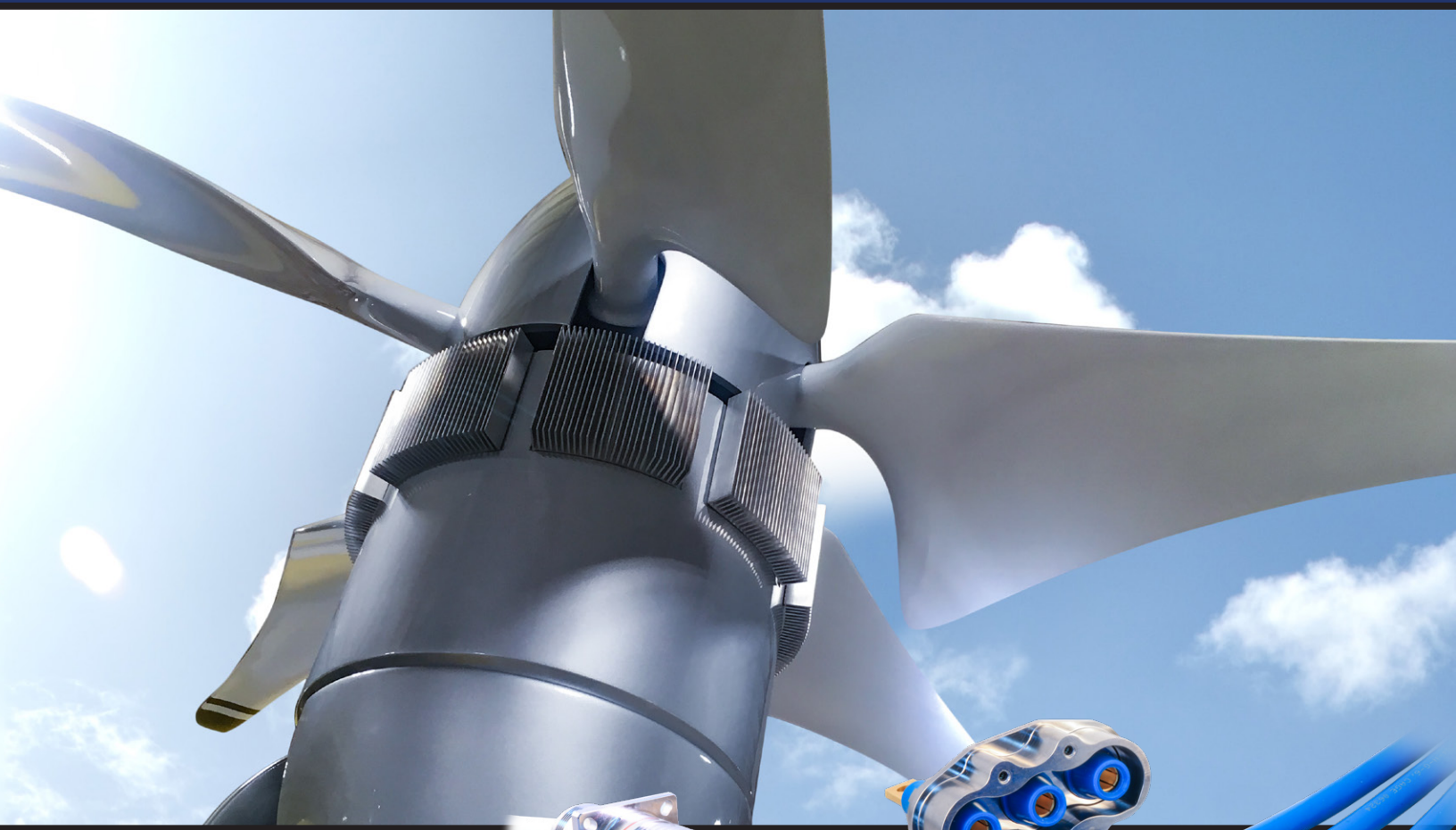




MISSION-CRITICAL  
INTERCONNECT  
SOLUTIONS



*Glenair*  
SIGNATURE SERIES



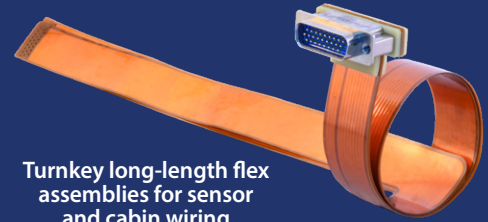
# Electric eVTOL Air Taxi Interconnect Solutions

Signature Interconnect Technology for Advanced Air Mobility

MARCH 2023

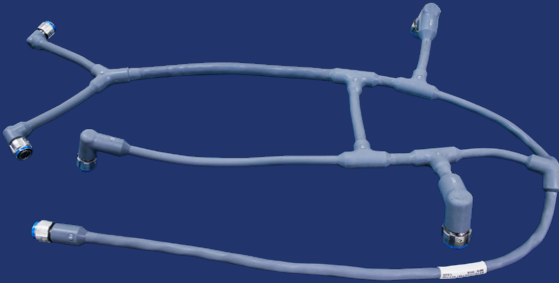


# Electric eVTOL Air Taxi Interconnect Solutions



Turnkey long-length flex assemblies for sensor and cabin wiring

## TURNKEY POWER CABLES AND WIRE HARNESES WITH GLENAIR SIGNATURE CONNECTORS



Environmentally-sealed / multibranch TurboFlex power assembly



Lightweight EMI / RFI overbraided power distribution assembly



Lightweight / ultra-flexible TurboFlex point-to-point cable

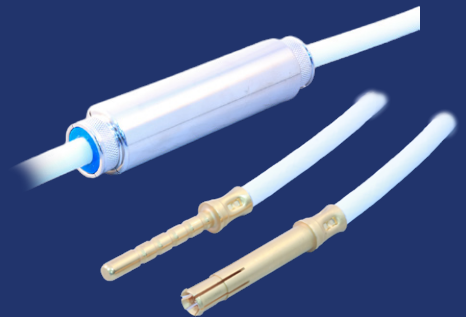
## BATTERY PLANT-TO-INVERTER-TO-ELECTRIC MOTOR CONNECTORS AND CABLES FOR eVTOL POWER DISTRIBUTION AND PROPULSION APPLICATIONS



PowerPlay MIL-DTL-38999 Series III type high-voltage, high-vibration



MotorHead low-profile composite PEEK series with Crown Ring contacts

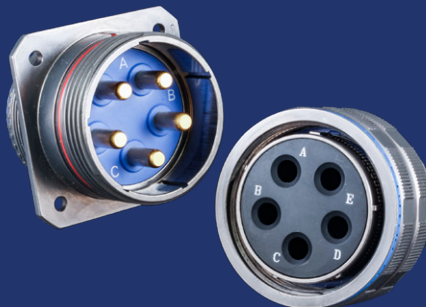


PwrLine HV power feed-line system for eVTOL power distribution applications

## AEROSPACE HV CONNECTORS FOR GROUND TESTING OF eVTOL PROPULSION AND AVIONIC SYSTEMS



PowerLoad high-current, high-voltage ground test connectors and cables



PowerTrip high-density ground test connectors and cables



Super ITS and ITS Wing-Lock quick-disconnect ground test connectors

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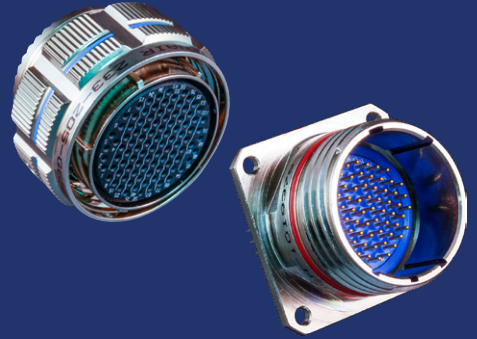
**LIGHTWEIGHT CONNECTORS AND TURNKEY HARNESS ASSEMBLIES FOR AVIONIC, CABIN, ACTUATOR, AND SENSOR APPLICATIONS**



Series 806 mil-aero grade micro miniature avionic and sensor connectors



Series 80 Mighty Mouse micro miniature connector with push-pull and/or threaded coupling



Series 23 SuperNine "Better Than QPL" MIL-DTL-38999 Series III

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**WIRE AND CABLE PROTECTION AND MANAGEMENT TECHNOLOGY**



Bulkhead cable feed-thrus with wire management grommets



Lightweight composite cable and wire bundle strain reliefs



Autoshrink cold-action tubing and boots

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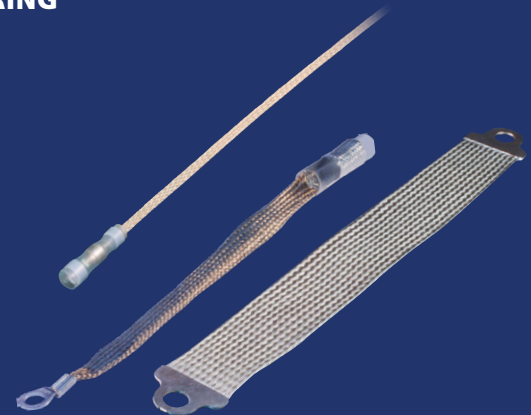
**SHIELDING, GROUNDING, AND SPLICING SOLUTIONS FOR EWIS WIRING**



Lightweight SpliceSaver single- and multi-wire series

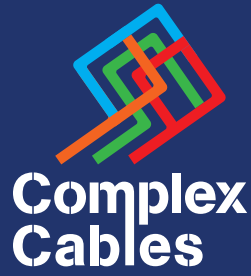


Tubular braiding and MasterWrap side-entry wraparound shielding for lightweight shielding applications



Lightweight, flexible ground straps and HSTs

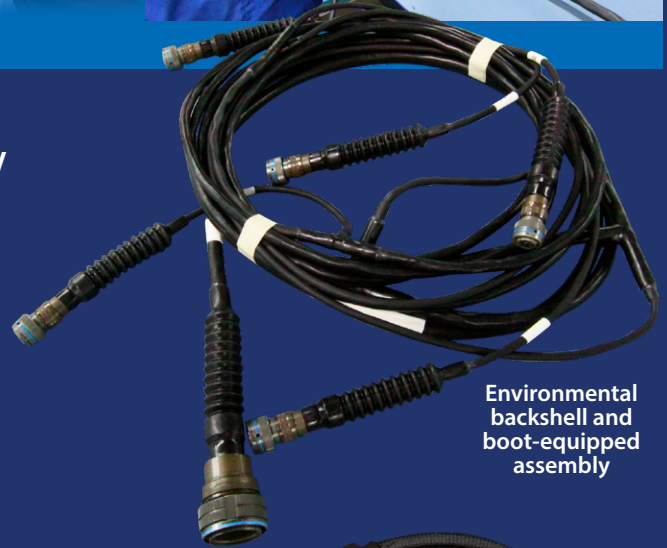
PROPULSION AND  
AVIONIC SYSTEM  
BUILD-TO-PRINT  
CABLE AND CONDUIT  
ASSEMBLIES



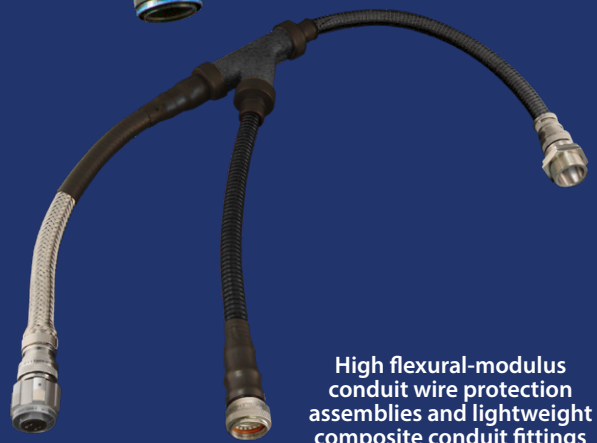
Glenair Turnkey Cable and  
Conduit Assemblies for eVTOL  
Power and Avionic Applications



Glenair's Complex Cable Group is laser-focused on producing turnkey assemblies built principally from Glenair Signature interconnect components including small form-factor connectors, lightweight EMI/RFI shielding, and Glenair Signature wire and cable.



Environmental backshell and boot-equipped assembly



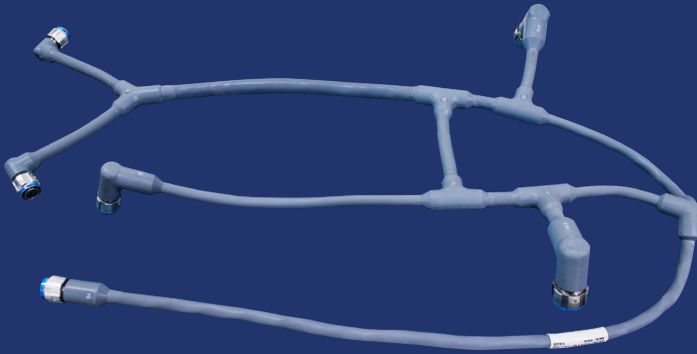
High flexural-modulus conduit wire protection assemblies and lightweight composite conduit fittings

MADE IN USA

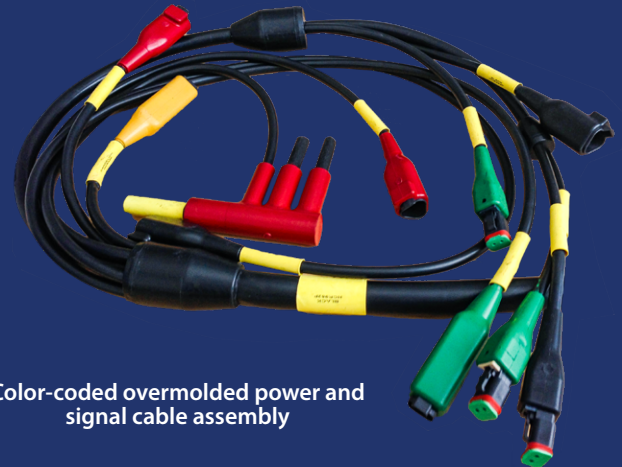
# Turnkey eVTOL Power and Signal Cable and Conduit Assemblies



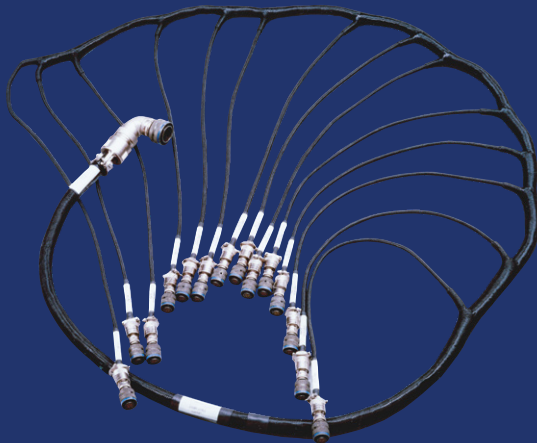
## with Glenair Signature TurboFlex power cable



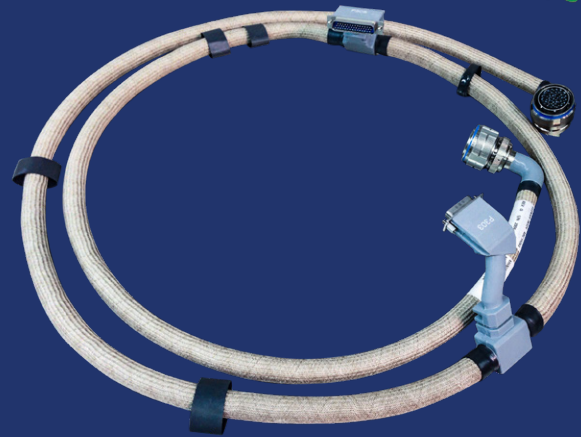
TurboFlex power distribution / sensor assembly with Duralectric™ overmolding and Mighty Mouse connectors



Color-coded overmolded power and signal cable assembly



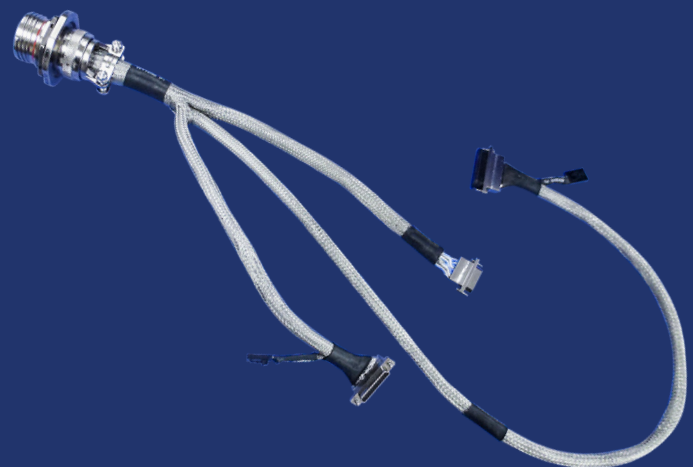
Complex multibranch assembly equipped with split-shell backshells for easy field reparability



Fabric overbraided assembly with discrete overmolded interconnect standoffs



Lightweight microfilament ArmorLite™ EMI/RFI shielded assembly with TurboFlex cable

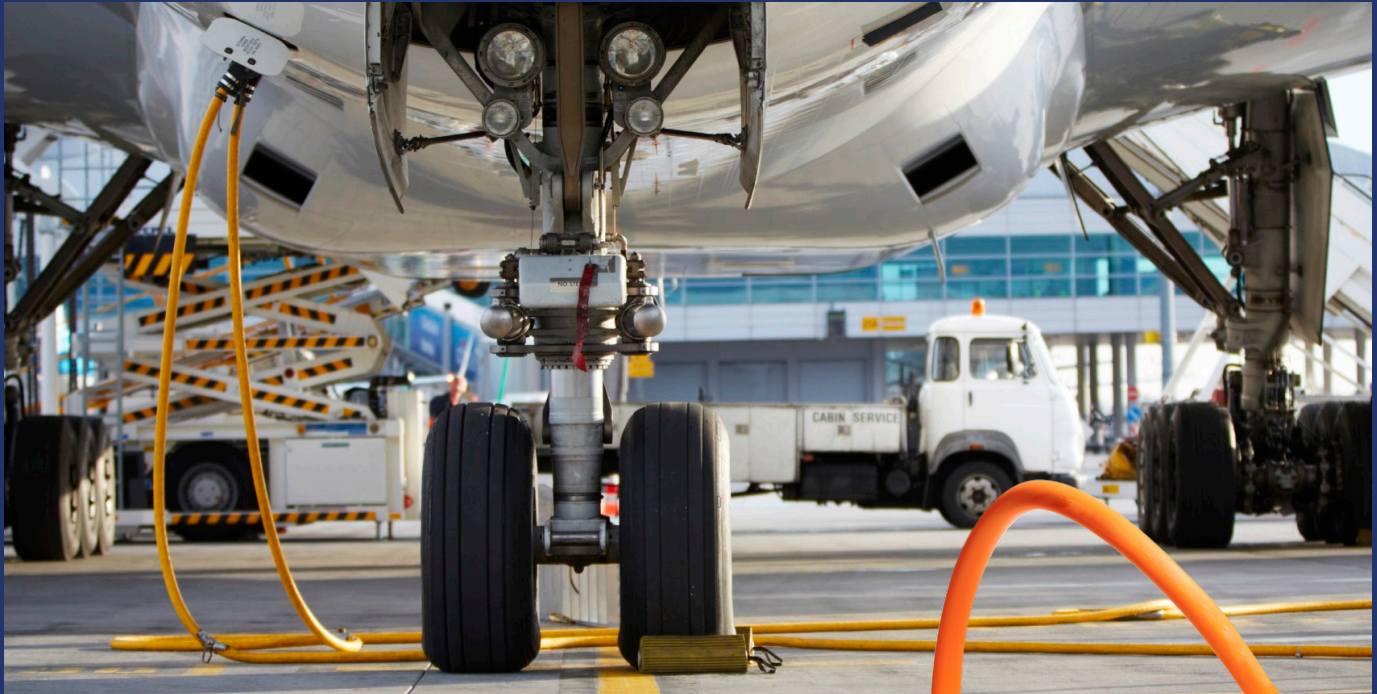


Lightweight avionic / sensor cable assembly with reduced size and weight connectors and ultra lightweight shielding

ELECTRICAL POWER  
PROPULSION SYSTEM  
CONNECTORS,  
CABLES, AND  
ACCESSORIES



The ultra  
flexible and  
rugged power  
cable solution



The ultra flexible and rugged power cable solution—ideal for rotating turret applications and weight reduction in SWaP-sensitive vehicle applications. TurboFlex cable is jacketed with Duralectric™ to provide outstanding flexibility and resistance to environmental and chemical exposure.



Available in a broad range of gages, 16 AWG to 450 MCM



◀ Duralectric™ is the high-performance TurboFlex® jacketing material perfectly suited for immersion, chemical or caustic fluid exposure, temperature extremes, UV radiation and more—available in a broad range of colors including safety orange



Many sizes In-stock and available for immediate, same-day shipment. No minimums!

# TurboFlex ultra-flexible power distribution cable with rugged Duraelectric™ jacketing



## TURBOFLEX CABLE APPLICATION EXAMPLE



This multibranch TurboFlex power and data interconnect assembly for a ruggedized defense application demonstrates the remarkable flexibility and minimal bend radius of large form-factor (up to 450 MCM) TurboFlex cable. Example shown features UV- and chemical-resistant Duraelectric jacketing in FED-STD 595C Safety Orange.

## ABOUT TURBOFLEX WITH DURALECTRIC™ D JACKETING

Duraelectric™ D is a Glenair Signature elastomeric material used in wire insulation, cable and conduit jacketing, overmolding, and shrink boots. Glenair TurboFlex high-flexibility power distribution cables are supplied with Duraelectric jacketing in different wall thicknesses, as well as “tell-tale” dual-layering.

TurboFlex core conductors are available in three aerospace-grade material and temperature configurations:

- T = Tin/Copper (-60° – 150°C),
- S = Silver/Copper (-60° – 200°C)
- N = Nickel/Copper (-60° – 260°C)

A signature configuration of TurboFlex is available with high-temperature shielding and lightweight aluminum conductors.

DURALECTRIC™ D PHYSICAL PROPERTIES		
Property	Typical Result	Test Method
Hardness, Shore A	60	ASTM D2240
Tensile Strength, psi	1100	ASTM D412
Elongation, %	500	ASTM D412
Tear Strength, Die B, ppi	150	ASTM D624
Low Temperature Impact at -65°C	Pass/No Cracks	ASTM D2137
Accelerated UV/Sunlight Resistance, 53 yr. Equiv. Exposure	Pass/Excellent	IEC 60068-2-5
Ozone Resistance	Pass/No Cracks	ASTM D1149
Zero Halogen	Pass	IEC 754-1

DURALECTRIC™ D ELECTRICAL PROPERTIES		
Property	Typical Result	Test Method
Dielectric Strength, kV/mm	19	ASTM D419
Comparative Tracking Index, VAC	> 600	ASTM D3638

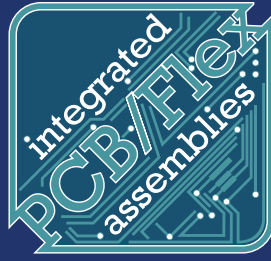
DURALECTRIC™ D FIRE RESISTANCE PROPERTIES	
Property	Typical Result
<b>Flammability</b>	
Oxygen Index, %	45
FAR 25.853, 12 Second Vertical	Pass
FAR 25.853, 60 Degree	Pass
FAR 27.1365 b,c	Pass
BSS7230 Method F2	Pass
IEC60614-1	Pass
EN60695-2-12, 850°C Glow-Wire	Pass
UL1685 FT4/IEEE1202	Pass
<b>Smoke Density</b>	
BSS7238	Pass
NES 711	Pass
EN 60695-2-11	Pass
UL1685 FT4/IEEE1202	Pass
<b>Combustion Toxicity</b>	
BSS7239	Pass
NES 713	Pass
SMP800 C	Pass

### GENERAL DURALECTRIC D PERFORMANCE SUMMARY

- Service Temperature Range: -65°C to 260°C
- Fire Resistant and Low Smoke-Zero Halogen (LSZH)
- RoHS materials
- Resistant to common aerospace, military and industrial fluids
- UV resistant



PROPULSION AND  
AVIONIC SYSTEM  
BUILD-TO-PRINT  
INTEGRATED FLEX  
ASSEMBLIES

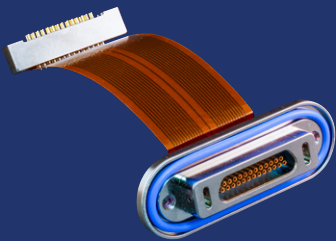


Flex, Rigid Flex, and Rigid PCB assemblies with signature interconnect technology for aircraft LRU applications

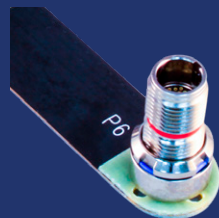


Turnkey connectorized flex, rigid flex, and rigid PCB assemblies incorporating Glenair's broad range of innovative small form-factor circular and rectangular PC-tail connector solutions for optimized ease-of-assembly and SWaP

**GLENAIR SIGNATURE PC-TAIL CONNECTOR TYPES AVAILABLE IN TURNKEY FLEX ASSEMBLIES**



Series MWD Micro-D and innovative pogo-pin AlphaLink



Series 88 SuperFly



Series 79 Micro-Crimp



SuperNine MIL-DTL-38999 type flexi with board connector



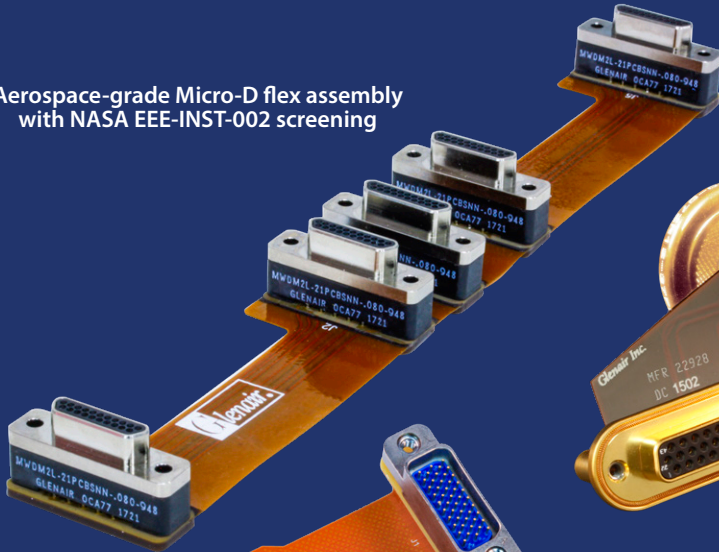
TURNKEY

# Flex, Rigid Flex, and Rigid PCB Assemblies with Glenair signature PC tail connectors



## MULTIBRANCH FLEX / PCB ASSEMBLIES WITH GLENAIR SIGNATURE CONNECTORS

Aerospace-grade Micro-D flex assembly with NASA EEE-INST-002 screening



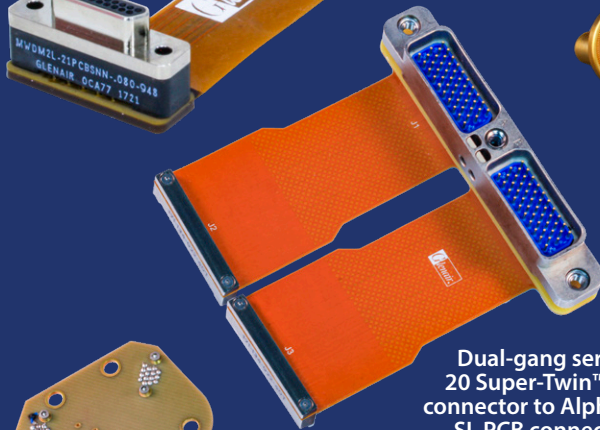
High-shock matched-impedance Mighty Mouse assembly with flex circuit



Aerospace-grade Series 28 HiPer-D to Series 80 Mighty Mouse I/O jumper: a tight space-constrained rectangular-to-circular solution



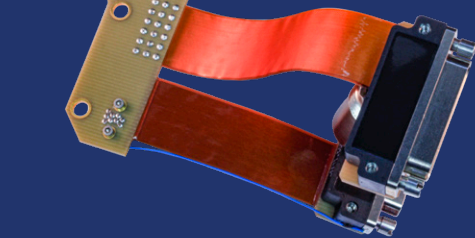
Dual-gang series 20 Super-Twin™ I/O connector to AlphaLink SL PCB connector



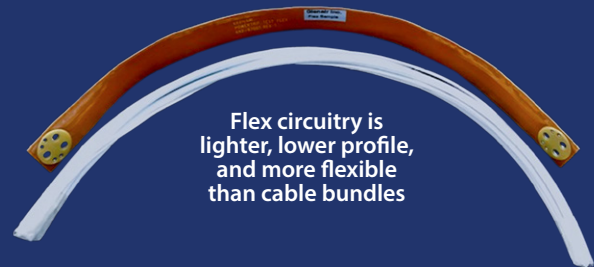
Hybrid flex/rigid flex multibranch Micro-D and Series 23 SuperNine flex assembly with discrete RF circuits



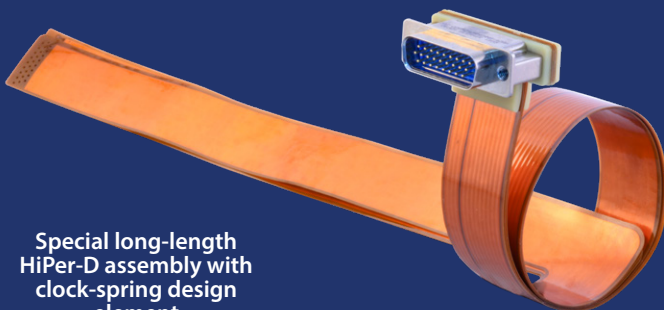
Stacked Micro-D I/O connectors with flex jumper to rigid PCB assembly



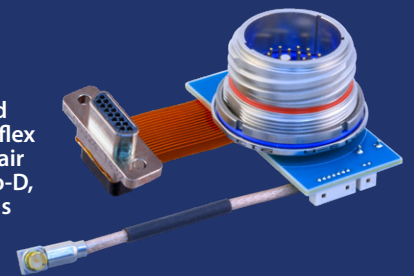
Flex circuitry is lighter, lower profile, and more flexible than cable bundles



Special long-length HiPer-D assembly with clock-spring design element



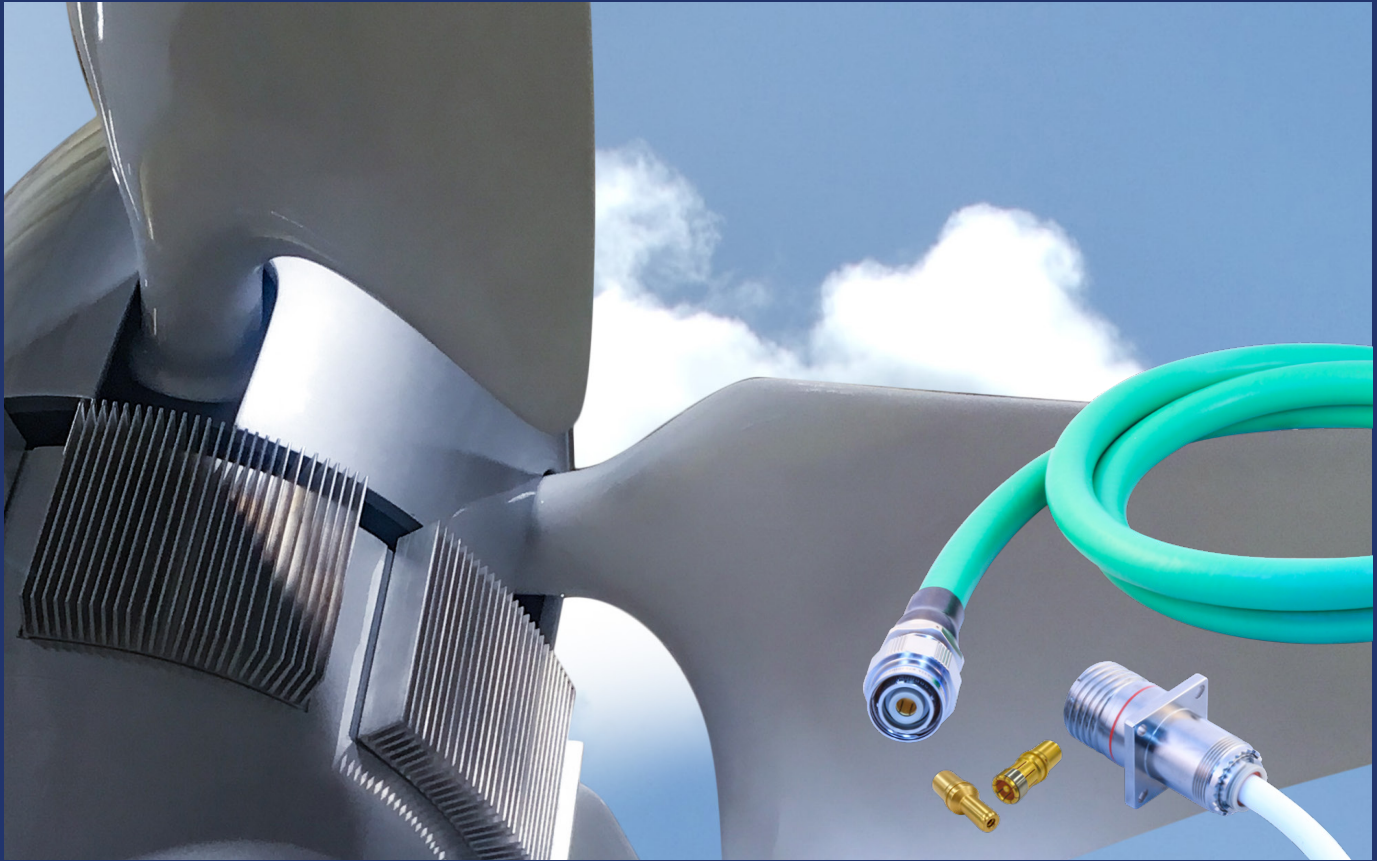
High vibration and shock resistant rigid flex assembly with Glenair Mighty Mouse, Micro-D, and RF connections



ELECTRICAL POWER  
PROPULSION SYSTEM  
CONNECTORS,  
CABLES, AND  
ACCESSORIES

# PowerPlay™

SuperNine “Better than QPL” MIL-DTL-38999  
high-power connector series



SuperNine PowerPlay is a high-ampacity single-pole and multi-pole connector series that combines the proven performance of MIL-DTL-38999 Series III connector packaging with contact and dielectric insert technology capable of 2000VAC working voltage. SuperNine PowerPlay utilizes Glenair Crown Ring contact technology, a crimp-removable, low insertion force contact series optimized for higher current carrying capabilities, lower contact resistance, and superior vibration resistance compared to LouverBand, hyperboloid, and other designs. Rectangular and other packaging options available.

- 2000 VAC working voltage
- High current, low resistance, superior vibration resistance
- Safe-touch finger proofing
- Integrated band platform shield termination
- Compatible with TurboFlex high-flexibility cable
- Support for busbar and other wire terminations
- Multi-Pin arrangements for size 8 and 4 AWG contacts. Single-Pole arrangements for 2, 1/0, 2/0, and 4/0 contacts. Options for 20 AWG interlock contacts on all sizes

SERIES 973

# PowerPlay AAM Propulsion System Power Connectors



Rugged, life-of-system durability

## BATTERY PLANT-TO-INVERTER-TO-ELECTRIC MOTOR CONNECTORS AND CABLES FOR eVTOL POWER DISTRIBUTION AND PROPULSION APPLICATIONS

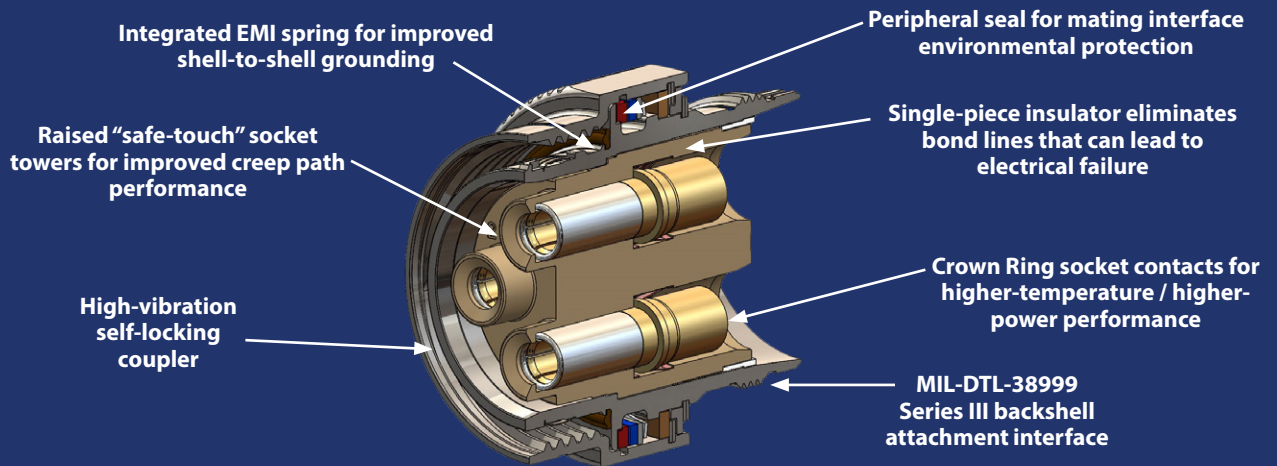


Range of insert arrangements for size 20, 8, 4, 2, 1/0, 2/0, and 4/0 AWG contacts with full support for Glenair TurboFlex cabling

Connector shell configurations IAW MIL-DTL-38999 Series III with safe-touch contact finger proofing

Range of wire termination options including crimp contact, threaded contact, bus bar, and factory-terminated cables and jumpers

## PowerPlay™: KEY CONNECTOR AND CONTACT DESIGN FEATURES, PLUG CUTAWAY VIEW



## ALTERNATIVE PACKAGING: BAYONET-LOCK AND LOW-PROFILE RECTANGULAR



PowerPlay is a high-durability life-of-system insert technology with raised towers for socket contacts, and safe-touch pins. The insert may be packaged in a variety of connector configurations beyond D38999 Series III, including bayonet-lock, and low-profile rectangular.

# SERIES 973

# PowerPlay AAM Propulsion System Power Connectors

## Contact Instructions

### HOW TO TERMINATE, INSTALL AND REMOVE CROWN RING CONTACTS

**1 Set Up Crimp Tool.** Install proper die assembly and locator into the pneumatic crimp tool.

**2 Strip Wire.** Remove wire insulation, taking care to avoid nicking or cutting wire strands. Strip wire to length shown on table.

**3 Insert Wire** into contact. The wire should be visible in the inspection hole.

**4 Insert contact into crimp tool.** Make sure the contact is fully inserted into the locator.

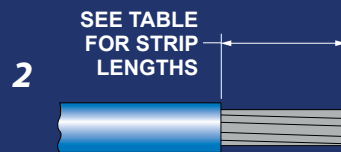
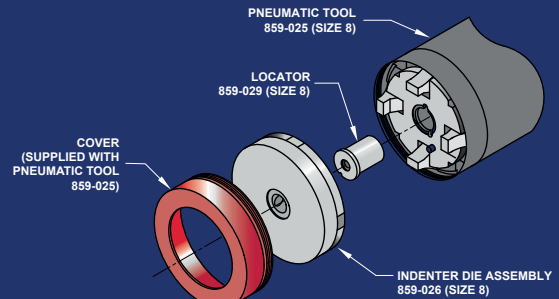
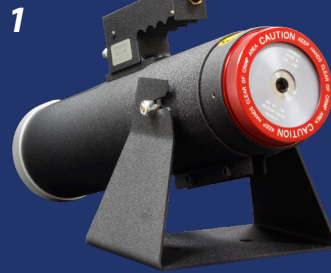
**5 Crimp contact.** While keeping contact seated, press the actuation button and hold the crimp die closed for a minimum of 8 seconds, to allow adequate dwell time for wire strand deformation.

**6 Inspect crimped contact.** Wire should be fully inserted and visible through the inspection hole. The crimp should be uniform in appearance.

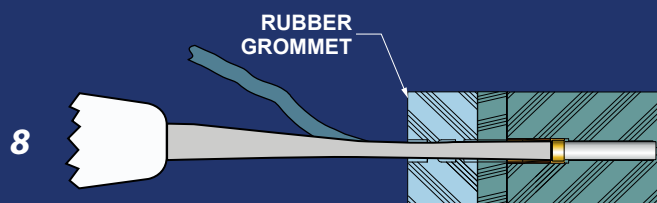
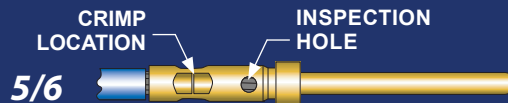
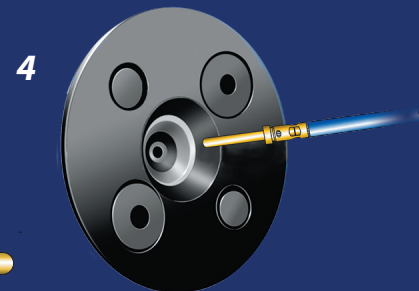
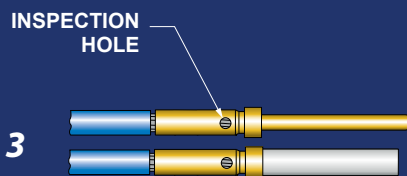
**7 Install contact into connector.** Brush Isopropyl Alcohol (IPA) onto the contact and approximately 1" of the wire. Before IPA dries, push the contact through the rear grommet until the contact locks into place. This can be done by hand without the need for a tool. **USE CARE TO AVOID DAMAGING THE CONNECTOR/GROMMET.**

**8 Contact Extraction.** Use the correct extraction tools per 979-013. Install the tool over the wire, for the contact to be removed. Brush a generous amount of Isopropyl Alcohol (IPA) onto the grommet, where the wire is exiting. Before IPA dries, slide the tip of the tool into the connector/grommet. Push the tool into the connector cavity until the tip bottoms in the connector. Avoid wiggling or rocking the tip. This may damage the cavity. A straight push is best. Holding both the wire and the tool, pull the tool and contact out of the connector. **Ensure the wire insulation is within the acceptable limits listed on the connector datasheet.**

#### PNEUMATIC CRIMP TOOL



Wire Size (AWG)	Strip Length in. (mm)
10	.495-.545 (12.57-13.84)
8	
6	
4	.550-.600 (13.97-15.24)
2	
1/0	.575-.625 (14.60-15.88)



ELECTRICAL POWER  
PROPULSION SYSTEM  
CONNECTORS,  
CABLES, AND  
ACCESSORIES

# MotorHead™

Advanced Air Mobility Connectors

Low-profile, high-durability power connector  
with low-labor-cost assembly



Prototype mated pair MotorHead with "Infinity" form-factor. Production series is lightweight composite thermoplastic or aluminum

The Glenair MotorHead Advanced Air Mobility connector is a low-profile, high-voltage solution for eVTOL advanced air mobility electric motor, inverter, and production break applications. The MotorHead connector solution is built around individually-shielded TurboFlex cable, high-ampacity contacts, and an easy-to-install Autoshrink insulator. Available materials include lightweight composite thermoplastic and aluminum. Both D38999 circular and innovative rectangular packaging is available. Termination and assembly process saves time and labor.

- High ampacity multi-pole series with Autoshrink insulator for reduced assembly and labor
- 2500 VAC working voltage
- High-ampacity contacts: crimp-removable, low insertion force
- High current, low resistance, superior vibration resistance
- Safe-touch finger proofing
- TurboFlex-compatible
- Support for busbar and other wire terminations
- Range of multi-pin insert arrangements for size 8, 4, 2, 1/0, 2/0, 4/0 contacts

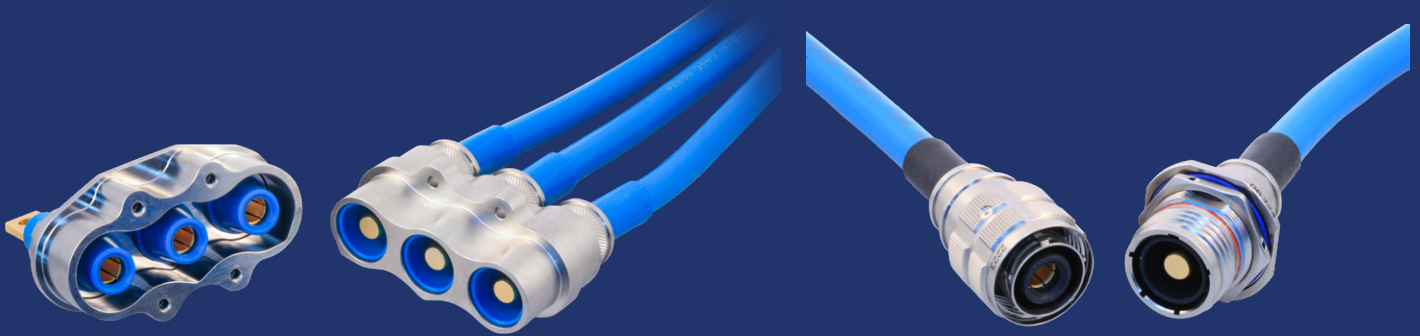
LOW-PROFILE

# MotorHead High-Power Connector for Electric Motor Power Applications



Life-of-system durability · fast, low-labor-cost assembly

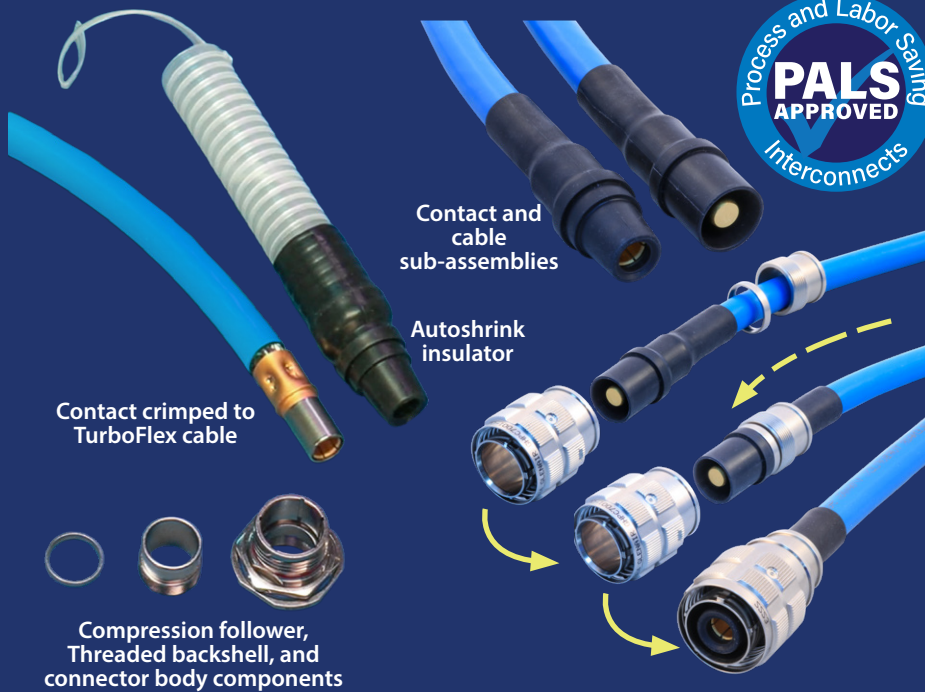
## BATTERY PLANT-TO-INVERTER-TO-ELECTRIC MOTOR CONNECTORS AND CABLES FOR eVTOL POWER DISTRIBUTION AND PROPULSION APPLICATIONS



MotorHead in low-profile motor-mount design—Glenair Signature “Infinity” form-factor—supplied in lightweight composite PEEK for optimized SWaP

MotorHead MIL-DTL-38999 Series III type form-factor for discrete power line applications

## MOTORHEAD IS A PALS-APPROVED ASSEMBLY PROCESS AND LABOR SAVING INTERCONNECT SERIES



1. Contact is crimp-terminated to appropriate gauge of TurboFlex cable
2. Autoshrink insulator is positioned and recovered over the contact and cable
3. Contact and cable sub-assembly is installed in the connector body and secured in place with follower and shield termination backshell

### GLENAIR SIGNATURE HIGH-AMPACITY CONTACTS



- Crimp, bus bar, and lug wire termination
- Range of contact options including Crown Ring, LouverBand, or standard 39029 crimp
- Contact options allow for exact alignment of electrical and application requirements
- All contact designs utilize premium-quality materials and offer life-of-system durability and mating performance

ELECTRICAL POWER  
PROPULSION SYSTEM  
CONNECTORS,  
CABLES, AND  
ACCESSORIES

# PWRLINE HV™

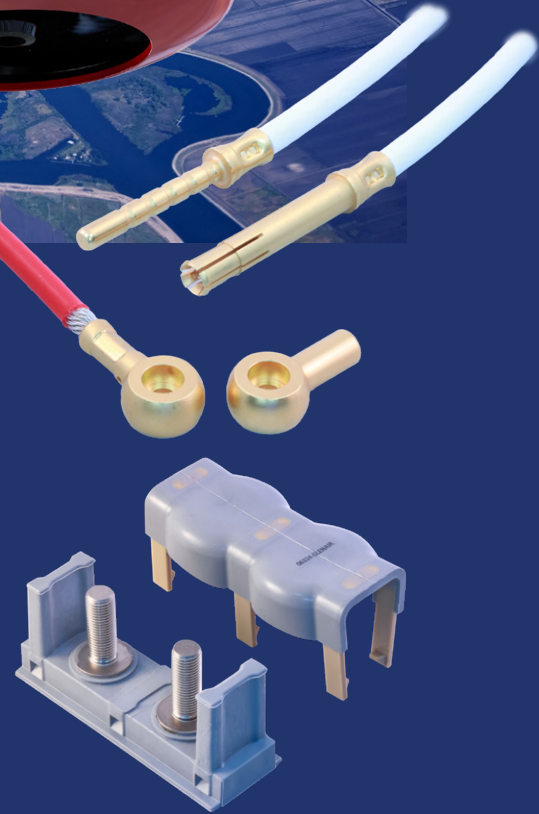
High-current power feeder system and current return network for composite fuselage eVTOL aircraft applications



## Unique power feeder system eliminates power line routing and termination issues

For electrical eVTOL motor applications that require discrete routing of 3-phase and DC power lines, Glenair has developed the PwrLine HV. PwrLine HV replaces conventional terminal strips and terminal lugs with a solution that eliminates the issues associated with routing large gauge cables. The PwrLine HV uses a crimp contact system that can accommodate tolerancing variations that routinely occur with large cables. Routing power feeders through the 3-D spatial environment routinely creates installation and terminal lug orientation issues. PwrLine eliminates these problems with its unique rotatable pin / socket architecture and unique in-line insulation packaging.

PwrLine HV is a complete power feeder and current return network system that includes contacts, cables, holding fixtures, mountable connector packages, as well as high-voltage terminal blocks and lugs for reduction of partial discharge and corona. Lightweight, high-durability Duraelectric terminal blocks, hoods, and cable jackets deliver outstanding environmental and insulation performance.



PwrLine HV: a complete power feeder ecosystem with matched, compatible components

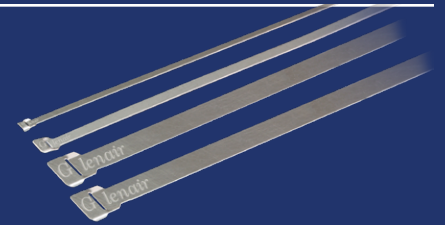
# HIGH-CURRENT / HIGH-VOLTAGE PwrLine HV Power Feeder System



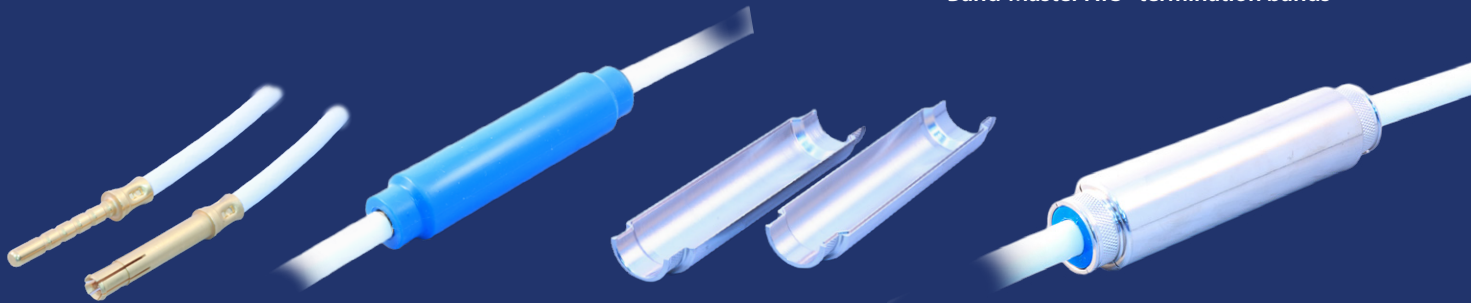
for aircraft electrical power distribution systems

## PWRLINE HV POWER FEEDER SYSTEM COMPONENTS

- Resolves cable lug misalignment issues
- Eliminates twisted cable (rotational) problems during assembly
- Integrated / compatible power line feeder system used in combination with PowerLoad and other power distribution system connectors



PwrLine HV power feeder system uses Band-Master ATS® termination bands

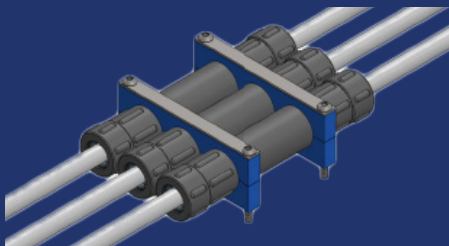


High-current power feeder contact and cable system

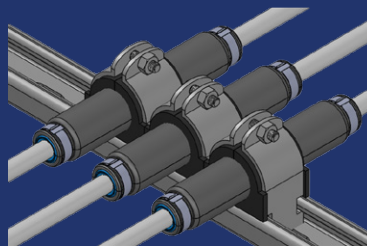
Mated contact pair inside self-vulcanizing Duraelectric insulator

Lightweight outer composite split shell with shield banding platforms

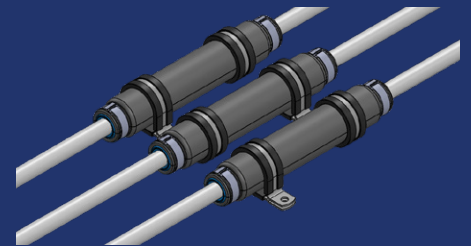
Assembled and ready for shield band termination with Band-Master ATS® bands



Schematic illustration with line block mounting hardware...



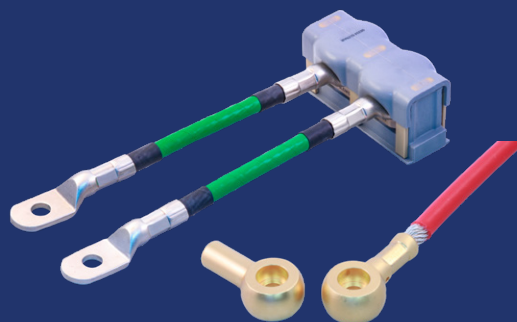
...strut clamp mounting hardware...



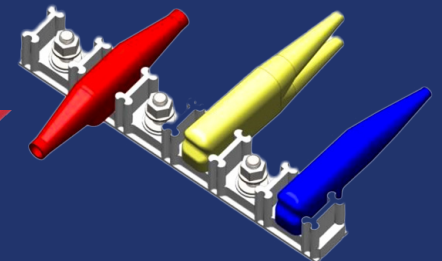
... and P-clamp mounting hardware



Multiple designs of high-voltage terminal blocks with accommodation for PwrLine HV lugs and/or standard lugs



Conventional and PwrLine HV terminal lugs



Color-coded terminal lug hoods made from high-performance Duraelectric material



ELECTRICAL POWER  
PROPULSION SYSTEM  
CONNECTORS,  
CABLES, AND  
ACCESSORIES

# PWRLINE HV™

Current Return Network for protection  
against electromagnetic interference  
in aircraft EWIS



## The Glenair Current Return Network revises traditional approaches to grounding systems on commercial aircraft.

The Glenair Current Return Network grounding solution uses a contact system and Band-Master ATS® grounding technology to simplify routing and termination processes and guarantee a stable electrical interace. Power contacts feature a rotatable pin / socket construction to eliminate twisted cable during assembly. The Duraelectric™ overmolded T fixture and AutoShrink™ boots, easily installed over the fixture's integral boot platforms, provide a durable environmental seal. The design is scalable for lightning strikes and fault currents.

The Current Return Network system employs “plug and play” connections and calibrated banding, eliminating the need for washers and torque wrenches, and waiving inspection requirements. The network's optimized TurboFlex™ wire and 16 mil insulated copper conductor provide both outstanding environmental protection and extreme flexibility.

- Replaces the traditional terminal lug / terminal strip solution
- Resolves cable lug misalignment issues
- Eliminates twisted cable (rotational) problems during assembly
- Integrated / compatible power line feeder system used in combination with PowerLoad power distribution system

HIGH-CURRENT / HIGH-VOLTAGE

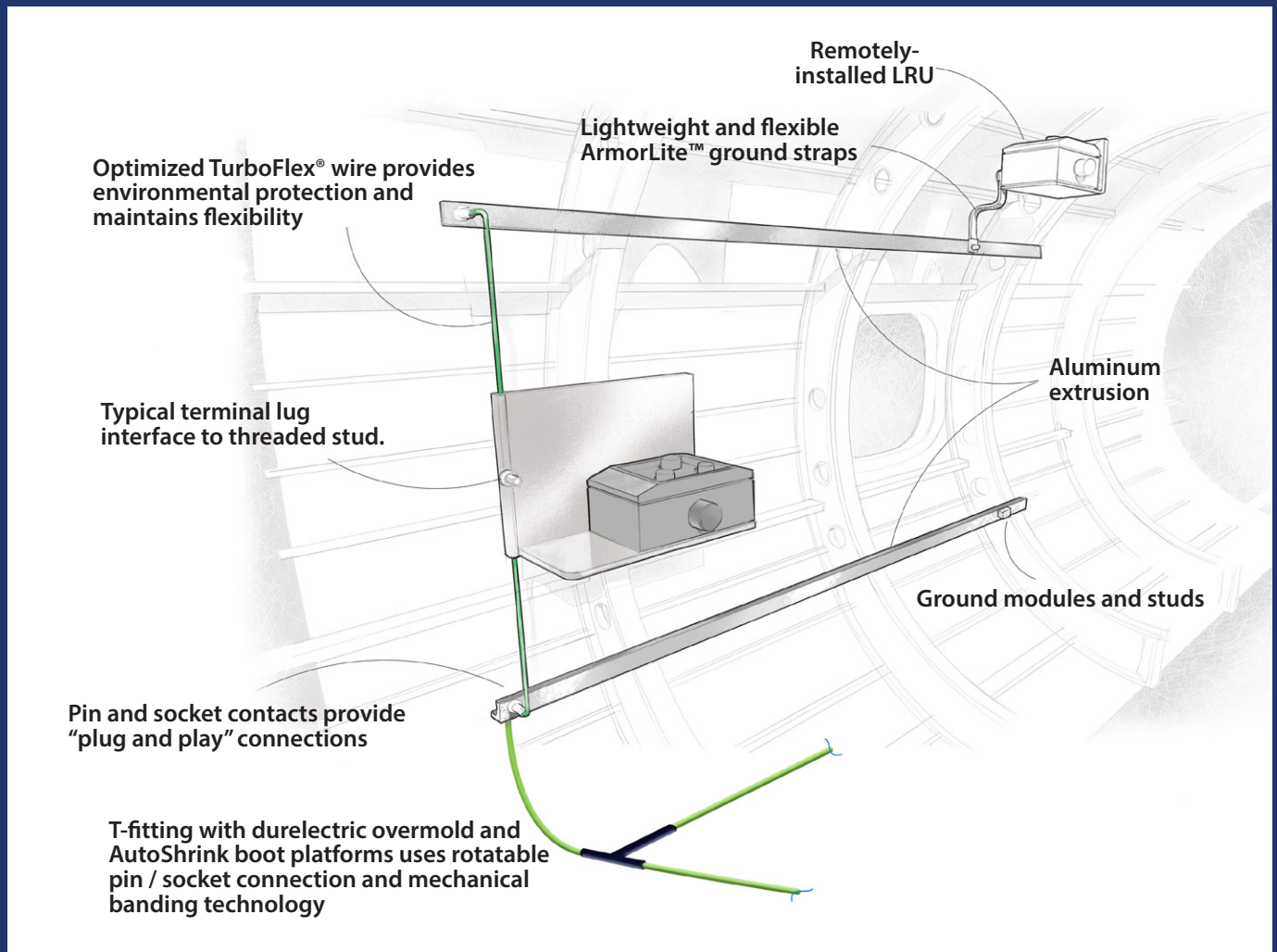
PwrLine HV™

# Ground (Current) Return Network

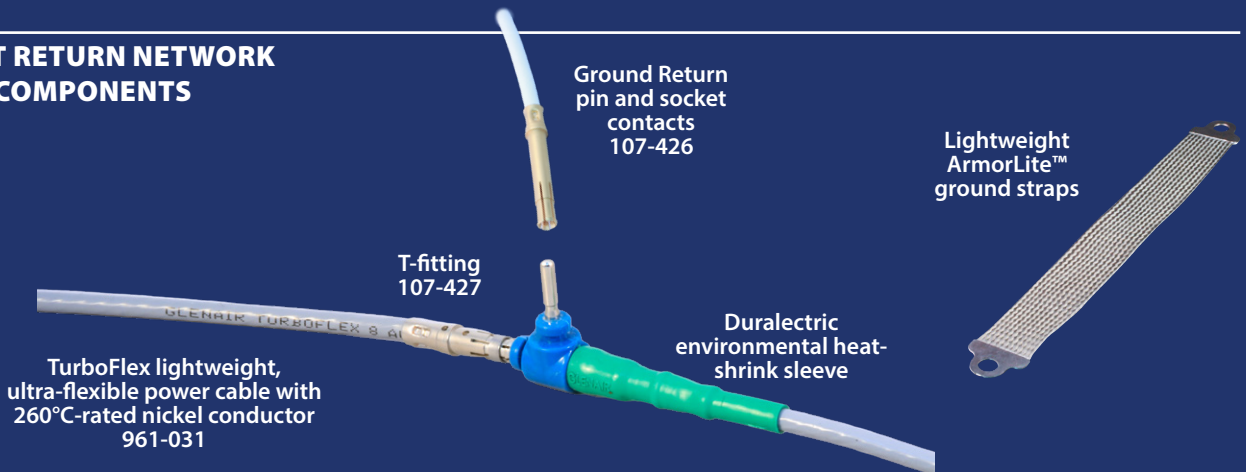
for aircraft electrical power distribution systems



## CURRENT RETURN NETWORK SYSTEM ILLUSTRATION



## CURRENT RETURN NETWORK SYSTEM COMPONENTS



HIGH-POWER GROUND  
TEST CONNECTORS  
FOR PROPULSION/  
AVIONIC SYSTEM  
QUALIFICATION

**POWER  
LOAD™**

High-voltage interconnect  
for eVTOL ground test  
applications



## The aircraft industry's most advanced power distribution interconnect

Electrical power generation technology in aircraft has evolved to meet modern requirements for higher power and lighter weight systems. Growing electrical power needs on commercial aircraft—and emerging eVTOL platforms—have caused major changes in power system architectures to accommodate peak-load stress factors in electrical wire interconnect (EWIS) cabling.

- **PowerLoad™, the high-vibration, high-temperature interconnect optimized for higher-voltage, higher-altitude, and higher-frequency**
- **TurboFlex®, the Glenair signature high-flexibility power cable solution**
- **Crown Ring crimp, bus bar, and lug style contacts, optimized for high current carrying, high temperature performance.**

**A GLENAIR SIGNATURE SOLUTION:  
CONNECTORS, CONTACTS, CABLES,  
ACCESSORIES, AND ASSEMBLIES**

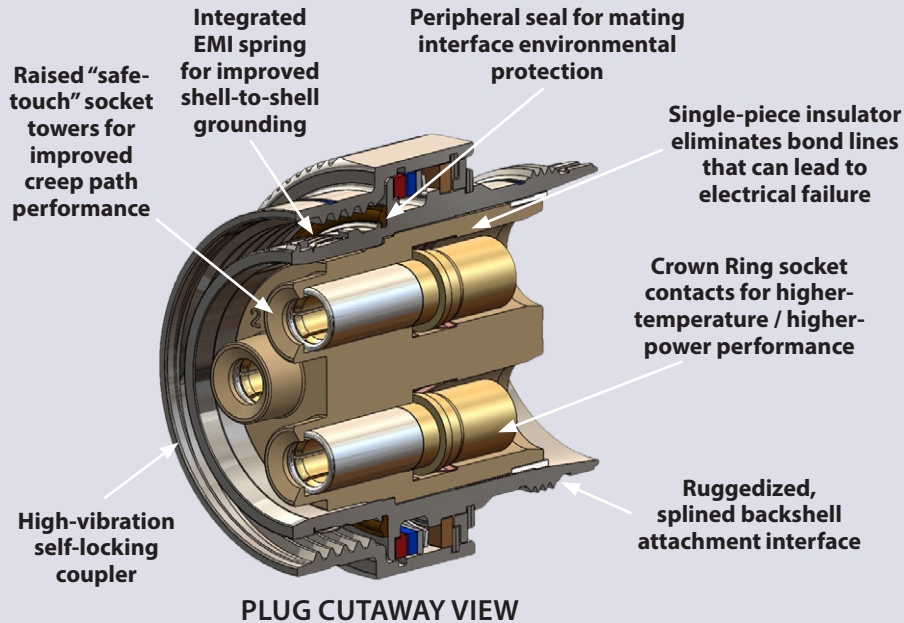
- **For applications up to 2000 VAC / 1500 Hz, and from 150 – 800 Amps.**
- **230°C maximum operating temperature connectors (stainless steel bodies and shells)**
- **TurboFlex® rope lay power cables optimized for PowerLoad™ connectors, from 8 AWG to 4/0**
- **Ultra-flexible cable configurations with ruggedized Duraelectric or FEP jacketing:**
  - **Single-wall hookup wire**
  - **Dual-wall jacketed interconnect cabling**
- **High-temperature Crown Ring contact technology**
- **Heavy-duty accessory interface**

# HIGH PERFORMANCE PowerLoad™ Series



## eVTOL electric propulsion system interconnect series

### POWERLOAD™: KEY CONNECTOR AND CONTACT DESIGN FEATURES



### GLENAIR SIGNATURE CROWN RING CONTACTS



- Crimp, bus bar, and lug wire termination
- Precision-machined high conductivity copper alloy
- Up to 60% lower contact resistance than equivalent AS39029 contacts
- Higher operating temperature resistance compared to other specialized high-power contacts
- Gold-plated for enhanced high-vibration durability

### TURBOFLEX® ULTRA FLEXIBLE / RUGGED POWER CABLES WITH DURALECTRIC OR FEP JACKETING

TurboFlex, Glenair high-flexibility power cabling has been optimized for use with PowerLoad connectors, and is supplied with either industry-standard FEP or Glenair signature Duralectric jacketing material, which is optimized for fluid immersion, caustic chemical exposure, temperature extremes, and UV radiation. Both materials are available in a broad range of colors including safety orange.



Available with cable gauge selections from 8 AWG to 4/0, to provide suitable margins for DWV, frequency derating, and peak-load performance.

Abrasion Resistance	Good
Wear Resistance	Good
Flame Resistance	Excellent
Sunlight Resistance	Excellent
Flex Resistance	Excellent

### TURBOFLEX® WITH DURALECTRIC™ JACKETING: ENVIRONMENTAL PERFORMANCE

Temperature rating: -60°C to 260°C  
 Halogen free per IEC 60614-1  
 Accelerated weathering and simulated solar radiation at ground level per IEC 60068-2-5; 56 Days exposure, suitable for greater than 50 years of service in direct sunlight  
 Flame resistant per IEC 60614-1  
 Flame resistant per UL 1685, section 12 (FT4/IEEE120), vertical-tray fire-propagation and smoke release test  
 Flame resistant per FAR 25.853 (A) amendment 25-116, appendix F part I (A) (1) (i), 60 second vertical burn test  
 Limiting oxygen index of 45 per ISO 4589-2:1999  
 Low smoke per NES 711, smoke density of 11.75  
 Smoke density class F1 per NF F 16-101 IAW DIN EN 60695-2-11:2011

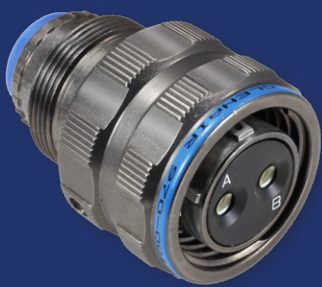
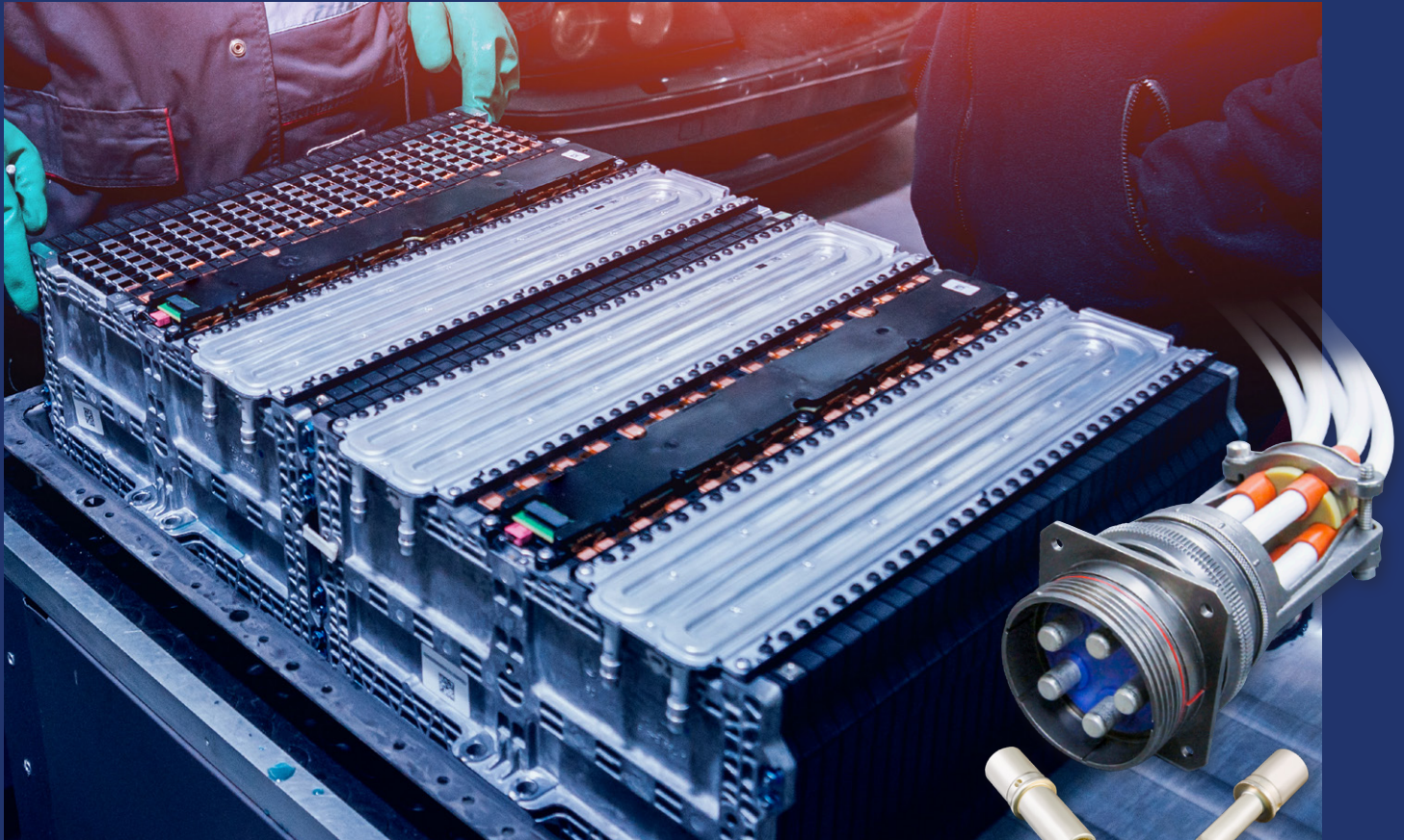
Low smoke toxicity per NES 713, tested value of 1.9  
 Fungus rating of 0 per MIL-STD-810g method 508.5, Does not support fungal growth  
 ASTM D624, die B tear strength, 150 pounds per inch minimum on jacket material  
 Low outgassing per ASTM e595 after post curing, TML .06%, CVCM .006%, WVR .02%  
 Resistant to fluids per MIL-STD-810F, method 504  
 JP-8 per MIL-DTL-83133 (NATO type 34)  
 MIL-H-5606 hydraulic fluid  
 MIL-PRF-23699 lubricating oil  
 MIL-C-85570 cleaner  
 TT-I-735 Isopropyl alcohol  
 AMS 1432 potassium acetate deicing/anti-icing fluid  
 MIL-C-87252 coolant  
 Amerex AFF fire extinguishing foam

HIGH-POWER GROUND  
TEST CONNECTORS  
FOR PROPULSION/  
AVIONIC SYSTEM  
QUALIFICATION

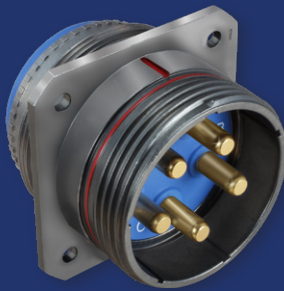


**POWER  
TRIP™**

Series 970 PowerTrip high-density reduced size and weight power connectors—ideally suited for multi-phase brushless motor interconnection



Lightweight plug with ratcheting coupling nut and low-resistance LouverBand contacts



Keyed receptacle with superior sealing and EMI shielding



Splined backshell interface for improved backshell attachment, strain relief, and EMI shielding.

The Series 970 PowerTrip™ offers improved performance compared to industrial-grade power connectors including higher density, superior resistance to vibration and shock, lower resistance, and more. Designed explicitly for aerospace-grade power interconnect applications.

- Fast, easy mating with triple-start ACME thread: 360° turn for full mating
- Reduced size and weight compared to conventional industrial and/or aerospace solutions
- LouverBand sockets for improved current ratings; up to 2000 mating cycles
- Ratcheting coupling nut for secure mating and high vibration resistance
- Operating temperature -65° C to +200° C
- Hermetic and EMI filter options available

High-density, high-performance power connectors

SERIES 970 POWERTRIP™ CONNECTOR STYLES



Plug  
970-001



Square Flange  
Receptacles  
970-003



Jam Nut Receptacles  
970-004



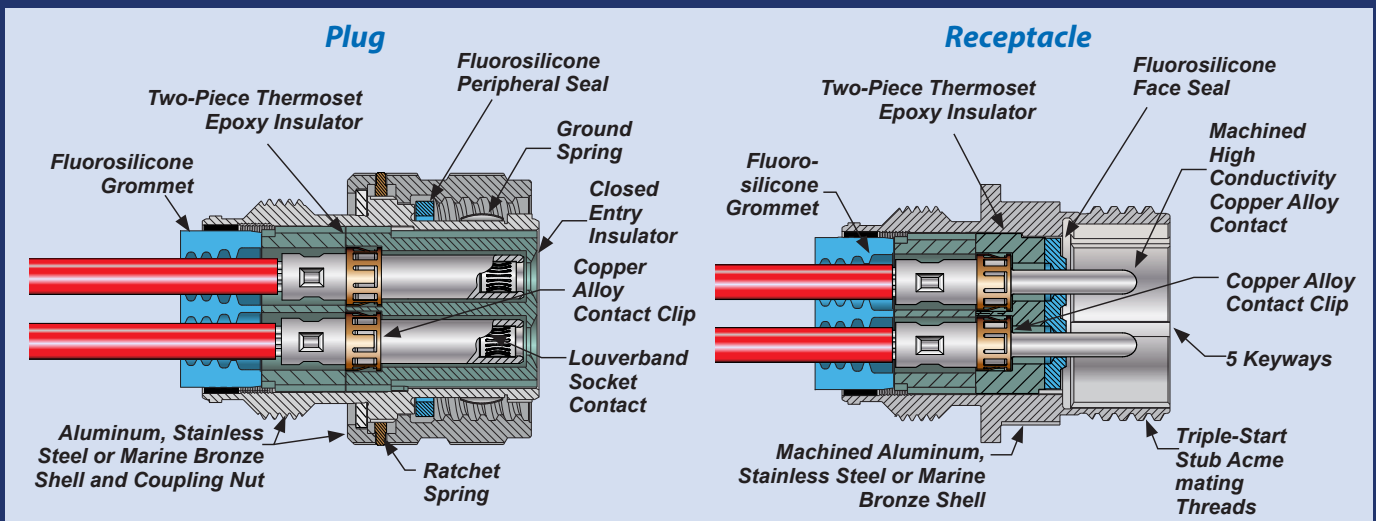
Cable Receptacles  
970-005



Feed-Thru Bulkhead  
970-006

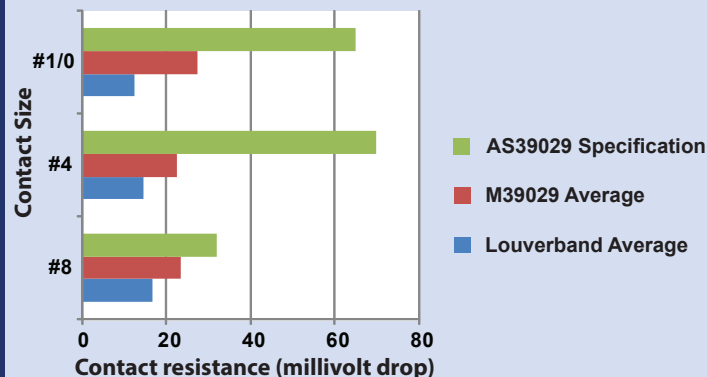


Hermetic Feed-Thru  
Bulkhead  
970-007



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 industrial and 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 conventional four-finger contacts. The LouverBand spring has consistent, stable normal force, even when subjected to thousands of mating cycles and temperature extremes.



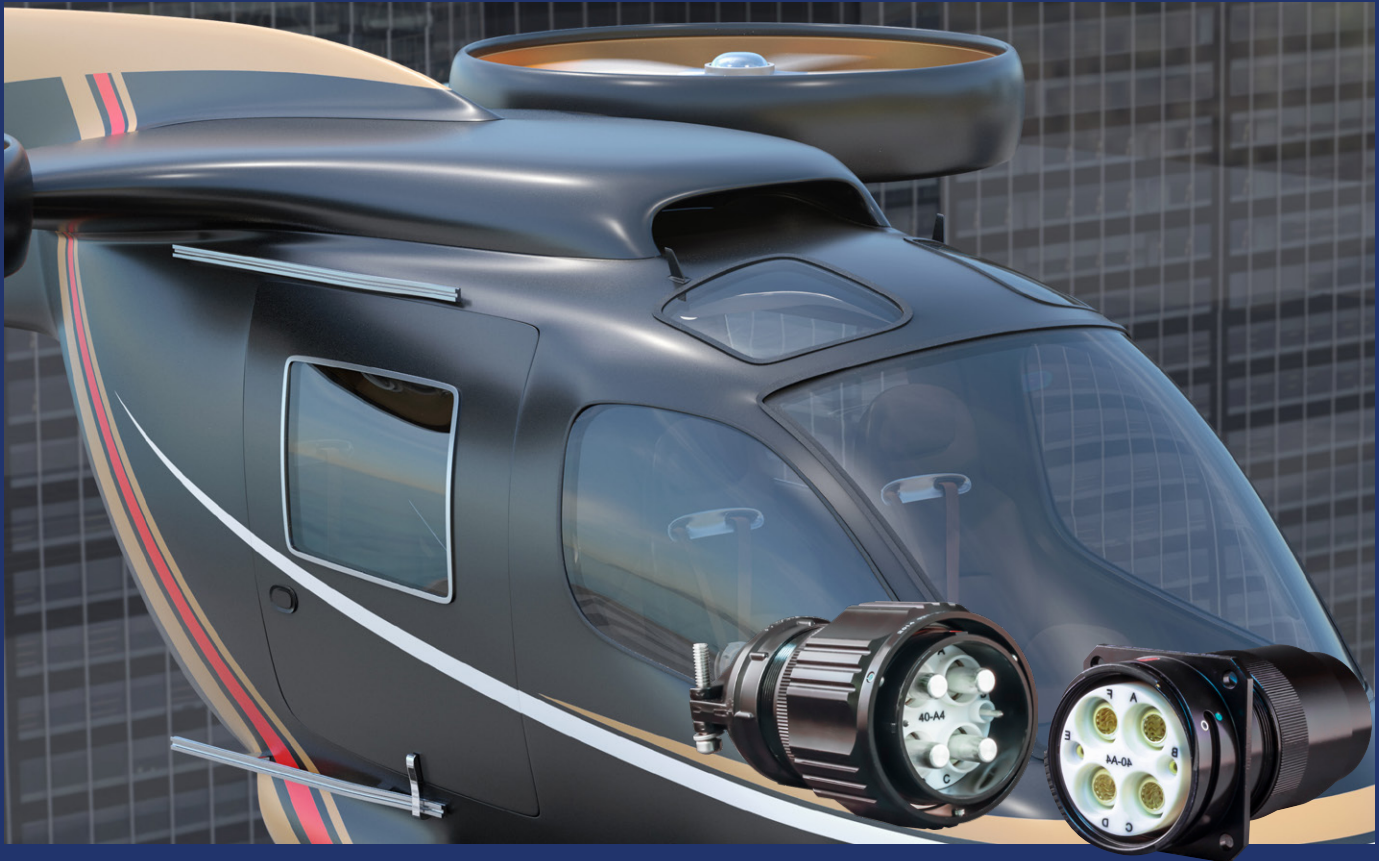
Conventional contact on the left, LouverBand contact on the right

LouverBand socket contact cutaway

HIGH-POWER GROUND  
TEST CONNECTORS  
FOR PROPULSION/  
AVIONIC SYSTEM  
QUALIFICATION



High-ampacity Super ITS - 921 high-performance reverse-bayonet for inverter, electronic speed control and other eVTOL aircraft applications



Reverse-bayonet derivatives of M5015 / VG95234 threaded connectors have long been preferred for their rapid mating and rugged resistance to vibration and shock in harsh-environment applications such as military vehicles and missile batteries. Now Glenair introduces an ultra high-performance version of the reverse-bayonet M5015 / VG95234 power connector called the Super ITS - 921. This series is designed for high-ampacity applications where low insertion force LouverBand type contacts, rugged mechanical contact retention, broad temperature tolerance, reduced size, and superior connector and wire sealing are required.

Super ITS - 921 is an extremely durable and environmentally-sealed connector, designed with its own set of high-density contact insert arrangements. Unlike conventional 5015-type connectors designed for industrial and legacy aircraft applications, the Super ITS - 921 offers uncompromised electrical, mechanical, and environmental performance features such as precision-machined aluminum alloy or stainless steel shells with 2000 mating cycle lifespan, rigid thermoplastic two-piece insulators, and machined, highly conductive copper alloy LouverBand contacts. Designed for extreme harsh environments such as are found in military defense applications, the Super ITS - 921 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 - 921 represents the ultimate in mission-critical power interconnection. This power distribution connector is fully tooled and available for immediate application.

- Super ITS-921 is a high-density reverse-bayonet connector with reduced size compared to standard M5015
- Low insertion force, high-ampacity front-release LouverBand contacts
- Rigid thermoplastic insulator with internal contact retention clips
- Precision-machined aluminum, stainless steel or marine bronze shells with polarization keys
- Interfacial and individual wire sealing for IP67 performance
- Broad operating temperature range: -65° to +180°C
- 2000-cycle reduced insertion-force mating

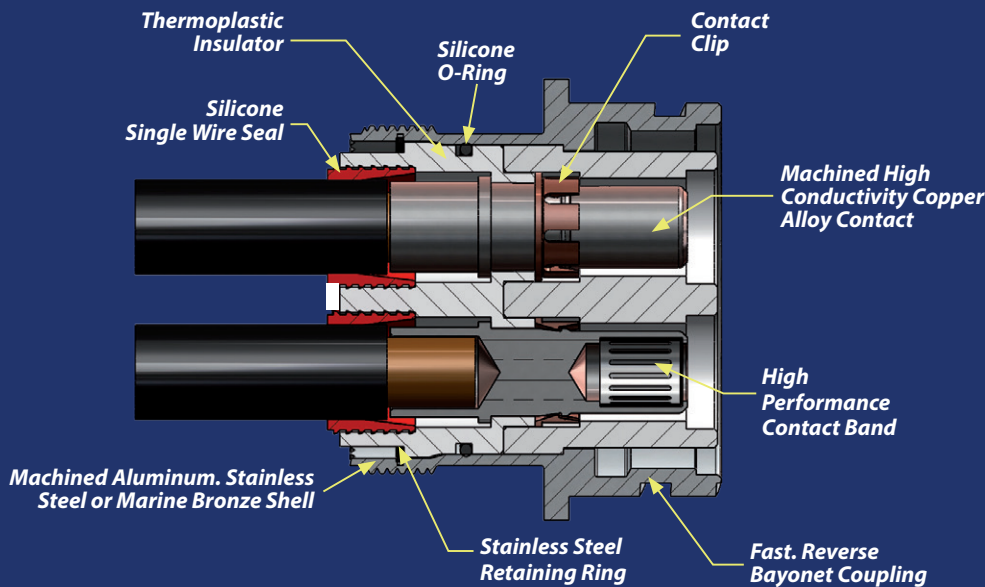
# ADVANCED PERFORMANCE Super ITS-921 Reverse-Bayonet Rigid Insert, High-Ampacity Connectors



## Features and Benefits

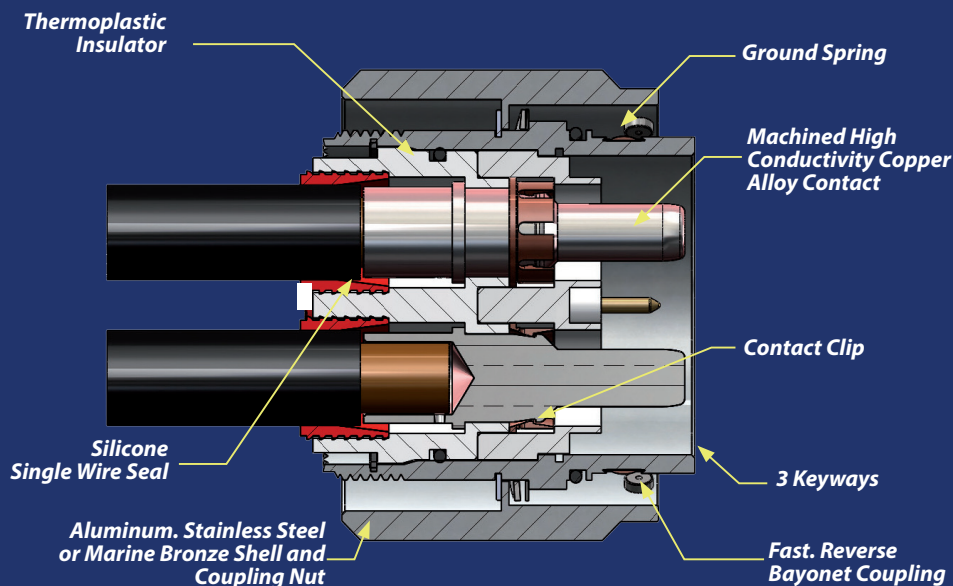
The Super ITS - 921 Connector Series is a high ampacity, harsh environment connector capable of meeting the demanding requirements of power applications utilizing the latest generation of aerospace-grade power cables. Compared to legacy 5015 or other industrial-grade solutions, Super ITS - 921 offers better durability, better wire and connector interface sealing, integrated crimp contact retention clips, thermoplastic insulators, precision-machined shells, and more.

### RECEPTACLE



- Fast, easy connector mating with reverse-bayonet coupling
- 3 polarizing keys
- Higher-density insert arrangements for reduced size and weight
- LouverBand Size 0, 4 and 8 socket contacts for high ampacity and longer life
- Crimp, front-release high-conductivity copper contacts
- Individual wire seals
- -65° C to +180° C operating temperature range

### PLUG



- Size 8, 4 and 1/0 power contact sizes
- Size 16 and 12 signal contact size
- Precision-machined plug bodies and receptacle shells



LIGHTWEIGHT  
AVIONICS,  
FLIGHT DECK,  
ACTUATOR AND  
SENSOR CONNECTORS

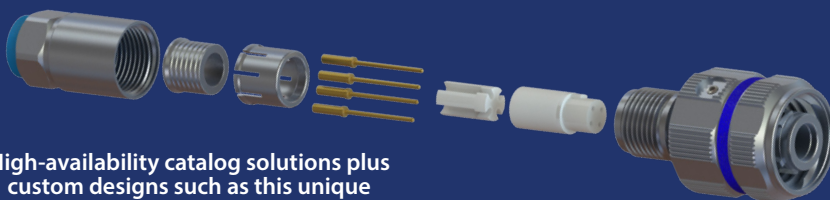
SERIES  
**806**  
MIL-AERO

Advanced performance,  
reduced size and weight  
connector series IAW  
MIL-DTL-38999



Series 806 offers significant size and weight savings while meeting all key performance benchmarks of MIL-DTL-38999 Series III for a broad range of space flight applications including sensors, telemetry, power, and system databus.

**SIZE AND WEIGHT SAVING SOLUTIONS: CATALOG OR CUSTOM**



High-availability catalog solutions plus custom designs such as this unique Quadrax implementation

- Next-generation small form factor aerospace-grade circular connector
- Designed for harsh application environments including air taxi sensors, flight navigation electronics, and flight deck avionics
- Integrated anti-decoupling technology
- High density 20HD, 22HD, RF, and high-speed contact arrangements
- Hermetic and filter versions
- +200°C temperature rating

# Series 806 Mil-Aero Micro Miniature Circular Connectors



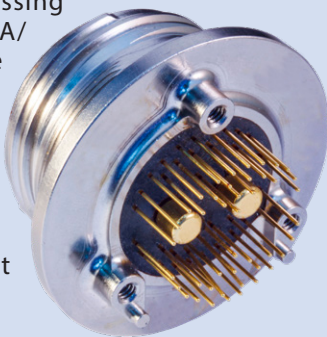
for rugged aerospace / UAM applications

## SERIES 806 MIL-AERO: FEATURES / SPECIFICATIONS

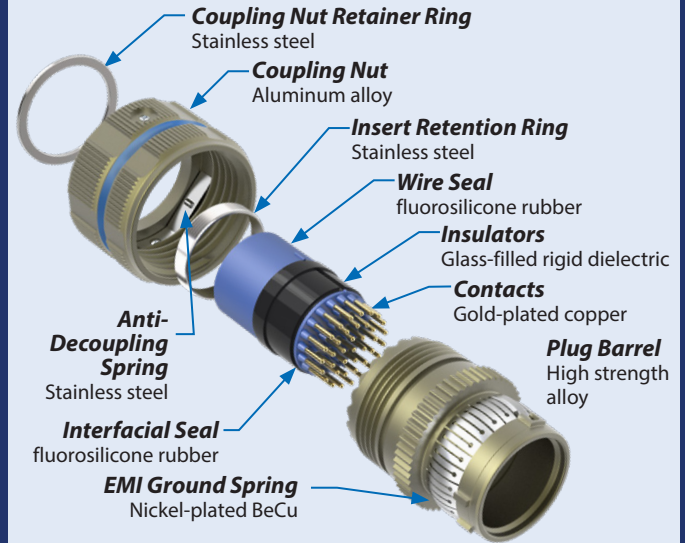
- High-density #20HD and #22HD arrangements for reduced size and weight
- Supported wire sizes:  
#20HD contacts 20–24 AWG  
#22HD contacts 22–28AWG
- Dielectric withstanding voltage  
#20HD layouts: 1800 Vac  
#22HD layouts: 1300 Vac
- Reduced pitch triple-start modified anti-decoupling stub ACME mating threads
- +200°C operating temperature
- “Triple ripple” wire sealing grommet (75,000 ft. rated)
- Snap in, rear release crimp contacts
- Metal contact retention clips
- Integral Nano-Band shield termination platform
- EMI shielding effectiveness per D38999M para. 4.5.28 (65 dB min. leakage attenuation @ 10GHz)
- 10,000 amp indirect lightning strike
- MIL-S-901 Grade A high impact shock

### AVAILABLE LIGHTWEIGHT ALUMINUM “CODE RED” HERMETICS

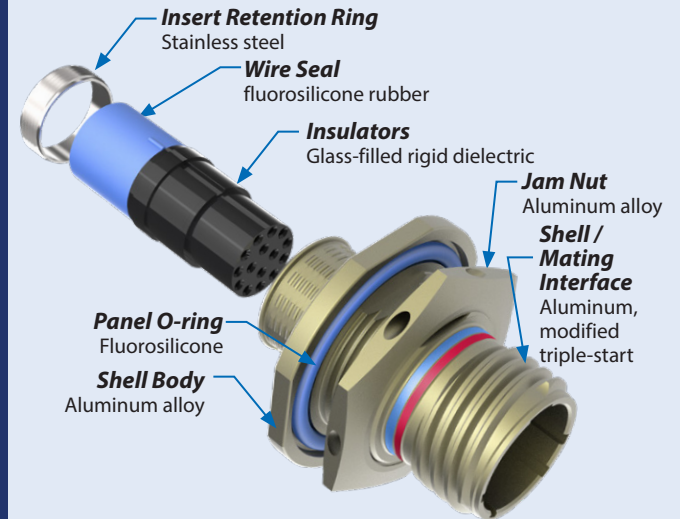
CODE RED is a lightweight encapsulant sealing and application process with 50% package-weight savings compared to glass-to-metal seal Kovar/stainless steel solutions. Non-outgassing CODE RED (IAW NASA/ESA) provides durable hermetic sealing with better than  $1 \times 10^{-7}$  leak rate performance. Gold-plated copper contacts deliver outstanding low-resistance current carrying capacity.



## SERIES 806 MIL-AERO PLUG

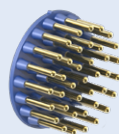


## SERIES 806 MIL-AERO RECEPTACLE

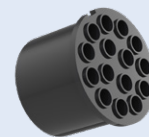


## SMALLER AND LIGHTER WITH EQUAL D38999 PERFORMANCE?

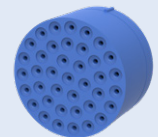
**High-Density Layouts**  
Twice as many contacts in a smaller package



**“Top Hat” Insulator**  
High voltage rating, foolproof alignment



**Triple Ripple Wire Seal**  
Reliable 75,000 ft. altitude immersion



LIGHTWEIGHT  
AVIONICS,  
FLIGHT DECK,  
ACTUATOR AND  
SENSOR CONNECTORS



Mighty Mouse micro  
miniature connector series  
for optimized SWaP

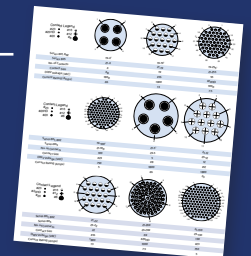


Mighty Mouse vs. 38999: less than half the size and weight.

# Mighty Mouse Connectors: Reducing the Size and Weight of Electrical Wire Interconnect Systems

- 8 coupling styles and 67 contact arrangements from 1 – 130 contacts
- MIL-DTL-38999 caliber performance
- Size #23, #22, #20, #20HD, #16, #12, #8 signal, power, RF, and high-speed contacts
- Discrete connectors and turnkey cable assemblies

## FULL RANGE OF SUPPORTED CONTACTS, 67 CONTACT ARRANGEMENTS



67 arrangements,  
from 1–130 contacts

# SERIES 80 MICRO MINIATURE Mighty Mouse Connectors and Cables

## Connector series overview



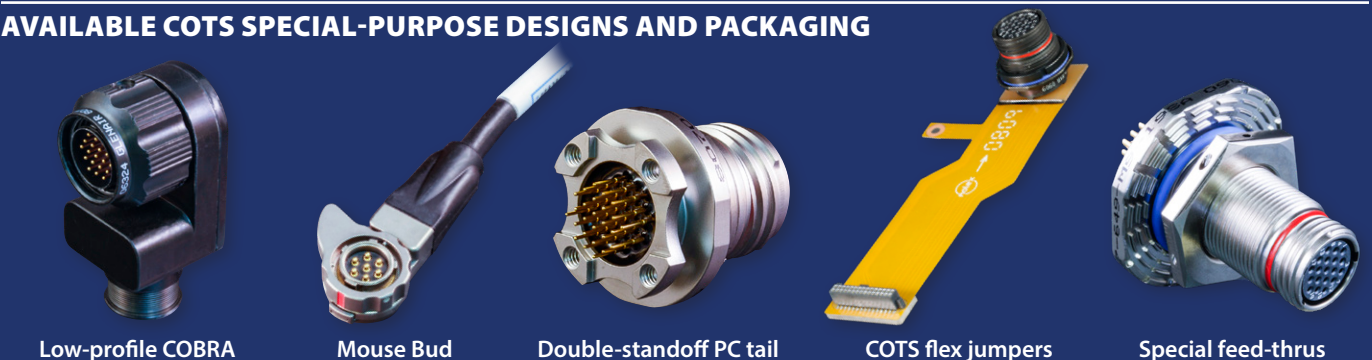
### CHOOSE FROM 8 DIFFERENT COUPLING DESIGNS



### AVAILABLE MIGHTY MOUSE CONNECTOR CLASSES



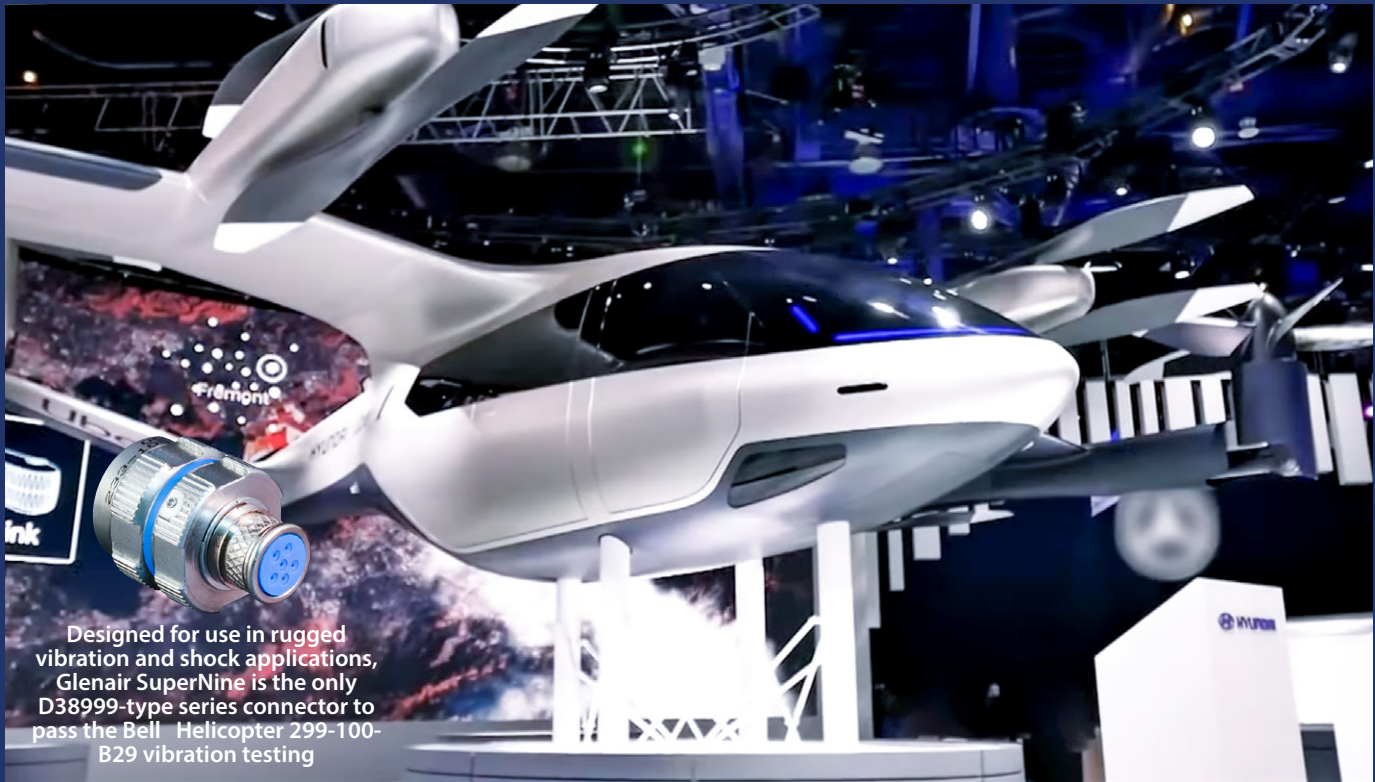
### AVAILABLE COTS SPECIAL-PURPOSE DESIGNS AND PACKAGING



LIGHTWEIGHT  
AVIONICS,  
FLIGHT DECK,  
ACTUATOR AND  
SENSOR CONNECTORS

# SuperNine®

The advanced-performance “fly-by-wire”  
connector series



Designed for use in rugged  
vibration and shock applications,  
Glenair SuperNine is the only  
D38999-type series connector to  
pass the Bell Helicopter 299-100-  
B29 vibration testing

SuperNine® is a “Better-than-QPL”  
MIL-DTL-38999 series connector  
with outstanding durability, sealing,  
ease of shield termination, broad  
range of PC tail configurations,  
environmental and hermetic  
bulkhead feed-throughs, connector  
savers, as well as off-the-shelf EMI/  
EMP filter connectors and more—all  
with Glenair’s legendary service,  
support, and product availability

## ALSO AVAILABLE: D38999 SERIES I AND SERIES II BAYONET-LOCK CONNECTORS



D38999 Series I (scoop-proof), and Series  
II (low-profile) bayonet-lock connectors in  
Class G space-grade configurations

SERIES 23

**SuperNine®**

**MIL-DTL-38999 Series III Type**

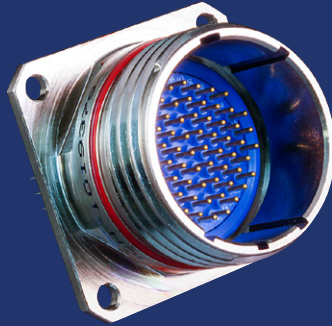
**Lighter, faster, stronger interconnects for Urban Air Mobility**



**RUGGED, HIGH VIBRATION AND SHOCK COUPLING AND MATING TECHNOLOGY**



Anti-decoupling, high vibration ratcheting coupling nut for ultimate safety and reliability



Triple-start stub ACME mating thread profile for fast mate and demate during maintenance cycles

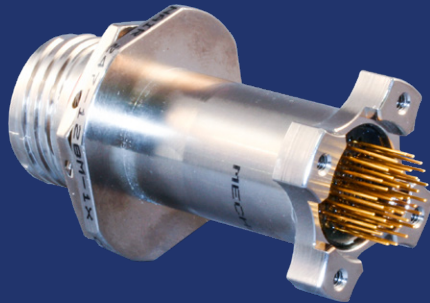


Special-purpose high-voltage in MIL-DTL-38999 Series III packaging

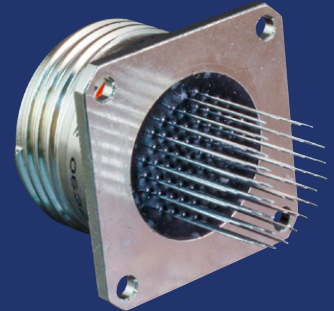
**BROAD RANGE OF PC TAIL STANDOFF DESIGNS FOR I/O-TO-BOARD APPLICATIONS**



Dual standoff design for superior resistance to vibration and shock

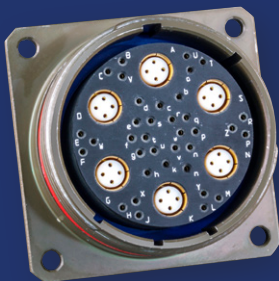


EMI / RFI planar-array filter connector for critical avionic systems



Ultra low-profile flat configuration for reduced package size applications

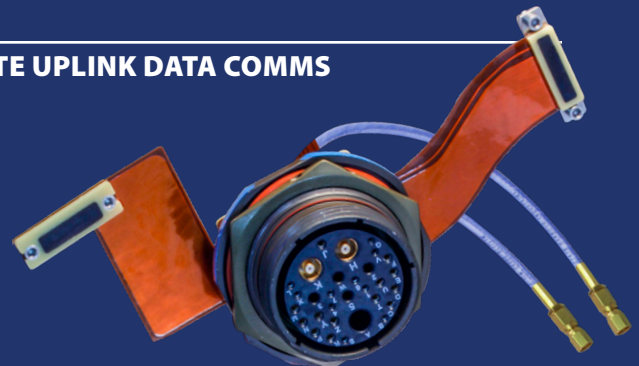
**HIGH-SPEED AND RF DESIGNS FOR SENSORS AND SATELLITE UPLINK DATA COMMS**



Industry-standard Quadrax-equipped layouts for signal and high-speed data



Ultra-light weight Octaxial contacts for 10Gb data transfer per contact



High-frequency RF designs for satcom communications

LIGHTWEIGHT  
AVIONICS,  
FLIGHT DECK,  
ACTUATOR AND  
SENSOR CONNECTORS

# EI Ochito®

High-speed octaxial contacts for Ethernet,  
SuperSpeed USB and multi-gigabit datalinks

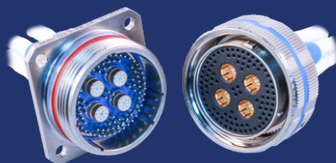


High speed, harsh environment EI Ochito® octaxial contacts save size and weight in aircraft avionics, weapons systems, satellites, radars, and communications equipment.

## AVAILABLE SIGNATURE CONNECTOR PACKAGING INCLUDES



Series 792 miniature rectangular



806 Mil-Aero Micro miniature



SuperNine advanced performance "fly-by-wire"

- 10GbE, SuperSpeed USB, and multi-gigabit shielded pairs
- Universal drop-in for keyed size #8 connector cavities
- Data-pair isolation for optimal signal integrity
- Crimp or threaded shield termination contact types
- Snap-in, rear release
- Environmentally sealed
- Aerospace-grade cable assemblies
- 50% cable / contact reduction compared to Quadrax

# HIGH-SPEED OCTAXIAL El Ochito® Contacts



Supported protocols and available turnkey jumper assemblies



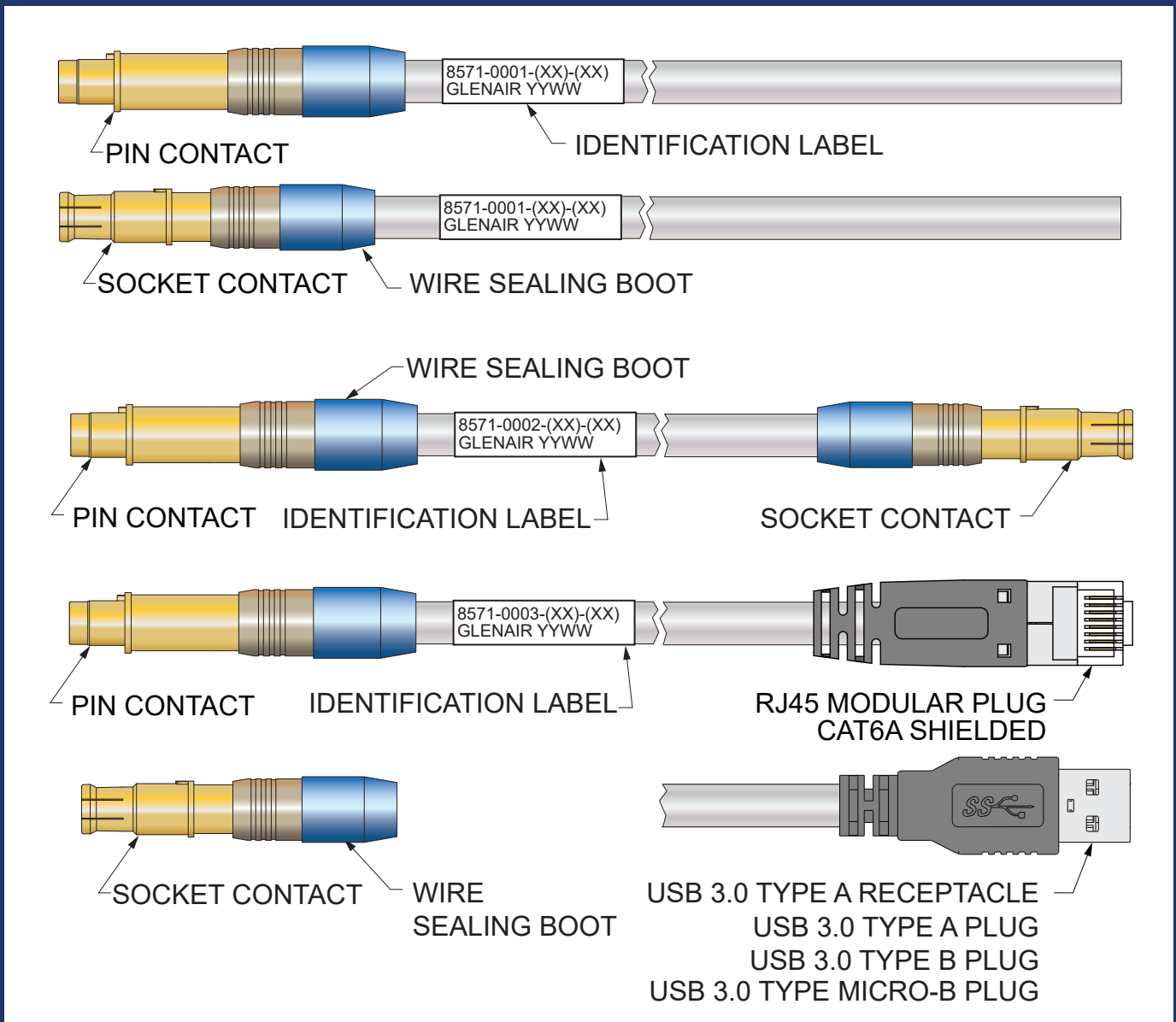
El Ochito® White octaxial contacts provide 10GbE in a single size #8 contact cavity (compared to two Quadrax) for 100BASE-T solutions.



Low-dielectric material. 90 ohms. El Ochito® Blue octaxial contacts provide an aerospace-grade solution for SuperSpeed USB 3.0



Low-dielectric material. Up to 5 Gbps. 100 ohms. El Ochito® Red octaxial contacts provide an aerospace-grade solution for multi-gigabit data rates.

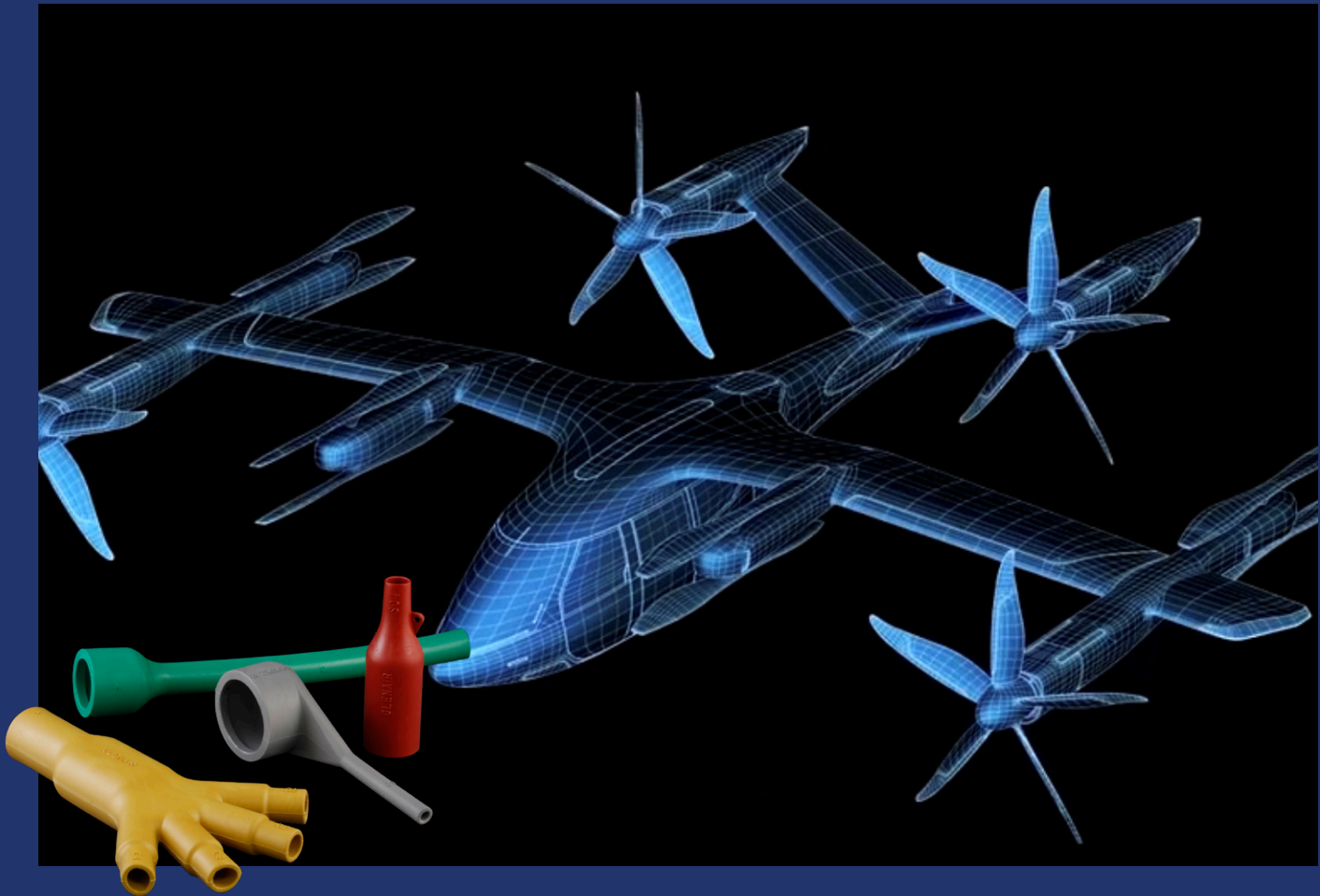




WIRE AND CABLE  
PROTECTION  
AND MANAGEMENT  
TECHNOLOGY

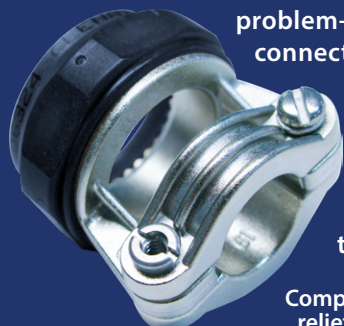


Aerospace backshell and  
accessory designs for  
weight reduction, life-of-  
aircraft durability, and  
optimal reliability



## Innovative solutions to EWIS environmental sealing, wire management, strain relief, and EMC shield termination

**G**lenair is the go-to design partner for innovative solutions to electrical wire interconnect system (EWIS) problems in airframe applications. Our backshell and connector accessory design engineers are responsible for more problem-solving innovation in our industry than every other connector accessory supplier combined. Take our extensive composite thermoplastic connector accessory series, for example. Glenair can supply the lightest weight solution for all EWIS cable routing, shield termination, environmental sealing, and cable strain relief applications—all in conductively-plated engineering thermoplastic.



Composite thermoplastic backshells and strain reliefs reduce weight and improve durability

### GLENAIR: MASTERS OF THE BACKSHELL UNIVERSE

- High-performance circular connector accessories for every environmental, mechanical and electromagnetic shielding requirements
- Tens of thousands of innovative part numbers in inventory ready for same-day shipment
- Fast turnaround on made-to-order accessories, typically only two to three weeks
- Constant, relentless backshell innovation

NEW INNOVATIONS IN

# Connector Backshells and Accessories



Unique, problem-solving backshells and connector accessories for aerospace applications

## HIGH-TEMP, LIGHTWEIGHT COMPOSITE THERMOPLASTIC ACCESSORIES



Split-shell and snap-lock banding backshells

Dummy stowage shorting plugs and receptacles

Piggyback boot Band-in-a-Can

Drop-in EMI/RFI shield termination configurations

## PRESSURE BOUNDARY, FIREWALL, AND SPLIT-SHELL FEED-THRU



Pressure boundary composite feed-thru

Firewall pressure boundary feed-thru

EMI/RFI split-shell metal feed-thru

- 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

## INNOVATIVE NEW EWIS TECHNOLOGIES



Self-locking protective covers

Split-shell snap-lock rectangular composite backshells

Heat shrink boot / wire routing clamp assembly

Leonardo's ProSeal spring-loaded protective covers

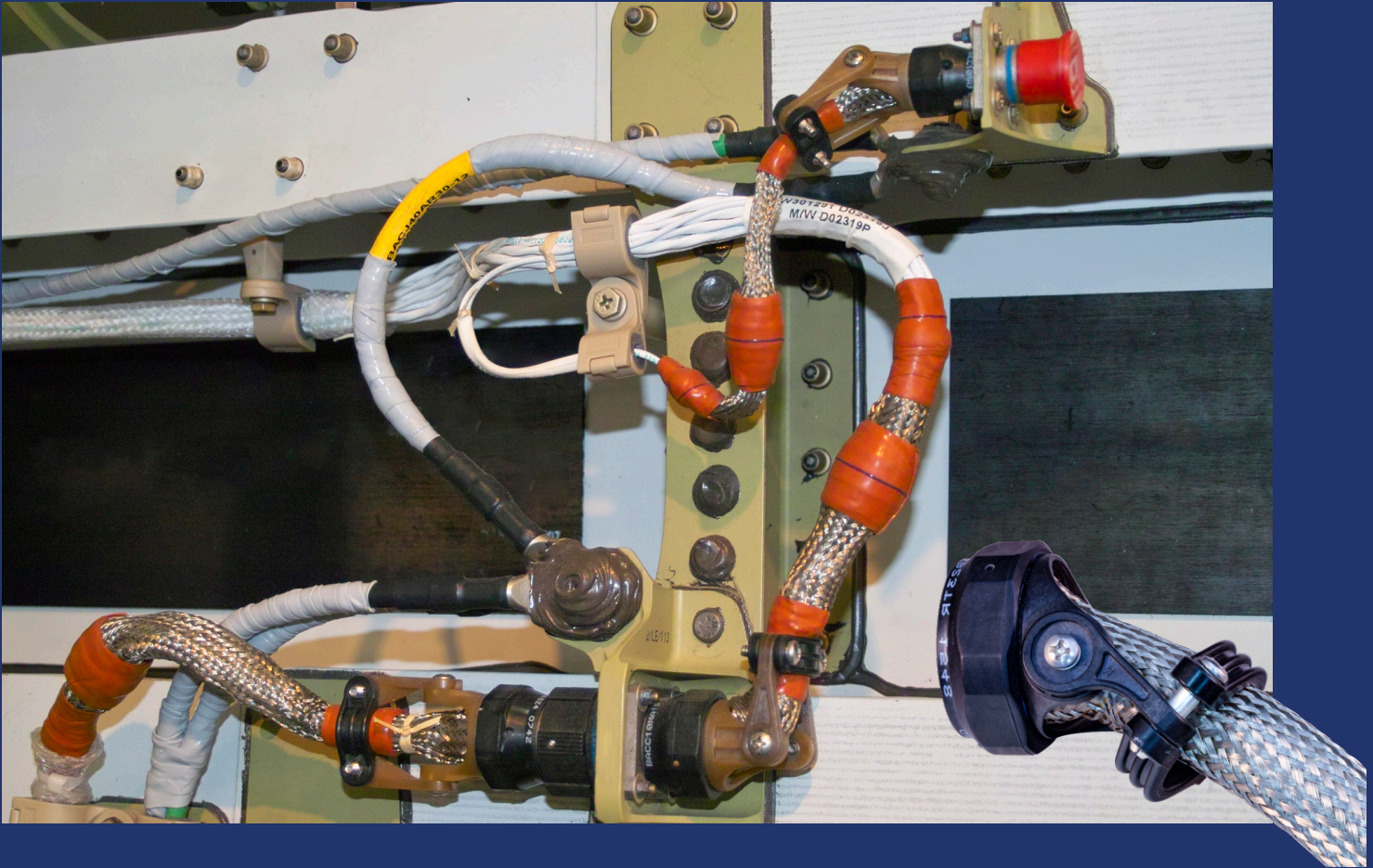
Lightweight SpliceSaver single- and multi-wire series

Lightweight Dummy Contact Sealing Plugs (DCSP)

WIRE AND CABLE  
PROTECTION  
AND MANAGEMENT  
TECHNOLOGY

# SWING ARM®

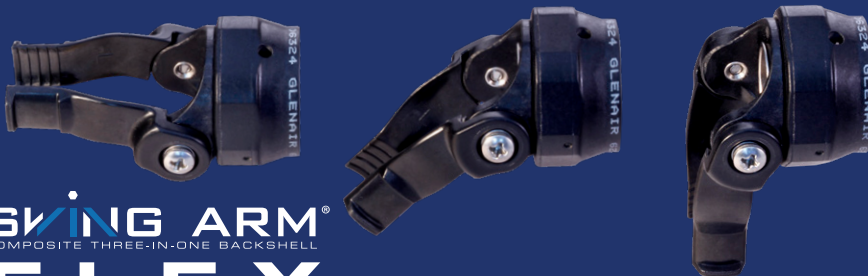
3-in-1 lightweight composite backshell with optional drop-in braid termination follower



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 both 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, SuperNine, and Series 806 Mil-Aero.

## 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®  
COMPOSITE THREE-IN-ONE BACKSHELL  
**FLEX**

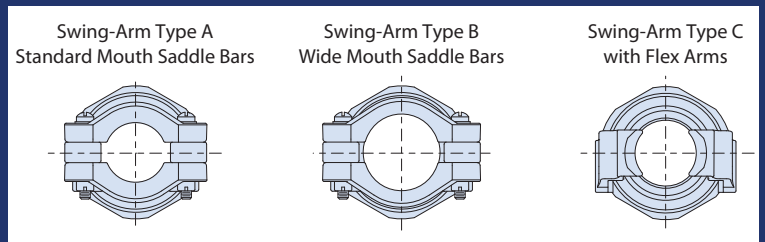
User-configurable straight, 45°, and 90° cable routing

# Swing-Arm 3-in-1 lightweight composite thermoplastic strain-relief and EMI/RFI shield termination backshell



## THREE STYLES OF SWING-ARM STRAIN RELIEF CLAMPS

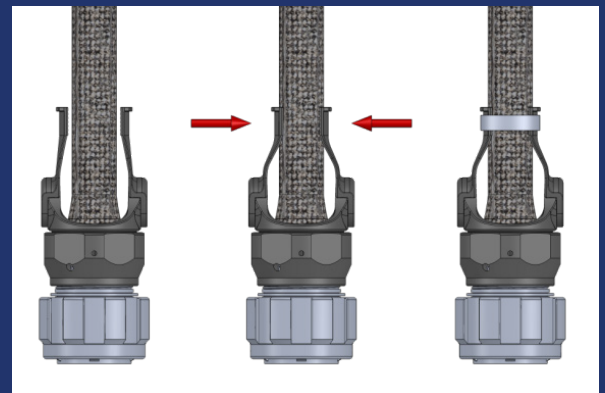
- Style A - standard mouth, rigid saddle bars
- Style B - wide mouth (for larger cable diameters), rigid saddle bars
- Style C Swing-Arm FLEX - no saddle bars, self-centering round cable strain relief



## 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).

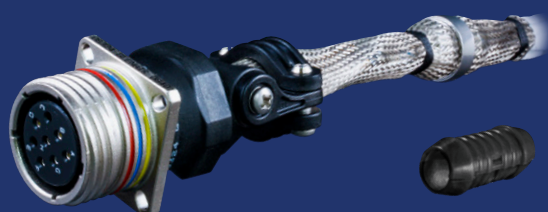


## SWING-ARM AND SWING-ARM FLEX WITH OPTIONAL INTEGRATED SHIELD SOCK

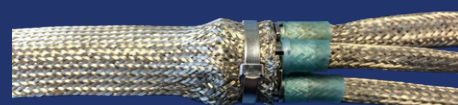
For fast and reliable EMI/RFI shield termination of individual wire and overall cable shielding



## 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



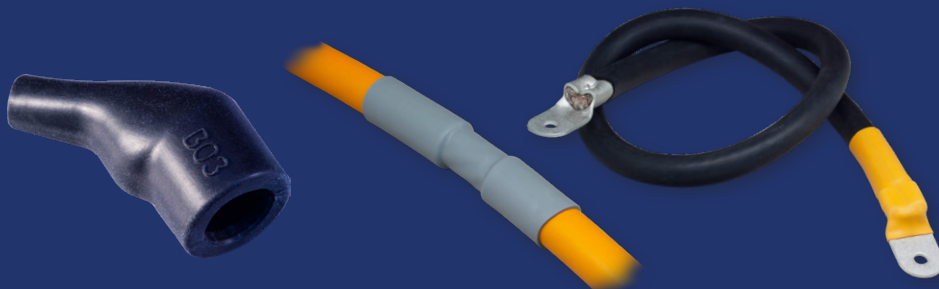


Fast and easy cold-action shrink boot and tubing solutions for wire and cable protection



**D**esigned for rugged weathering, UV and ozone-resistant performance, Glenair Autoshrink is the one-piece easy-action shrink boot and tubing solution. Quickly attach shrink boots, splice insulation, or repair Glenair Duraelectric formula jacketing. Straight, 45° and 90° angle lipped shrink boots lock into boot groove on adapters to keep out environmental debris. 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 Duraelectric formula 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.

- Straight, 45° and 90° angle-lipped shrink boots and shrink tubing
- Fast and easy installation
- Four high-performance material types
- Fire-resistance in all material types
- Reliable IP68 sealing
- 3000 VAC rated
- Multiple color options
- Service temperature range: -65°C to 300°C
- Ideal for repair of cables and conduit with Duraelectric jacketing
- Extreme UV / sunlight resistance
- Integrated ground strap versions available



Mil-Aero / Industrial fluid-resistant lipped shrink boots

Fast and easy repair of Duraelectric-jacketed cables

Utilize for termination of lugs on new installations

# Cold-Action Shrink Boots and Tubing



Four material types for high UV plus LSZH, fluid resistance, temperature tolerance, and subsea use

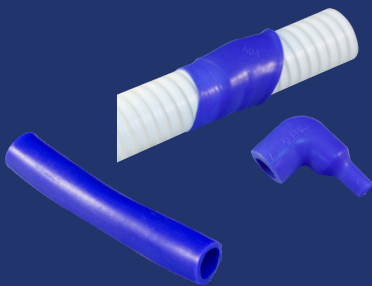
## AUTOSHRINK D UV-RESISTANT / LSZH SHRINK BOOTS AND TUBING



Autoshrink D is a high-performance elastomeric material (Glenair Duraelectric™ formula polymer GPS67) cold-action shrink boot and jacket solution for general-purpose use in military and commercial aerospace electrical wire interconnect systems and other harsh wire protection, sealing, and repair applications.

- Service temperature range: -65°C to 225°C
- Fire resistant and Low smoke-zero halogen (LSZH)
- General-purpose resistance to common aerospace, military and industrial fluids
- Tubing available with integrated ArmorLite ground strap

## AUTOSHRINK F ADVANCED FLUID RESISTANT SHRINK BOOTS AND TUBING



Autoshrink F is a high-performance elastomeric material (Glenair Duraelectric™ formula polymer GPS125) cold-action shrink boot and jacket solution for application-specific use in military and commercial aerospace electrical wire interconnect systems and other harsh wire protection, sealing, and repair applications. Autoshrink F is highly resistant to aircraft industry jet fuels, oils, solvents, and cleaners.

- Service temperature range: -65°C to 200°C
- Fire resistant and suitable for immersion in jet fuel, diesel, lubricants, and solvents

## AUTOSHRINK S SUBMERSIBLE SHRINK BOOTS AND TUBING



Autoshrink S is a high-performance polymer material (Glenair Subsea formula GPS153) cold-action shrink boot and jacket solution for use in high-pressure applications such as underwater oil & gas industry electrical wire interconnect systems and other subsea harsh-environment wire protection, sealing, and repair applications.

- Service temperature range: -40°C to 100°C
- Low smoke-zero halogen (LSZH)
- Resistant to common industrial and environmental fluids

## AUTOSHRINK T HIGH-TEMPERATURE-TOLERANT SHRINK BOOTS AND TUBING



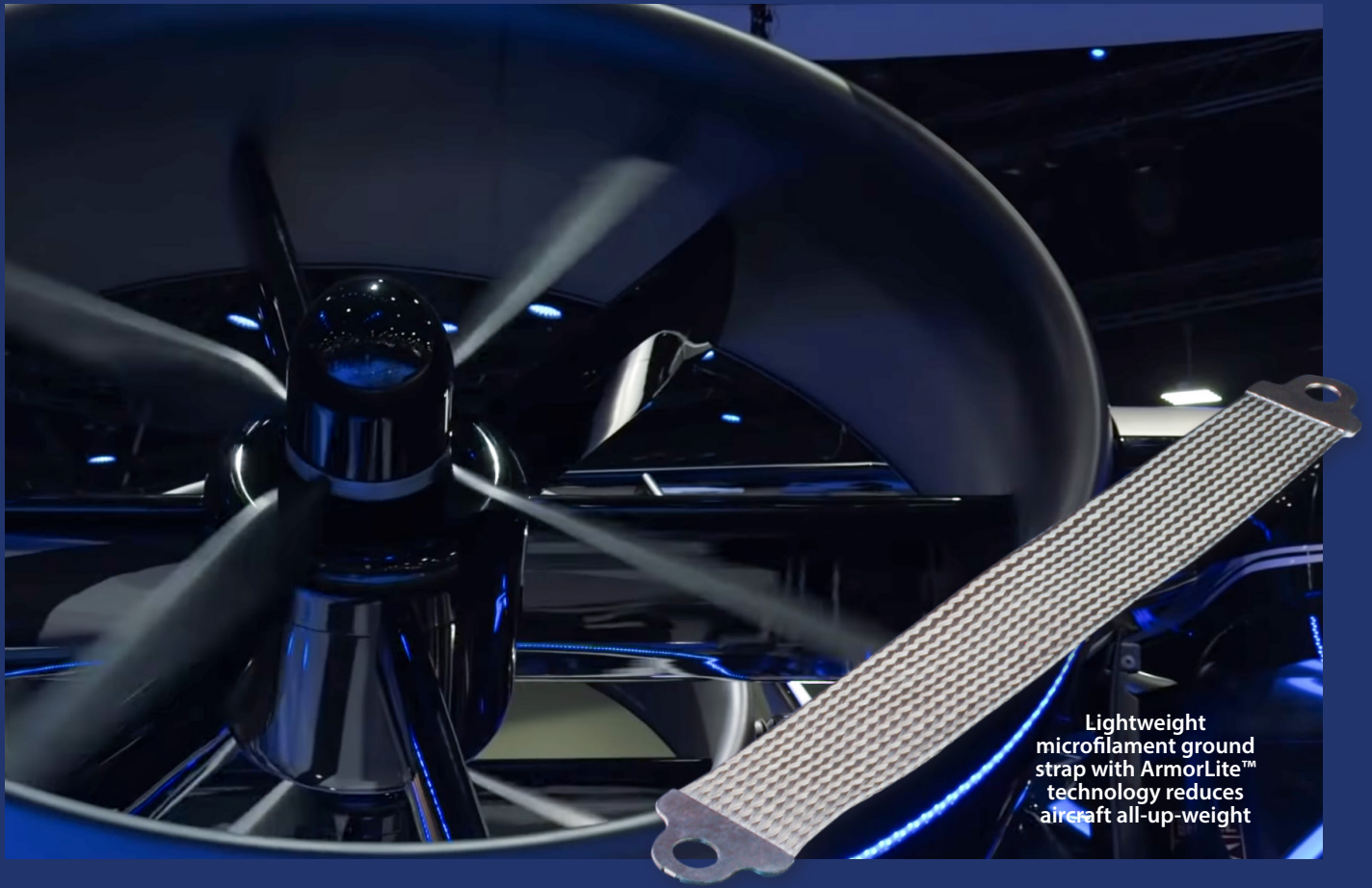
Autoshrink T is a high-performance rubber material (Glenair ThermaRex formula GPS139) cold-action shrink boot and jacket solution for use in high-temperature applications in military and commercial aerospace electrical wire interconnect systems and other harsh-environment wire protection, sealing, and repair applications.

- Service temperature range: -65°C to 300°C
- Fire resistant and low smoke-zero halogen (LSZH)
- Resistant to common aerospace, military and industrial fluids

SHIELDING  
AND GROUNDING  
SOLUTIONS FOR  
ELECTROMAGNETIC  
COMPATIBILITY

# ARMORLITE™

Ground Straps for electrostatic discharge, lightning strike and power equipment grounding



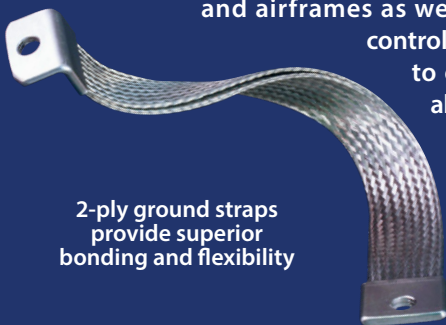
Lightweight microfilament ground strap with ArmorLite™ technology reduces aircraft all-up-weight

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 fry avionics gear and disrupt electric motor operation. Power generation systems (batteries, motors, inverters, etc.) can also produce transient electrical current that can damage adjacent electronic systems such as electronic controllers and fly-by-wire systems.

Damage from these events is minimized and managed in aircraft 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 and solid material ground straps to both commercial and military aerospace customers. Our ground straps are exactly designed with appropriate conductive and dissipative materials for each application.

- 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
- Fast turnaround on requests for unusual and build-to-print requirements



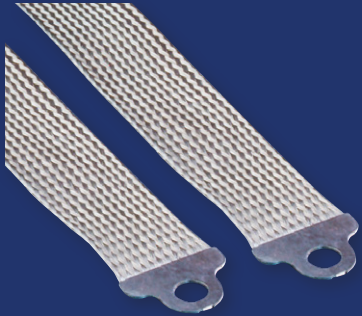
2-ply ground straps provide superior bonding and flexibility

# High-Performance Ground Straps

Lightweight, general, and heavy-duty

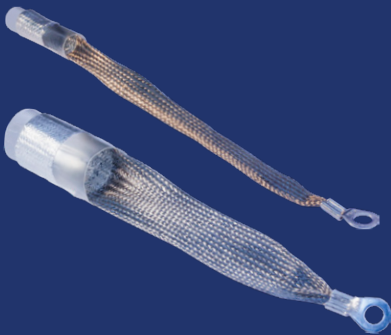


## LIGHTWEIGHT ARMORLITE™ MICROFILAMENT GROUND STRAPS



- 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

## LARGE-DIAMETER, LIGHTWEIGHT ARMORLITE™ EWIS GROUNDING HSTS



- Oversized heat shrink termination sleeves for grounding of long-run overbraided EWIS harnesses
- Manufactured in-house by Glenair (made in America)
- Fabricated from lightweight, highly flexible ArmorLite™ microfilament EMI/RFI braid material
- Weight reduction up to 70% lighter compared to legacy NiCu A-A-59569 / QQB575 materials

## GROUND PLANE ADAPTER PLATE FOR USE WITH COMPOSITE THERMOPLASTIC PANELS

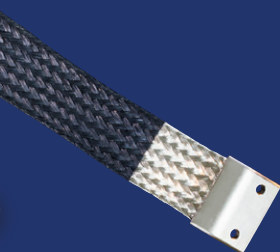


- Resolves connector-to-panel grounding issues in composite fuselage aircraft
- Fabricated from highly conductive tinned beryllium copper IAW AMS 4530 or ASTM B194 and ASTM B545
- Available for all popular aerospace connectors with straight and 90° ground attachments

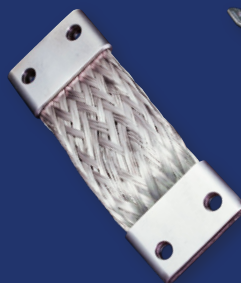
## FAST TURNAROUND ON UNUSUAL/BUILD-TO-PRINT REQUESTS



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



SHIELDING  
AND GROUNDING  
SOLUTIONS FOR  
ELECTROMAGNETIC  
COMPATIBILITY

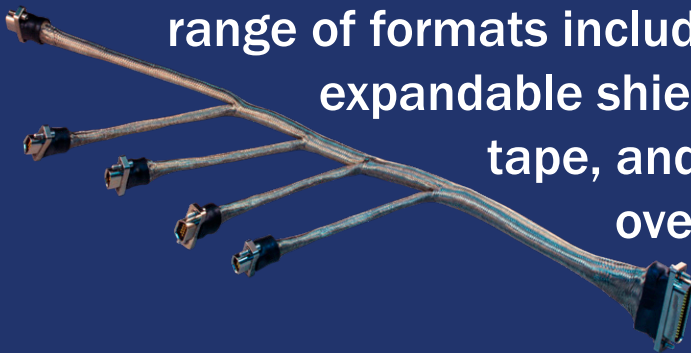
# ARMORLITE™

Microfilament nickel-clad expandable  
stainless steel EMI/RFI braided 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. ArmorLite™ is packaged in a wide range of formats including bulk expandable shielding, mesh tape, and factory overbraiding.

- Ultra-lightweight EMI/RFI braided sleeving for EMC and lightning strike applications
- Best performing metallic braid during lightning tests (IAW ANSI/EIA-364-75-1997 Waveform 5B)
- Microfilament stainless steel: 70% lighter than NiCu A-A-59569/QQB575
- Outstanding EMI/RFI shielding and conductivity
- ArmorLite™ CF with enhanced corrosion protection
- Superior flexibility and “windowing” resistance: 90 to 95% optical coverage
- 70,000 psi (min.) tensile strength



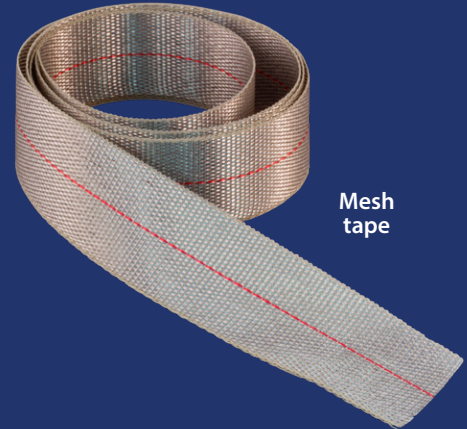
LIGHTWEIGHT, FLEXIBLE  
**ArmorLite™ Microfilament Braid**  
 for EMI/RFI Shielding Applications



**ARMORLITE™ SHIELDING SOLUTIONS AND PACKAGING**



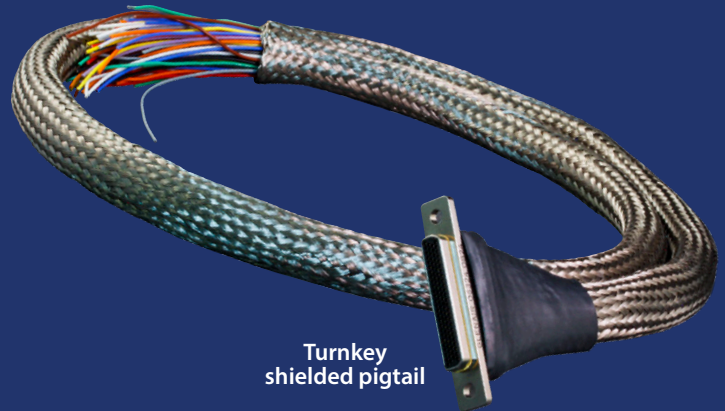
Factory overbraided



Mesh tape

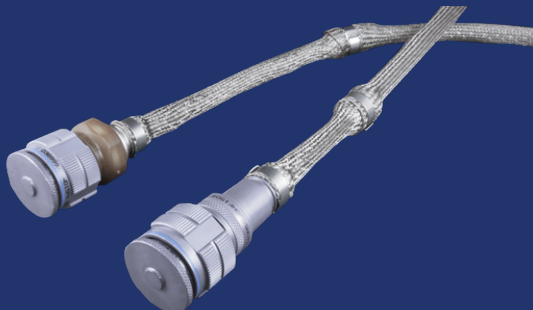


Integrated shield sock



Turnkey shielded pigtail

**ALSO AVAILABLE FOR ADDITIONAL WEIGHT SAVINGS: AMBERSTRAND METAL-CLAD COMPOSITE BRAIDED SHIELDING**



Braid Dia.	AmberStrand® 100% vs. nickel-coated copper		
	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%

Braid Dia.	AmberStrand® 75% vs. nickel-coated copper		
	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%

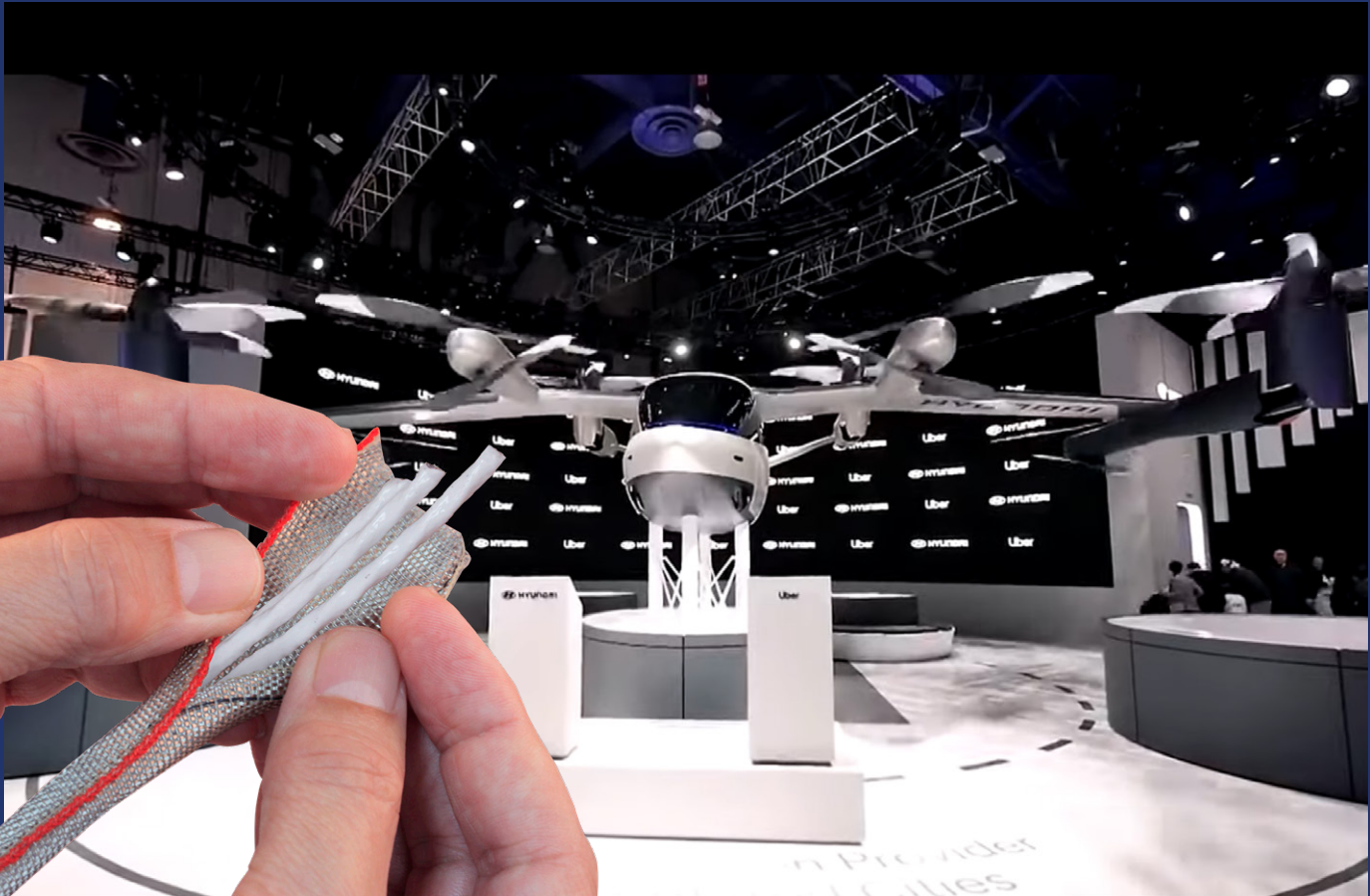


SHIELDING  
AND GROUNDING  
SOLUTIONS FOR  
ELECTROMAGNETIC  
COMPATIBILITY



MasterWrap™

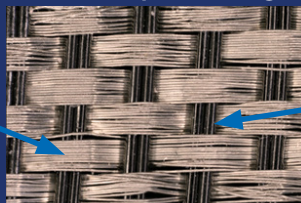
Flexible, lightweight wraparound  
EMI/RFI wire shielding and  
abrasion protection material



**T**ubular braided sleeving meets the broad range of EMC shielding and mechanical protection requirements of aircraft harness assemblies. But the need to apply shielding materials over already-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—available in conductive ArmorLite™ and now in abrasion-resistant Nomex®—solves these problems and more. MasterWrap™ is ideally suited for both long-run wire harness protection as well as spot coverage and maintenance of EWIS cable applications—all with outstanding weight reduction and ease-of-assembly. MasterWrap™ ArmorLite™ and MasterWrap™ Nomex® are qualified for use at major aircraft manufacturers for long cable runs, spot coverage, and repairs.

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 ensure up to 95% optical / mechanical coverage

**MASTERWRAP ARMORLITE**

- Up to 70% weight reduction
- 500 hour salt spray corrosion resistance
- 50,000 cycle 90°–120° bend flex tested
- Temperature tolerant from -65°C to 200°C

**MASTERWRAP NOMEX®**

- Soft, abrasion resistant unbonded Nomex® yarn
- -60° to +240°C temperature range
- 90,000 PSI yield tensile strength
- Excellent chemical resistance; will not melt

NEW MASTERWRAP™ WITH NOMEX®

# MasterWrap™ Nomex® flexible, lightweight wraparound abrasion / thermal protection



for spot mechanical coverage and repair of wire harnesses

## MASTERWRAP (NOMEX®): DIMENSIONAL INFORMATION • HOW TO ORDER



How To Order			
<b>Sample Part Number</b>	103-095	-024	GY
<b>Basic No.</b>	MasterWrap™ (Nomex®) material		
<b>Dash No.</b>	See Table I		
<b>Color option</b>	W = White R = Red GN = Green GY = Gray TN = Desert Tan OR = Orange Omit = for standard Black		

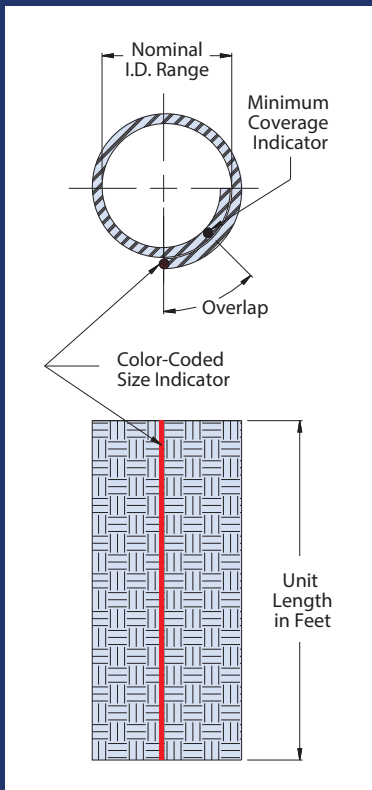
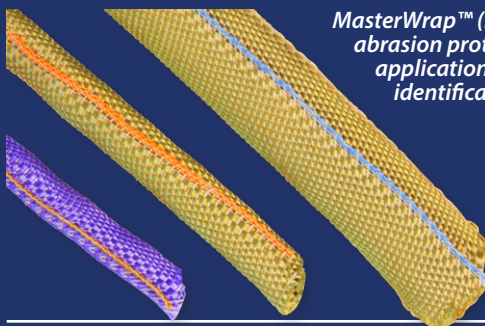


Table I								
Dash No	Nominal I.D. (Ref.)		Ref. Wire Bundle Range Nominal		Approx. Weight Grams/Ft.	Min. Pull Strength (lbs)	Size Indicator color code	Quantity feet/spool
	In.	mm	In.	mm				
004	.125	3.2	.093 .170	2.4 4.3	1.8	39	Black	50-500
008	.250	6.4	.170 .300	4.3 7.6	2.3	75	Brown	50-400
012	.375	9.5	.300 .406	7.6 10.3	3.2	94	Red	50-300
016	.500	12.7	.406 .520	10.3 13.2	3.7	116	Orange	50-250
020	.625	15.9	.520 .675	13.2 17.2	5.0	158	Yellow	50-200
024	.750	19.1	.675 .825	17.2 21.0	6.0	193	Green	50-100
032	1.000	25.4	.825 1.100	21.0 27.9	7.3	237	Blue	50-100
040	1.250	31.8	.938 1.312	23.8 38.3	10.0	TBD	Violet	50-75
048	1.500	38.1	1.187 1.590	30.1 40.4	11.0	TBD	Gray	50
064	2.000	50.8	1.812 2.090	33.0 53.1	12.2	TBD	White	50



MasterWrap™ (Nomex®) is the ideal solution for mechanical abrasion protection of wire bundle harnessing in aircraft applications. Available color selections allow for easy identification and labeling of wire circuitry.

### NOTES

Product ordered in 1 foot increments, packaged in boxed spools. See Table I. Lengths of 1-49 feet will be packaged in individual polybags.

Materials:

Woven mesh - high temperature DuPont™ Nomex®; Monofilament - PEEK; Overlap tracer - high temperature DuPont™ Nomex® thread

DuPont™ and Nomex® are trademarks or registered trademarks of E.I. duPont de Nemours and Company.



# MISSION-CRITICAL INTERCONNECT SOLUTIONS

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[www.glenair.com](http://www.glenair.com)

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Wallingford, CT  
06492

Telephone:  
203-741-1115  
Facsimile:  
203-741-0053  
sales@glenair.com

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60712

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+81-52-569-2523  
sales@glenair.jp