MISSION-CRITICAL
INTERCONNECT SOLUTIONS

Glenair®

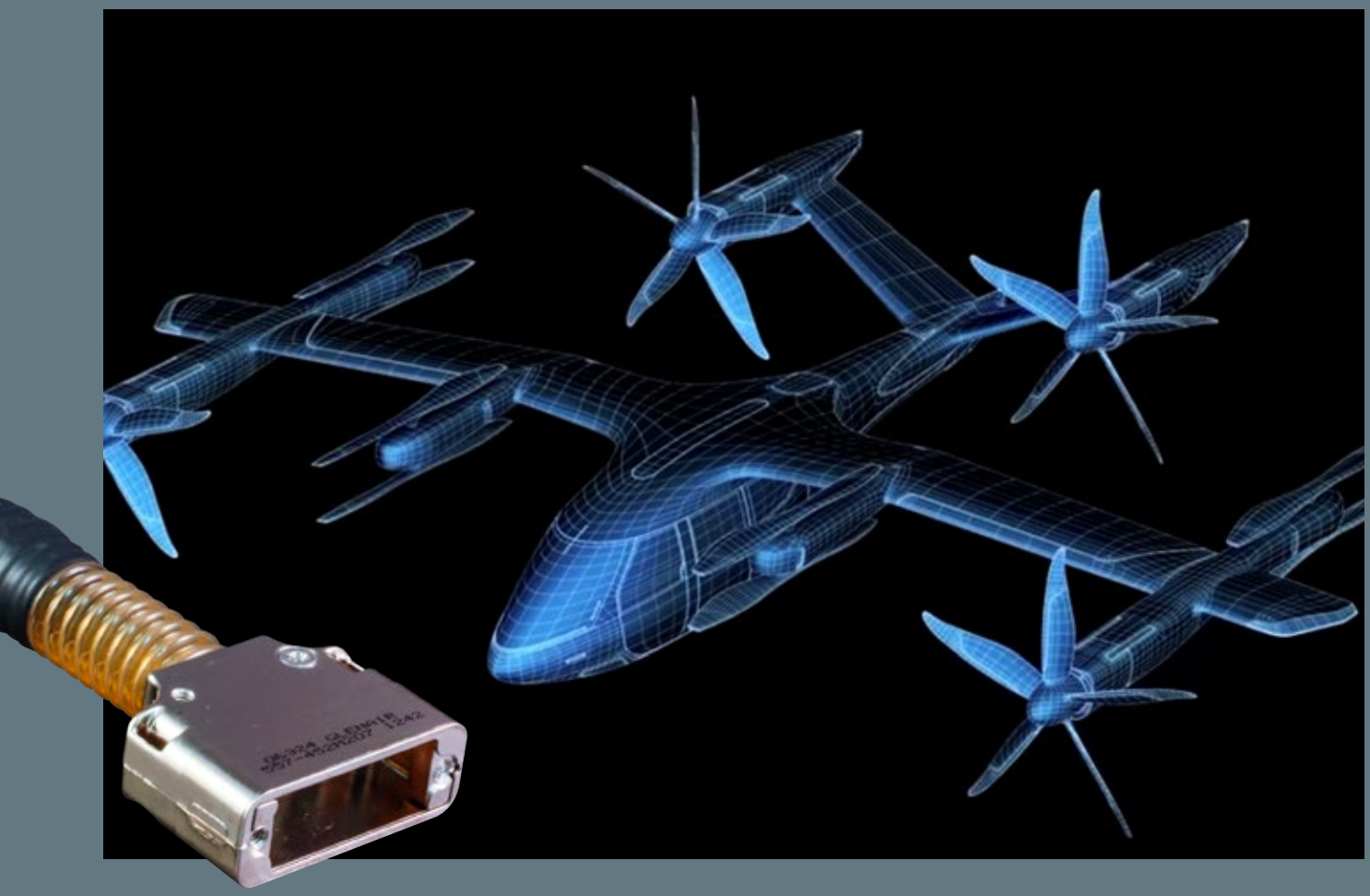
Glenair
SIGNATURE SERIES

eVTOL EWIS Shielding and Grounding Solutions

Signature Interconnect Technology for Urban Air Mobility

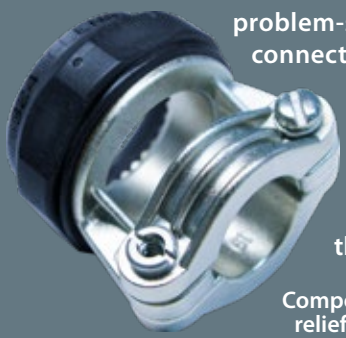
WIRE AND CABLE
PROTECTION
AND MANAGEMENT
TECHNOLOGY

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

Glenair 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 accesory 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**

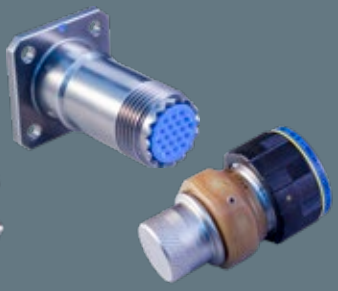
NEW INNOVATIONS IN

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



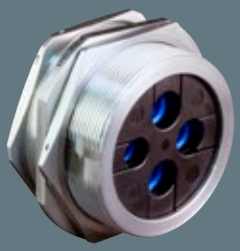
Dummy stowage shorting plugs and receptacles

Piggyback boot Band-in-a-Can

Drop-in EMI/RFI shield termination configurations

PRESSURE BOUNDARY, FIREWALL, AND SPLIT-SHELL FEED-THRUS

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)

GroundControl earth bond ground stud and electrical return network solution for conventional and composite aircraft

Various sizes and types of ground studs for attachment to different wall thicknesses and material types

Designed for explicit use in ground path return networks in airframe and fuselage structures

The GroundControl Earth Bond system is designed for easy attachment of ground studs to electrical return path networks in composite airframes. The complete system includes hydraulic hand tools, a range of available ground stud sizes designed for use with Glenair lightweight microfilament ground straps, and fastening hardware. Easy one-hand-operation setting tools are available for in-situ installation on the aircraft. Studs are a conductive bilaminar (copper core) design with extremely low electrical resistance. The system supports blind hole installation. No surface preparation is required. Both UNC and metric thread studs are available, as well as special thin-wall versions with integrated sealing.

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

GroundControl

Earth Bond / Ground Stud Installation System

Qualified for use in commercial airframe applications

HYDRAULIC SETTING TOOLS

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

ACCESSORY GROUND STRAPS AND ATTACHMENT HARDWARE

PowerBlock system high-voltage terminal lugs

2-ply microfilament-cladded composite thermoplastic ground strap

Round cross-section braided ground strap

Harsh environment and chemical-resistant ground strap jacketing

SHIELDING AND GROUNDING SOLUTIONS FOR ELECTROMAGNETIC COMPATIBILITY

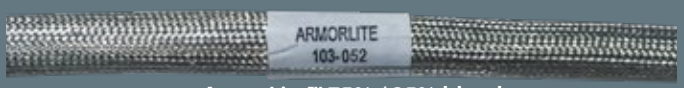
ARMORLITE™

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

Save weight and ensure safe and reliable performance on every flight. All-Up-Weight (AUW) has met its match: ArmorLite™ microfilament stainless steel braid saves significant weight compared to standard plated copper shielding. By way of comparison, 100 feet of 5/8 inch ArmorLite™ is more than four pounds lighter than standard plated copper shielding used in EMI/RFI and lightning strike protection.

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 microfilament and stainless steel cladding.

ArmorLite™



ArmorLite™ 75% / 25% blend

New enhanced corrosion resistance ArmorLite™ CF

- **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

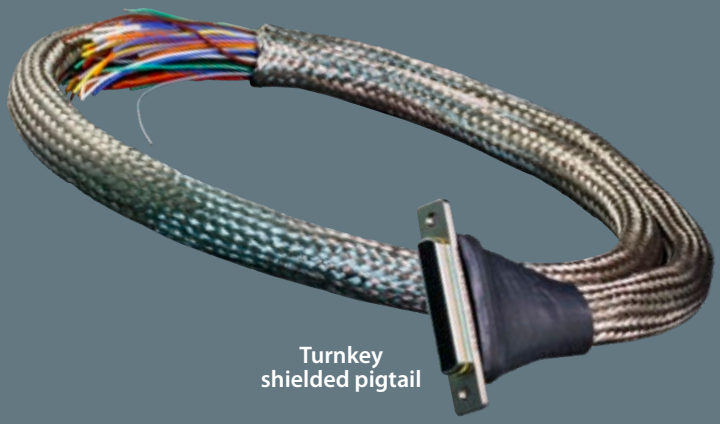
ArmorLite™ Microfilament Braid for EMI/RFI Shielding Applications

ARMORLITE™ SHIELDING SOLUTIONS AND PACKAGING

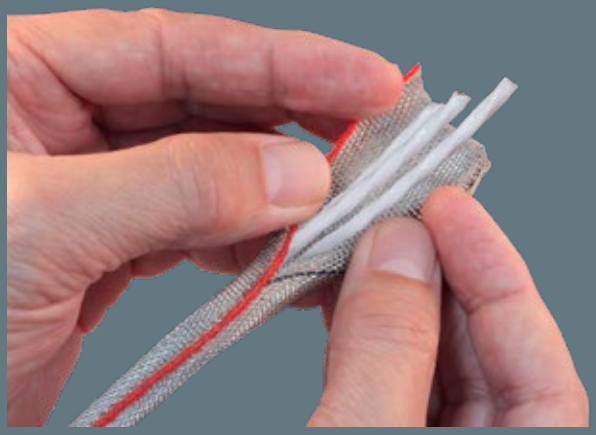
Factory overbraided

Mesh tape

Integrated shield sock



Turnkey shielded pigtail



MasterWrap

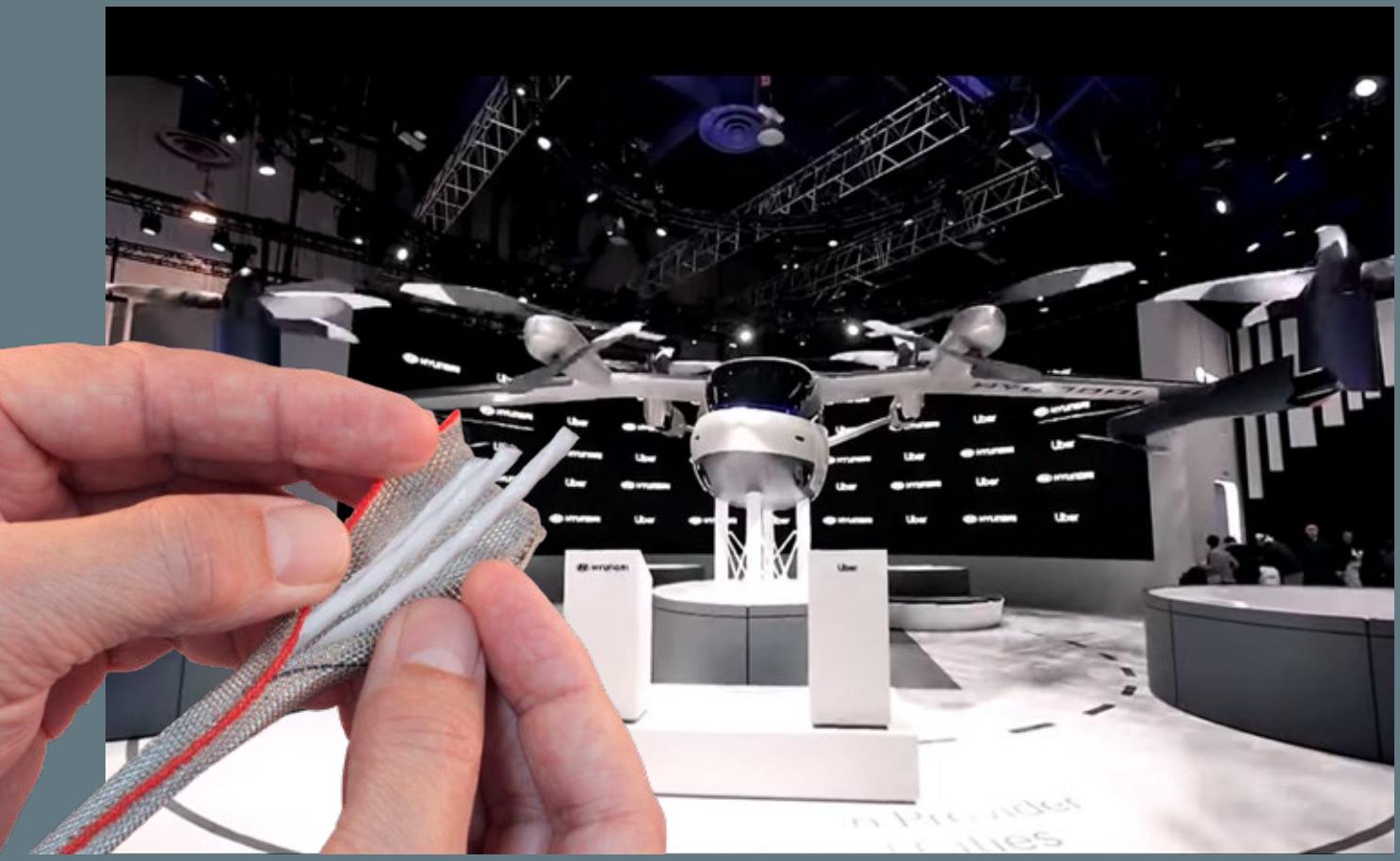
Bulk expandable shielding

Lightweight, flexible ground straps

SHIELDING AND GROUNDING SOLUTIONS FOR ELECTROMAGNETIC COMPATIBILITY

MasterWrap™

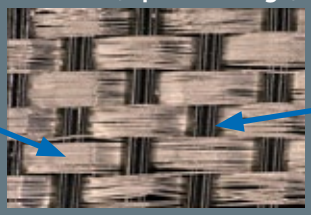
Flexible, lightweight wraparound EMI/RFI wire shielding and abrasion protection material



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®

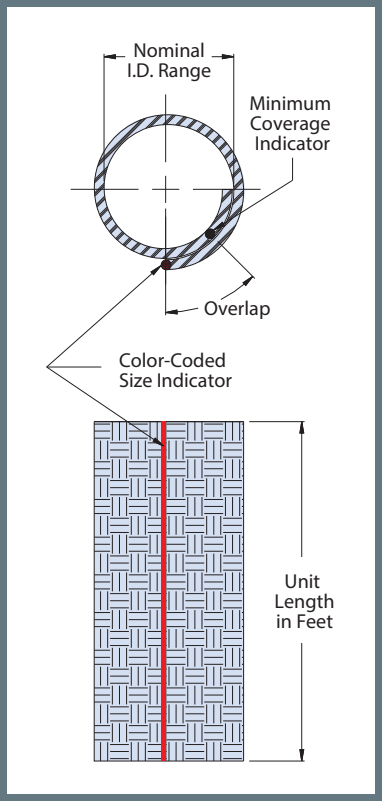
- **Soft, abrasion resistant unbonded Nomex® yarn**
- **-60° to +240°C temperature range**
- **90,000 PSI yield tensile strength**
- **Excellent chemical resistance; will not melt**

NEW MASTERWRAP™ WITH NOMEX®

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

for spot mechanical coverage and repair of wire harnesses

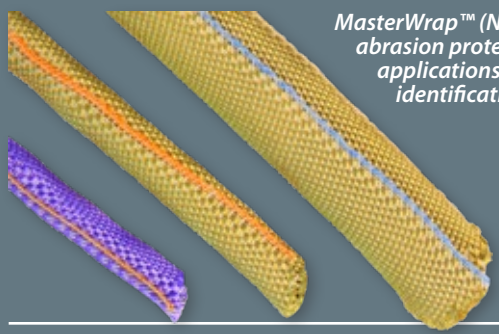
MASTERWRAP (NOMEX®): DIMENSIONAL INFORMATION • HOW TO ORDER



How To Order			
Sample Part Number	**103-095**	**-024**	**GY**
Basic No.	MasterWrap™ (Nomex®) material		
Dash No.	See Table I		
Color option	**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.) In.	Nominal I.D. (Ref.) mm	Ref. Wire Bundle Range Nominal In.	Ref. Wire Bundle Range Nominal mm	Approx. Weight Grams/Ft.	Min. Pull Strength (lbs)	Size Indicator color code	Quantity feet/spool
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.

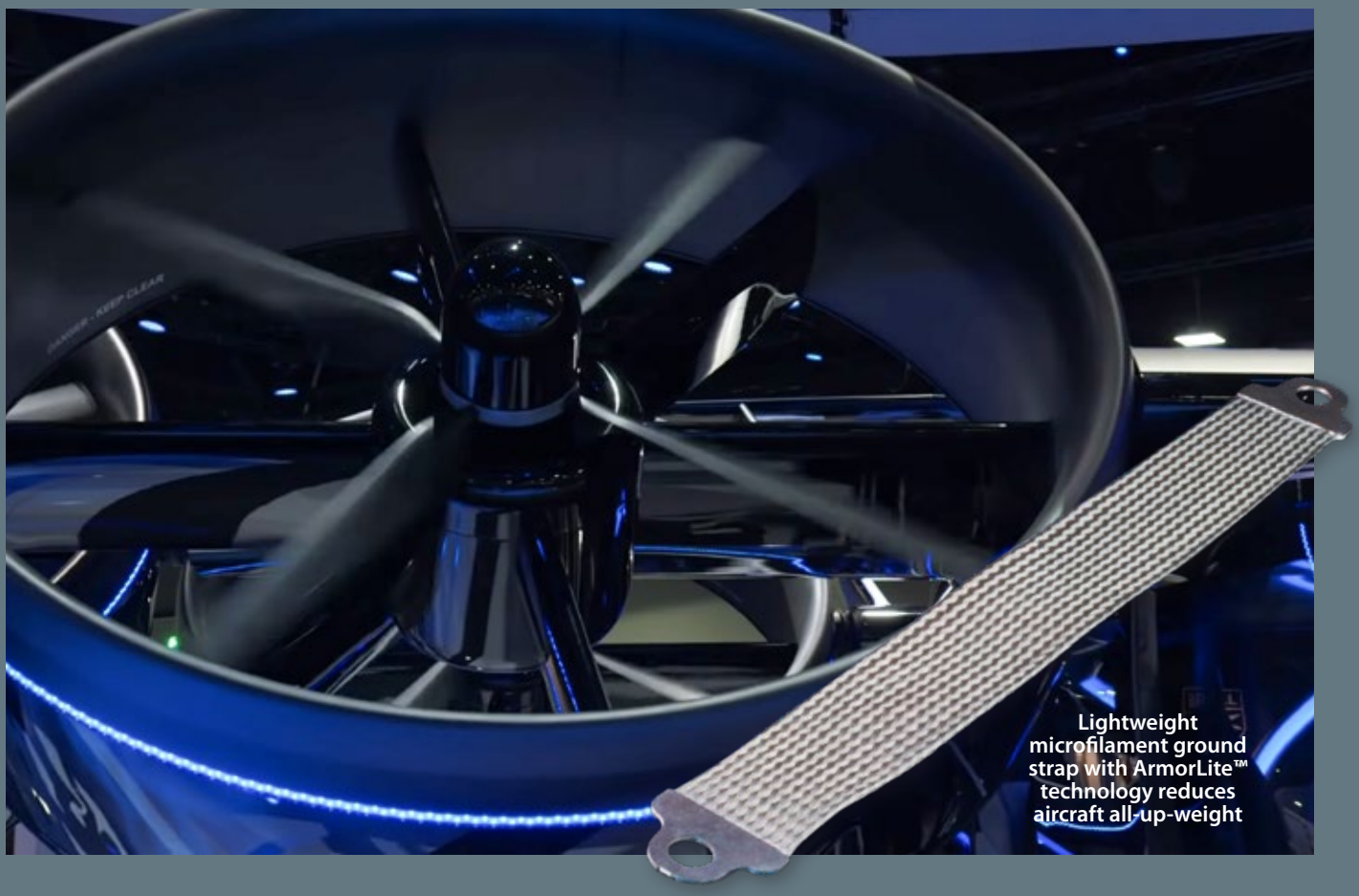
Materials:

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.

SHIELDING AND GROUNDING SOLUTIONS FOR ELECTROMAGNETIC COMPATIBILITY

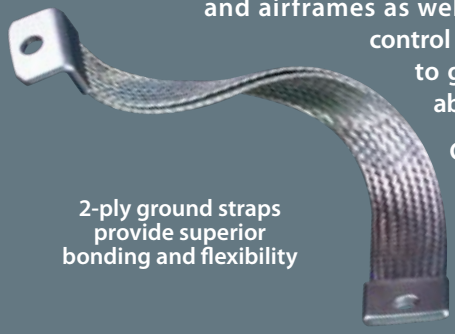
Ground Straps for for electrostatic discharge, lightning strike and power equipment grounding



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



2-ply ground straps provide superior bonding and flexibility

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 exactingly designed with appropriate conductive and dissipative materials for each application.

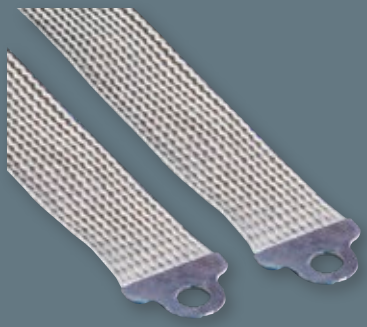
- **Ultra-lightweight ground straps with highly conductive or dissipative performance**
- **Metal-clad microfilament braided solutions**
- **Significant contribution to weight reduction initiatives in commercial and military aircraft**
- **Heavy-duty variants for electrical potential grounding from engines,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

SERIES 107

High-Performance Ground Straps

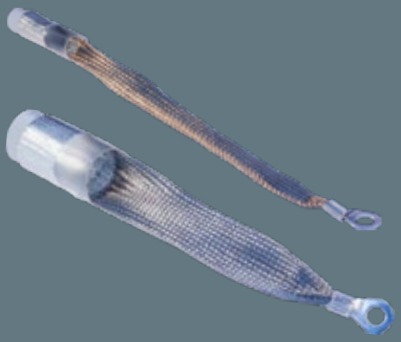
Lightweight, general, and heavy-duty

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

MISSION-CRITICAL

INTERCONNECT SOLUTIONS

Glenair, Inc.

1211 Air Way • Glendale, California • 91201-2497

Telephone: 818-247-6000 • Fax: 818-500-9912 • sales@glenair.com

www.glenair.com

Glenair Power Products Group
20 Sterling Drive
Wallingford, CT
06492
Telephone: 203-741-1115
Facsimile: 203-741-0053
sales@glenair.com

Glenair Microway Systems
7000 North Lawndale Avenue
Lincolnwood, IL
60712
Telephone: 847-679-8833
Facsimile: 847-679-8849

Glenair GmbH
Schaberweg 28
61348 Bad Homburg
Germany
Telephone: 06172 / 68 16 0
Facsimile: 06172 / 68 16 90
info@glenair.de

Glenair Italia S.p.A.
Via Del Lavoro, 7
40057 Quarto Inferiore –
Granarolo dell'Emilia
Bologna, Italy
Telephone: +39-051-782811
Facsimile: +39-051-782259
info@glenair.it

Glenair Korea
B-1304 Gunpo IT Valley
148 Gosan-Ro, Gunpo-Si
Kyunggi-Do, Korea
435-733
Telephone: +82-31-8068-1090
Facsimile: +82-31-8068-1092
sales@glenair.kr

Glenair UK Ltd
40 Lower Oakham Way
Oakham Business Park
Mansfield, Notts
NG18 5BY England
Telephone: +44-1623-638100
Facsimile: +44-1623-638111
sales@glenair.co.uk

Glenair Nordic AB
Gustav III : S Boulevard 46
SE-169 27 Solna
Sweden
Telephone: +46-8-50550000
sales@glenair.se

Glenair Iberica
C/ La Vega, 16
45612 Velada
Spain
Telephone: +34-925-89-29-88
Facsimile: +34-925-89-29-87
sales@glenair.es

Glenair France SARL
7, Avenue Parmentier
Immeuble Central Parc #2
31200 Toulouse
France
Telephone: +33-5-34-40-97-40
Facsimile: +33-5-61-47-86-10
sales@glenair.fr

Printed in U.S.A.