Commercial Aerospace EWIS Technology

Signature Interconnect Solutions for Commercial Aircraft
**Glenair Signature Commercial Aerospace EWIS Technology**

**Signature Interconnect Solutions for Commercial Aircraft**

### NEXT-GENERATION MICRO MINIATURE CONNECTORS

- **Series 806**
  - Mil-Aero micro miniature

- **Series 791 and 792**
  - Micro-Crimp rack and panel

- **Series 20**
  - SuperTwin lightweight modular

### HARSH ENVIRONMENTAL AEROSPACE CONNECTORS

- **SuperNine**
  - “better than QPL”
  - MIL-DTL-38999 Series III

- **CODE RED**
  - lightweight hermetic

- **ThermaRex HT**
  - high-temperature connector

- **EMI filtered**
  - pressure transducers

### SPECIAL-PURPOSE AEROSPACE CONNECTORS AND CONTACTS

- **PowerLoad**
  - power distribution connectors

- **GateLink Pro**
  - high-speed data uplink connector

- **El Ochito**
  - high-speed Ethernet and USB 3.0

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SPECIAL-PURPOSE AEROSPACE CONNECTORS AND CONTACTS (CONTINUED)

- Superfly Datalink
- SpliceSaver time- and labor-saving wire splice replacement
- Dummy Contact Sealing Plugs (DCSP)

ADVANCED-PERFORMANCE CONNECTOR ACCESSORIES AND WIRE MANAGEMENT SOLUTIONS

- ProSeal spring-action protective covers
- Swing-Arm and Swing-Arm FLEX strain reliefs
- Autofshrink cold-action tubing and boots
- Turboflex ultra-flexible power cables
- ArmorLite microfilament EMI/RFI shielding
- Lightweight, flexible ground straps and HSTs
- MasterWrap wraparound shielding now available in Nomex®
- Problem-solving circular and rectangular connector accessories
- Band-Master ATS advanced shield termination system
- Turnkey, lightweight polymer- and metal-core conduit wire protection systems
Series 806 offers significant size and weight savings while meeting key performance benchmarks for a broad range of applications such as commercial and military aerospace, robotics, transportation, and more. Designed for general use in harsh vibration, shock, and environmental settings—as well as high-altitude, unpressurized aircraft zones with aggressive voltage ratings and altitude immersion standards—the Series 806 Mil-Aero features numerous design innovations including durable mechanical insert retention, radial seals and triple-ripple grommet seals. Its reduced thread pitch and re-engineered ratchet prevent decoupling problems, particularly in small shell sizes, solving one of the major problems of shell size 9 and 11 MIL-DTL-38999 Series III connectors.

SAVE SIZE AND WEIGHT WITH SERIES 806 CONNECTORS

- Series 806 Mil-Aero
  - Smallest Size
  - .500 In. Mating Threads
  - 3 #20 Contacts or 7 #22 contacts

- MIL-DTL-38999
  - Smallest Size
  - .625 In. Mating Threads
  - 3 #20 Contacts or 6 #22 contacts

- Next-generation small form factor aerospace-grade circular connector
- Designed for harsh application environments such as aircraft, industrial robotics and more
- Upgraded environmental, electrical and mechanical performance
- Integrated anti-decoupling technology
- Higher density 20HD and 22HD contact arrangements
- Hermetic and filter versions
- +200°C temperature rating
## Series 806 Mil-Aero Micro Miniature Circular Connectors
for harsh mil-aero applications IAW MIL-DTL-38999

### 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 antidecoupling 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 1X10⁻⁷ leak rate performance. Gold-plated copper contacts deliver outstanding low-resistance current carrying capacity.

### SERIES 806 MIL-AERO PLUG

- **Coupling Nut Retainer Ring**: Stainless steel
- **Coupling Nut**: Aluminum alloy
- **Insert Retention Ring**: Stainless steel
- **Wire Seal**: Fluorosilicone rubber
- **Insulators**: Glass-filled rigid dielectric
- **Contacts**: Gold-plated copper
- **Plug Barrel**: High strength alloy
- **Anti-Decoupling Spring**: Stainless steel
- **Interfacial Seal**: Fluorosilicone rubber
- **EMI Ground Spring**: Nickel-plated BeCu

### SERIES 806 MIL-AERO RECEPTACLE

- **Insert Retention Ring**: Stainless steel
- **Wire Seal**: Fluorosilicone rubber
- **Insulators**: Glass-filled rigid dielectric
- **Jam Nut**: Aluminum alloy
- **Shell / Mating Interface**: Aluminum, modified triple-start
- **Panel O-ring**: Fluorosilicone
- **Shell Body**: Aluminum alloy

### 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

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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 connector with the rugged features of our popular HiPer-D M24308 connector. Let’s add a unique dual lobe shell and recess the pins to eliminate the possibility of scooping damage. Then let’s add high speed datalink capability. Originally designed for NASA’s Orion project, the Series 791, with all its special features, is well-suited for general aerospace use as well. The Series 791’s small size and blind mate capability make it a perfect choice for LRU electronic modules. Other applications include radars, communication equipment, avionic systems, power distribution units, instrumentation, and other applications that require a smaller, higher performance interconnect in standard I/O or rack-and-panel configurations.

- 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
The Series 792 connector brings high-speed datalink capability to the Glenair Series 79 rectangular connector family. Size 8 cavities accept standard QuadraX and El Ochito datalink contacts. The 792’s small size and blind-mate capability makes it a perfect choice for radars, weapons systems, communications gear, satellites, exoatmospheric vehicles, avionics, and instrumentation. Board mount versions feature straight and right angle terminals.

The Series 792 is an aerospace-grade ultraminiature rectangular connector for high-speed datalinks including 10Gb Ethernet, USB 3.0, and HDMI. The Series 792 features precision-machined (not stamped!) aluminum alloy shells with dual lobes for robust polarization. The 100% scoop-proof interface protects contacts from damage. An integrated ground spring reduces susceptibility to electromagnetic interference. Hybrid layouts with discrete size #23 signal or power contacts add additional versatility.
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.

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

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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 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.

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.

Now available: the interconnect industry’s most advanced and comprehensive MIL-DTL-38999 Series III connector series.
SERIES 23

SuperNine®
MIL-DTL-38999 Series III Type
Advanced Performance Connectors

SuperNine®
environmental class connectors

SuperNine®
ruggedized RJ45
and USB connectors

SuperNine®
glass and CODE RED
hermetic connectors

SuperNine®
high-speed
connectors

SuperNine®
emi/emp
filter connectors

SuperNine®
fiber optic connectors

SuperNine®
parylene-compatible
PC tail connectors

SuperNine®
space-grade assisted
separation force connectors

SuperNine®
Sav-Con® connector
savers and go-betweens
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 gold-plated copper alloy contacts, significantly improving electrical performance. CODE RED hermetic connectors are available now in SuperNine® (D38999 Series III type metal and composite), 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.

- 1X10⁻⁷ hermetic sealing in a lightweight aluminum shell
- Low-resistance gold-plated copper contacts
- Passed full D38999/23 qualification testing
- Meets NASA outgassing and aerospace temperature/corrosion resistance standards
- Operating temperature -65°C to +200°C
- Up to +50% weight savings
- Improved current carrying capacity and electrical resistance compared to Kovar/Inconel solutions

CODE RED: Available today in Mighty Mouse 806 Mil-Aero, M24308/9 D-Sub and D38999/23
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 LIGHTWEIGHT HERMETIC CONNECTOR TESTING AND VALIDATION**

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

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 3 BAR (50 psi) atmospheric pressure differential.
6. Space Life Support Systems: Requires additional qualification testing not yet performed by Glenair.

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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, SuperNine® D38999, or EN2997
- 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 (in development)

**-150°C THERMAREX CRYO CONNECTOR**
- Dynamic cryogenic connector
- Vibration at -150°C
- Ultra low-temperature Duralectric K seals

**THERMAREX HIGH-TEMPERATURE HERMETIC**
- High-temperature sealing technology maintains $1 \times 10^{-7}$ 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**
- 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**
- 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**
- Flexible passivated stainless steel core conduit
- High-temperature-tolerant ThermaRex jacket
- .127” to .250” outer diameter sizes
- 300°C continuous service

**ARMORLITE CF**
- Stainless steel over copper microfilament EMI shield
- High temperature -80°C to 300°C
- Corrosion / harsh environment resistant
- 1000 hour salt spray testing completed
- 70% reduced weight vs. standard braid
- Superb electrical resistance and shielding performance

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Glenair is the worldwide leader in the design and manufacture of ceramic planar-array filter connectors for the aerospace industry. Glenair pressure sensor transducers integrate our comprehensive in-house filter connector capability with thin film sensor technology for use in fuel systems, hydraulic systems, engine monitors, environmental systems, and other inline applications where accurate and reliable measurement of fluid pressure is a mission-critical requirement.

As a manufacturer of a broad range of military aerospace connectors—from our SuperNine® MIL-DTL-38999 type series to our micro miniature Mighty Mouse series—Glenair is uniquely positioned to supply both standard and lighter-weight, reduced form-factor connectorized transducers for the military and aerospace industries. Our complete in-house capability in connectors as well as thin film transducer technology enables Glenair to offer exceptionally fast turnaround on both made-to-order as well as standard catalog pressure transducers.

Glenair also offers transducers for the oil field industry including specialized devices for use in seismic exploration, wellhead pressure sensing and mud pulse telemetry. These intrinsically safe geophysical industry pressure sensors may be specified with a broad range of filtered interconnect types from MIL-DTL-5015, MIL-DTL-26482 and so on.

- Sealed, welded construction thin film packaging
- Stainless steel diaphragm suitable for all applications
- Extended operating temperature up to 150°C
- High reliability and accuracy ±1% F.S.
- Integral filter elements for EMI protection
- Ultra small form-factor—up to 20% shorter overall length compared to standard solutions
- Qualification per DO-160 pending
MINIATURIZED
EMI/RFI Filter Pressure Transducers
For size and weight reduction aerospace applications

QUALIFICATION TESTING

Glenair pressure transducers have been independently tested and certified per Glenair Qualification Test Plan QTP #367. Testing documentation available upon request.

<table>
<thead>
<tr>
<th>Test</th>
<th>Per Standard</th>
<th>Result</th>
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<tbody>
<tr>
<td>Workmanship</td>
<td></td>
<td>PASS</td>
</tr>
<tr>
<td>Temperature and Altitude</td>
<td>DO-160G, Section 4, Category E2, High Temp = 150 deg C</td>
<td>PASS</td>
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<tr>
<td>Temperature Variation</td>
<td>DO-160G, Section 5, Category A</td>
<td>PASS</td>
</tr>
<tr>
<td>Operation Shocks and Crash Safety</td>
<td>DO-160G, Section 7, Category E, Aircraft Type 5, Test Type F</td>
<td>PASS</td>
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<tr>
<td>Vibration</td>
<td>DO-160G, Section 8, Category R, Fixed Wing, Zone 5, Curves E &amp; E1</td>
<td>PASS</td>
</tr>
<tr>
<td>Humidity</td>
<td>DO-160G, Section 6, Category B</td>
<td>PASS</td>
</tr>
<tr>
<td>Baseline Functionality Testing</td>
<td>Conducted before and after every major test.</td>
<td>PASS</td>
</tr>
</tbody>
</table>

IN-HOUSE TRANSDUCER DESIGN AND DEVELOPMENT

Dramatic size and weight reduction in pressure transducers.
From left to right:
1. Typical inline transducer for general-duty industrial applications
2. Legacy MIL-DTL-38999 form factor transducer
3. Innovative reduced form-factor transducer with Glenair EMI/RFI SuperNine® filter connector
4. Series 80 Mighty Mouse locking push-pull transducer with additional size/weight reduction.
PowerLoad™ is a high-vibration, high-temperature resistant connector series designed for high altitude aircraft power distribution applications. An innovative combination of low-resistance contacts and a one-piece composite thermoplastic insulator with aggressive contact cavity isolation results in a reliable high-current solution that optimizes wire-to-contact termination and weight reduction in power distribution cables. Designed for use in integrated drive generator and backup generator applications, PowerLoad is available in three- and six-contact layouts for both multiphase and high-frequency power systems. Removable wire-sealing grommet and wire separator allow for easy rear release of contacts and improved sealing of tape-wrapped wire.

- PowerLoad 28-6 layout connector is rated at 500 volt at 50,000 ft. with a current of 45 amps per contact with 3 phase power in parallel at high frequency
- Available configurations include a high-vibration self-locking coupling nut plug, panel-mount receptacle with stub-ACME mating threads, and bulkhead feed-thru for firewall applications
- Aluminum class connectors are rated to 200°C operating temperature; passivated stainless steel designs rated to 230°C
HIGH PERFORMANCE
PowerLoad™ Series
Aircraft power distribution connectors

POWERLOAD™ AVAILABLE CONFIGURATIONS

Panel-mount receptacle with integrated wire sealing backshell
Cable plug with high-vibration coupler and ground spring
Bulkhead feed-thru for firewall applications

AVAILABLE INSERT ARRANGEMENTS
- Six size #8 contacts
- Three size #2 contacts
- Three size #1/0 contacts

PURPOSE-DESIGNED FOR AIRCRAFT ENGINE AND GEAR BOX ZONE

<table>
<thead>
<tr>
<th>Aircraft Engine Zone 4 Performance Requirements</th>
<th>Applicable RTCA/DO-160 Requirements</th>
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</thead>
<tbody>
<tr>
<td>Environmental Stress Factors</td>
<td>Applicable RTCA/DO-160 Requirements</td>
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<tr>
<td>Vibration</td>
<td>DO-160 Category S and H (Table B-1)</td>
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<tr>
<td>Shock</td>
<td>DO-160 Category D, Test Procedure 1</td>
</tr>
<tr>
<td>Ground Survival Temperature -65° to 200°C; DO-160 Category D1</td>
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<tr>
<td>Pressure Differential</td>
<td>Sea level to 50kft; DO-160 Category D3</td>
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<tr>
<td>Operating Temperature</td>
<td>-55° to 200°C; DO-160 category D3</td>
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<tr>
<td>Moisture</td>
<td>Exposure to humidity and condensation; DO-160 Category B</td>
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</table>

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Environmentally-sealed breakaway design for high-speed data transfer between terminal gate and aircraft

GateLink Pro™ connectors are exactingly designed to meet the needs of airport terminal-to-aircraft data uplinks. The IP68 sealed receptacle connector on the aircraft is designed for low profile environmental performance (available ProSeal™ protective cover adds additional environmental protection). Plug connectors are ruggedized for rough handling with pogo pin contacts and retention springs recessed deep into the plug to prevent damage. Designed for fast and reliable high-speed Ethernet data transfer up to 1Gb / second. Turnkey overmolded cable assemblies as well as discrete connectors and environmental shrink boots are available.

- Durable pogo pin contact system rated to tens of thousands mating cycles
- Sealed receptacle available with ProSeal spring-action protective cover
- Straight or right-angle AutoShrink wire protection boots or rugged overmolded plug assemblies for reliable environmental protection
GATELINK PRO APPLICATIONS AND SOLUTIONS

Wired datalink interconnect access to the aircraft from the airline terminal gate supports various information domains and data types including aircraft traffic control, airline information services, passenger entertainment, weather, and so on. Airline operating center applications (flight plans, schedules, advisories) are quickly and reliably uploaded to the aircraft during turnarounds at the gate. Mechanical and environmental damage to the datalink interface is a common problem solved by GateLink Pro.

GATELINK PRO SPECIFICATIONS

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

GATELINK PRO AVAILABLE ACCESSORIES

- Overmolded environmental plugs and hybrid GateLink Pro to RJ45 cable sets
- IP68 sealed receptacle with integrated ProSeal™ protective cover and Autoshrink™ environmental sealing / strain relief boot
- Mated GateLink Pro™ plug and receptacle cordsets with shielded twisted pair cabling. Plug side features environmental overmolding, receptacles side utilizes strain relief boot

Antivibration and shock spring-action solution • Self-aligning environmental seals

Autoshrink is a high-performance elastomeric material (Glenair Duralec™ formula polymer GPS67) cold-action shrink boot and jacket solution for commercial aerospace electrical wire interconnect systems
High-speed octaxial contacts for Ethernet, USB 3.0 and other multi-gigabit protocols

High speed, harsh environment El Ochito® octaxial contacts save size and weight. Suitable for aircraft avionics, weapons systems, satellites, radars, communications equipment and other aerospace/defense gear, El Ochito® contacts are optimized for drop-in use in all connector packages with keyed size #8 contact cavities, including MIL-DTL-38999, ARINC 600, Series 80 Mighty Mouse, Series 791 Micro-Crimp, and others.

- 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

El Ochito® White
10G Ethernet
1000BASE-T
10GBASE-T
10Gbps / 100 Ohms

El Ochito® Blue
SuperSpeed USB 3.0
Aerospace-grade
5Gbps / 90 Ohms

El Ochito® Red
HDMI
SATA
DisplayPort
5Gbps / 100 Ohms
El Ochito®: The Ultimate Shielded High-Speed Data Contact

Now available for SuperSpeed USB 3.0 and HDMI
High speed, harsh environment SuperFly® Datalink connectors—optimized for 10Gb Ethernet and SuperSpeed USB protocols—save significant size and weight compared to Quadrax. Suitable for aircraft avionics, weapons systems, satellites, radars, communications equipment and other aerospace/defense gear, Octaxial SuperFly® Datalink connectors bring superior EMC shielding, environmental protection, and signal integrity to mission-critical mil-aero applications.

- Ultra-small size
- Shielded Octaxial contacts
- Up to 5 Gbps
- 10Gb Ethernet and SuperSpeed USB
- Environmentally protected
- Aerospace-grade performance

Panel mount SuperFly Datalink receptacles feature straight or right angle printed circuit terminals. Watertight even when unmated, SuperFly Datalink jacks are epoxy-sealed and are compatible with conformal coatings.
**SuperFly® Datalink**

The high-speed nano miniature connector for harsh environments

---

**Connector Configurations**

- Quick Disconnect
- Threaded Coupling
- Straight PC Tails
- Right Angle PC Tails

Quick-disconnect “push-pull” versions are ideal for tactical gear. Threaded-coupling versions are intended for aircraft and space-grade applications where secure mating is a requirement.

---

**Flight-Grade Shielded Wire and Cable**

Aerospace-grade pre-wired cable assemblies, single-ended, point-to-point, and commercial USB / RJ45 jumpers available as easy-to-order catalog solutions. A range of SAE AS6070 qualified cables for SuperSpeed USB and 100 Ohm Cat 6A Ethernet also available for customer wire-to-connector termination.

---

**Push-Pull Quick-Disconnect**

A push-pull SuperFly Datalink receptacle connectors feature two canted coil springs for secure mating and excellent EMI protection. A fluorosilicone O-ring provides watertight sealing when mated.

**Cable Connector**

Cable connectors feature gold-plated crimp contacts, precision insulators, integral backshell, sealing grommet and machined shells. Cable connectors are available as unassembled kits or ready-to-use factory-terminated cordsets.
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 nineteen 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

- 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

TIME SAVING • LABOR SAVING • WEIGHT SAVING
SpliceSaver™ Fast and reliable replacement for wire splice and terminal block technologies

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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 FOD
- Easy-to-install single piece design
- Visible quality control / confirmation of cavity fill from back of connector
- EWIS compliant test report GT 15-106 available
**WEIGHT / COST-SAVING**

**Dummy Contact Sealing Plugs (DCSP)**

for reliable sealing of unused contact cavities

---

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.

---

**Connector Series / Size / Color Code / Part Number Selection**

<table>
<thead>
<tr>
<th>Connector Series</th>
<th>Size</th>
<th>Color Code</th>
<th>Part Number Selection</th>
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<td>22</td>
<td></td>
<td>680-116-20</td>
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<tr>
<td></td>
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<td>Mighty Mouse</td>
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<td>ARINC 600</td>
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<td>Series 806</td>
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<tr>
<td>Mighty Mouse Mil-Aero</td>
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</table>

Illustration shows conventional sealing plug / contact configuration (top) and long form-factor Dummy Contact Sealing Plugs (bottom).
High-performance military and commercial interconnect applications employ protective covers to seal unmated receptacles from sand, dust, and moisture ingress, as well as other forms of environmental and mechanical damage. ProSeal protective covers are mounted directly to panels and electronic equipment housings to enhance the reliability and consistent use of connector covers. Spring-action equipped ProSeal covers are available for every military QPL and Glenair signature connector series, and are supplied in a broad range of designs to meet every application requirement.

- Anti-vibration and shock spring-action solution
- IP67 (dust / immersion) and IP56 (dust / water jet) ingress protected designs
- Self-aligning environmental seals
- Lock in open position or automatic closure
- Compatible with a broad range of military standard and commercial connectors including D38999 Series I, II, III, Mighty Mouse Series 801, 804, 805, and 806, MIL-DTL-24308 and more
IP67 AND IP56 RATED
ProSeal spring-action protective covers
for mission-critical mil-aero applications

ROBUST ENVIRONMENTAL SEALING
- Self-aligning gimbal-action face seal
- Anti-vibration and shock spring-action performance
- Full environmental threaded / twist-lock seal

RUGGED MECHANICAL PERFORMANCE
- Dual-action mechanism: cover locks in open position and holds tight in closed position
- ProSeal cover shares connector mounting holes and hardware
- Jam nut and wall mount configurations available in all styles

VERSATILITY OF DESIGN
- Suitable for all circular designs including commercial USB / RJ45 interfaces
- Rectangular connector designs with convenient thumb tabs
- Low-profile non-locking designs for use with recessed quick-disconnect connectors

© 2020 Glenair, Inc • 1211 Air Way, Glendale, CA 91201 • 818-247-6000 • www.glenair.com • U.S. CAGE code 06324 • Glenair Signature Commercial Aerospace EWIS Technology
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.

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

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

Stainless Steel Swing-Arm versions ideally suited for extreme temperature range applications
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

- Drop-in follower for direct termination of overall or individual wire shielding
- Swing-arm and swing-arm flex with optional integrated shield sock
- Swing-arm shield sock termination options, standard split ring or StarShield Star
Designed 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 Duralectric 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 Duralectric 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 Duralectric jacketing
- Extreme UV / sunlight resistance
- Integrated ground strap versions available

- Fast and easy repair of Duralectric-jacketed cables
- Utilize for termination of lugs on new installations

Mill-Aero / Industrial fluid-resistant lipped shrink boots
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 Duralectric™ 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 Duralectric™F 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 SUBSEA 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

**AUTOSHRINK T HIGH-TEMPERATURE-TOLERANT 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
TurboFlex® power distribution cables are constructed from highly flexible conductors and high-performance insulation to produce cables ideally suited for applications where flexibility, durability, and weight reduction are required. Amazingly durable and flexible—especially in cold weather—the 16 AWG to 450 MCM TurboFlex cable features high strand count rope lay inner conductors made with tin-, nickel- and silver-plated copper. TurboFlex is jacketed with Glenair’s unique Durallectric™ compound that provides outstanding flexibility and resistance to environmental and chemical exposure. Durallectric is also low smoke, zero halogen. Long life and performance are critical in power distribution applications. TurboFlex, with its flexible conductors and durable jacket delivers both.

Durallectric™ 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.

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

Many sizes In-stock and available for immediate, same-day shipment. No minimums!
SERIES 96
TurboFlex ultra-flexible power distribution cable

Environmental performance · voltage rating data
Duralectric™ jacketing specifications and colors

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 Duralectric jacketing in FED-STD 595C Safety Orange.

Ultra flexible rope lay construction
TurboFlex bend radius is 3X the outer diameter

Voltage Ratings

<table>
<thead>
<tr>
<th>P/N</th>
<th>Jacket Wall Thickness</th>
<th>AC Voltage Rating, RMS</th>
<th>DC Voltage Rating</th>
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<tr>
<td>961-004</td>
<td>.032&quot;</td>
<td>2000</td>
<td>2800</td>
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<td>961-003</td>
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<td>.093&quot;</td>
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<tr>
<td>961-001</td>
<td>.125&quot;</td>
<td>4500</td>
<td>6300</td>
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</tbody>
</table>

Standard catalog product is available with either Tin/Copper, Silver/Copper, or Nickel/Copper conductors, with standard Duralectric™ jacketing in four wall thicknesses.

Consult factory for special formula Duralectric™ K, F, and C configurations

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/IIEEE120), vertical-tray fire-propagation and smoke release test
Flame resistant per FAR 25.853 (A) amendment 25-116, appendix F Part 1 (A) (1) (I), 60 second vertical burn test
Limiting oxygen index of 45 per ISO 4589-2:1999
Low smoke 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 0.06%, CVCM 0.006%, WVR 0.02%
Resistant to fluids per MIL-STD-810F, method 504 JP-8 per MIL-DTL-83133 (NATO type 34) MIL-H-5606 hydraulic fluid
MIL-PFR-23699 lubricating oil
MIL-C-85570 cleaner
TFF-735 Isopropyl alcohol
AMS 1432 potassium acetate deicing/anti-icing fluid
MIL-C-87252 coolant
Amerex AFF fire extinguishing foam

Abrasion Resistance: Good
Wear Resistance: Good
Flame Resistance: Excellent
Sunlight Resistance: Excellent
Flex Resistance: Excellent
Save weight and total cost-of-ownership every time you fly! All-Up-Weight (AUW) has met its match: ArmorLite™ microfilament stainless steel braid saves significant weight compared to standard QQ-B-575/A-A-59569 EMI/RFI shielding, as well as competitor solutions such as 44 AWG NiCu. By way of comparison, 100 feet of 5/8 inch ArmorLite™ is more than four pounds lighter than standard 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, turnkey backshell shield sock assemblies, factory overbraiding, ground straps, HSTs, and more. ArmorLite™ offers superior temperature tolerance compared to other lightweight tubular braided shielding including microfilament composite technologies. New ArmorLite™ CF offers advanced corrosion protection compared to all other shielding types with comparable electrical performance due to its innovative combination of conductive copper filament and stainless steel cladding.

- 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
- ArmorLite™ CF with enhanced corrosion protection now available
- 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™ SHIELDING SOLUTIONS AND PACKAGING

- Factory overbraided
- Integrated shield sock
- Mesh tape
- Turnkey shielded pigtail
- MasterWrap
- Bulk expandable shielding
- Lightweight, flexible ground straps

© 2020 Glenair, Inc • 1211 Air Way, Glendale, CA 91201 • 818-247-6000 • www.glenair.com • U.S. CAGE code 06324 • Glenair Signature Commercial Aerospace EWIS Technology
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 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**
SERIES 107
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
Tubular 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 wraparounds abrasive protection for spot mechanical coverage and repair of wire harnesses

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

How To Order

<table>
<thead>
<tr>
<th>Sample Part Number</th>
<th>Basic No.</th>
<th>Dash No.</th>
<th>Color option</th>
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<tr>
<td></td>
<td>MasterWrap™ (Nomex®) material</td>
<td>See Table I</td>
<td>W = White R = Red GN = Green GY = Gray OR = Orange Omit = for standard Black</td>
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Table I

<table>
<thead>
<tr>
<th>Dash No.</th>
<th>Nominal I.D. (Ref.)</th>
<th>Nominal Wire Bundle Range Nominal</th>
<th>Approx. Weight Grams/Ft.</th>
<th>Min. Pull Strength (lbs)</th>
<th>Size Indicator color code</th>
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<td>7.3</td>
<td>237 Blue</td>
<td>50–100</td>
</tr>
<tr>
<td>040</td>
<td>1.250</td>
<td>.938/.1312</td>
<td>23.8</td>
<td>10.0</td>
<td>TBD Violet</td>
<td>50–75</td>
</tr>
<tr>
<td>048</td>
<td>1.500</td>
<td>.117/.1590</td>
<td>30.1</td>
<td>11.0</td>
<td>TBD Gray</td>
<td>50</td>
</tr>
<tr>
<td>064</td>
<td>2.000</td>
<td>.182/.2090</td>
<td>33.0</td>
<td>TBD</td>
<td>White</td>
<td>50</td>
</tr>
</tbody>
</table>

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.

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.
Industry-leading backshell and accessory designs for weight reduction, reduced cost-of-ownership, and increased reliability

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

Glenair is the go-to design partner for innovative solutions to electrical wire interconnect system 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 new CompAction connector accessory design (shown left on a Series 806 Mighty Mouse). The splined interface and unique compression grommet delivers guaranteed environmental sealing, even at high altitude, on difficult-to-seal asymmetrical twisted-pair wiring.

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
Connector coupling ring safety sleeve for F/O applications
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 2020

Dummy stowage shorting plugs and receptacles
Self-locking protective covers
Advanced “Dogbone” terminal blocks and hoods

MIL-DTL-38999 SAV-CON® Connector saver go-between with Micro-D diagnostic test port
Environmental panel cut-out sealing plug assembly
Heat shrink boot / wire routing clamp assembly

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Glenair Signature Commercial Aerospace EWIS Technology
Innovative Rectangular Backshells and Connector Accessories

Proven-performance backshells and accessories for rectangular connectors

Glenair offers more tested and tooled rectangular interconnect products—including the world’s broadest range of rectangular backshells—than any other supplier in the industry. Simply put, from the smallest Micro-D subminiature to the largest ARINC 600, Glenair has an unparalleled range of solutions. Need something light and corrosion free? Glenair is the industry leader in tooled composite thermoplastic connector accessories.

- All forms of 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

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.
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 caps and covers for safe connector shipment and storage
- Micro-D backshell with elliptical banding platform
- Metal Micro-D banding backshell
- Split-shell backshell
- Environmental protective covers for Micro-D connectors
- Conductive rubber covers

---

**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

---

**LARGER FORM FACTOR RECTANGULAR BACKSHELLS**

- Composite EMI/RFI banding backshell for EPX® 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

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Quick, easy, cost-effective and highly reliable termination of braided metallic shielding or fabric braid to connectors and backshells

Band-Master ATS® is the advanced termination system for interconnect cable shielding. The unique low profile and smooth inside diameter of the one-piece type 304 austenitic stainless steel clamping band virtually eliminates RFI/EMI/EMP leakage paths. The lock maintains constant tension under extreme environmental conditions. Band-Master ATS® bands have passed severe shock, vibration and thermal cycle testing with negligible deterioration of shell conductivity and have been approved and added to the specifications for the world’s largest aircraft manufacturers.

- Precision hand-held tools and termination bands—both from a single supplier
- Innovative Slim Standard and Nano bands reduce weight and improve safety (no buckle cuts)
- Clamp both small and large diameters easily and reliably

BAND-MASTER ATS® ADVANCED TERMINATION SYSTEM

- Easy-to-use manual tools with built-in calibration counter
- High-volume pneumatic tool for bench use
- Save time and tool maintenance costs with the Glenair band tool calibration system
The advanced termination system for interconnect cable shielding

**Band-Master ATS® Manual Tool Selection**

### 601-100 Hand Tool for Standard Bands
The 601-100 Standard Band-Master ATS® Tool weighs 1.18 lbs., and is designed for standard .24" width clamping bands in a tension range from 100 to 180 lbs. Calibrate at 150 lbs. ± 5 lbs. for most shield terminations. Tool and band should never be lubricated.

### 601-109 Hand Tool for Slim Standard Bands
The 601-109 Slim Standard Band-Master ATS® Tool weighs 1.2 lbs., and is designed for slim standard .24" width clamping bands in a tension range from 50 to 100 lbs. Calibrate at 100 lbs. ± 5 lbs. for most shield terminations. Tool and band should never be lubricated.

### NEW 601-122 Hand Tool for Micro Slim Bands
The 601-122 Micro Slim Band-Master ATS® Tool weighs 1.2 lbs., and is designed for micro slim .125" width clamping bands in a tension range from 50 to 100 lbs. Calibrate at 82 lbs. ± 3 lbs. for most shield terminations. Tool and band should never be lubricated.

### 601-101 Hand Tool for Micro Bands
The 601-101 Micro Band-Master ATS® Tool weighs 1.18 lbs., and is designed for micro .120" width clamping bands in a tension range from 50 to 85 lbs. Calibrate at 80 lbs. ± 5 lbs. for most shield terminations. Tool and band should never be lubricated.

### 601-108 Hand Tool for Nano Bands
The 601-108 Nano Band-Master ATS® Tool weighs 1.18 lbs., and is designed for nano .075" width clamping bands in a tension range from 20 to 50 lbs. Calibrate at 50 lbs. ± 3 lbs. for most shield terminations. Tool and band should never be lubricated.

### Band-Master ATS® Band Selection

<table>
<thead>
<tr>
<th>Bands</th>
<th>Length</th>
<th>Part Number</th>
<th>Fits Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Standard Band</td>
<td>9.0</td>
<td>601-005</td>
<td>25.4</td>
</tr>
<tr>
<td>Medium Standard Band</td>
<td>14.0</td>
<td>601-040</td>
<td>47.8</td>
</tr>
<tr>
<td>Long Standard Band</td>
<td>18.0</td>
<td>601-049</td>
<td>63.5</td>
</tr>
<tr>
<td>Short Micro Band</td>
<td>5.0</td>
<td>601-024</td>
<td>12.7</td>
</tr>
<tr>
<td>Medium Micro Band</td>
<td>8.0</td>
<td>601-060</td>
<td>22.4</td>
</tr>
<tr>
<td>Long Micro Band</td>
<td>14.0</td>
<td>601-064</td>
<td>47.8</td>
</tr>
<tr>
<td>Short Nano Band</td>
<td>6.0</td>
<td>601-500</td>
<td>15.2</td>
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<tr>
<td>Medium Nano Band</td>
<td>9.0</td>
<td>601-504</td>
<td>23.9</td>
</tr>
<tr>
<td>Long Nano Band</td>
<td>14.0</td>
<td>601-508</td>
<td>47.8</td>
</tr>
<tr>
<td>Short Slim Standard Band</td>
<td>9.0</td>
<td>601-570</td>
<td>25.4</td>
</tr>
<tr>
<td>Medium Slim Standard Band</td>
<td>14.25</td>
<td>601-572</td>
<td>47.8</td>
</tr>
<tr>
<td>Short Micro Slim Band</td>
<td>8.125</td>
<td>601-600</td>
<td>22.4</td>
</tr>
<tr>
<td>Medium Micro Slim Band</td>
<td>14.25</td>
<td>601-602</td>
<td>47.8</td>
</tr>
</tbody>
</table>

*3 lengths and 3 widths of EMI braid termination bands plus new Slim Standard bands for size and weight savings—50% lighter and lower-profile than standard bands. Terminated “Slim” style bands have a tighter, smoother buckle with no sharp edge to injure assembly technicians. Plus, say goodbye to protective tape wrapping!*

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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.

TURNKEY FACTORY-TERMINATED CONDUIT ASSEMBLIES

Complex multibranch aircraft electrical wire conduit assembly with high-temperature polymer-core conduit

Lightweight multibranch wire protection conduit assembly with high-temperature polymer-core convoluted tubing

Crush-resistant commercial aerospace metal-core conduit assembly
RUGGED
Conduit Wire Protection Systems
Flexible, impact resistant alternatives to lighter-duty jacketed cable assemblies

COMPLEX, MULTIBRANCH ASSEMBLIES WITH INNOVATIVE LIGHTWEIGHT POLYMER-CORE WIRE PROTECTION CONDUITS

Lightweight, halogen-free PEEK wire conduit assembly

COMPLEX, MULTIBRANCH ASSEMBLIES WITH HEAVY-DUTY METAL-CORE CONDUIT AND OVERBRAIDING WIRE PROTECTION MATERIALS

Turnkey wheel well impact-resistant metal-core conduit assembly

Metal-core conduit wire protection aircraft brake assembly

Brass, SST, or nickel-iron metal-core conduit material types with innovative microfilament and drawn filament braiding. Factory terminated or for use with user-installable fittings.
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