | Anodized Aluminum | PK | Composite Thermoplastic (PEEK) |
| NAB2 | Aluminum Bronze | B | Brass |
| T | Titanium | Alternative materials available, contact factory | |

| SuperG55™ Performance Specifications | |
|---|---|
| Mating Cycles | 500 |
| Pressure | 689 Bar (10,000 PSI) Mated and Un-mated |
| Operating Temperature | -20°C to +90°C |
| Voltage Rating | 600 VDC / 440 Vac |
| Current (max.) | 5 to 18 Amps (dependant on contact and cable conductor sizes) |

| SuperG55™ Material/Finish | |
|---|---|
| Shells | 316L Stainless Steel/ Passivated |
| Insulator | PEEK/NA |
| Insert | Neoprene/NA |
| Contacts | Copper Alloy/Gold Plated |
| O-rings | Nitrile/NA |
| Overmold and Cable | Polyurethane or Neoprene/NA |
| Coupling Nut | 316L Stainless Steel/ Protective Coating Blue |
| Bulkhead Receptacle Tails | PTFE Insulated 16 AWG Wire/NA |
| Cable | Polyurethane or Neoprene Jacketed/NA |

**NON-STANDARD MATERIALS:** Other material options are available as part of our non-catalog offerings including anodized aluminum, titanium, and aluminum bronze. Glenair is also able to supply SuperG55™ interconnects in composite thermoplastic (PEEK) to meet application requirements for reduced cathodic corrosion as well as weight reduction without affecting connector performance.

**HIGH-SPEED ETHERNET:** The SuperG55™ Ethernet option is available in the 1508, 2013 and 2021 contact configurations and provides both high speed (Up to 1GB) and power (600 Volts) in a full subsea environment (10,000 PSI). Gigabit speed data transfer up to a distance of 75mtrs.





SERIES 921

# Super ITS

## Ultra high-performance reverse-bayonet power connectors

Reverse-bayonet derivatives of MIL-DTL-5015 (VG95234) connectors have long been preferred for their rapid mating and rugged resistance to vibration and shock in harsh environment applications such as mass transit, rail, and military vehicles. Now Glenair introduces an ultra high-performance version of the reverse-bayonet 5015 power connector called the Super ITS. This series is designed for high-ampacity applications where low insertion force LouverBand type contacts, mechanical contact retention, broad temperature tolerance, and superior connector and wire sealing is required.

Super ITS is an extremely durable and environmentally-sealed connector, designed in accordance with legacy MIL-C-5015, EN50124, and VDE 0110-1 requirements. Unlike conventional 5015-type connectors designed for industrial and rail applications, the Super ITS offers uncompromised electrical, mechanical, and environmental performance—including an unprecedented 2000 mating cycles. Designed for extreme harsh environments such as are found in heavy industries, mining, military vehicles, offshore and shipboard applications, the Super ITS delivers contact and wire support from #16 to 2/0 and 1 mmq – 70 mmq respectively. With ampacity up to 350 amps, and a max working voltage of 2450 VCC / 1750 VCA, the Super ITS represents the ultimate in industrial power interconnection.

- **Low insertion force, high-ampacity front-release contacts**
- **Rigid insulator with internal retention clip**
- **Aluminum, stainless steel or marine bronze shells with polarization keys**
- **Connector O-ring and individual wire sealing grommets**
- **High temperature range: -55° to +180°C**
- **2000 mating cycles**

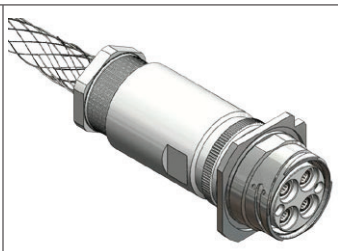
*SERIES 921*

# Super ITS

## Ultra high-performance reverse-bayonet power connectors

SUPER™ ITS

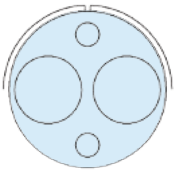
### PRODUCT SELECTION GUIDE

| | | | |
|---|---|---|---|
|  |  |  |  |
| **Wall Mount Receptacle Connector** | **Straight Plug connector** | **Jam Nut Receptacle Connector** | **In-Line Receptacle Connector** |

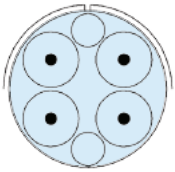
### CONTACT ARRANGEMENTS

**CONTACT SYMBOLS**

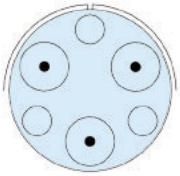

Mating face views, pin connectors. Socket arrangements are reversed.



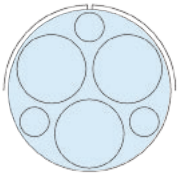
**24-GL9**
2 #4, 2 #16



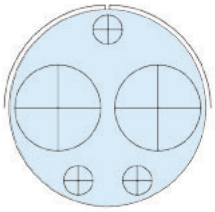
**24-06**
4 #8, 2 #16



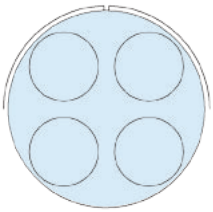
**28-GL3**
3 #8, 3 #16



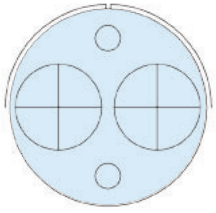
**28-22**
3 #4, 3 #16



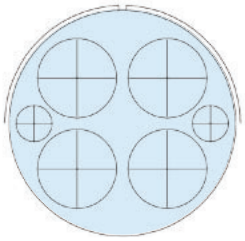
**32-1**
2 #0, 3 #12



**32-17**
4 #4



**32-GL5**
2 #0, 2 #16



**40-A4**
4 #0, 2 #12

| Performance Comparison: ITS vs Series 921 Super ITS | | |
|---|---|---|
| | **ITS** | **Series 921 Super ITS** |
| Mating Cycles | 500 | 2000 |
| Mating Face Sealing | FRONT O-RING | SEALING O-RING |
| Polarization Key | NO | YES |
| Power Contacts | COPPER ALLOY | LOUVER BAND, HIGER AMPACITY, L.I.F. |
| Insert | RUBBER | HIGH TEMP/RIGID INSERT + INTERNAL CLIP |
| Grommet | RUBBER | INDIVIDUAL CONTACT SEAL (Silicon) |
| Hard Anodization | NO | YES |
| Temperature Range | -55 / +125°C | -55 / +180°C |
| Working Voltage | MIL-C-5015 | MIL-C-5015, EN50124, VDE 0110-1 |

ADVANCED-
PERFORMANCE
MIL-AERO
CONNECTORS

# SuperNine®

## The advanced-performance MIL-DTL-38999 Series III style connector


Better than QPL? SuperNine® is the interconnect industry's most complete and advanced D38999 Series III type connector family. From IP-68 rated environmental-class connectors with improved durability, high vibration resistance, and ease-of-use, to EMI/EMP filter connectors with innovative flange and PC tail termination configurations, SuperNine® offers military and commercial aerospace customers that have standardized on Series III technology the opportunity to improve interconnect system performance and resolve a wide range of persistent electrical, environmental, and mechanical performance problems—all with catalog (COTS) connector solutions backed by Glenair's high-availability business model.

SuperNine® offers improved durability, sealing, cost-of-ownership, ease of shield termination, a broader range of PC tail configurations, environmental and hermetic bulkhead feed-throughs, connector savers, off-the-shelf EMI/EMP filter connectors and more—all supported with Glenair's well-established reputation for service, support, and fast turnaround.


Now available: the interconnect industry's most advanced and comprehensive MIL-DTL-38999 Series III connector series

Glenair SuperNine® connectors in action: in this example, a pair of our advanced fiber optic interconnects cabled-up in a turnkey, environmentally sealed point-to-point jumper

SERIES 23

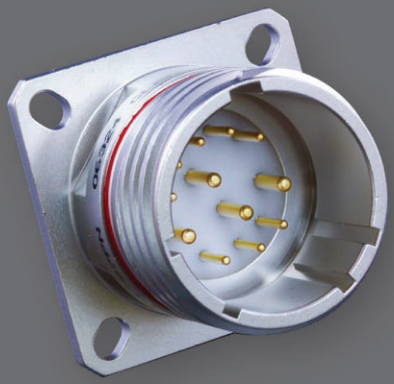
# SuperNine®

## MIL-DTL-38999 Series III Type

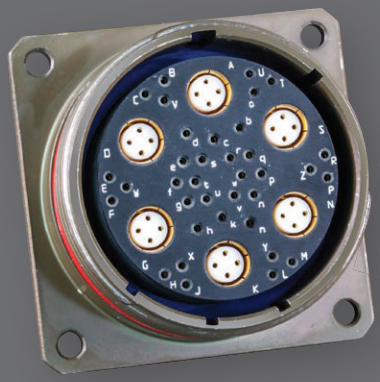
## Advanced Performance Connectors

SuperNine® environmental class connectors with high-vibe 1500 mating cycle performance

SuperNine® ruggedized RJ45 and USB connectors including USB 3.0 SuperSpeed



SuperNine® glass and lightweight CODE RED hermetic connectors



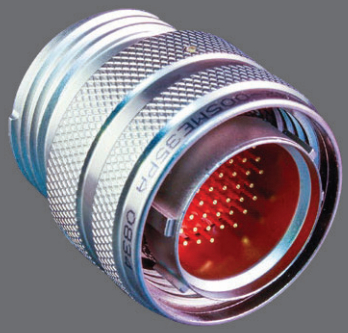
SuperNine® high-speed datalink connectors with Quadraxial or El Ochito® contacts

SuperNine® EMI/EMP filtered receptacles, plugs, and savers

SuperNine® tight-tolerance fiber optic connectors and cable assemblies

SuperNine® parylene-compatible PC tail connectors

SuperNine® space-grade assisted separation force connectors



SuperNine® Sav-Con® connector savers and go-betweens

RJ45/USB
SUPER SEAL™

## SUPERSEAL™

# Ruggedized RJ45 and USB connectors for applications as diverse as military ground vehicles to passenger IFE

## IP67 open-face, robust insert-to-shell grounding, complete range of wire, cable, and circuit board terminations

MIL-DTL-38999 Series III with sealed RJ45

MIL-DTL-38999 Series III with RJ45 USB cable assemblies

High-capacity, high-speed USB data stick

- **Superior sealing—IP67 unmated—for complete system protection against water, sand and dust**
- **Highly durable RJ45 design, including enhanced operating temperature, increased life-cycle, and rugged vibration and shock performance**
- **Shielded/grounded coupler designs in both receptacle and plug connectors**
- **Crimp, solder-cup, PC tail, and Quadrax contact/wire termination options**
- **RJ45 plug and/or jack interface options available in Cat 5e**
- **MIL-DTL-38999 type versions intermateable with other RJ45 field-duty connectors**

*RJ45 ETHERNET AND USB 2.0*

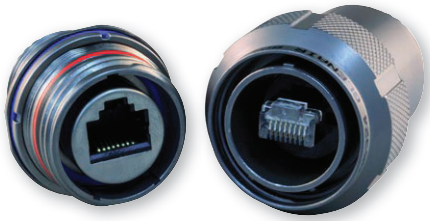
# Introduction and Technical Reference

## SuperSeal connector overview

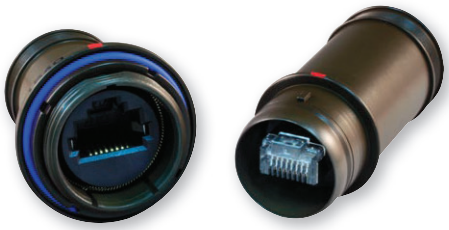
### AVAILABLE TERMINATION OPTIONS

Solder Cup | PC tail | Crimp | Jack-to-Jack | EMI Filtered | Quadrax | MIL-STD-1560 Arrangements

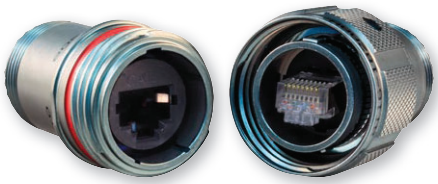
### RJ45 / USB SERIES 801, 804 AND 805 MIGHTY MOUSE



Series 801 double-start



Series 804 push-pull



Series 805 triple-start

Series 801 double-start

Series 804 push-pull

Series 805 triple-start

### ADDITIONAL PACKAGING OPTIONS

ITS (5015 Intermountable), RJ45 Cat 5e or USB 2.0

IPT 26482 Type, RJ45 or USB 2.0

28840 RJ45 Cat 5e or USB 2.0

NEXT-GENERATION
MICRO
MINIATURE
CONNECTORS

# Super Twin®

## Lightweight Composite Modular Connectors


## High-density drop-in replacements for legacy modular rectangular connectors save weight, space, and assembly time

The Glenair Series 20 Super-Twin™ lightweight modular connector is a drop-in replacement for legacy cable and panel connectors that no longer meet packaging requirements and performance specifications—especially for ease of assembly, electromagnetic compatibility and size, weight and power optimization.

The Glenair Series 20 Super-Twin™ can accommodate a broad range of contact sizes and types from #23 to #8 signal, Quadrax, El Ochito®, power, and fiber. Modular inserts offer fast and flexible assembly and repair. Peripheral and grommet seals provide outstanding environmental protection. Keyed inserts and shells provide versatile polarization and protection against mis-mating. The innovative clamshell and banding porch design brings modern, state-of-the-art connector capabilities to modular cable and panel applications. The lightweight connector is used in cable as well as panel/avionics bay applications, and is designed to replace larger and heavier legacy connectors.

- **For reduced size and weight cable and panel applications**
- **Flexible assembly and repair**
- **Environmentally sealed**
- **Meets highest performance requirements for rack-and-panel modular systems**
- **Replaces heavier and larger legacy connectors**
- **Series 200: modular inserts, composite shell, integral strain relief/backshell**
- **Series 201: separate backshell, crimp or PC tail, typically composite shells. Mates with Sr. 200**

*SERIES 20 SUPER-TWIN™*

# Lightweight composite connector for cable and rack-and-panel applications

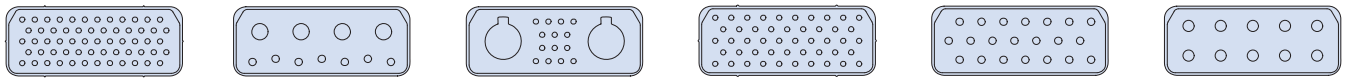
## SUPER-TWIN™ TECHNICAL OVERVIEW


### Weight Study, Typical Regional Jet Airframe

Series 20 Super-Twin™
Mated Pair: 67g
Weight/Plane: 7,661g
Legacy rectangular: aluminum
Mated Pair: 192g
Weight/Plane: 22,103g
Legacy rectangular: composite
Mated Pair: 141g
Weight/Plane: 16,123g

**Summary:**
Using Series 20 composite instead of legacy aluminum connector saves **14,442 grams** (31.8 lbs) per plane. Using Series 20 composite instead of legacy composite connector saves **8,482 grams** (18.6 lbs) per plane

**SUPERTWIN™ SIZE 2 CONTACT ARRANGEMENTS**



PATTERN 60
60 X Size 23 Contacts
DWV= 750 VAC

PATTERN 7W4
4 X Size 12 Contacts
7 X Size 20 Contacts
DWV= 1500 VAC

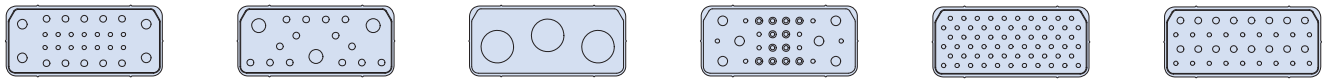
PATTERN 14Q2
2 X Size 8 Contacts
14 X Size 23 Contacts
DWV= 750 VAC

PATTERN 48
48 X Size 23 Contacts
DWV= 1300 VAC
DWV@50 000 ft = 800 VAC

PATTERN 21
21 X Size 20 Contacts
DWV= 1500 VAC

PATTERN 10
10x Size 16 Contacts
DWV= 1500 VAC

**SUPERTWIN™ SIZE 3 CONTACT ARRANGEMENTS**



PATTERN 28
14 x Size 23 Contacts
10x Size 20 Contacts
4x Size 16 Contacts
DWV= 1300VAC

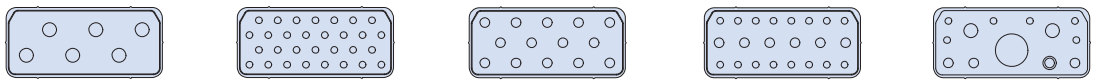
PATTERN 14W3
3 x Size 12 Contacts
14 x Size 20 Contacts
DWV= 1500 VAC

PATTERN W3
3 x Size 8 Contacts
DWV= 1500 VAC

PATTERN J28
22 x Size 23 Contacts
6 x Size 16 Contacts
DWV= 1500 VAC

PATTERN 63
63 x Size 23 Contacts
DWV= 1300 VAC
DWV@50 000 ft = 800 VAC

PATTERN 34
18 x Size 23 Contacts
16 x Size 20 Contacts
DWV= 1500 VAC



PATTERN W6
6 x Size 12 Contacts
DWV= 1500VAC

PATTERN 30
30 x Size 20 Contacts
DWV= 1500 VAC

PATTERN 14
14 x Size 16 Contacts
DWV= 1500 VAC

PATTERN 22
16 x Size 20 Contacts
6 x Size 16 Contacts
DWV= 1500VAC

PATTERN 12W1
2x Size 12 Contacts/ 1x Size 8
/ 4 x Size 16 / 6 x Size 20
DWV= 1500VAC

**Keyed, snap-in-place insert modules are currently available in seventeen tooled layouts, accommodating size #23, #20, #16, #12 and keyed size #8 contacts (for use with Quadrax or El Ochito™ contacts).**

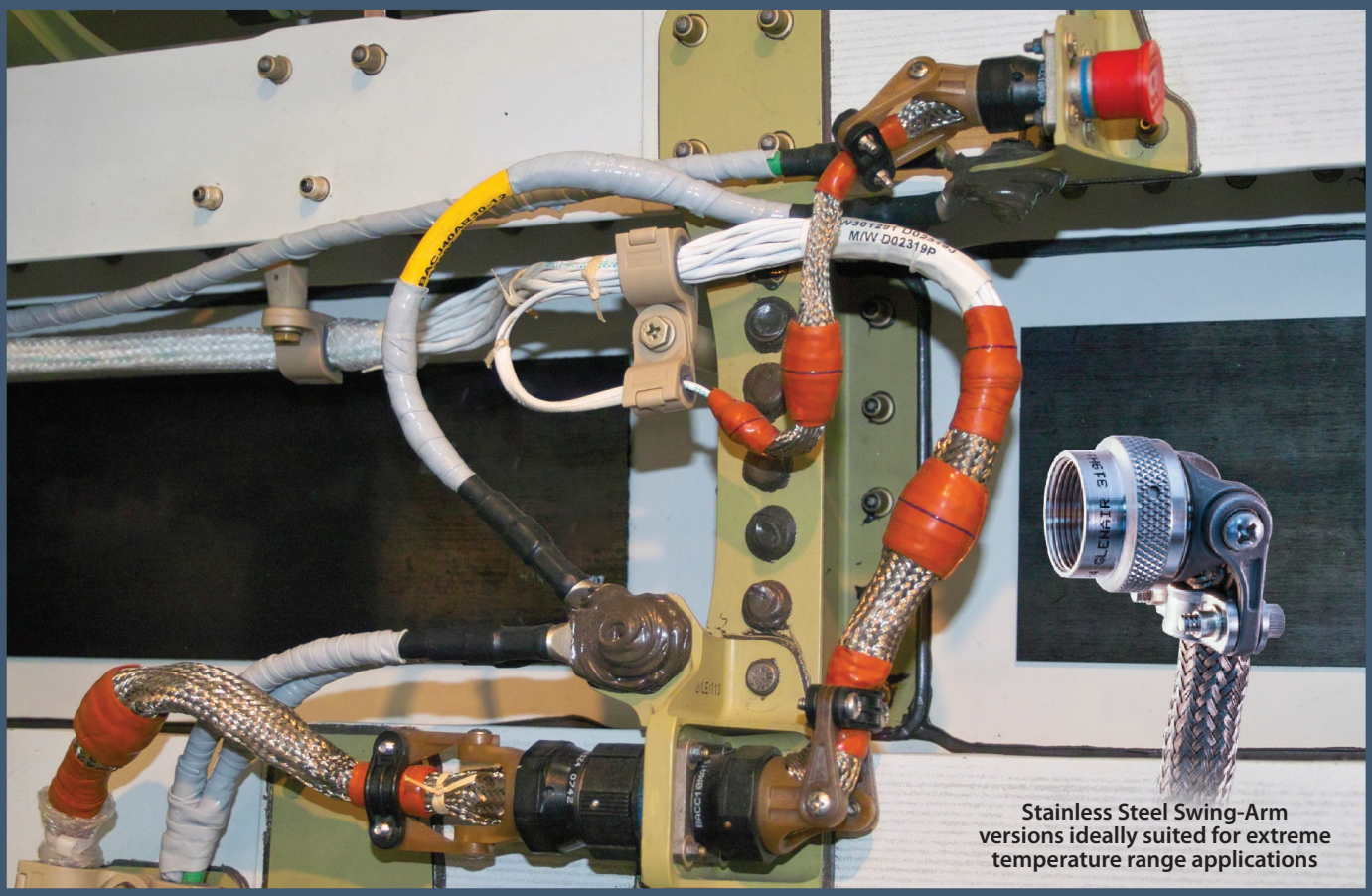
**Modular inserts easily removed with available tool**

**Center jackscrew for secure connector-to-connector mating**

ADVANCED PERFORMANCE
CONNECTOR ACCESSORIES

# SWING ARM®

## 3-in-1 lightweight composite or stainless steel backshell with optional drop-in braid termination follower



Stainless Steel Swing-Arm versions ideally suited for extreme temperature range applications

Glenair's composite Swing-Arm® strain relief backshell is a lightweight and corrosion-free cable clamp with cable shield termination options for a wide range of EWIS applications. This innovative backshell has become the standard shield termination device for weight reduction in military and commercial airframe applications. Made from temperature-tolerant composite thermoplastic, rugged Swing-Arm® backshells offer easy installation, long-term performance, and outstanding weight and SKU reduction. Performance tested to stringent AS85049 mechanical and electrical standards and available for all commonly-specified mil-standard and commercial cylindrical connectors including MIL-DTL-38999 and Glenair Series 806 Mil-Aero connectors.

SWING ARM®
COMPOSITE THREE-IN-ONE BACKSHELL
FLEX

User-configurable straight, 45°, and 90° cable routing

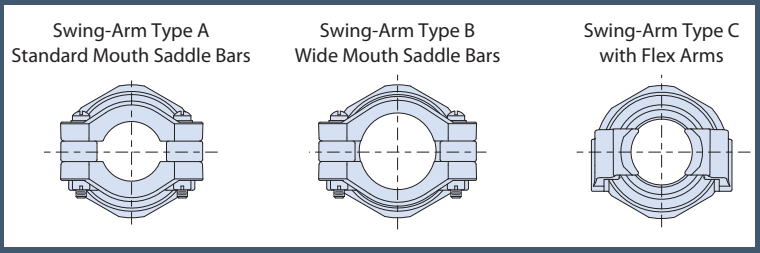
### Introducing Swing-Arm FLEX®, Glenair Next-Generation Composite Swing-Arm® Strain Relief

- Significant weight reduction: no saddle bars or hardware
- Rapid assembly: cable self-centers on bundle, little or no wrapping tape required
- Braid sock and drop-in band termination follower versions for EMI/RFI applications
- Internal conductive ground path

# Swing-Arm 3-in-1 lightweight composite or stainless steel strain-relief and EMI/RFI shield termination backshell

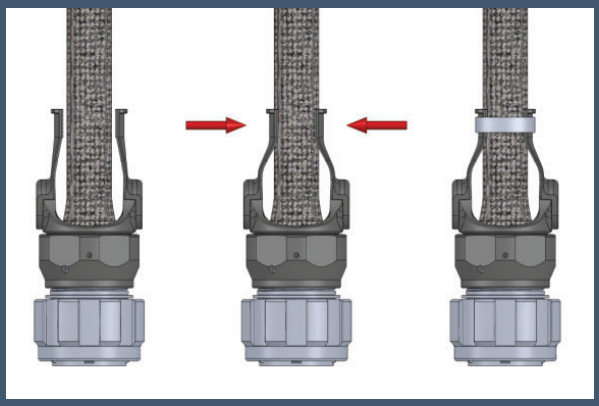
## THREE STYLES OF SWING-ARM STRAIN RELIEF CLAMPS

- **Style A - standard mouth, rigid saddle bars**
- **Style B - wide mouth (for larger cable diameters), rigid saddle bars**
- **Style C Swing-Arm FLEX - no saddle bars, self-centering round cable strain relief**




## SWING-ARM VERSATILITY: FROM SIMPLE CABLE STRAIN RELIEF TO EMI/RFI SHIELD TERMINATION

Fast and reliable termination of individual wire and overall EMI cable shielding with industry-standard Band-Master ATS® tools and straps. New slim profile bands eliminate sharp strap cutoff for improved safety.



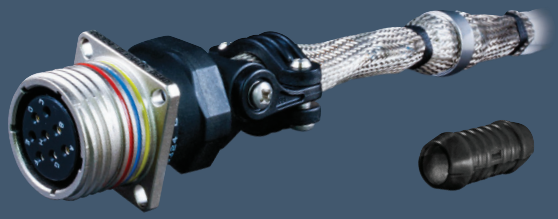
## DROP-IN FOLLOWER FOR DIRECT TERMINATION OF OVERALL OR INDIVIDUAL WIRE SHIELDING

Two drop-in-follower designs, solid and slotted are available for all Swing-Arm styles (A, B, and C).

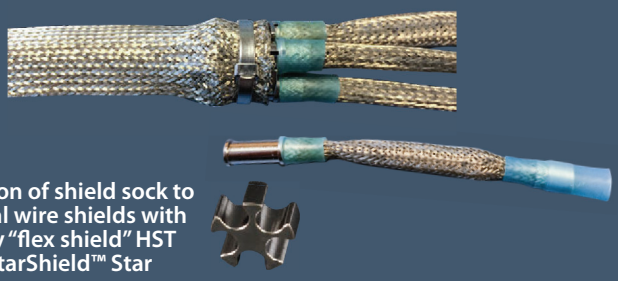
## SWING-ARM AND SWING-ARM FLEX WITH OPTIONAL INTEGRATED SHIELD SOCK

For fast and reliable EMI/RFI shield termination of individual wire and overall cable shielding

## SWING-ARM SHIELD SOCK TERMINATION OPTIONS, STANDARD SPLIT RING OR STARSHIELD STAR



Termination of shield sock to cable shield with split support ring



Termination of shield sock to individual wire shields with auxiliary "flex shield" HST and StarShield™ Star

Glenair®

EXTREME TEMPERATURE

# ThermaRex Interconnect Solutions

## Cryogenic and high-temperature tolerant connectors, cables, and conduit systems

ThermaRex™

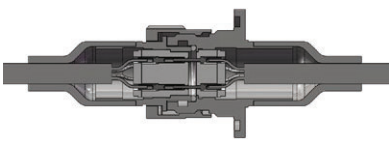
CONNECTORS

Sensor devices in aerospace engine applications are increasingly exposed to higher temperature operating environments. Environmental sensors in nuclear power reactors—an extremely high temperature and radiation-rich environment—are also exposed to temperature extremes well beyond the capabilities of conventional interconnect devices. Glenair ThermaRex interconnect solutions are designed to survive and excel in high continuous operating temperature application environments up to 600°C. The ThermaRex product family includes connectors, cables, and wire protection conduit systems.

### 300°C THERMAREX HT CONNECTOR

- **Service rating up to 300°C**
- **Vibration-resistant threaded coupling**
- **High-temperature ceramic insulators and silicone seals**
- **Durable stainless steel construction**
- **Available in Mighty Mouse, and SuperNine® D38999**
- **Utilizes Glenair Crown Ring contacts**

### 600°C THERMAREX UHT CONNECTOR



- **300°C to 600°C service range**
- **Vibration-resistant threaded coupling**
- **Specialized contacts, laser welds, and metal seals**
- **Utilizes ultra-high temperature-tolerant Mineral Insulated cable**
- **Ideal for nuclear and other extreme temperature applications**

*HIGH-TEMPERATURE TOLERANT*

# ThermaRex Interconnect Solutions

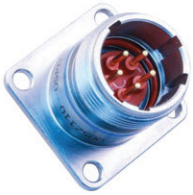
## Product showcase

### -150°C THERMAREX CRYO CONNECTOR

ThermaRex™ CRYO

- Dynamic cryogenic connector
- Vibration at -150°C
- Ultra low-temperature Duralectric K seals

### THERMAREX HIGH-TEMPERATURE HERMETIC

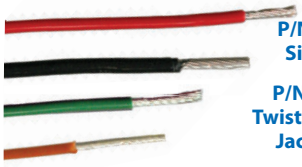


- High-temperature sealing technology maintains 1X10$^{-7}$ leak-rate performance at 300°C

### CROWN RING CONTACTS

- Crimp removable contacts
- Suitable for use at 300°C or higher while maintaining low electrical resistance
- Stainless steel Crown Ring provides compression force on the socket
- Superior vibration resistance
- Higher current carrying capabilities, lower contact resistance

### 300°C THERMAREX WIRE



P/N 961-047 - Single Wire

P/N 960-2371 - Twisted, Shielded, Jacketed Pair

- Special nickel-coated copper alloy conductors
- 300°C continuous service
- 24 to 8 AWG, 10 colors of insulation
- Single-wires plus jacketed, shielded, twisted pair available

### 300°C THERMAREX POLYMER-CORE CONDUIT

P/N 120-100, Material Code R

- High-temperature-tolerant flexible polymer-core conduit
- All standard colors: Black, clear, orange, blue, yellow
- Qualification test report GT-17-261 available
- 300°C continuous service
- Available with high-temperature braid shield and/or jacket

### 300°C THERMAREX METAL-CORE CONDUIT

P/N 750-216, Jacket Code R

- Flexible passivated stainless steel core conduit
- High-temperature-tolerant ThermaRex jacket
- .127" to .250" outer diameter sizes
- 300°C continuous service

### ARMORLITE CF

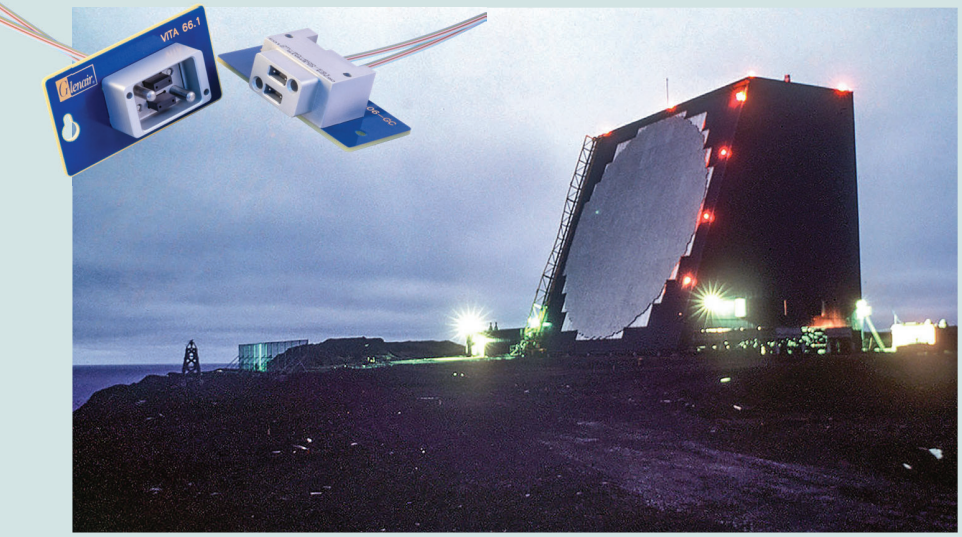

P/N 103-126

- Stainless steel over copper microfilament EMI shield
- High temperature -80˚C to 400˚C
- Corrosion / harsh environment resistant
- 1000 hour salt spray testing completed
- 70% reduced weight vs. standard braid
- Superb electrical resistance and shielding performance

Glenair
MISSION-DRIVEN DESIGN

Rugged Fiber Optic CONNECTORS

# VITA 66.1 Style MT Ferrule Rugged Optical Backplane Connectors




The VITA 66 interconnect series introduces fiber optic connectivity to VPX ruggedized embedded computing systems. Glenair's VITA 66.1 and 66.4 compliant blind-mate, optical MT module/backplane connectors use the open architecture defined in VITA 46. These products are both compatible with VPX systems and available as standalone connector solutions for reliable, high-speed transmission in extreme commercial and military environments.

- VITA 66.1 and 66.4 spec compliant
- Integrated alignment pins
- Glenair designed spring-loaded MT ferrules
- Supports industry standard MT ferrules—up to 24 channels per MT
- No unique tooling required for assembly

APPLICATIONS

- VPX compliant backplanes
- Embedded computing devices
- Mlitary aircraft (Phased Array) Radars
- Flight computers and other aircraft LRUs
- Command center comms equipment



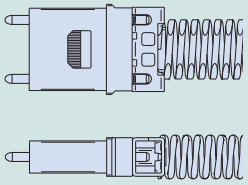

*VITA 66.1 STYLE*

# MT Ferrule Fiber Optic Backplane Connectors

## Rugged, blind-mate MT solution

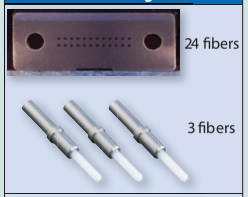
Glenair


Right-angle configurations for motherboard to daughtercard applications



Glenair designed floating MT ferrule contacts

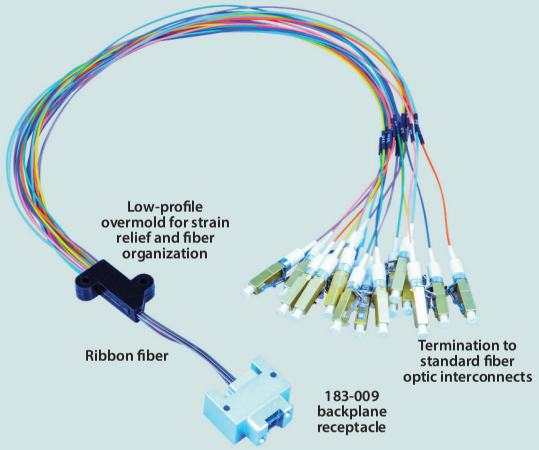
**The MT Ferrule High-Density Advantage**

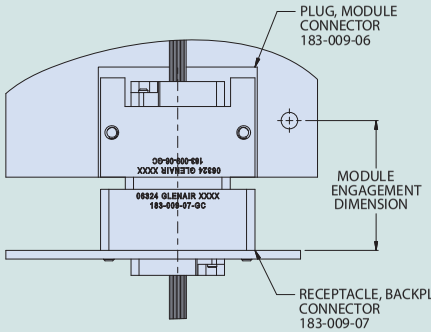



Up to 24 fibers in a single compact, lightweight ferrule (7mm x 3mm / .276" x .118") — same real estate as three size #16 termini side by side

## TURNKEY VITA 66.1 CONNECTORS, CABLE ASSEMBLIES, AND FERRULES

Glenair can design, terminate, and test complex multibranch and point-to-point assemblies incorporating VITA 66.1 style backplane connectors with standard commercial fiber optic interconnects for termination to board-level transceivers. Low-profile cable overmolds provide fiber media organization and ribbon-to-wire strain relief. Discrete backplane connectors and MT ferrule assemblies are also available



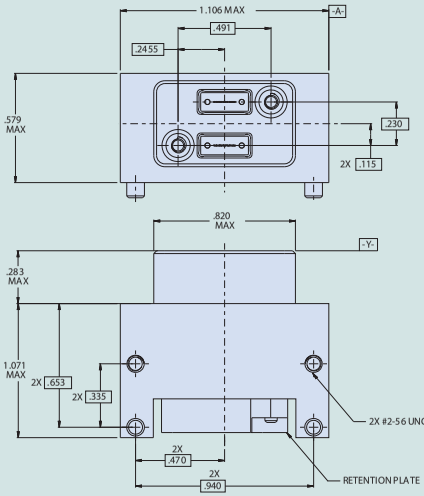

RANGE OF ENGAGEMENT REQUIREMENT (VITA 66.0)

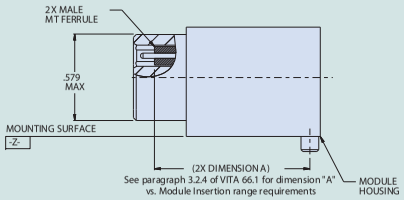
*VITA 66.1 STYLE*

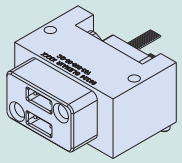
# MT Ferrule Fiber Optic Backplane Connectors

## How to order 183-009-06 Plug Module connectors

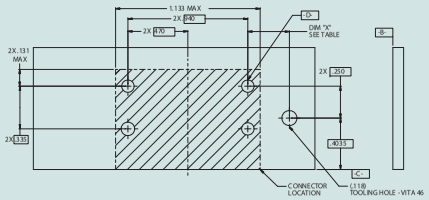
| How To Order | | | |
|---|---|---|---|
| **Sample Part Number** | **183-009** | **-06** | **GC** |
| **Basic Part Number** | MT Fiber Optic Backplane Interconnect, VITA 66.1 Style | | |
| **Connector Style** | **-06** = Plug Module | | |
| **Material / Finish** | **M** = Aluminum / Electroless Nickel<br>**GC** = Aluminum / Clear Anodize | | |



| Connector Location on Module PCB | |
|---|---|
| Position | Dim. "X" |
| P2 | 2.1154 |
| P3 | 3.8012 |
| P4 | 4.9350 |
| P5 | 6.0689 |
| P6 | 7.2028 |




### NOTES

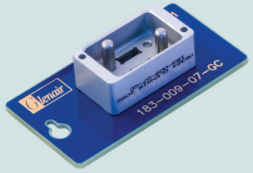
Connectors are designed to meet general requirements of ANSI/VITA 66.1
See figure 3.25-1 and table 3.25-1 of VITA 66.0 for Module Engagement requirements
See paragraph 3.2.4 Of VITA 66.1 For dimension "A" vs. Module Insertion range requirements
For MT ferrule kit part numbers, see Glenair drawing 181-143



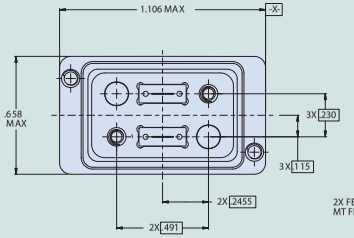

*VITA 66.1 STYLE*

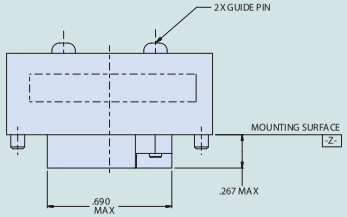
# MT Ferrule Fiber Optic Backplane Connectors

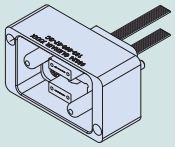
## How to order 183-009-07 Receptacle Backplane connectors



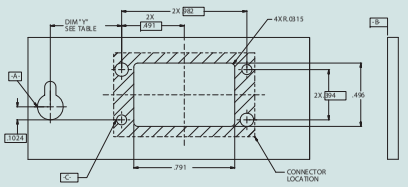
| How To Order | | | |
|---|---|---|---|
| **Sample Part Number** | **183-009** | **-07** | **GC** |
| **Basic Part Number** | MT Fiber Optic Backplane Interconnect, VITA 66.1 Style | | |
| **Connector Style** | **-07** = Receptacle, Backplane | | |
| **Material / Finish** | **M** = Aluminum / Electroless Nickel<br>**GC** = Aluminum / Clear Anodize | | |



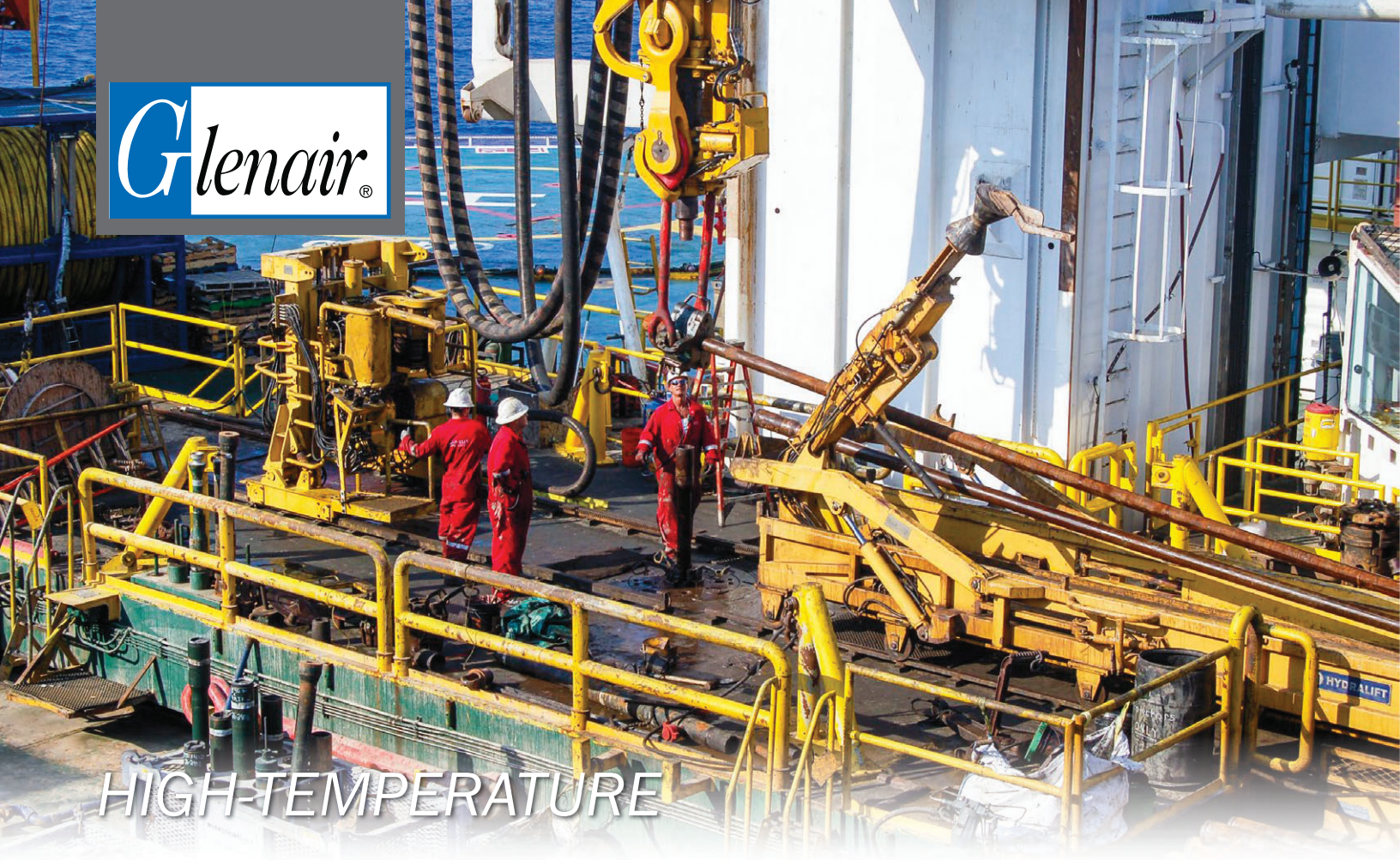



| Connector Location on Module PCB | |
|---|---|
| Position | Dim. "X" |
| J2 | 2.0945 |
| J3 | 3.7803 |
| J4 | 4.9142 |
| J5 | 6.0480 |
| J6 | 7.1819 |




### NOTES

Connectors are designed to meet general requirements of ANSI/VITA 66.1
See figure 3.25-1 and table 3.25-1 of VITA 66.0 for Module Engagement requirements
See paragraph 3.2.4 Of VITA 66.1 For dimension "A" vs. Module Insertion range requirements
For MT ferrule kit part numbers, see Glenair drawing 181-143



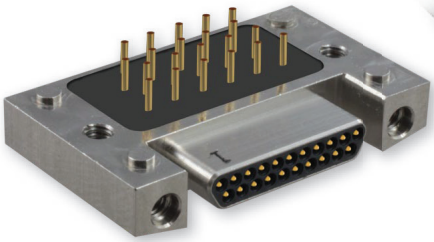

# Well-Master® 260°

## The Micro-D connector for serious, high-temperature applications

Standard Micro-D connectors are rated for +125°C. Glenair's MWDM Micro-D can withstand +150°C continuous operating temperature and can be upgraded to +200°C if assembled with special high temperature epoxies. But oil, gas and geothermal wells can subject electronic instruments to temperatures as high as +260°C. The GHTM Series Micro-D meets the need for a high density, high performance connector capable of handling this temperature. The GHTM features contacts made from a special alloy that resists softening when exposed to temperatures up to +260°C (500° F). Rugged passivated stainless steel shells and hardware, high temperature liquid crystal polymer (LCP) insulators allow these connectors to survive the most demanding environments. Unique angled mounting ears allow the Well-Master™ 260° to fit in confined spaces.

- **+260°C Operating Temperature**
- **Angled Mounting Ears to Fit in Small Diameter Instruments**
- **High Reliability TwistPin Contact System with Special High Temperature Alloy**
- **.050" Pitch Contact Spacing for Reduced Size**
- **Solder Cup, Pre-Wired or PCB**

Well-Master 260®



**+260°C PCB Header**

**+260°C Cable Connector**

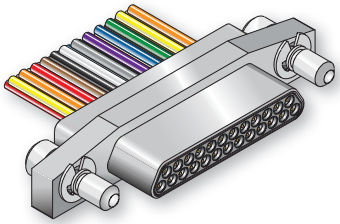
*SERIES GHTM WELL-MASTER 260°*

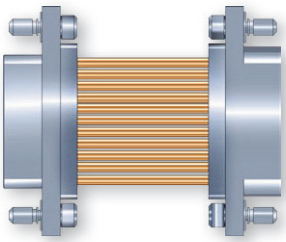
# Downhole Micro-D Connector

## Reference information / contact arrangements

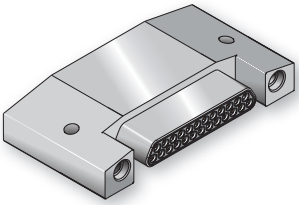
In addition to extreme high temperature tolerance, and demating resistance to vibration and shock, the Glenair Well-Master™ 260° Micro-D connector features unique shell packaging designed to conform with the cylindrical shape of instrument housings. Special angled mounting ears facilitate incorporation of the connector into available space, and the Micro-D's overall reduced size compared to other rectangular connector solutions allows for more efficient utilization.

**High Temperature Micro-D with insulated Wire Pigtails**

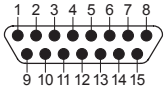
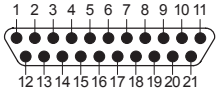
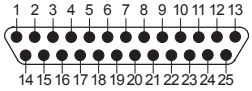
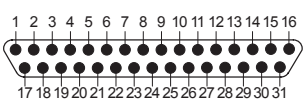
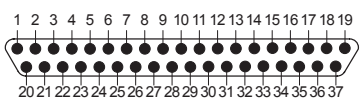
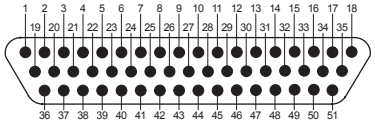




**High Temperature Back-to-Back Micro-D**



**High Temperature PCB Header**

| GHTM High Temperature Contact Arrangements (Pin Face View) | | | |
|---|---|---|---|
|  |  |  |  |
| 9 | 15 | 21 | 25 |
|  |  |  | |
| 31 | 37 | 51 | |

**Mating face of pin connector. Socket connector contact numbers are reversed.**

Glenair®

TURNKEY

# Wired Conduit Assemblies

## Rugged, lightweight, flexible wire protection solutions

Ultra-flexible polymer-core point-to-point fiber optic conduit assembly

All of the metal-core conduit and polymer-core convoluted tubing systems we fabricate at Glenair may be wired and assembled at our factory with tamper-proof crimp ring or solder terminations according to customer requirements. Reduced size and weight factory terminated conduit assemblies offer the utmost in environmental ruggedness, reliability and durability. Certified factory assemblers and calibrated tooling guarantee reliable long-term performance. Glenair's expertise in wired conduit systems extends from simple point-to-point jumpers to complex multibranch assemblies as well as turnkey integrated systems and LRUs with flexible conduit interconnect cabling.

### CONDUIT ASSEMBLIES INCORPORATING JUNCTION BOXES

Lightweight composite junction box and polymer core conduit wire protection assembly

Turnkey integrated box assembly and wired polymer-core interconnect system with NAVSEA-qualified Navy junction boxes

Lightweight multibranch wire protection conduit / box assembly with high-temperature polymer-core convoluted tubing

*TURNKEY*

# Wired Conduit Assemblies

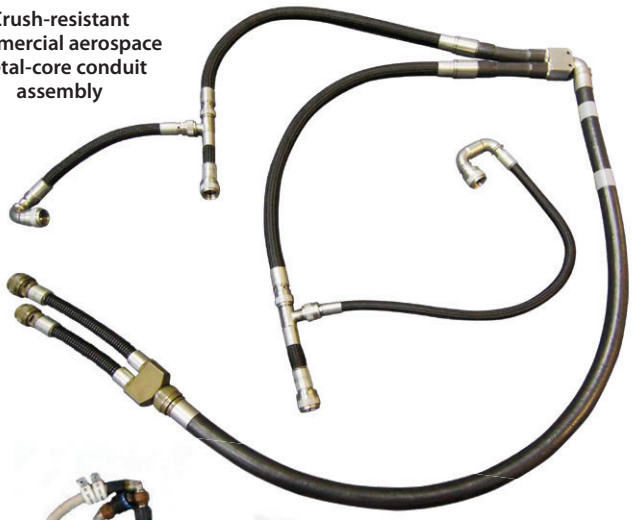
## Flexible, impact resistant alternatives to lighter-duty jacketed cable assemblies

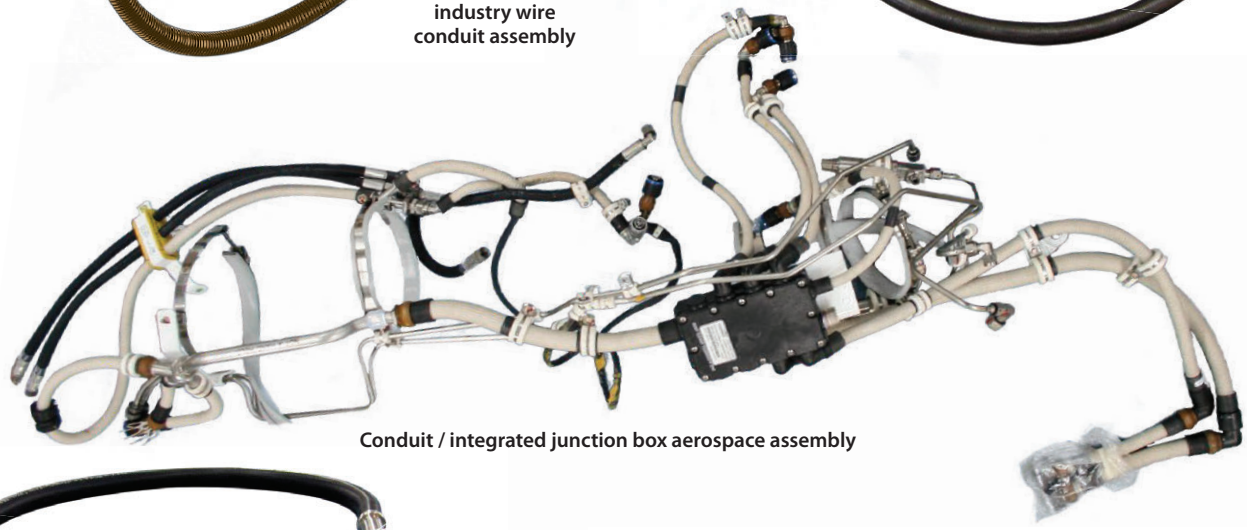
CONDUIT SYSTEMS

### COMPLEX, MULTIBRANCH CONDUIT ASSEMBLIES

Lightweight, halogen-free rail industry wire conduit assembly

Crush-resistant commercial aerospace metal-core conduit assembly





Conduit / integrated junction box aerospace assembly

Splash zone, above-deck shipboard conduit assembly with Marine Bronze Geo-Marine connectors

Complex multibranch fighter jet electrical wire conduit assembly