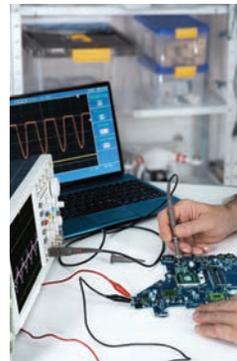


# PRODUCTS, SERVICES, AND CAPABILITIES



**CARLISLE**  
INTERCONNECT TECHNOLOGIES

# We're Your One Connection to Thousands of Interconnect Solutions

As one of the world's leading designers and manufacturers of high-performance wire and cable — including optical fiber — we are also experts in the design and production of harsh environment interconnect products such as contacts, connectors, cable assemblies, installation kits, ARINC trays, racks, and shelf assemblies. In addition to manufacturing interconnect products for multiple markets, we have extensive engineering and certification capabilities that range from design to fully installed FAA-certified projects with DER, DAR, and DMIR personnel on staff.

By nature of our vertical integration, we can provide interconnect solutions encompassing every facet of design and production, and thereby help our customers solve a variety of product needs, including unique cable configurations, custom high-frequency connectors, complete cable assemblies of any complexity, and specialized complex harnesses, racks, and structures.

**We're ready to take on your next challenge.**



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# WHO WE ARE

## Roots

The Carlisle Interconnect Technologies (CarlisleIT) story goes back to 1940, when Henry Dudley Minich founded what was then known as Tensolite. It consisted of a team of six researchers in an old converted house in North Tarrytown, New York. They started out investigating the properties and commercial possibilities of various plastics and synthetic fibers and eventually began to build a reputation for producing the finest miniature insulated wire and cable in the industry. Tensolite was an early pioneer in the application of insulation to miniature wire and was one of the first to apply a unique material called PTFE to produce high-temperature wire and cable. In fact, the company's first insulated wire product was used to electrically heat the gloves and flight suits of World War II Air Force pilots.

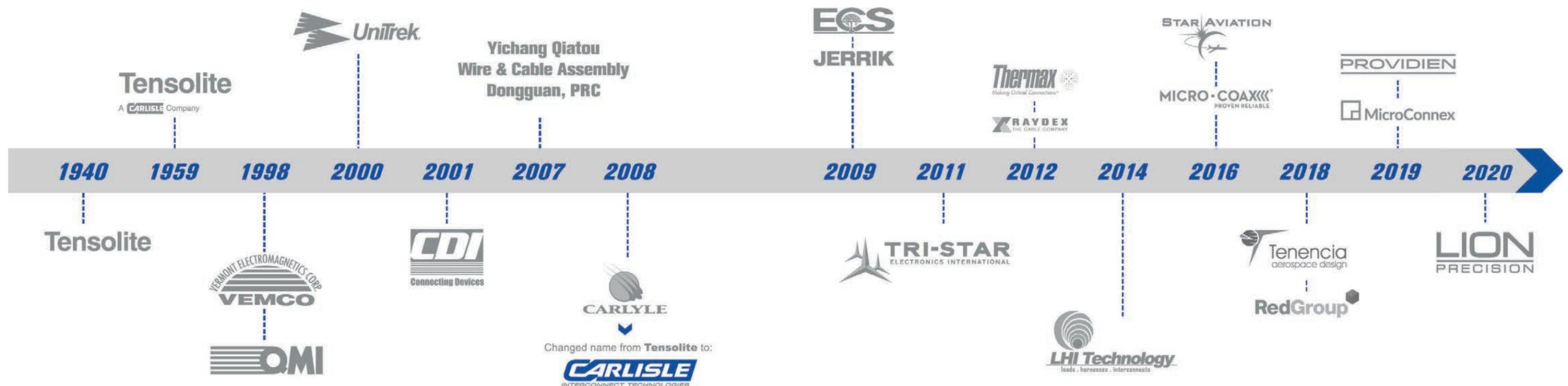
## Growth

In 1959, Tensolite became part of Carlisle Companies, Inc. (NYSE: CSL). As Tensolite evolved with the markets it served, it became apparent that it needed to provide total interconnect solutions to customers. Starting in 1998, Tensolite began to implement a strategy to vertically integrate into value-added cable assemblies. The aim was to provide superior high-speed, high-density, and RF/microwave cable assemblies. Since that time, we have evolved from Tensolite to CarlisleIT and have continued to add more capabilities through acquisitions, making us an end-to-end solution for many applications. This eliminates extra steps in the manufacturing process, shortens turn times, and allows OEMs to focus on just a select few suppliers.

## Today & Tomorrow

Today, we remain firmly committed to staying at the forefront of high-performance wire, cable, and interconnect systems, and our team works tirelessly each day to develop innovative solutions for our partners in the aerospace, military, space, test & measurement, medical technology, and industrial markets. With the continued backing of Carlisle Companies, we are continuously exploring emerging technologies and new opportunities -- and that means collaborating with our customers to take on next-gen projects and technologies. Mr. Minich would be amazed to see how his small laboratory in North Tarrytown, New York, has grown into one of the world's leading designers and manufacturers of high-performance wire, cable, and interconnect solutions.

## Our Timeline



## The Markets We Proudly Serve



### COMMERCIAL & MILITARY AEROSPACE

We can create custom hybrid solutions to meet your unique product design, engineering, and installation needs, regulatory requirements, supply chain and operational pressures, technology innovation, systems integration, lead time, and cost. And we can do it anywhere you fly.

- » Cabin Management
- » Avionics
- » Aerospace Connectivity
- » Aircraft Structures
- » IFEC
- » EFB
- » SATCOM
- » Advanced Air Mobility



### TEST & MEASUREMENT

High-performance, low-loss solutions for your urgent lab and long-term design needs.

- » Probes & Accessories
- » Oscilloscopes
- » Spectrum Analyzers
- » Digital Multimeters
- » Logic Analyzers



### INDUSTRIAL

From our harsh-environment designs for the most aggressive and ruggedized specifications to our ever-reliable RF interconnect systems, we are dedicated to creating solutions that help you focus on what you're building.

- » Laser/Industrial Automation
- » Heavy Equipment/Vehicles
- » Alternative Energy/Storage
- » Automotive
- » Rail Mass Transit
- » Oil & Gas Exploration
- » Sensors
- » Condition Monitoring



### DEFENSE

From radars, missiles, satellites, and forward-looking infrared systems to electronic warfare and communication systems, we ensure the reliability of the parts that connect them. This gives our military the ability to operate with efficiency and confidence in any environment — so they can focus on the mission at hand.

- » Radars & Antennas
- » Missile Defense
- » UAV/UAS
- » C4ISR
- » Military Aerospace



### SPACE

NASA, JAXA, and ESA have trusted us for more than 50 years with some of the space industry's most innovative and groundbreaking devices, programs, and missions — including Voyager, Mars Rover, Europa, MAVEN, and the James Webb Telescope, to name a few.

- » Spacecraft & Launch Vehicles
- » Satellite Integration
- » Deep Space Exploration
- » RF Power Handling

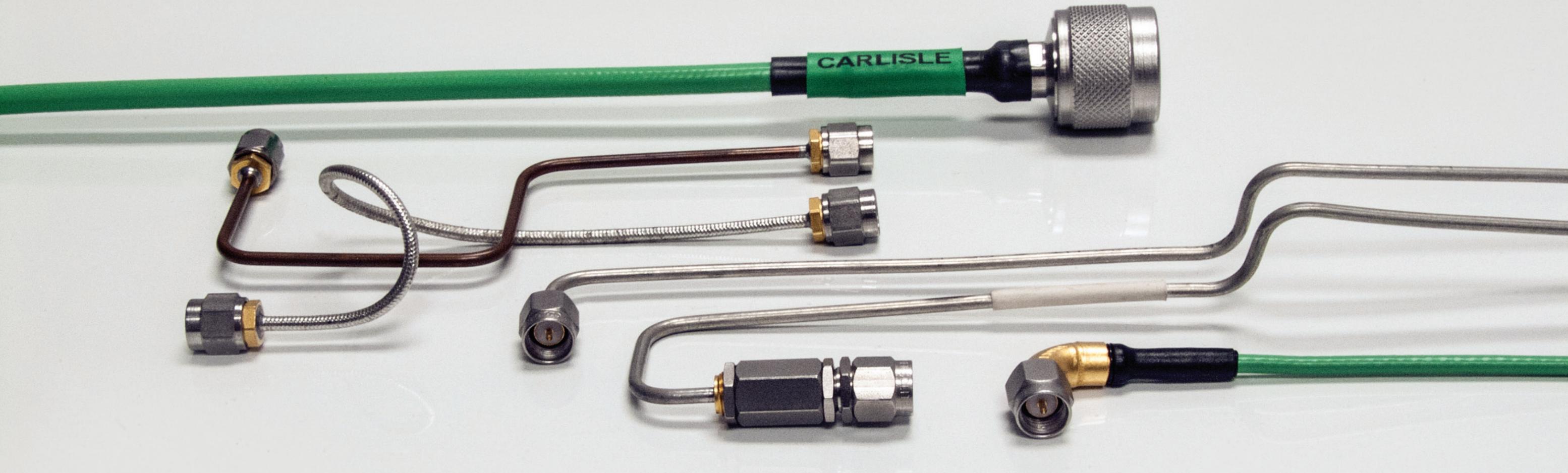


### MEDICAL

Carlisle Medical Technologies is an industry leader in the design and manufacture of high-performance solutions for the medical device market. With a global footprint, award-winning design and engineering experts, and extensive manufacturing capabilities, the company is uniquely able to design, build, test, and deliver solutions with unparalleled responsiveness and speed to market.

- » High-Speed Surgical Video
- » High-Performance Surgical Power
- » Single-Use Electrosurgical
- » Diagnostic Patient Monitoring
- » Medical Wire Harnesses
- » EN ISO 13485:2003 Certified





# CABLE ASSEMBLIES

## Connections Happen Everywhere

Whether your applications are deep in space, deep under the ocean, or anywhere in between, our precision-crafted cable assemblies and harnesses are ready to perform.

Streamlined, cost-effective, fully manufactured, and ready to install, our cables, connectors, and assemblies are vertically integrated to offer a complete solution to your design challenges. Our custom-designed and engineered solutions also maximize performance and durability.

## Product Offerings:

- » ECS Brand Avionics RF Coaxial Assemblies
- » Data Bus, Power, and Video Assemblies
- » Fiber Optic Cable Assemblies
- » Harness Assemblies
- » Gen-Z High-Speed Cable Assemblies
- » High-Density Coaxial Assemblies
- » Power & Grounding Assemblies
- » RF/Microwave Assemblies
- » RF/Microwave Harness Products
- » Test & Measurement Products



## ECS Brand Avionics RF Coaxial Assemblies

Each ECS brand avionics RF coaxial assembly is tested on our network analyzers to maintain high quality and ensure reliability. Insertion loss, phase matching, time delay, and VSWR are measured to verify performance and to meet your exact assembly requirements. RF assembly electrical profiles are documented, and a certificate of compliance is included with each shipset. Profiles are archived in our database to ensure repeatability. Individual phase-matched cables can be remanufactured rather than replacing an entire shipset.



### Available Types:

- Low PIM
- TCAS Cable Sets
- Customized Sets

### Key Features:

- Up to 75% lighter than MIL-C-17 standard cables
- Bend radii ranges from 0.75" to 2"
- -55 °C to 200 °C temperature range
- Multilayered shielding for superior protection against EMI/RFI
- Minimal insertion loss
- Meets or exceeds FAR Part 25 burn/smoke requirements
- Product ID marker tape with identification every 3" to 4"
- Low PIM assemblies made with non-ferromagnetic properties to reduce multifrequency interference

### Supported Frequencies:

- HF (2 – 30 MHz)
- Marker Beacon (75 MHz)
- VOR/LOC (108 – 118 MHz)
- VHF (118 – 156 MHz)
- Glide Slope (329 – 335 MHz)
- DME (960 – 1220 MHz)
- GPS (1575 MHz)
- SATCOM (1559 – 1660 MHz)
- XM/Wi-Fi (2200 – 2400 MHz)
- MLS (5030 – 5091 MHz)
- IFE - KU Band (10.7 – 12.75 GHz)

*ECS brand avionics RF connectors listed on page 22.*

## Data Bus, Power, and Video Assemblies

### HDMI, USB, DVI, Display Port, and Coaxial Digital Video Assemblies



Designed to provide flexible cable solutions to support a wide variety of aircraft cabin management systems.

- HDMI, DVI, D-sub, Quad, and Octax® terminations
- Optimum shielding to minimize interference issues
- Developed for minimal insertion loss and superior EMI protection
- Meet or exceed FAR burn/smoke requirements
- Fully terminated and tested
- Custom designs available

### HDMI 2.0 Locking Cable Assemblies



Fully qualified to support 4K ultra-high-definition displays at 60 Hz, these cable assemblies are made to order in customer-specified lengths.

- HDMI 2.0-compliant
- Available with single-end terminations
- Made to order in customer-specified lengths
- Available with or without the anti-vibration locking feature

### Octax® 10 Gb High-Speed Data Assemblies



Octax assemblies use standard M39029 contacts and connectors that are 40% lighter than competitor products.

- Cables house four Ethernet pairs in separate low-profile cells within a small envelope housing
- Optimized for use with our Gigabit series cables
- Available in plug and socket
- Can be utilized in panel-mount applications

*Octax connectors listed on page 25.*

## Fiber Optic Cable Assemblies

### Singlemode, Multimode, and Multifiber Assemblies & Breakouts

We offer a full range of fiber optic cable assemblies, including:

- Fiber jumpers
- Connectorized assemblies
- Highly complex breakout assemblies
- Long-length assemblies
- Fiber harnessing on racks, trays, or other structures

We terminate all common connector and termini designs and offer all termination types, including single mode, multimode, and plastic optical fiber in single and multiple-fiber configurations.

Assembly design and value-add engineering are available, as well as environmental, mechanical and optical qualification testing, and certification as needed.



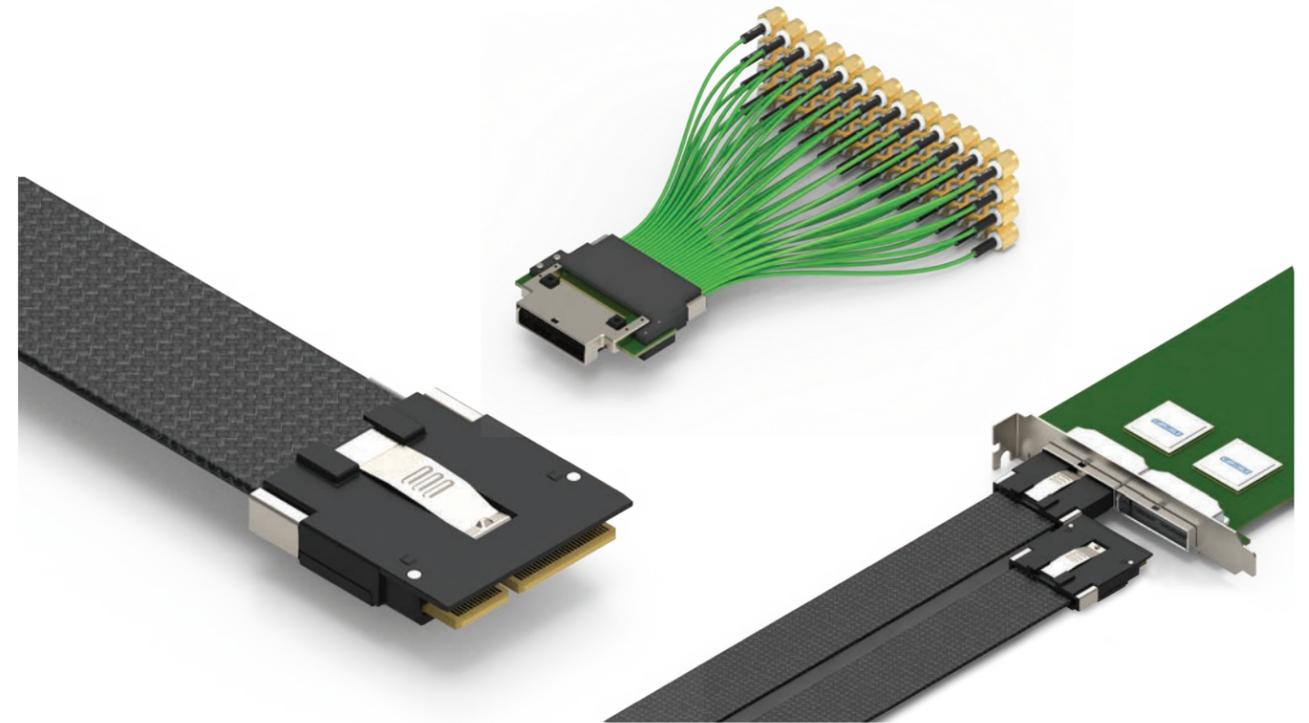
## Harness Assemblies

### Straightforward and Highly Complex Multibranch Configurations

No matter how complex and stringent your application needs are, our engineers work to keep overall cable harness design simple and effective. We work with you to custom-design, manufacture, test, and certify cable harnesses from the small, simple, and straightforward to highly complex, multibranch configurations that can include a combination of features like overbraided sections, screened branches, overmolded connector boots, or complex hybrid designs utilizing a mix of signal, power cables, RF cables, and even fiber optics. We have design and engineering teams at our state-of-the-art manufacturing facilities worldwide and are ready to work with you on complete, end-to-end managed solutions for your application needs.

## Gen-Z High-Speed Cable Assemblies

### Supporting PCIe Gen 5 Speeds and SaaS, SATA, SATAe, and NVMe Protocol Signals



Gen-Z data access architecture and technology increase the data rates and bandwidths of the links between processors and peripheral components, including memory devices up to 400 GT/s. As a result, there is less latency in data access on/between applications.

#### Key Features:

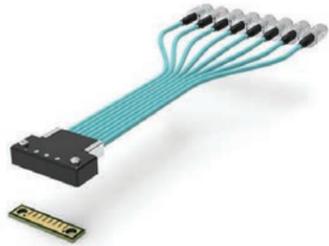
- Card-edge, high-density, discrete-pin connector that supports vertical, right-angle, and cabled installations
- Provides high-performance signal integrity capable of supporting line rates up to 112 GT/s PAM4 without Forward Error Correction (FEC)
- Right-angle and edge-mount type board-side connectors available
- Meet SFF-TA-1002 pinout specifications
- Maximum number of high-speed differential channels
- No sideband signals (10 additional pairs of signals compared to standard pinout solution)
- Standard and custom solutions available

#### Available in:

- 1C
- 2C
- 4C
- -1C
- -2C
- -4C
- -4C+

## High-Density Coaxial Assemblies

### CoreHC™ Ganged Interconnect System



Multichannel, test-point system targeted for high-density boards where space is limited. It offers reduced trace lengths and higher signal integrity than boards using traditional SMA and precision RF-type connectors. On average, there is 4x higher available bandwidth for signals in the same real estate as SMA connectors.

- DC – 65 GHz
- Vertical, edge-mount, and right-angle configurations available
- No soldering required

### CoreGD™ Ganged Interconnect System



A high-performance, multi-port, ganged SSMP interconnect system that offers excellent signal integrity for complex layouts and crowded PCBs used in more rugged applications. It is a low-cost solution optimized for applications with demanding bandwidth up to 65 GHz, pushing the envelope up to 100 GHz.

- SSMP-type board-side interface
- 2.92 mm and 1.85 mm cable-side connectors (DC – 65 GHz)
- Vertical, edge-mount, and board-to-board options

### HDSI® High-Density Shielded Interconnects



Feature ribbonized coaxial cable, matched impedance PCBs, and common connectors to meet today's demand for smaller, faster, and lighter interconnect solutions. Available in single-ended and differential configurations.

## Power & Grounding Assemblies

Provide a convenient and fast bolt-on solution to power and grounding cabling needs.

- Eliminates the need to purchase and maintain expensive terminal lug installation tooling and the need to train installers on crimping procedures
- Facilitates design to exacting standards, pre-determined cable dressing, and assurance of proper fit
- Can be combined with other CarlisleIT products into kits that facilitate assembly on the factory floor



## RF/Microwave Assemblies



M-FLEX®

Designed to accept semi-rigid cable connectors. Unlike other single- or double-braided “RG”-type flexible cables, M-FLEX cables are true MIL-DTL-17-compliant microwave cables.

- DC – 40 GHz
- RF shielding > 90 dB
- Helical shield for improved loss and phase stability
- Available in various lengths and connector options
- Designed for standard, readily-available solder-on connectors



Semi-Flex®

With an outer conductor comprising a tin-filled copper wire braid, a copper/poly foil inner layer, and a semi-rigid-style dielectric and center conductor, our Semi-Flex cables provide enhanced shielding and performance that exceeds traditional conformable cables.

- Conformable
- DC – 26.5 GHz
- Hand-formable without the need for bending tools
- Superior flexibility and bending radius compared to semi-rigid



Semi-Rigid

Manufactured by our trained technicians to meet J-STD-001E cable assembly standards and MIL-C-17 specifications, all assemblies are inspected per IPC-A-610 and IPC-A-620 to ensure that each one performs as specified.

- Tight physical tolerances, minimal VSWR, and high phase stability
- Phase-matched assemblies available upon request
- Custom-designed per drawings
- Vast selection of cable and connector options
- Computerized forming equipment ensures repeatability and accuracy
- MIL and commercial-grade connectors available

## RF/Microwave Assemblies Cont'd



### WorkHorse® Test Assemblies

Ruggedized and specifically designed for use in high-volume production environments, where strenuous flexing and numerous mating cycles quickly destroy typical connectors. Ideal replacements for OEM test port cables due to their long life and repeatable performance.

- DC – 26.5 GHz
- Utilize CarlisleIT's proven "504" triple-shielded cable
- Available with crushproof stainless steel interlocking armor
- Low loss and phase stable for testing repeatability
- Triple shielded for reduced leakage
- RoHS-compliant



### High-Performance, Low-Loss RF Coaxial Jumpers

Multiple configurations with 1.85 mm, 2.40 mm, 2.92 mm, and 3.50 mm connector types on .079" (outer shield diameter) coaxial cable

- DC – 65 GHz
- Standard RF Jumpers phase matched to +/- 2 ps in pair
- Tighter phase matching to +/- 1 ps and +/- 0.5 ps is available upon request
- Short, medium, and long heat shrink options

#### Available in three configurations:

- Standard FEP jacket
- Stainless steel armor
- Clear PVC armor



### UTIFLEX® Flexible Microwave Assemblies

Constructed using a low- or ultra-low-density PTFE dielectric coupled with fully shielded outer conductors and a unique connector attachment that withstands mechanical and thermal stresses far better than standard connectors. The result: excellent loss characteristics, outstanding phase stability, and superb flexibility compared to standard flexible cables — all without sacrificing mechanical integrity.

- Low SWR (1.25:1 to 40 GHz typical)
- Excellent shielding effectiveness
- Precision phase matching
- Class 10,000 clean-room assembly processes
- Low-outgassing materials
- Radiation-resistant up to 100 Mrads
- Real-time X-ray capability

**Available Variants:** Miniature, Low-Loss, Ultra-Low-Loss, MKR Ruggedized, External Armor, Ultra-Light, TVAC



### Space-Grade Microwave Assemblies

Our extensive track record in providing microwave transmission line products means you can partner with us to deliver proven solutions for your most demanding space flight technical challenges.

- Operating frequency through:
  - » V band
  - » Power handling (CW, multipactor, ionization)
  - » PIM
  - » Radiation
  - » TVAC
  - » Cryogenic
- Qualified to many program-specific requirements
- Can be supplied against NASA EEE INST 0002 and ESCC 3408
- Available configurations:
  - » UTIFLEX
  - » Semi-Rigid
  - » Multipoint harness
- Connector designs are tailored to the cable for an optimized cable assembly



### UTIPHASE™ Phase-Linear Microwave Assemblies

Combines every traditional feature of UTIFLEX® with a thermally phase-stable proprietary dielectric that eliminates the PTFE "knee." Also leverages the same cable assembly terminations and proven connector families that have made UTIFLEX famous, thus saving money, validation schedules, and lead times.

- Linear thermal phase performance
- Naturally ruggedized with sturdy concentric core
- Vertically integrated
- Typical velocity of propagation 80%
- Universally configurable with standard connectors and armor
- Tested to the Group A, Group B, and Group C qualification test requirements of MIL-DTL-17



## RF/Microwave Harness Products

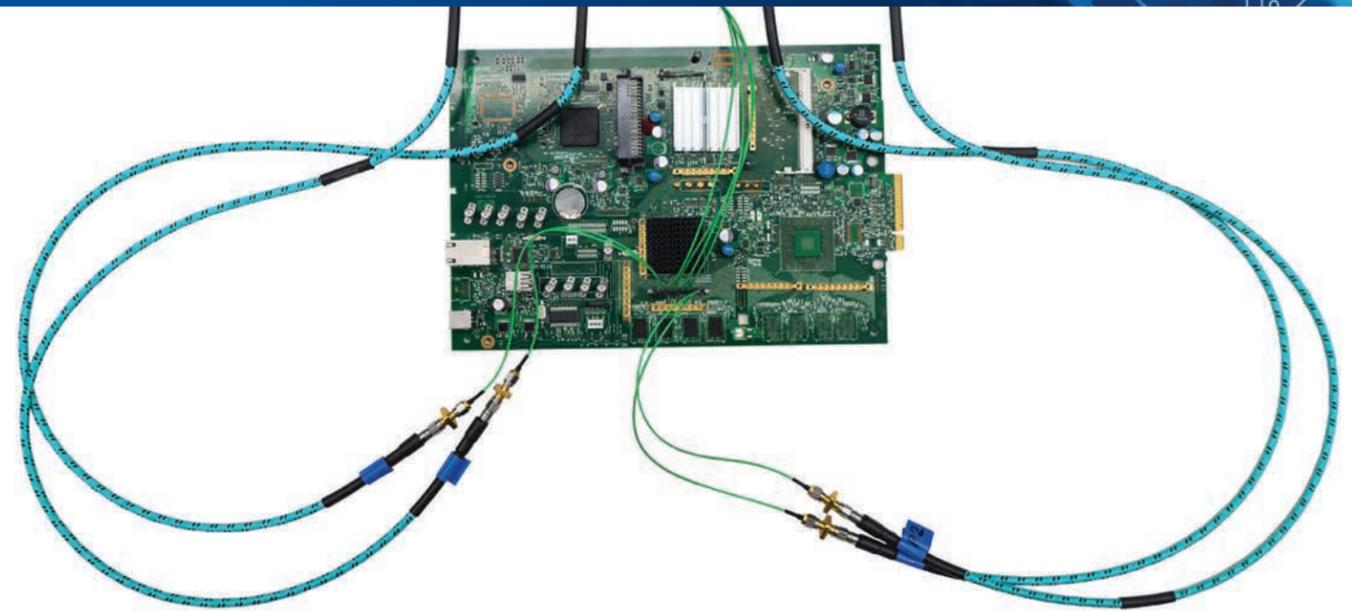
Our engineering teams will aid in custom-design, manufacture, test, and certification of cable harnesses from the small, simple, and straightforward to highly complex, multibranch configurations that can include a combination of features like:

- Overbraided sections
- Screened branches
- Overmolded connector boots
- Complex hybrid designs utilizing a mix of signal, power cables, RF cables, and even fiber optics

We can offer any standard connector housings, along with custom-designed housings to meet your specific needs.



Custom Engineered Assemblies available.



## Test & Measurement Products



### Board-to-Board Interposer Solutions

We offer a wide portfolio of low-loss, high-frequency Precision RF Connectors in various configurations for design flexibility and multiple applications.

- 50  $\Omega$  impedance
- DC – 110 GHz
- 1.00 mm, 1.35 mm, 1.85 mm, 2.4 mm, 2.92 mm, and 3.5 mm
- We will provide your board layout and optimized footprint based on your board stack-up
- Solder-mount and solderless/field-replaceable solutions



### SecureThread™

High-performance interconnect system using a blind-mateable push-on interface with a threaded coupling nut that prevents the cable assembly from moving once the connection is made.

- DC – 65 GHz
- Solder and solderless options
- Surface-mount and field-replaceable types
- Pre-tinned SMT
- CoreHC – Precision Connectors or SSMP – Precision Connector interfaces



### High-Frequency Flex Circuit Probes & Passive Probes

Engineered to deliver consistent, repeatable, and dependable results and an industry-leading combination of high bandwidth and high voltage in a low-cost, rugged, general-purpose probing solution.

- 500 MHz bandwidth AND 1,000 V CAT III; 600 V CAT IV
- Small head and body for enhanced visibility and access to small geometry circuit elements
- UL and IEC certified (exceeds UL61010-31, IEC61010-31)
- 1X, 10X, and 100X kits available
- Off-the-shelf and customized solutions



# CONNECTORS

## The Smallest Things Make All the Difference

Our high-performance connectors and adapters are designed and engineered to be the highest quality and most reliable in the market.

Our filters and connectors meet or exceed EMI industry standards, and we are unmatched in speed of delivery, manufacturing flexibility, and quality control, providing consistently reliable, superior performance for your applications.

## Product Offerings:

- » ECS Brand Avionics RF Connectors
- » Backshells
- » Data Bus Connectors
- » Digital Connectors
- » EMI Protection & TVS Connectors
- » RF/Microwave Connectors
- » Specialty Connectors





## ECS Brand Avionics RF Connectors

Designed and fabricated to meet industry specifications, including MIL-C-39012, ARINC 600, and ARINC 404, our ECS brand avionics RF connectors seal out moisture and hydraulic fluids and are durable enough to withstand the punishment and harsh operating conditions of avionics installations, including high-vibration and extreme temperature variations.



ARINC



BNC



FlightGear™ Blind Mate



HN



SMA



TNC



Type C



Type N

### Key Features:

- ARINC 404 and 600 Contacts: Bring RF signals directly to the avionics. We offer coaxial contacts for all of our optimized avionics RF cable solutions to allow direct termination into the ARINC connector without the need for loss-inducing adapters or jumpers.
- BNC Connectors: Often used for aircraft ground support and test equipment. Straight, right-angle, bulkhead, and extended connectors are available for the complete line of optimized avionics RF cable. Available in bulk or as part of full tested assemblies.
- FlightGear™ Blind Mate Antenna Connectors: Save space for new and existing antenna installations, prevent coax cable damage, and allow for quick antenna removal and replacement not possible in typical antenna installations.
  - » Type N, TNC, and BNC
  - » Interface compatible with MIL-STD-384A
  - » Frequency range: DC to 11 GHz
  - » Temperature rating: -65 to 150° C
- HN Connectors: Used for high-power applications and are matched to cables with comparable power-handling capabilities. Available in right-angle configurations and engineered for low-pressure aircraft environments, this connector series is the ideal choice for airborne radio.
- SMA Connectors: Support applications up to 18 GHz. Terminations of SMA connectors onto ECS low-weight, low-loss, avionics coaxial cable allows optimum links between SATCOM antennas and diplexer, block upconverter, or amplifier.
- TNC Connectors: The most common connector for Avionics RF applications and comes in the widest range of configurations, including extended versions to reach difficult installations. Special options also exist with self-locking features, keyed configurations, and low-PIM materials.
- Type C Connectors: Often found on aircraft transponder systems and used in mid-frequency applications. Available in both straight and right-angle options.
- Type N Connectors: A more robust connector option used for a variety of aircraft antenna systems with performance up to 18 GHz. Straight and right-angle configurations for all avionics coaxial cables are available to suit your unique application.

ECS brand avionics RF coaxial assemblies listed on Page 10.

## Backshells



### Compact D-Sub Backshells

Designed to minimize weight and maximize internal space and EMI shielding, our D-Sub Backshells are an ideal solution for high-end commercial and aviation cables where weight and/or EMI shielding are critical.

- Special mounting features that maximize cable strain relief strength, preventing damage to wires and electrical contacts
- Five standard sizes: 1/E through 5/D
- Varying cable exit diameters ranging from 7 to 16 mm
- Front panel-mount capability
- 60% lighter than comparable industry-standard products
- Tapped body style
- Accommodates conventional and moisture-proof MIL-STD-24308 D-Sub connectors

#### Available Exit Angles:

- 45°
- 90°
- Straight



### Composite Backshells

Up to 30% weight savings compared to aluminum configurations.

- 45° Exit Angle
- 90° Exit Angle
- Straight Exit Angle
- 10 mm and 13 mm cable exit diameters



### EN4165/BACC65 Backshells

Low-profile and lightweight backshells, compatible with EN4165/BACC65 connectors with very effective EMI shielding.

- 45° Exit Angle
- 90° Exit Angle
- Straight Exit Angle
- 10 mm and 13 mm cable exit diameters



### Universal Spring Latches

Compatible with MIL-STD-24308 D-Sub connectors and Compact D-Sub backshells. Provides enhanced locking stability for in-panel and inline applications compared to industry-standard products.

## Data Bus Connectors



Terminated Assembly with Size 25 38999 Connector

Terminated Assemblies with a Pair of Size 19 38999 Connectors



Octax-Solo Plug and Flange-Mount Receptacle

Octax Hybrid



Octax LT

Octax to Quadrax Adapter Assembly

### Octax®

High-speed Ethernet interconnect solution delivering data transfer speeds of 10 Gbps and higher to the commercial and military aerospace market. Optimized for use with our Gigabit series cable and utilizes MIL-DTL-38999 series III size 9 to 25 shells and standard AS39029 22D crimp contacts.

#### Key Features:

- Lightweight and compact allowing for greater density
- No special tooling required
- Field repairable
- Available in nickel or cadmium plating
- Environmentally sealed
- EMI shielded

#### Available Types:

- Solo
- LT
- Hybrid
- 38999 (Sizes 11, 19, 25)
- Flange-mount receptacle
- Plug
- Straight PCB (flange mount)
- ARINC 600
- EN4165
- Single Contact

#### Adapter:

Bridges the technology between Quadrax and Octax for systems that use Quadrax at the board level.

*Octax assemblies listed on page 11.*

## Digital Connectors



### Card Edge Connector System Supporting 25 Gbps Data Rate

Smooth mating surface area reduces the wear and tear of contacts and increases the durability and life cycle of the contact system. This connector system also lowers insertion and withdrawal forces, while supporting data rates up to 32 Gbps with excellent signal integrity. Suitable for multiple applications (like cable to board and board to board) with various PCB thickness profiles.

- PCB thicknesses of 0.062 in and 0.093 in for complex PCB designs
- Surface-mount and edge-mount options for pick-and-place
- 0.8 mm contact pitch for high density
- 500 mate/de-mate cycles for high reliability



### AltaVel™ Open Pin Field Interconnect System Supporting 25 Gbps Data Rate

Optimized to provide scalability and reliability in dense, high-mate/de-mate cycles applications with data rates greater than 25 Gbps.

#### Available Configurations:

- Board to Board
- Board to Cable
- Cable to Cable
- Cable to Panel
- Single-ended (50 and 75 Ω) and differential (85 and 100 Ω) designs

#### Available Styles:

- Vertical to Vertical
- Right Angle to Vertical
- Right Angle to Right Angle
- Surface Mount
- Paste in Hole
- Plated through Hole



## EMI Protection & TVS Connectors



### Circular Filtered Connectors

These low-pass filter connectors include the most popular circuits — C, CL/LC, Pi, and T — and are constructed using planar filter technology for maximum strength and high performance from low to high frequencies.

- MIL-DTL-26482
- MIL-DTL-38999 I – IV



### D-Sub & Micro-D Filter Connectors

Meet the interface requirements of M24308 and M83513, while providing filtering in accordance with the customer's strict requirements.



### EPX Filter Connectors

May be stacked for space savings and can be used in cable-to-cable and rack-and-panel applications. Modules are available in all standard arrangements with signal and power contacts. Compared to circular connectors, the EPX offers a slim shell design with high density.



### Rectangular Filter Connectors

Our ARINC filter connectors offer the complete line of standard layouts. Our modular construction uses standard shells and filtered backpacks.



### TVS Connectors

Our family of TVS connectors can be incorporated into any of our circular or rectangular product configurations and can include the filtering if required. Our unique packaging "diode-in-board" can handle power up to 3k watts while saving space and weight.

## RF/Microwave Connectors



### Microwave Adapters

Full-gender family of precision RF adapters in different connector options to cover applications ranging from DC to 65 GHz. They come standard in a passivated stainless steel body with a captivated beryllium copper center conductor to ensure mating repeatability. Gold-plated housing or non-captivated center conductor also available. All of our adapters are 100% tested to ensure optimum performance over their respective frequency range and offer low VSWR and insertion loss.

- Between-Series Straight Adapters
- Right-Angle and Straight In-Series Adapters



### Phase Adjusters

#### Block Style

- Up to 18 GHz
- Low insertion loss
- Smooth, continuous phase adjustment
- No external length change
- Rugged, compact housing
- MIL-STD-348-compliant



#### Phase-Adjustable Adapters

- Up to 50 GHz
- Low insertion loss
- Smooth continuous phase adjustment
- Positive resettable locking mechanism
- Multiple interface options available
- MIL-STD-348-compliant



### Phase-Adjustable Cable Connectors

- Up to 26 GHz
- OD cable configurations:
  - » 0.047, 0.085, and 0.141
- Smooth, continuous phase adjustment
- Positive resettable locking mechanism
- Multiple interface options available
- MIL-STD-348-compliant



### Swept/Radius Right-Angle Connectors

Utilizes a one-piece curved center contact with a radius tube housing. The proprietary manufacturing process ensures a true coax geometry from end to end. The radius design configuration allows for better performance at higher operating frequencies in a tighter package and greatly reduces shock or vibration failures.

- Multiple interface options available
- 50  $\Omega$  impedance
- Low VSWR and insertion loss
- Tested per MIL-STD-202

## RF/Microwave Connectors Cont'd



### Push-On Connectors

- SMPS: Satisfy demand for increased package density and reduced weight in microwave systems
- SMPM: Blind-mateable system that provides a micro-miniature interface that can be used as a smaller and lighter version
- SMP: Allow an increase in performance and complexity of designs, while simultaneously improving upon the form factor
- SMP-L™: Feature the Secure-Lok™ locking mechanism to the standard SMP interface
- TMP®: Provide a convenient blind-mateable interconnect solution specifically for high-power applications
- XMP™: Specifically for use in RF-excited CO2 lasers that are capable of delivering between 100 – 600 W of power



### Thread-On Connectors

- BNC: Predominant choice in low-frequency RF and aerospace applications that provide superior performance up to 4 GHz
- EPSMA (Enhanced Performance): Maintain the same physical dimensions of an SMA connector, while extending the performance to 26.5 GHz. They are tuned to provide ultra-low VSWR over the frequency range.
- K Connectors 2.92 mm (K\*): Provide mode-free performance up to 40 GHz.
- SMA: Our most extensive product line includes a complete list of board-mount, field-replaceable, cable connector, and adapter configurations. An ideal solution for microwave modules and systems up to 18 GHz.
- SSMA: A smaller version of the SMA connector designed for board-to-board connections. Commonly used with .085" semi-rigid cables and provides mode-free performance to 36 GHz. Also available as board-mount, field-replaceable, and other configurations.
- TNC: Used in microwave systems up to 11 GHz. Ideal for space applications and available in high-reliability (Hi-Rel) designs.
- Type N: Used heavily in microwave systems where higher power-handling capability is needed. Includes cable connectors and adapters and is available in both 12 GHz and 18 GHz designs.

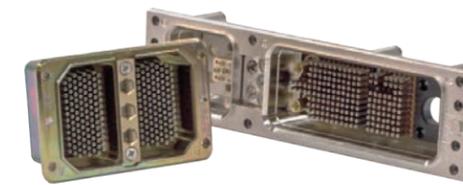
\*K Connector is a trademark of Anritsu Company



### Precision RF Connectors

- Low-loss, high-frequency options in various configurations for design flexibility and multiple applications
- 50  $\Omega$  impedance
- Frequencies supported up to 110 GHz
- Multiple mating interfaces available: 1.00 mm, 1.35 mm, 1.85 mm, 2.4 mm, 2.92 mm, and 3.5 mm
- Solder-mount and solderless/field-replaceable types
- Vertical flange-mount, 30° angled, and edge-launch options

## Specialty Connectors



### ARINC 404 & 600 Harsh-Environment Connectors

Our ARINC connector capabilities range from standard to complex with custom inserts, filtering, and harnessing options available. We do it all.

### CB/CBX All-Plastic Connectors



These lightweight-style connectors have a positive latch-type lock and are perfect for PC board and blind-mating applications.

### CBC Galley Connectors



Standardized for ease of maintenance and interchangeability, and designed to accommodate the many different plug-in warming devices and other ancillary units presently in use worldwide.

### CLP/CLPP Circular Connectors



Ideal for blind-mating in IFE systems and aircraft galley applications where intermateability with MIL-C-26500 is preferred. These connectors will readily mate with MIL-C-26500 bayonet-type plug MS24266R series connectors and can be PC board-mounted.

### CQ Connectors



Emits an audible click when mated. Ideal for blind-mating applications and hard-to-reach places like under passenger seats. Mates with any standard D-Sub or MIL-C-24308 connector when lockpost hardware is installed.

### Terminal Lugs



Engineered not only to be reliable but to also drive down costs by reducing weight and providing installation efficiency.

### Grounding Blocks



Designed for critical power applications with high-vibration and temperature. Intended for use with copper or aluminum terminal lugs.



# CONTACTS

## Leading the Industry through Experience, Quality, and Innovation

Powered by decades of experience, we are the premier global manufacturer of high-reliability contacts for harsh environment and mission-critical applications, with the widest QPL range in the industry serving OEM customers in aerospace, defense, space, and industrial markets worldwide. We have a wide global sales and distribution network and process more than 300 million contacts annually entirely in-house – from raw material to finished product.

High-Volume Manufacturing Processes & Capabilities Include:

- Blank manufacturing using cold heading & screw machine
- Automated plating lines (full & selective plating)
- Hooding, stripping, and color banding

## Product Offerings:

- » RF Coaxial & Triaxial Contacts
- » Signal & Power Contacts
- » Thermocouple Contacts
- » Custom-Designed Contacts





## Contacts

Approvals for AS39029, EN3155, and BACC47

### RF Coaxial & Triaxial Contacts



We are your source for RF coaxial and triaxial contacts used in MIL-C-38999, ARINC, and many other connector families. Our RF coaxial and triaxial contacts are used in critical communication systems, commercial and military satellites, and telecom, as well as navigation and integrated avionic applications.

### Thermocouple Contacts



At 36,000 feet on a 70,000-lb thrust jet engine or miles down an oil exploration hole, our contacts can take the punishment. What may be exotic contacts to others have become part of our standard product offering that brings decades of Tri-Star experience to your application.

### Signal & Power Contacts



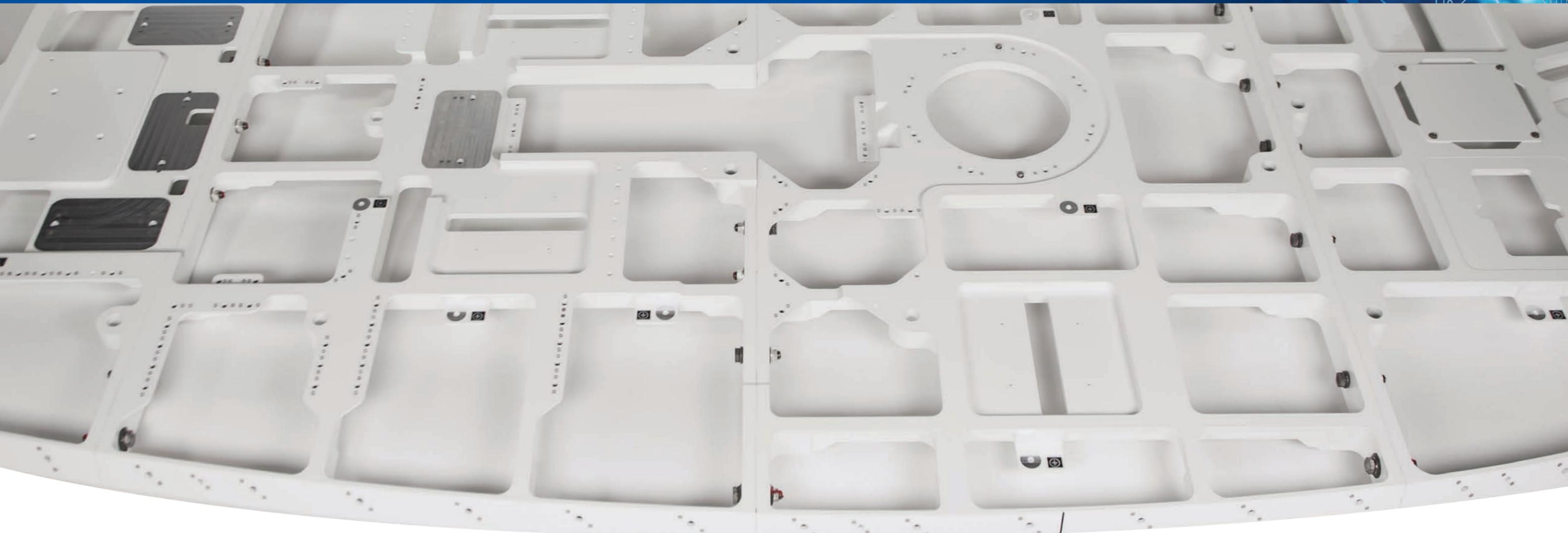
Whether you are transmitting data for communication purposes or electrical power to perform work, our contacts will perform reliably as the most critical interconnect components in your connectors. Available with various termination options:

- Crimp
- PC Tail
- Solder Cup
- Wire Wrap

### Custom-Designed Contacts



Special materials, designs, or configurations of contacts — we can handle them all. Enlist our design engineering team early in the process so we can help you to develop the optimum contact for your particular application.



# STRUCTURES

## Quality Integrated Structures and Industry-Leading Quality Standards

With a unique ability to design, build, test, and certify numerous types of interconnect structural items, we have the leading edge in end-to-end manufacturing.

We focus on building the highest-quality products with the best materials available, offering a wide range of precision structures adhering to military-quality standards and specifications.

## Product Offerings:

- » Antenna Mounts & Accessories
- » Avionics Enclosures
- » Racks & Shelves
- » Trays
- » Tray Accessories



## Antenna Mounts & Accessories



### Antenna Doubler & Adapter Plates

A wide range of installation solutions is available to match any antenna configuration or airframe application. Custom-solution design, substantiation, certification, and kits can be provided upon request.

### Cable Feed-Thru Assemblies



Eliminate the need for expensive feed-thru connectors and associated losses for improved system performance. Standard and custom bulkhead cable penetration designs are available.

## Avionics Enclosures



### ARINC 404A, 600, 628, 836A Enclosures

We use top-quality aircraft-grade materials to meet or exceed ARINC 600 specifications, as well as all civil and military aircraft application criteria. Our special designs stand up to the most rigorous environmental hazards for in-flight and on-the-ground operations. Each enclosure is fully warranted, ensuring that your avionics systems equipment will not only fit securely but operate safely.

- Optional plenum chamber and fan for positive pressure air cooling system

## Racks & Shelves



### 19" Racks

Designed for all aircraft types, our 19" racks feature a ruggedized construction combined with an innovative design that offers a significant weight reduction over existing rack designs.

- Conform to rack standards EIA/ECA-310-E
- Universal rack-mounting flange
- Available in standard "U" heights
- Standard mounting hole patterns are available for both 24" and 27" depth configurations (custom depth and mounting hole patterns available per request)
- Can be customized for special mission needs



### Aluminum Equipment Racks & Shelves

**Racks:** Available with integrated plenums for equipment cooling, optimized for weight and strength, and can be delivered fully wired and ready to fly.

**Shelves:** Direct-fit replacements or new shelves where additional equipment space is required. Can be provided either as a simple frame where you can add your own installation on top or as fully wired and tested kits ready to bolt into the aircraft and slide in the LRUs.



### Composite Equipment Racks & Shelves

**Racks:** Strong, light, airtight, and fireproof, our composite racks are ideal in spaces where full enclosures are required

**Shelves:** Special inserts are used to allow mechanical interface with composite racks and aluminum shelving



### Overhead Storage Bin Racks & Structure

We offer a variety of installations to support special cabin equipment, such as inflight entertainment or passenger connectivity. These installations would be located in the overhead storage bins, generally used for carry-on baggage

## Trays



### ABS 1699

Standard equipment on all Airbus A3xx aircraft

- Meet ARINC 600 and ABS1773 standards specific to these aircraft platforms
- Integrated side seals to speed installation on cooled equipment shelves
- Cooling holes standardized to accept NSA939511-03 plugs
- Advanced thumbscrew hold-downs



### ABS 1876

Developed for the Airbus A350 aircraft but can also be used on all Airbus A3xx aircraft

- Provide a 20% reduction in weight compared to our standard ABS1699 trays
- Meet ARINC 600 standards and ABS1773 requirements specific to these aircraft platforms



### ARINC 404 & 600

All ARINC trays are designed and fabricated in our state-of-the-art manufacturing facility using top-quality aircraft-grade materials to meet or exceed ARINC specifications, as well as all civil and military aircraft application criteria. Our special designs stand up to the most rigorous environmental hazards for in-flight and on-the-ground operations. Each tray is fully warranted, ensuring that your avionics systems equipment will not only fit securely but operate safely.

- Off-the-shelf designs or custom solutions are available to best fit your requirements
- Optional plenum chamber and fan for positive pressure air-cooling system

*Adjustable Keeper with Mounting Block available for ARINC 404-style trays. Details on page 40.*

## Trays Cont'd



### ARINC 836A Miniature Module

A small form-factor avionics mounting solution that enables quick and easy field installation/replacement of LRUs. Much like the ARINC 404 and ARINC 600 solutions in place today, this ARINC 836A-compliant design offers interchangeability between manufacturers and standard mounting.

#### Components:

- A tray that mounts to the aircraft
- An enclosure that holds the electronics
- A locking latch to allow quick and easy installation of the enclosure to the tray



### Lightweight ARINC

Using new fatigue-resistant aluminum materials and a highly refined design, we have developed an innovative line of lightweight ARINC 600 trays that are 20% lighter than standard trays, while still meeting the rigorous performance criteria of FAR Part 25, ARINC 404A and 600, and RTCA/DO-160.

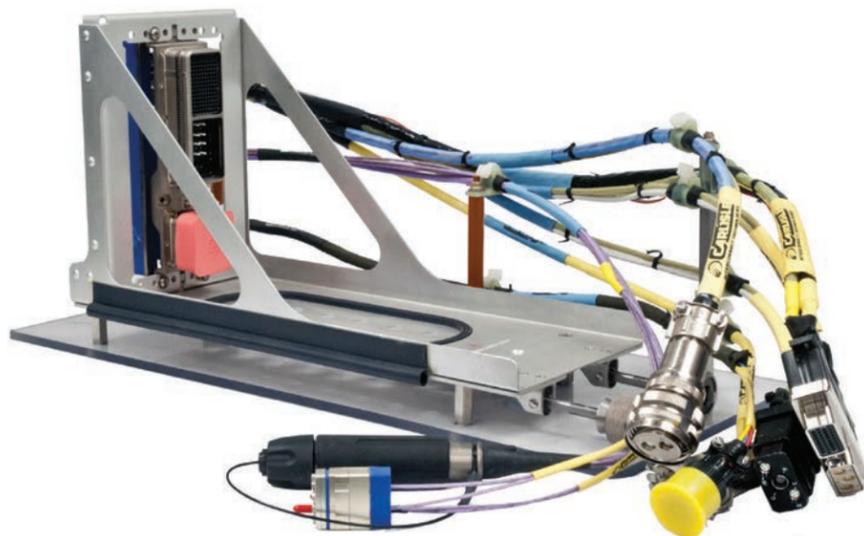


### Custom Trays & Mounts

Our engineering staff is available to solve your installation challenges.

- Vibration isolation mounts
- Grounding springs or studs
- Terminal blocks or strips
- Cooling fans and plenums
- Drip shields and hoods
- Full EMI enclosures behind the connector
- Multiple trays or mounts collected into a stacked, side-by-side, or other configurations

## Tray Accessories



### Positive Pressure Air Filtration Systems

We offer a variety of positive pressure solutions to capture dust and debris before they ever enter the cooling system or equipment.

Positive pressure air filtration occurs at the inlet side of a cooling fan, generally installed on a shelf, rack or individual mounting tray assembly. These filters prevent dust and debris from contaminating the cooling fan and electronics, which can shorten the operating life significantly. Additionally, it helps keep the air plenums free of debris that can restrict cooling air flows. This helps maintain consistent cooling performance over time to make sure high-value electronics aren't unnecessarily stressed by reduced cooling flows. Filtration solutions meet fire standards for airborne equipment and are available in a variety of configurations to maximize filter life.

### Adjustable Keeper with Mounting Block

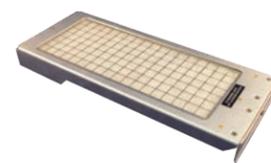


Designed as an upgrade to the NAS1637 Adjustable Keeper with Mounting Provisions, this product interfaces with the NAS1637 latch to retain Line Replaceable Units (LRUs) into ARINC 404-style trays. With upgraded materials, finishes, and additional features, it:

- Exceeds the performance and user experience of build-to-spec NAS1637 keepers
- Includes a mounting block that allows for installation on avionic trays and maximizes the adjustment range of the keeper

*ARINC 404-style trays listed on page 38.*

## Tray Accessories Cont'd



### Negative Pressure Air Filtration Systems

We offer three types of negative air pressure filtration systems that significantly reduce the ingress of cooling air contaminants from entering the equipment through top to bottom cooling flows.

- Tray-mounted
- LRU-mounted
- AF-5000 air filtration unit



### Temperature & Cooling Flow Sensors

A low-cost monitoring solution for your stand-alone cooling system that can be interfaced into any low-pressure plenum application.



### Stand-Offs

Our male/female threaded Hex stand-offs are ideal for clamping wire bundles or tubes away from a bulkhead or for routing through various structural installations.

- Color-coded to indicate the height
- Made from aerospace-grade aluminum for additional weight savings



### Insertion-Extraction Hold-Downs

We offer several installation "force-limiting" hold-downs with extraction features to protect the blind-mate connectors interfacing with your equipment. Offers easy maintenance removal and replacement.



### Military-Style Hold-Downs

The industry standard for a thumbscrew hold-down restraint of avionics equipment

- Secure ratcheting locking mechanism that meets the performance standards of MS14108, MIL-F-85371
- RoHS-compliant



### Advanced Thumbscrew Hold-Downs

A lightweight, high-performance option when a more advanced solution is needed. Developed to meet the extreme performance standards of ABS1699, ASNA2168, and RTCA/DO-160.

- Retain equipment even when not fully tightened
- Provide superior installation force compared to standard military-style hold-downs



# SYSTEMS

## Avionics equipment is made even better with the best installation components

We provide kits and components with varying levels of factory-completed integration to fit the needs of any installation program. One aircraft or hundreds, we are ready to help minimize the time in the hangar and get you flying again quickly. Need something specialized? Our engineering team is ready to create the perfect package, including custom structures, harness assemblies, fiber optics, RF cables, and other critical components.

- Approvals from FAA or EASA delegates
- Specialized substantiating documentation
- Robust manufacturing capabilities from FAA approved facilities

## Product Offerings:

- » Automatic Dependent Surveillance Broadcast (ADS-B)
- » EFB Systems
- » GPS System/Multimode Receiver (GPS/MMR)
- » In-Flight Entertainment & Connectivity
- » SATCOM



## Automatic Dependent Surveillance Broadcast (ADS-B)



Certified installation design packages and kits available for:

- A320
- 757
- 747
- 767

Other airframes can be quoted upon request

## EFB Systems



### eZMount® Tablet Cradle for iPad®

Designed to be mounted to the eZMount Twist mounting system, the eZMount universal cradle allows many generations of devices to be used without updating the mounting on the aircraft, eliminating costs of certification and hardware replacement. This gives airlines flexibility to upgrade their devices without driving costly changes to aircraft fleets.



### eZMount® EFB Mounting Solutions

Engineered to adapt to angles and tight constraints of the flight deck and designed to be easily adjustable by the flight crew for enhanced operation and safety.

- Fully RTCA/DO-160 FAA-witness tested, substantiated to 20G impulse and 9G sustained crash-loads in all directions
- The only mounting solution for both certified and noncertified options that meets all of these qualifications
- Provisions available in complete STC installation kits or as individual PMA components to support owner/operator EFB STC\* installation projects or installation via local field approval efforts (Form 337)
- All display mounts are compatible with our eZMount Tablet Cradle

## GPS System/Multimode Receiver (GPS/MMR)



Certified installation design packages and kits available for most Airbus and Boeing aircraft.



## In-Flight Entertainment & Connectivity



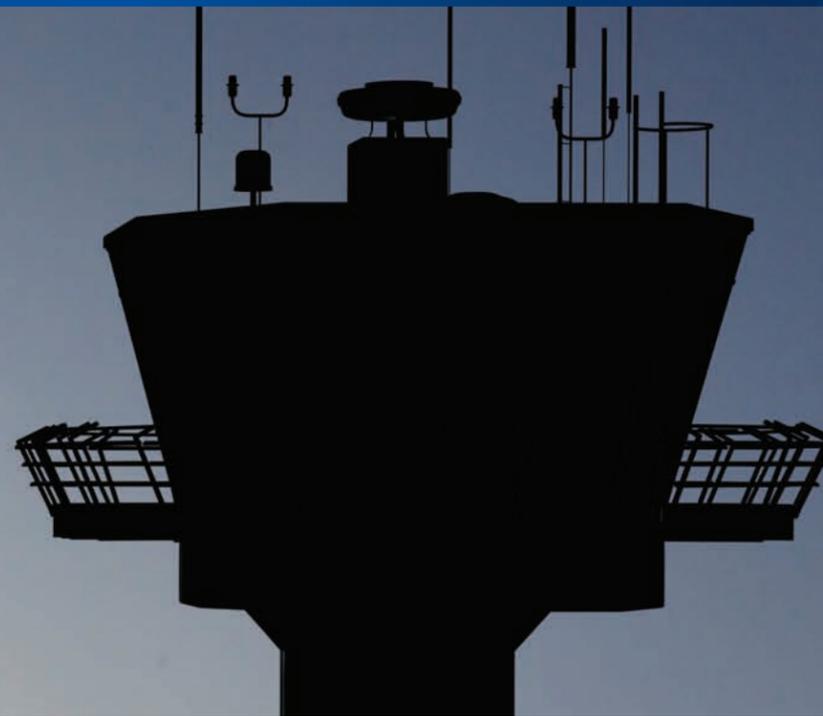
Want to install the latest in high-speed connectivity to your large or small aircraft? Our connectivity integration kits contain the key components you need to mount, connect, and interface modems, routers, content servers, and antennas on the aircraft quickly and easily. Our products are often the standard items referenced in the equipment installation manuals for these popular systems, assuring you of the best possible performance of the system in the air.

Don't see what you need? Contact our applications engineering team, and we'll be glad to help!

### Kits:

- Cobham AVIATOR 200, 300, 350, 700, and SP
- FlightGear™ ARINC 791 and 792 Ka, Ku, Ka/Ku
- Gogo AVANCE™
- HD-710/HP-720 Hardware (Unpressurized Application)
- HD-720 Hardware
- Honeywell Aspire 200, 350, and 400
- HS-720 Hardware
- HSD-440 Hardware
- HSD-X Hardware
- SD-720 Hardware
- SENTRY™ Flight Data Recorder Retrofit Kit
- Simphone
- SmartSky 4G LTE ATG





## SATCOM

### ARINC 791 Installations

We offer multiple ARINC 791 solutions for Ka-band, Ku-band, and Ka/Ku SATCOM installations. Our ARINC 791 adapter plate solution fulfills the need for standardized installation, easier maintenance inspections, and an overall lower cost of ownership. Installation packages are available for a wide range of aircraft. Details of available certifications, in-process engineering, and customizations are always expanding and can be furnished upon request.

- Conforms to the ARINC 791 standard, which future-proofs your SATCOM installation and makes upgrades to next-generation SATCOM antennas and system equipment easier and faster, with commonality across entire fleets
- Designed to support a wide range of SATCOM systems, ARINC 791 is preferred by aircraft manufacturers for line fit installations



### Thermal Management Solution (TMS) for ESA SATCOM Applications

An integrated isothermal transfer plate utilizes patented technology to transfer heat from the antenna(s). Passive elements reject heat to the surrounding environment. The all-aluminum structure eliminates concerns about galvanic corrosion common to other heat transfer technologies. Our TMS can be adapted to any antenna form factor and integrated into the antenna support structure.





# WIRE & CABLE

## Engineered and installed to meet your unique challenges

Ruggedized to perform reliably in harsh conditions and under extreme temperatures, our wire and cable can be engineered and installed to meet your unique challenges.

## Product Offerings:

- » Composite Aerospace Wire
- » MIL-SPEC Wire
- » Commercial UL/CSA/BS Cable & Hookup Wire
- » Industrial Wire & Cable
- » Fiber Optic Cables
- » Harsh Environment, Engine, and SWAMP Cables
- » High-Speed Digital & Data Cables (Aerospace)
- » High-Performance Coaxial Cables
- » Specialty Cables
- » Shielding & Overbraiding Products
- » Cable Assembly & Repair Products

## Composite Aerospace Wire



### Seamless™ & Seamless™-T

Seamless and Seamless-T PTFE tape-wrapped products are designed for use in commercial and military aerospace applications and are available in a variety of constructions and colors. Custom designs are available by request.

**AS22759/80-/92 & AS22759/180-/192 Hookup Wires:** Incorporate either dual-, three-, or four-layer insulation constructions with either copper alloy, tin-, silver-, or nickel-plated stranded conductors.

**NEMA WC 27500 Cables:** Incorporate from one to 15 MIL-DTL-22759, MIL-DTL-25038, or MIL-DTL-81381 wires, plus a single or double shield, and a single or double jacket.

### Tufflite®

Available in six cable families in sizes 26 to 4/0 AWG. Laser-markable and approved to multiple commercial aircraft platforms.

- TL: Medium Wall, Normal Weight
- ST: Enhanced Medium Wall, Normal Weight
- SLT: Thin Wall, Light Weight
- TLR: Metric Medium Wall, Normal Weight
  - EN 2267-010 (DR)
  - EN 2714-013 (ML)
- TLS: Thick Wall, Abrasion-Resistant
- TLA: Thick Wall, Aluminum Conductor

## MIL-SPEC Wire



Suitable for high-temperature applications with PTFE, ETFE, FEP, or PTFE/polyimide insulation. Options for highly abrasion-resistant insulation or high-strength conductors for maximum performance under mechanical stresses are also available.

- AS22759 Wire (fluoropolymer insulated)
- MIL-C-17 (high-performance coaxial cable)
- NEMA WC 27500 Cable
- MIL-DTL-16878 Wire (NEMA HP3, HP4)
- MIL-DTL-25038 Wire (fire-resistant)
- MIL-DTL-81381 (polyimide insulated)

## Commercial UL/CSA/BS Cable & Hookup Wire



Meets or exceeds Underwriters Laboratories (UL) and/or the Canadian Standards Association (CSA) safety standards.

## Industrial Wire & Cable



### Polyimide Equipment Wire & Cable

A compact, lightweight, and mechanically tough polymer with:

- Good flexibility
- Heat resistance
- Chemical resistance

Typical applications include airframe and aircraft wiring, military communications and avionics, automotive wiring, and nuclear power installations.



### Thermocouple Cables

Available in a broad range of thermocouple cable types and designed for accurate measurement and control in a variety of applications, including connecting sensors to devices, instrumentation and control, and temperature measurement.

- SAE5419 with parallel or spiral-laid components wires
- AS5419 Type "K" cables are typically used as extension leads for aerospace applications. Thermocouple extension wires are calibrated for use together in fabricating thermocouples.
- Dumbbell (single-shot and figure 8)
- Engineered to withstand hazardous environments
- Excellent resistance to chemicals, oils, and lubricants
- PTFE, FEP, PFA, or polyimide insulations
- Wide temperature performance
- Color-coded insulation for ease of identification



## Fiber Optic Cables

### LITEflight® EP

Aerospace-grade fiber optic cables that provide all the performance and benefits necessary to perform in the harsh environments of aerospace and military applications with low loss, tight bend radius, improved thermal stability, and peak performance during termination and installation. Semi-loose structured and compatible with all commercially available fiber optic termini and connectors.

### LITEflight® HD

A multichannel fiber cable in the smallest package. Designed for compatibility with cutting-edge fiber optic connector designs like industry-leading MPO and MPO-derivative connectors, as well as emerging multi-fiber termination connectors.

### LITEflight® HP

Offers excellent thermal stability and ideal connector/contact compatibility in a semi-loose construction for challenging harsh environment installations.

### LITEflight® POF

The only aerospace-qualified POF cable on the market today and the highest-performing plastic optic cable for harsh environment installations. Available in single- and multicore configurations and compatible with all standard POF transceivers.

### LITEflight® TS

The best-performing tight-structured cable in the industry, offering low loss and high bandwidth. Available in all standard multimode and single-mode core types.



## Harsh Environment, Engine, and SWAMP Cables

### Thermazone™ Fire-Resistant Cables

Designed for use in high-temperature and severe-environment applications such as engine wire, fire detection circuits, fly-by-wire systems, and flight-critical circuits. Three wire options are offered:

- MIL-DTL-25038/1 (Thermazone I)
- MIL-DTL-25038/3 (Thermazone IIIK, IIIG)
- BMS 13-55 (Boeing Material Spec)



### EFGLAS Equipment Wire & Cable

Designed for Severe Weather and Moisture Prone (SWAMP) applications, such as wheel housings, wings, and engine nacelle. Provides extreme strength, abrasion, and temperature resistance from the combination of PTFE tape and a PTFE impregnated glass yarn braid.



### ESW Firezone Cables

A range of high-temperature, fireproof, and fire-resistant single- and multicore cables, incorporating PTFE and polyimide, specifically designed for use in fire zone areas of the aircraft engine.



## High-Speed Digital & Data Cables (Aerospace)

We offer innovative data cables designed for reduced size and weight, easy installation, and flexibility in tight routing spaces. Choose from a wide range of high-performance data cables that meet the demanding needs of your aerospace applications.



### NETflight® Series Ethernet Cables

Built with a small envelope, lightweight housing, and faster bandwidth speeds to meet the demands of new technology and increasingly higher data-transmission requirements. Both standard and custom configurations are available for instrumentation, control, and signal applications of various types.

- 100 Base-T Ethernet Cable – Single Twisted Pair
- 100 Base-T Ethernet Cable – Shielded Quad
- 100 Base-T Ethernet Cable – Twisted Pair
- High-Performance Ethernet Quad Cable
- Lightweight 100 Base-T Ethernet Quad Cable

### Maxflite™ Series Cables

Provides high-speed performance for the popular video and data bus protocols. Designed for Severe Weather and Moisture Prone (SWAMP) applications, such as wheel housings, wings, and engine nacelle. Provides extreme strength, abrasion, and temperature-resistance from the combination of PTFE tape and a PTFE-impregnated glass yarn braid.

- HDMI
- DVI
- USB
- Firewire
- CANbus
- Fiber Channel



### Gigabit Series Ethernet Cables

Combine industry-leading, high-speed performance with significant size and weight advantages over comparable cables. Their durable design and exceptional electrical and mechanical characteristics make them ideal for a broad range of high-speed Ethernet applications in the aerospace, defense, military, and ground transportation markets. Developed in a wide variety of configurations to provide 1 and 10 Gb performance in the most demanding applications. These cables can be paired with our Octax connectors to produce an ultra-high-speed cable assembly.

- Shielded Dual Quads
- Gigabit-10HP™
- Gigabit-Flexx™
- Gigabit-Plus™
- Gigabit-STP

Octax connectors listed on page 25

## High-Performance Coaxial Cables



### MaxForm® Hand-Formable Cables

A hand-formable alternative to semi-rigid cable. With its 100% shield coverage, it provides equivalent performance to MIL-C-17 semi-rigid but can be formed by hand without the use of bending equipment.

- Solid PTFE core beneath a tin-soaked metal braid
- A direct replacement for UTIFORM® cables as general form, fit, and function for both product are identical



### ECS Brand Avionics RF Cable

Configured specifically for avionics systems that require a low-loss cable with frequencies between 0 – 12 GHz. Sold in bulk, cut-to-fit, or within a kit, these cables have short lead times with no minimum quantity and, in many cases, are in stock with same-day shipping available.

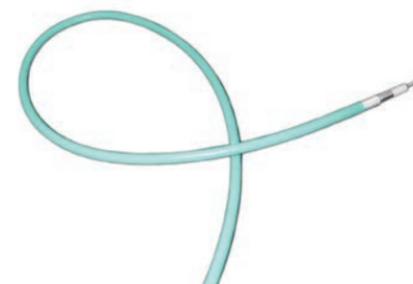
- 50 and 75 Ω Triaxial
- 75 Ω Coaxial



### Semi-Rigid Coaxial Cables

A large range of impedances, diameters, materials, and finishes are available.

- MIL-DTL-17-Qualified Cables
- Standard Copper, Aluminum, and Stainless Steel 50 Ω Cables
- Dimensionally Stable "DS" 50 Ω Copper Cables
- Low-Loss 50 Ω Copper and Aluminum Cables
- Ultra-Low-Loss 50 Ω Copper Cables
- Non-50 Ω Impedance Cables
- Custom Cables



### M-FLEX® Flexible Coaxial Cables

Flexible cables capable of accepting connectors designed for semi-rigid cables. Unlike other single- or double-braided "RG" type flexible cables, M-FLEX cables are true microwave cables capable of operating at frequencies of 26.5 GHz.

- Precision, helically wrapped, silver-plated copper foil inner shield
- Outstanding flexibility while providing 100% coverage
- Electrical performance approaches that of their semi-rigid counterparts
- Intended for static installations
- Supplied in long, continuous lengths which makes M-FLEX cables ideal for automated cutting and stripping equipment

## Specialty Cables

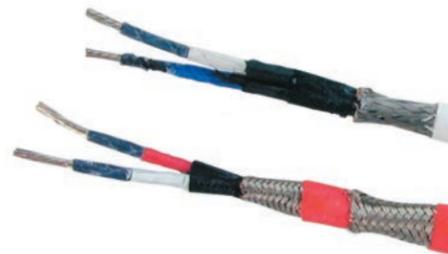


### Coil Cords

Provide a combination of strength, flexibility, and resistance in harsh chemical environments across a wide operating temperature range. A wide variety of materials is available on customer-specific designs for aerospace and industrial markets.

- Diameter: Up to 3.0 in (7.6 cm)
- Coiled length: Up to 7 ft (2.1 m)
- Operating Temperature: -55 to 200 °C
- Jacket Materials: polyurethane, hytel, Seamless™ PTFE tape/polyimide, FEP/polyimide, polyolefin
- Internal Wires: PTFE, PTFE/polyimide composite, FEP, ETFE standard or custom data cables

### Low-Noise Cables



Minimize triboelectric noise generated by cable movement and provide superior shielding to protect signals from external interference. These cables are ideal for use with piezoelectric accelerometers or other sensitive transducers, or other applications with low-power signals and/or electrically noisy environments.

They are also used in airborne EVM (Engine Vibration Monitoring) systems with approval from many major aerospace manufacturers.

## Shielding & Overbraiding Products



### ARACON® Lightweight Fibers & Braids

ARACON fibers combine the conductivity of an outer metal coating with the strength, light weight, and flexibility of aramid fibers. ARACON fibers are based on the same technology that created DuPont™ KEVLAR®, well known for its use in bullet-resistant vests, high-speed boats, and military helmets.

When braided into a shield, ARACON provides superior performance against electromagnetic interference (EMI) with weight savings of up to 80% over conventional metal braiding.

### Metallic Braids

Utilizing braiders from eight to 96 carriers, we offer several different sizes of metallic EMI shielding:

- Nickel-plated copper (per A-A-59551)
- Tin-plated copper (per A-A-59551)
- Silver-plated copper (per A-A-59551)
- Stainless steel (per QQ-W-423)

## Shielding & Overbraiding Products Cont'd



### Non-Metallic Braids

For protective non-metallic overbraiding, we can adjust coverage, braid angles, and material type to facilitate the needed heat resistance, abrasion resistance, or flexibility.

- Ceramic
- Cloth
- "E" Fiberglass
- ECTFE (Halar®)
- Graphite
- Kevlar
- MIL-C-572
- Nylon
- Nomex
- PEEK
- PETE
- PTFE
- "S" Fiberglass

*Custom overbraiding services listed on page 73.*

## Cable Assembly & Repair Products

### Portable Coaxial Cable Stripper Kit



Cuts and strips our ECS brand Avionics coaxial cables in three seconds, reducing termination times dramatically and assuring the perfect no-nick strip every time.

- Blades last up to 15,000 strips
- Handheld driver is powered by a removable battery pack
- Comes complete with hard-shell carrying case, charger, and one cutter head (additional cutter heads sold separately)

### Tie Cords & Lacing Tapes



Ideal for severe, harsh, and high-temperature environments to ease and secure installation and attachment to electrical apparatuses, bundling or marking wires and cables, and harnessing applications.

- Certifications held to Airbus standard DAN107
- Customer-specific solutions available

# SENSORS

## High Performance for Complex Applications

When an application demands complex measurement, a high-performing sensor for displacement, distance, position, or vibration can deliver the results you need to achieve market-leading performance. As the world's leader in precision products, Lion Precision, a Carlisle brand, produces high-performance capacitive and inductive sensors capable of delivering an unmatched combination of resolution and speed. Rapid customization and short lead times bring your high-tech products to market quickly. Lion Precision's displacement, distance, position, or vibration sensors can give you the best results for the most demanding measurements.

### Product Offerings:

- » Capacitive Sensors
- » Eddy Current Sensors
- » Label Sensors
- » Machine Tool Sensors
- » Fast Steering Mirror Sensors



## Capacitive Sensors

High-resolution, high-performance noncontact displacement, distance, position, oscillation, and vibration sensors for a wide range of applications.

### Elite Series



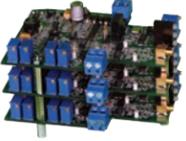
Product Selection Guide	CPL590	CPL490	CPL190/290	CPL230	CPL350	CPA100
Typical Resolution* (% F.S. rms) @ 15 kHz	0.003%	0.0007%	0.003%	0.004%	0.004%	0.03% @ Midrange
Nonlinearity*	0.1%	0.2%	0.02%	0.5%	0.2%	0.2%
Dual Range (Sensitivity)	✓		CPL290			
User Adjustments	✓	✓	✓			✓
Adjustable Gain						✓
Adjustable Offset	✓	✓	✓			✓
Range Indicator	✓	✓	✓			✓
Setpoint/Switched Output						
Channels Per Package	1-8	1-3	1-8	1-6	1	1
Selectable Bandwidth (Internal DIP Switch)	0.1, 1, 10, 15 kHz	1, 10, 15, 50 kHz	0.1, 1, 10, 15 kHz	0.1, 1, 10, 15 kHz	0.1, 1, 10, 15 kHz	
Maximum Bandwidth	15 kHz	15 kHz	15 kHz	15 kHz	15 kHz	15 kHz
Customization Available	✓	✓	✓	✓	✓	✓
Digital Output	✓					

STANDARD TECHNICAL SPECIFICATIONS

\*Typical specifications dependent on probe and range

## Eddy Current Sensors

Our eddy current sensors provide high-resolution measurement and unmatched precision in even the dirtiest environments. These advantages have made eddy current sensors indispensable for many machine builders, production managers, and precision metrology applications.

	ECL202	ECL150	ECL101	ECL110	ECA101
					

Linear Analog Out	✓	✓	✓	✓	
Nonlinear Analog Out					✓
Digital Output					
Setpoint Output	✓				✓
Pushbutton Adjustment	✓				
Adjustable Gain			✓	✓	✓
Adjustable Offset	✓		✓	✓	✓
Range Indicator	✓	✓	✓	✓	✓
Multichannel Package		✓		✓	
Selectable Bandwidth	0.1, 1, 10, 15 kHz	1, 10, 15, 50 kHz	0.1, 1, 10, 15 kHz	0.1, 1, 10, 15 kHz	0.1, 1, 10, 15 kHz
Nonlinearity	0.2%	0.2%	0.25 - 0.5%	0.25 - 0.5%	No
Resolution	0.002% - 0.025%	0.002% - 0.025%	0.004% - 0.06%	0.004% - 0.06%	0.02%
Maximum Bandwidth	15 kHz	15 kHz	80 kHz	80 kHz	10 kHz

## Label Sensors

Reliable, compact sensors that get the job done when nothing else will, utilizing capacitive or ultrasonic technology to eliminate sensitivity to color or contrast.



**LRD5100**  
Tear-Tape Sensor

The LRD5100 senses the presence or absence of tear-tape on overwrap film. Works with all tear-tape materials and nonmetallic overwrap



**LRD2100**  
Capacitive Label Sensor for Metal-Free Labels

The world's first clear label sensor. Optics-free capacitive sensing does not require changes in color or contrast to sense labels



**LRD3120**  
Clear Label Technology for Small Spaces

Same great performance as the LRD2100 in smaller spaces. Very small sensor head for mounting in tight spaces



**LRD8200**  
Ultrasonic Technology for Every Label Type

Ultrasonic technology provides accurate sensing of any type of label. Wide fork for booklets and easy web threading



**Lion Eye2**  
Traditional, Non-Clear Labels

The LionEye2 offers the same reliability all LRD sensors provide for traditional, non-clear labels.  
M8 Connector only



**LRD6300**  
High-Speed Accuracy, One-Button Setup

The finest clear label sensor for reliable, easy-to-set label sensing on applicators and slitter/rewinders



**LRD3100**  
Clear Label Technology for Small Spaces

Same great performance as the LRD2100 in smaller spaces. Sensor head can be used with supplied baseplate, or a baseplate can be designed into the machinery



**LRD900**  
Traditional, Non-Clear Labels

The LRD900 offers the same reliability all LRD sensors provide for traditional, non-clear labels.  
M8 connector only

## Machine Tool Sensors

Precise inspection to ensure you're producing your best work.



### Spindle Error Analyzer (SEA)

Flexible configuration for sophisticated measurements and highest-precision spindles.  
Best analysis device available

**Applications:** Production/Machine Shops



### SpindleCheck Analyzer (SCA)

Detailed analysis of machine performance with high resolution

**Applications:** Production/Machine Shops



### SpindleCheck Inspector (SCI)

Maintenance and test measurements compared across speeds and across machines

**Applications:** Production/Machine Shops



### TARGA III

The first and best system to measure run-out of high-speed PCB drilling spindles

**Applications:** High-Speed Runout Measurement

## Fast Steering Mirror Sensors

### EDA400 Features & Applications

Featuring state-of-the-art Lion Precision Eddy Current Sensors, the new EDA400 controller is the ideal solution for Fast Steering Mirror and differential sensing applications.

The EDA400 system comes with two matched pairs of high-resolution noncontact Eddy Current Sensors, the driver with four sensor inputs (two per axis), and a 9-Pin connector interface for easy connectivity.

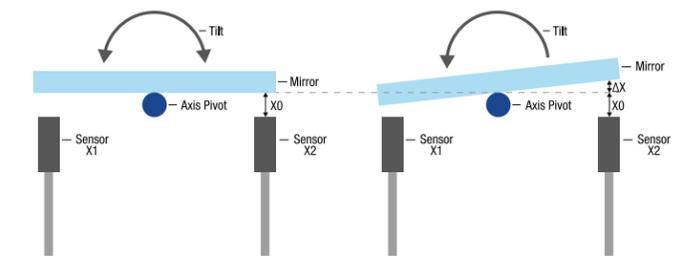


### The EDA400 System Is Designed for:

- » Fast Steering Mirrors (FSM)
- » Telescope and microscope stabilization
- » Image stabilization

### How the System Works

The differential system provides feedback from any change in the null position. As shown to the right, small changes in the tilt of the target are measured and sent to the actuator to allow fast and accurate control and positioning.



### System Features

- » High bandwidth
- » Extremely low power consumption
- » Excellent temperature stability
- » Very low mass
- » Nanometer resolution
- » Matched sensors for high stability and repeatability

The system can be customized for specific applications and is also available as a board without an enclosure for space savings and easy integration into a control system.

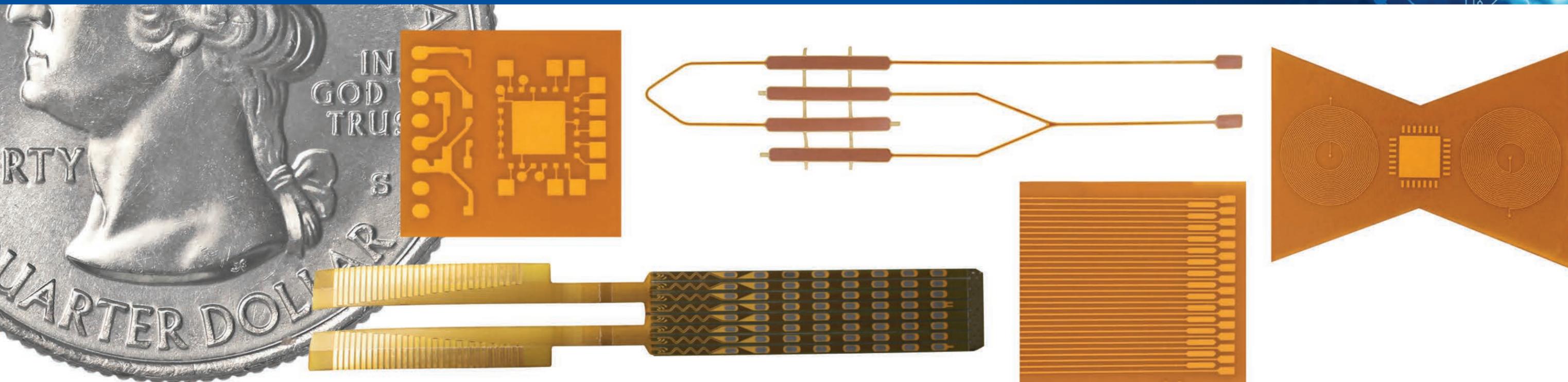


**How Do Fast Steering Mirrors Work?**



**FSMs in Space Applications**

Specifications	
Input Voltage	± 15 VDC
Input Power	0.7 watts
Output	± 10 VDC
Linearity Error	± 0.15% FS (varies depending on range)
Driver Operating Temperature	0 °C to 55 °C
Probe Operating Temperature	-30 °C to 125 °C
Weight (Electronics)	35 grams board only
Weight (Probe with 1 meter cable)	13.4 grams
Null Gap	0.43 mm
Measuring Range	± 0.2 to ± 0.9 mm
Thermal Sensitivity at Null	0.01% F. S/°C
Frequency Response	20 kHz
RMS Noise at Null	10 nm @ 1.5 kHz
RMS Noise Full Range	20 nm @ 1.5 kHz



# FLEX CIRCUITS

## Maturing your ideas from prototype to production

We are proud of our reputation as an advanced flex printed circuit (FPC) fabricator. We have earned this distinction by advancing our manufacturing processes for flex circuit board fabrication with higher circuit densities and unique design characteristics. Our engineering teams hold multiple success stories of assisting our customers from only a design concept to a finished flex printed circuit. We invite you to partner with MicroConnex, a Carlisle brand, for your next flex circuit board design.

Along with flex circuit board manufacturing services, we also offer thin film deposition capabilities and laser micromachining services. Visit [MicroConnex.com](http://MicroConnex.com) to determine a solution for your next printed interconnect device.

## Product Offering:

- » Polyimide films as thin as 12.5  $\mu\text{m}$
- » 25  $\mu\text{m}$  diameter thru, blind, and buried vias
- » Thin film deposition incorporated into flex printed circuit fabrication
- » Unsupported metal leads (flying leads)
- » 25  $\mu\text{m}$  trace/space circuit densities

## Flex Circuit Fabrication Capabilities & Design

CAPABILITY	Standard	Advanced	Developmental
Layer Count (circuit layers)	1 to 6 layers	7 to 10 layers	more than 10 layers
Available Trace and Space	Thickness & Process Dependent - See Below		
Laser Drill MicroVias to Pad	125 $\mu\text{m}$ Pad with 25 $\mu\text{m}$ > Via	75 $\mu\text{m}$ Pad with 25 $\mu\text{m}$ Via	50 $\mu\text{m}$ Pad with 25 $\mu\text{m}$ Via
Plated MicroVias Size Laser Drill (Aspect Ratio)	6 to 1	8 to 1	10 to 1
Plated Blind MicroVias Size – Laser Drill	>50 $\mu\text{m}$ blind	38 $\mu\text{m}$ blind	25 $\mu\text{m}$ blind
Positional Accuracy of MicroVias (Material Dependent)	25 $\mu\text{m}$	12 $\mu\text{m}$	< 12 $\mu\text{m}$
Solder Mask Positional Tolerance	50 $\mu\text{m}$	25 $\mu\text{m}$	25 $\mu\text{m}$
Solder Mask Webbing	125 $\mu\text{m}$	100 $\mu\text{m}$	75 $\mu\text{m}$
PI Coverlay Positional Tolerance	75 $\mu\text{m}$	50 $\mu\text{m}$	< 25 $\mu\text{m}$
PI Coverlay Webbing	125 $\mu\text{m}$	100 $\mu\text{m}$	75 $\mu\text{m}$
PI Coverlay Adhesive Bleed	100 $\mu\text{m}$	75 $\mu\text{m}$	< 50 $\mu\text{m}$
Bump Diameter	Bump Diameter 175 $\mu\text{m}$ Base Pad 300 $\mu\text{m}$ Post Height 15-45 $\mu\text{m}$	Bump Diameter 125 $\mu\text{m}$ Base Pad 200 $\mu\text{m}$ Post Height 15-45 $\mu\text{m}$	Bump Diameter 75 $\mu\text{m}$ Base Pad 150 $\mu\text{m}$ Post Height 15-45 $\mu\text{m}$
Layer to Layer Registration	50 $\mu\text{m}$	25 $\mu\text{m}$	< 25 $\mu\text{m}$
Imaged Feature to Laser Feature Registration	50 $\mu\text{m}$	25 $\mu\text{m}$	< 25 $\mu\text{m}$
Controlled Impedance	10%	10%	< 10%

		COPPER TRACE THICKNESS					
		1/8 oz (5 $\mu\text{m}$ )	1/4 oz (9 $\mu\text{m}$ )	1/2 oz (18 $\mu\text{m}$ )	1 oz (36 $\mu\text{m}$ )	1 1/2 oz (54 $\mu\text{m}$ )	2 oz (72 $\mu\text{m}$ )
Space & Trace	Semi-Additive Process	25 $\mu\text{m}$	30 $\mu\text{m}$	38 $\mu\text{m}$	75 $\mu\text{m}$	75 $\mu\text{m}$	100 $\mu\text{m}$
	Subtractive Process	Contact Us for Design Options					

Guidelines Only - "Mix and Match" designs that span categories are typical for our customers  
MicroConnex offers Proto- to Production fabrication for each capability category

## Additional Flex Capabilities

CAPABILITY	Available Options	Details
Surface Finish	ENIG	Ni: 0.5 to 6.0 $\mu\text{m}$ (20-240 u") Au: 0.05 to 0.20 $\mu\text{m}$ (2-8 u")
	Ni/Au (Electroplated Soft & Hard Au Available)	Ni: 0.5-5.0 $\mu\text{m}$ Au: 0.5-3.5 $\mu\text{m}$ (Thicker Stacks Available)
	ENEPIG	Ni: 2.5 to 3.8 $\mu\text{m}$ (100-150 u") Pd: 0.1 to 0.2 $\mu\text{m}$ (4-8 u") Au: 0.025 to 0.050 $\mu\text{m}$ (1-2 u")
	Immersion Sn	1.0 $\mu\text{m}$ (40 u")
	Immersion Ag	0.1 to 0.4 $\mu\text{m}$ (4-16 u")
	OSP	Bare Cu Surface Protect (Anti-Oxidation)
Quality and Metrology	AOI	Orbotech Ultra Dimension 800 Flex AOI for Dimensional Verification to 15 $\mu\text{m}$ Orbotech Ultra PerFix™ 120 – Laser Removal of Shorts & Cu Defects to 10 $\mu\text{m}$ View Pinnacle 250 & Plus for Dimensional Metrology (x-y-z)
	3D Imaging and Metrology	Keyence VHX 6000 for 3D Imaging and Proto Metrology Nikon VMA 6555 – Optical Imaging and Production Metrology
	Cross Section & Optical Microscopy w/ Image Capture	Via Plating Verification
	XRF	Fisher XDV u-Poly Capillary with Silicon Drift Detector Spot Size of 20-30 $\mu\text{m}$ > 0.01 $\mu\text{m}$ Film Thickness Resolution Light Element Capability; Phosphorous Composition Verification in EN
	Flying Probe E-Test	ATG A7 for Continuity 1 W to 10 kW and Isolation up to 25 MW (FM) 10 GW (ohmic) with MicroShort Detection and Soft Touch Probes
	Dimensional Verification	Olympus STM7 Optical CMM Microscope with x-y Stage and z-axis Measurement Capability. Up to 500x Magnification. 1 $\mu\text{m}$ z-axis accuracy
	TDR (Time Domain Reflectometry) Impedance Test	Polar Si8000 Field Solver
Laser Processing - ESI 355 nm UV	Singulation	Precision laser cutting down to +/- 10 $\mu\text{m}$ accuracy
	Skiving/Ablation	Controlled depth skiving and lead/feature ablation down to +/- 5 $\mu\text{m}$ accuracy
	Blind/Thru Via Drill	Capability to 25 $\mu\text{m}$ Via Diameter
Thick Metallization & Electroforming	Ni, Cu, Au (Other Engineering Metals or Alloys upon Request)	<b>Semi-Additive:</b> Up to 50 $\mu\text{m}$ thickness; 1:1 Aspect Ratio <b>Through-Mask:</b> Up to 50 $\mu\text{m}$ thickness; 5:1 Aspect Ratio
Thin Film Deposition	Target Set: Al, Au, Cu, CuNi, Ir, Cr, Ni, NiCr, Ti, TiW Reactive Sputtering: IrOx and Variants	<b>Magnetron Sputter Deposition:</b> 5-3000 nm thickness Three Targets per Load Maximum



# SERVICES & CAPABILITIES

## We're ready to take on your next challenge

At CarlisleIT, our commitment to providing you with end-to-end solutions comes to life through our comprehensive suite of services and capabilities. By working closely with you, we gain an exceptional focus on solutions specifically tailored to your needs, from design to delivery and beyond. We can design, build, test, certify, and deliver precisely what you need, exactly when you need it. Whether it's for commercial aerospace, military & defense, space, test & measurement, industrial, or medical technology applications, CarlisleIT has just what it takes to get it done.

## We Offer:

- » Engineering & Design
- » Airworthiness Certification
- » 5-Axis Machining
- » Laser Marking & Engraving
- » Mechanical Assembly
- » Metal Finishing & Paint
- » Sheet Punch & Forming
- » Water Jet Cutting
- » Testing & Field Services
- » Custom Overbraiding Services
- » Bobbin Winding
- » Contract Manufacturing



### Engineering & Design

Our ability to create custom solutions means you have a true partner in innovation as you move your business forward.

- Complete electrical and structural design
- Custom component design
- Field installation surveying
- Airflow cooling and analysis
- Stress analysis
- Qualification testing
- Fire detection and containment
- Regulatory compliance (SFAR 88, DO-160, FAR)
- Conformity, STC, and PMA
- On-site DER, DAR, and DMIR
- ProE, AutoCAD, and CATIA



### Airworthiness Certification Services

We are an FAA STC Design Approval Holder with a staff of certification experts, in-house Federal Aviation Administration Designated Engineering Representatives (FAA DERs), Designated Airworthiness Representatives (FAA DARs), and Designated Manufacturing Inspection Representatives (FAA DMIRs).

- STC Certification (FAA/EASA/Part 21 DOA)
- PMA Manufacturing (FAA PMA/EASA Part 21 POA)
- OEM Aircraft Parts & Assemblies

Hundreds of STCs have been awarded to CarlisleIT across a broad spectrum of systems and equipment and have been recognized by airworthiness authorities worldwide. CarlisleIT components fly on more than 90% of commercial aircraft in service today.



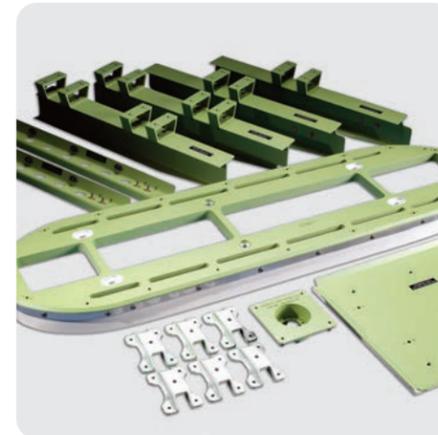
### 5-Axis Machining

We have extensive manufacturing facilities for aerostructures of all shapes and sizes. We can work in a wide variety of aerospace metals, including aluminum, stainless steel, titanium, and select composites. 3- and 5-axis CNC, lathe, and long-bed machining make turning your designs into high-quality pedigreed aircraft parts quick and easy. Manufacturing facilities are FAA PMA-approved, allowing parts to be delivered with airworthiness tags if requested. All parts receive AS9102 FAI and detailed inspection by an expert quality staff using the latest technology.



### Laser Marking & Engraving

Permanent logos, labels, bar codes, and part numbers can be engraved into a wide variety of metals and plastics.



### Mechanical Assembly

In addition to sheet metal and machining, we offer additional services for mechanical assembly, including:

- Screws
- Rivets
- Hi-locks
- Welding
- Adhesive Bonding
- Press Fit & Crimping
- Packaging optimized for next-level integration



### Metal Finishing & Paint

- MIL-DTL-5541 automated chemical conversion coating line
- Class 3 RoHS clear chem finish (most common)
- Part handling up to 8 ft x 5 ft x 1.5 ft thick
- Max part handling weight of 250 lb
- Fully automated process chemistry monitoring and time in tank controls
- Qualified on 2000, 5000, 6000, and 7000 series aluminum alloys
- NADCAP certification



### Sheet Punch & Forming

TRUMPF TruPunch CNC punch/shear presses with a full range of punch tooling numbering nearly 1,000 tool sets.

- Typical Materials: Aluminum, acrylics, Teflon™, and stainless steels
- Stamping Sheet Size: 4 ft x 6 ft 8 in
- Tolerance: +/- 0.002 in (0.05 mm)
- Max Thickness: 1/4 in (aluminum); 3/16 in (stainless steel)



### Water Jet Cutting

The Z-2043 offers a high-versatility water jet cutting solution, which can accommodate sheets up to 12 ft in a wide variety of materials, including sheet metal, composites, foams, and more. This provides an attractive alternative to roughing operations using conventional machining centers and the ability to cut soft materials not suitable for conventional machining.



### Testing & Field Services

We offer a variety of test kits, test facilities, and field support resources in support of our products. Contact us if you have special requirements or would like a customized test configuration tailored to your product and field support needs.

- Fiber optic test & inspection kits
- Product qualification & testing
- Vibration & shock testing
- Customer product training
- On-site technical support



### Custom Overbraiding Services

Overbraiding of customer-supplied products, from simple hose to complex wiring harnesses with multiple breakouts.

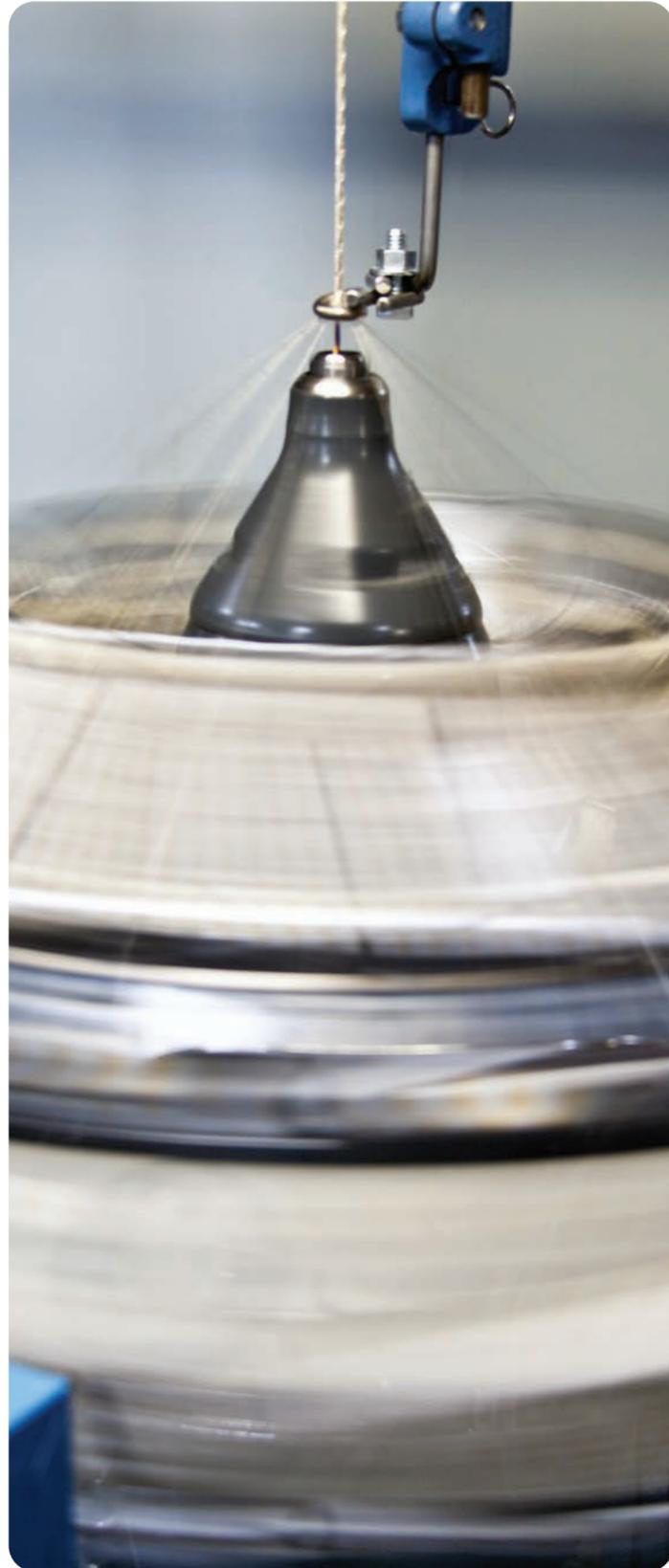
- High-temperature aircraft engine applications, both OEM and MRO
- AOG repairs of harness braiding with 24- to 48-hour turnaround
- FAA-certified repair station

*Shielding and overbraiding products listed on pages 56-57.*



### Bobbin Winding

Complete bobbin winding capabilities with multiple ends for NEB and WW machines.



## Contract Manufacturing

When you partner with CarlisleIT, you're connected to a global manufacturer with diverse resources to manufacture your product at any scale required. Our build-to-print capabilities are strategically aligned to give you complete control over the design and product modification process. Inside our full-service fabrication facilities, we can manufacture custom components, discrete assemblies, or complete avionics systems kits from customer-supplied drawings or 3D models with product modifications you control.

## Key Manufacturing Capabilities:

- Custom composite cables
- Cutting & marked wire kits
- Wire harnesses & cable bundles
- Custom overbraiding
- RF assembly & test
- Fiber optics
- Equipment racks
- Switch panels
- Electromechanical structures
- Aircraft modification kits
- Machining & additive manufacturing
- Micromachining & CNC milling
- PMA/EPA production

## Manufacturing Advantages:

### Contact Machining and Cold Heading

- One of two contact manufacturers in the world with cold heading capabilities
- Cost-effective

### Selective Plating

- Highly efficient computerized plating line
- Pioneer in custom selective plating equipment
- Lower total cost for customer

### Quality Systems

Our manufacturing locations are certified and committed to upholding the strict quality standards of:

- AS9100
- ISO 9001
- ISO 13485
- ISO 14001
- UL
- ITAR
- MIL Spec/SAE
- RoHS
- FDA

*\*Visit CarlisleIT.com for individual certifications per manufacturing location.*

### Molding & Potting

- We offer a complete line of molding and potting services to support and complement the manufacturing of our customers' requirements
- With design, tooling equipment, and testing, we can execute the most cost-effective and timely solutions for all sizes and shapes of plastic components, enclosures, and strain relief for harsh environment requirements
- We validate the designs and use 3D systems to generate a concept for customer approval using the Solid Works, Mold Flow, and Microwave Studio

### 5-Axis Machining

- Efficiently fabricate complicated structural components from 3D models
- We can design it for you or use customer 3D models



# We Are Interconnect.

At Carlisle Interconnect Technologies, we do more than make interconnect technologies for a spectrum of industries. We deliver the critical connections and products that make amazing performances possible.

## Carlisle Operating System (COS)

### Driving the Industry Forward

We're leading the way with Carlisle Operating System (COS), our standardized methodology using the tools of Lean Manufacturing and Six Sigma to drive continuous improvement for our customers and our business. It promotes the systems and culture of safety, employee involvement, quality, and on-time delivery — all of this with our customers in mind.

The COS methodology is woven into our leadership fabric and everything we do. This thought process is both supported and driven by our top leadership and ensures the sustainability of our successes with our customers and our business. Every CarlisleIT location participates with the goal of continuous improvement at all facilities.

With COS, companies working with CarlisleIT know they're partnering with a world-class interconnect manufacturer dedicated to providing comprehensive, next-level solutions they can't get anywhere else.

### Nine Key Metrics

- » MDI - Managing for Daily Improvement
- » TPM - Total Preventative Maintenance
- » Culture
- » Supply Chain
- » Environment
- » Safety
- » Quality
- » Delivery
- » Cost

The COS Operational Excellence program recognizes and rewards facility performance with a specific and defined level of achievement, providing each facility a road map for continuous success. The program allows us to monitor and track performance to ensure we're achieving our performance goals.



People. Process. Productivity.

# Global Manufacturing. Local Support.

Wherever you are, so are we. With manufacturing centers around the globe, our highly qualified team of engineers is up to any challenge. Our extensive worldwide manufacturing capabilities, coupled with end-to-end local project management and engineering support, allow us to design, build, test, and certify your product in-house, saving you the time and hassle of managing multiple vendors.



### HEADQUARTERS

100 Tensolite Drive  
St. Augustine, FL 32092  
United States  
1 (800) 458-9960

### FACILITIES CERTIFICATIONS

- » AS9100
- » ISO 9001
- » ISO 13485
- » ISO 14001
- » FDA
- » ITAR registration
- » MIL-SPEC/SAE
- » RoHS compliance
- » UL

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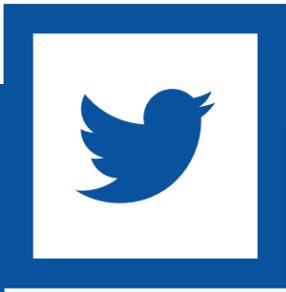
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 [www.CarlisleIT.com](http://www.CarlisleIT.com)

 [Sales@CarlisleIT.com](mailto:Sales@CarlisleIT.com)