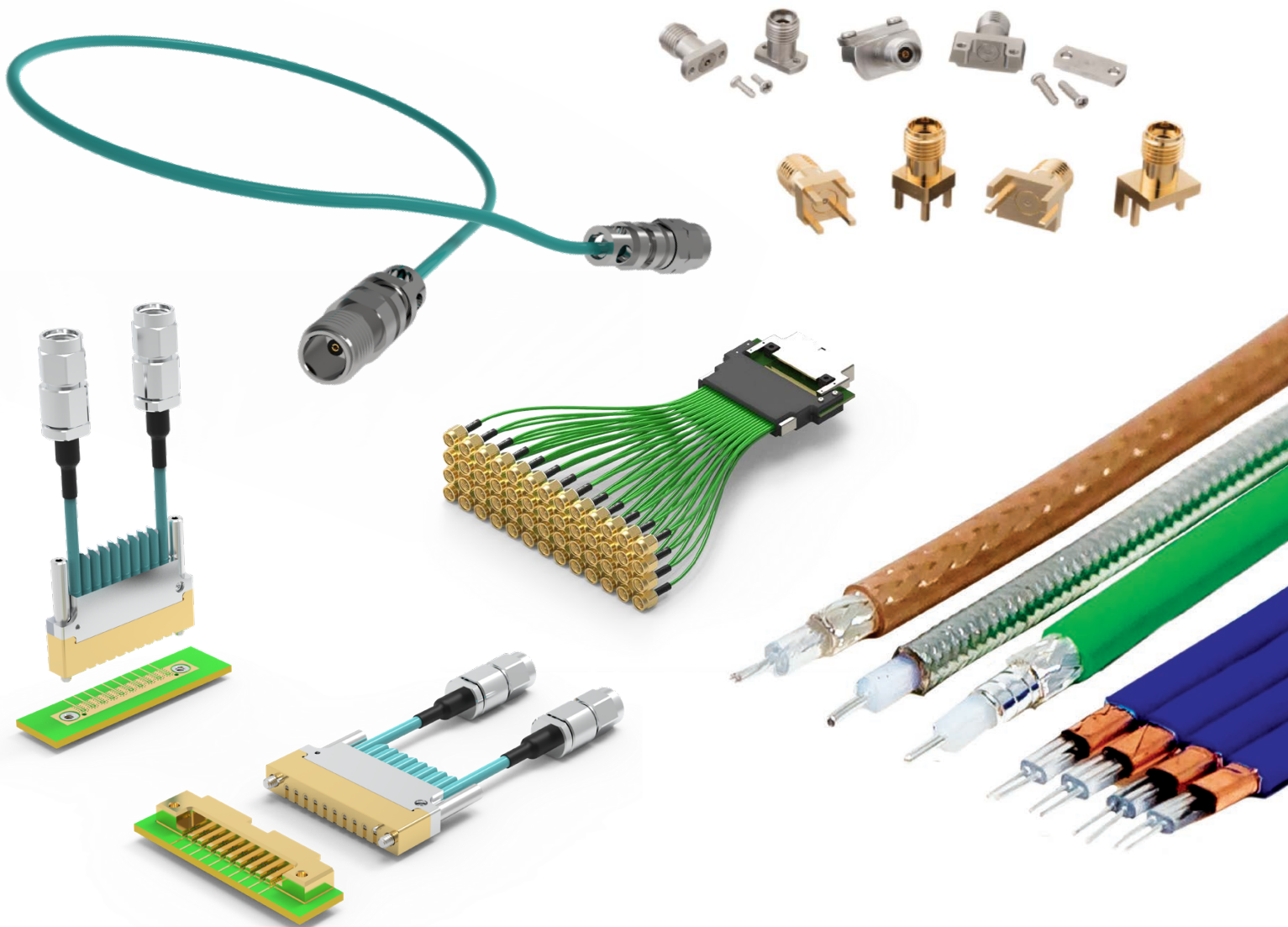


# Test & Measurement Products & Services



High-Performance Wire & Cable  
RF Products  
Digital Products  
Probes  
Signal Integrity Services

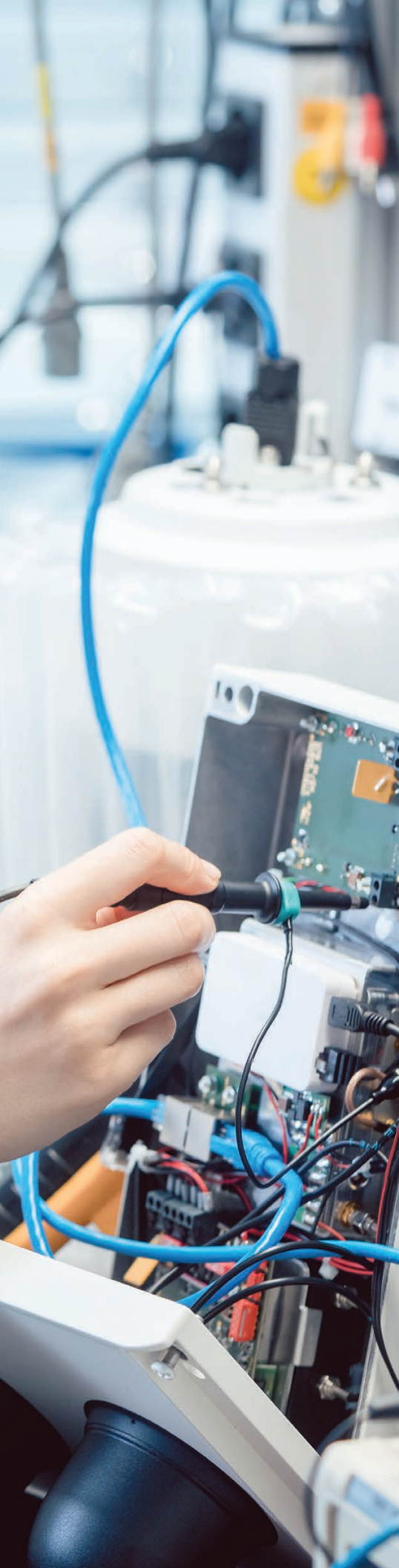
**CARLISLE**  
INTERCONNECT TECHNOLOGIES

A woman with her hair in a bun, wearing a white lab coat, is shown in profile from the side, looking at a computer monitor. Her right hand is on the control panel of a piece of electronic test equipment. The background is a blurred laboratory or office environment with blue walls and other equipment.

## Recalibrating the Standard for Test & Measurement

Our products are designed with you in mind. Our full lineup of customizable interconnect solutions leverage our unique hybrid technology (RF + Digital + Power) and can test up to 100 GHz.

**CARLISLE**  
INTERCONNECT TECHNOLOGIES



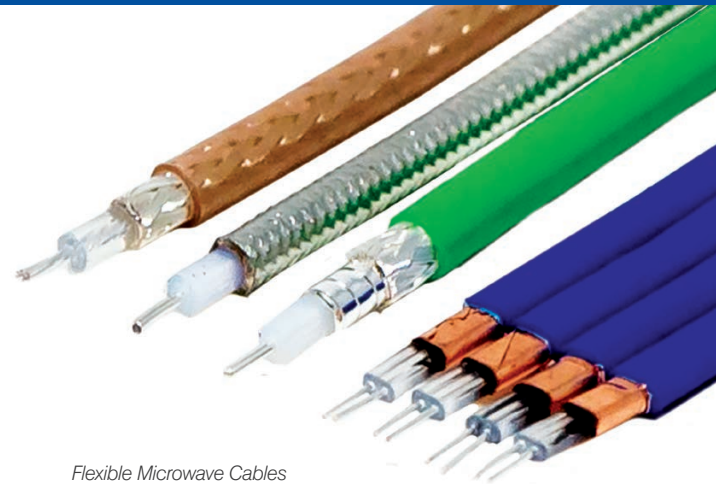
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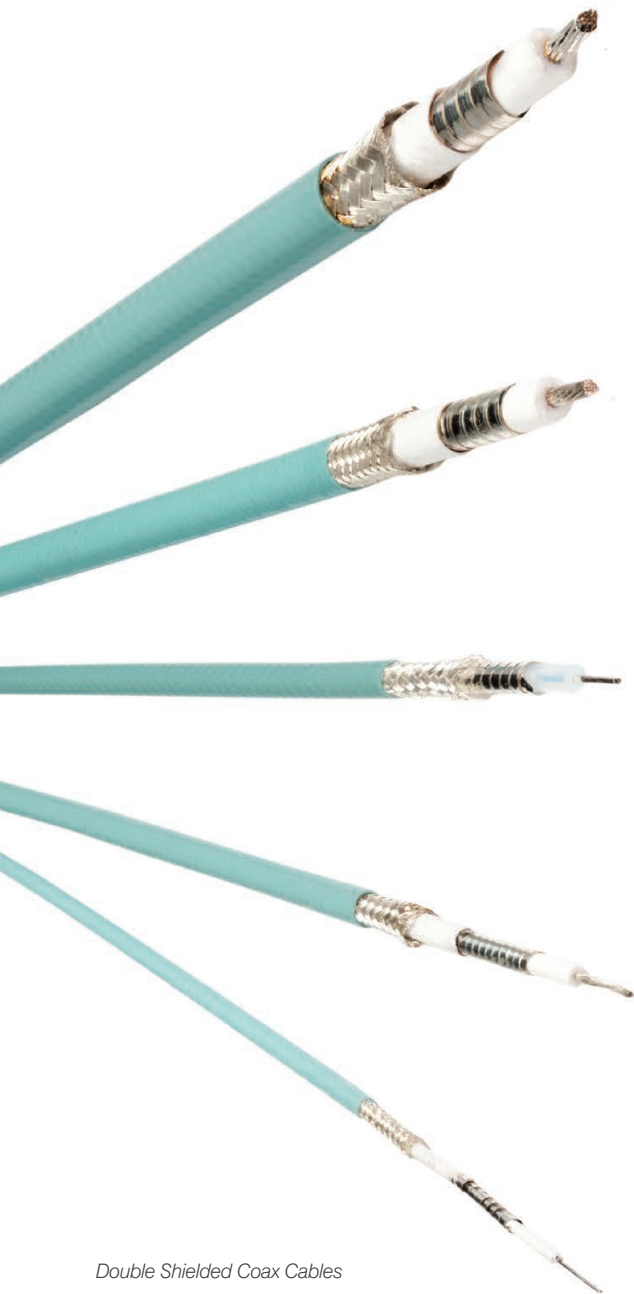
# High-Performance Microwave Cables

We offer a complete line of high-performance microwave cables with excellent loss characteristics, outstanding phase stability, and unsurpassed flexibility, compared to standard flexible cables—all without sacrificing mechanical integrity.

We have also greatly increased connector reliability through a unique connector attachment that withstands mechanical and thermal stresses far better than standard connectors.



*Flexible Microwave Cables*



*Double Shielded Coax Cables*

## Available Types

### Flexible

- Versatile low-loss cables operating up to 70 GHz
- Excellent shielding effectiveness and precision phase matching

### Semi-Flex/Conformable

- Hand-formable with lower leakage and superior bending radius to semi-rigid types

### Semi-Rigid

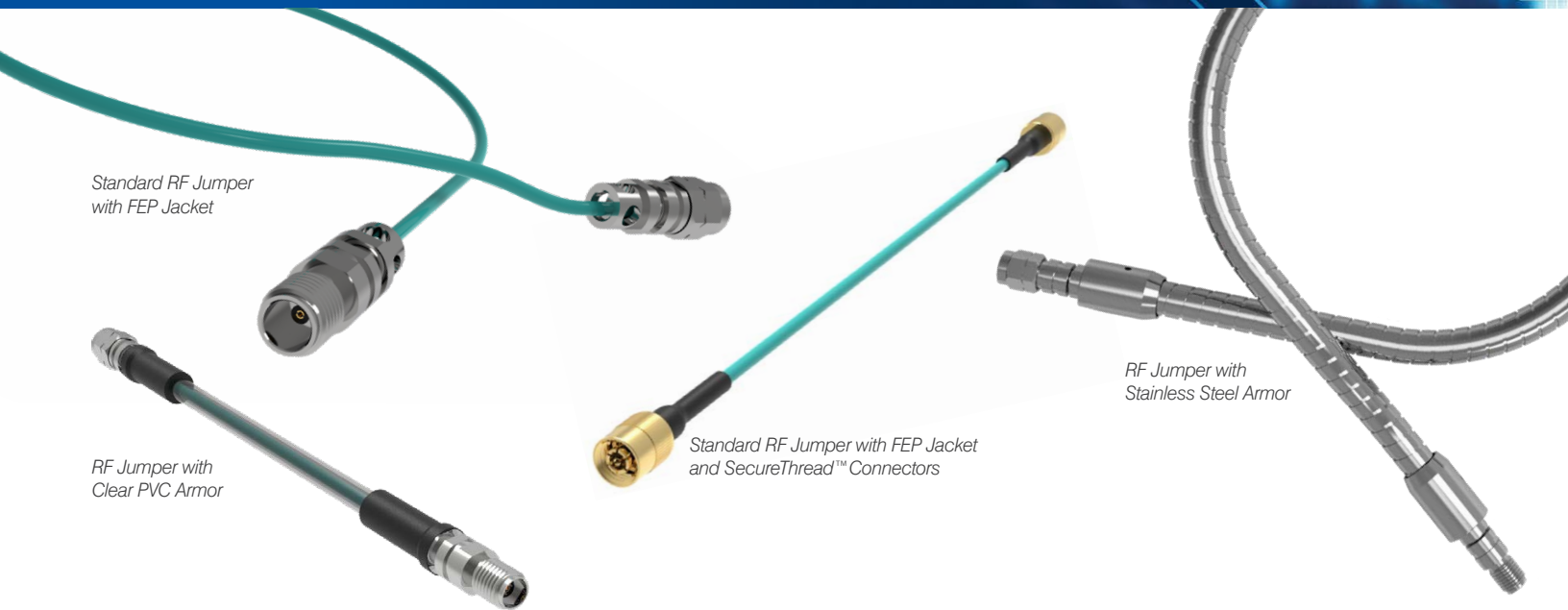
- Benchmark by which all other RF cables are measured
- Highest RF shielding and lowest attenuation

### RG

- Higher reliability with excellent crush, torque, and kink resistance for rugged use

### Armor Braid

- Excellent crush, torque, and kink resistance for use in rugged environment



Standard RF Jumper with FEP Jacket

RF Jumper with Clear PVC Armor

Standard RF Jumper with FEP Jacket and SecureThread™ Connectors

RF Jumper with Stainless Steel Armor

## Low-Loss RF Coax Jumpers

We offer RF cable jumpers in multiple configurations to cater to most applications. If you are looking for a length or configuration not found in the options below, please contact us to inquire about custom orders. We aim to provide an end-to-end solution that encompasses precision RF connectors, jumpers, and adapters.

### Available Configurations

#### Standard Fluorinated Ethylene Propylene (FEP) Jacket

- Phase matched to +/-2 ps in pair (+/-1ps and +/-0.5 ps is available upon request)
- Come in 0.125" and 0.092" cable jacket sizes (or 0.078" and 0.105" outer shield sizes, respectively)

#### Stainless Steel Armor

- Excellent tensile, torsional, abrasion, and cut-through resistance
- Come in 0.125" and 0.092" cable jacket sizes (or 0.078" and 0.105" outer shield sizes, respectively)

#### Clear PVC Armor

- Excellent tensile, torsional, abrasion, and cut-through resistance
- Come in 0.125" and 0.092" cable jacket sizes (or 0.078" and 0.105" outer shield sizes, respectively)

#### Custom

- Custom cable assemblies available upon request

Jumper Configuration Options	Connector Options					
	3.50 mm (123 GHz)	2.92 mm (40 GHz)	2.40 mm (50 GHz)	1.85 mm (65 GHz)	1.00 mm (110 GHz)	SecureThread™ SMPM (123 GHz)
Standard FEP Jacket	✓	✓	✓	✓	✓	✓
Stainless Steel Armor	✓	✓	✓	✓	✓	NA
Clear PVC Armor	✓	✓	✓	✓	✓	NA

# Low-Loss RF Coax Jumpers Cont'd.

## Standard Part Number Guide for RF Jumper Cables

Fill in the part number to the right.

**Cable Type**

7 0.079" Coax

**Strain Relief**

S Short  
M Medium  
L Long

**Connector 1 Type**

1 1.00 mm  
4 2.40 mm  
5 3.5 mm  
8 1.85 mm  
9 2.92 mm  
ST SecureThread SSMP (SMPM)

**Connector 1 Gender**

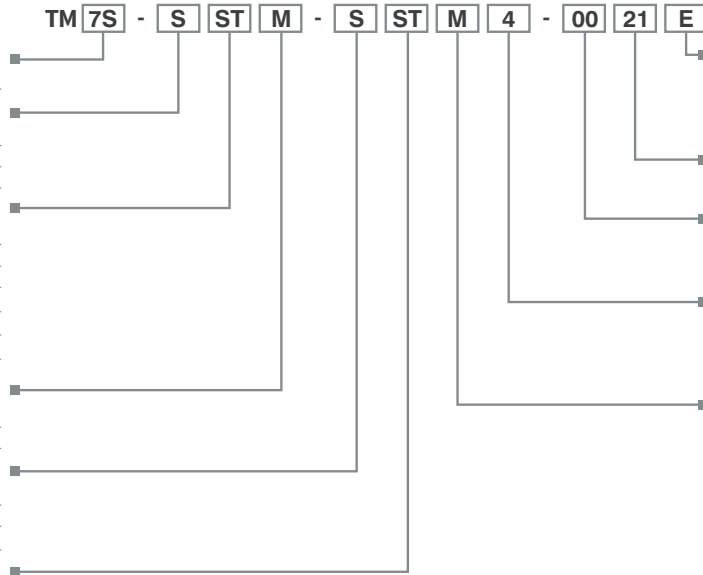
M Male  
F Female

**Connector 1 Orientation**

S Straight (No Mounting)  
2 2 Hole Flange  
4 4 Hole Flange

**Connector 2 Type**

1 1.00 mm  
4 2.40 mm  
5 3.5 mm  
8 1.85 mm  
9 2.92 mm  
ST SecureThread SSMP (SMPM)



**Phase Matching (Pairs)**

Null +/- 2ps  
D: +/- 1ps  
E: +/- 0.5ps

**Length in cm**

999 2 or 3 digit cm

**Standard/Custom Connectors**

00 Standard  
XX Custom

**Connector 2 Orientation**

S Straight (No Mounting)  
2 2 Hole Flange  
4 4 Hole Flange

**Connector 2 Gender**

M Male  
F Female

# High-Density RF Ganged Interconnects

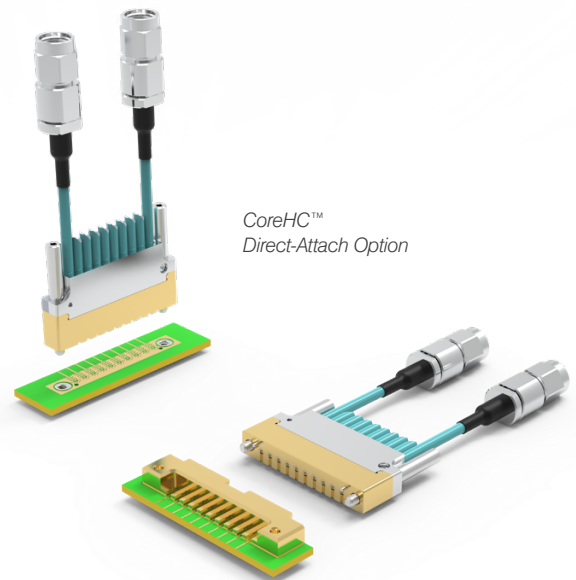
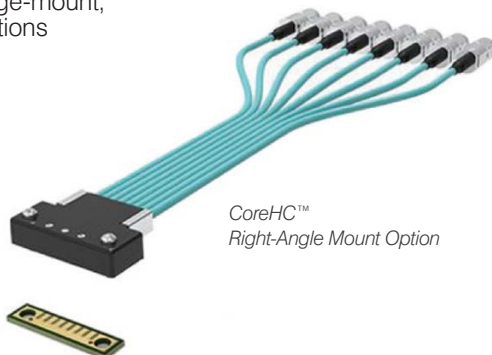
CoreHC™ and CoreGD™, our multichannel test-point systems, are targeted for high-density boards where space is limited. These products result in reduced trace lengths and higher signal integrity, compared to boards using traditional SMA-type connectors.

## CoreHC™

CoreHC is a compression-force interconnect system with 2.5 mm channel spacing that can be attached directly to a board without a connector.

**Key Features**

- 1.85 mm and 2.92 mm cable-side connectors
- 2.5 mm pitch
- Vertical, right-angle, edge-mount, and board-to-board options



## High-Density RF Ganged Interconnects Cont'd.



CoreGD™  
Surface Mount Option

### CoreGD™

CoreGD™ is a typical male, female mate/de-mate interface using SSMP (SMPM) and WMP (SMPS) connectors.

#### Key Features

- 1.85 mm and 2.92 mm cable-side connectors
- 4 mm pitch
- Vertical, edge-mount, and board-to-board options

## Precision RF Connectors.



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

### Key Features

- 50 Ω impedance
- Frequencies ranging from 26.5 to 110 GHz
- Field-replaceable options available
- 1.00 mm, 1.85 mm, 2.40 mm, and 3.50 mm mating interfaces

### Solder-Mount PN's & Specifications

Size	Frequency	Termination	Description	P/N	Product
Vertical Mount					
1.85 mm	DC - 65 GHz	Solder Mount; Stripline Trace	1.85 mm Female Straight	TMB-V8FS-3SM	
2.4 mm	DC - 50 GHz		2.4 mm Female Straight	TMB-V4FS-3SM	
2.92 mm	DC - 40 GHz		2.92 mm Female Straight	TMB-V9FS-3SM	
3.5 mm	DC - 34 GHz		3.5 mm Female Straight	TMB-V5FS-3SM	
3.5 mm	DC - 34 GHz		3.5 mm Female Straight, Long Leads	TMB-V5FS-3SM-01	

# High-Density RF Ganged Interconnects Cont'd.

## Solderless/Field-Replaceable Connectors Product Numbers & Specifications

Size	Frequency	Termination	Description	P/N	Product
<b>Vertical Mount - CPW</b>					
1.00 mm	DC - 110 GHz	Solderless/Field-Replaceable CPW Trace	1 mm Female; 2 Hole Flange Type	TMB-V1F2-3LC-0X	
1.85 mm	DC - 65 GHz		1.85 mm Female; 2 Hole Flange Type	TMB-V8F2-3LC	
2.4 mm	DC - 50 GHz		2.4 mm Female; 2 Hole Flange Type	TMB-V4F2-3LC	
2.92 mm	DC - 40 GHz		2.92 mm Female; 2 Hole Flange Type	TMB-V9F2-3LC	
3.5 mm	DC - 34 GHz		3.5 mm Female; 2 Hole Flange Type	TMB-V5F2-3LC	
<b>Vertical Mount - Stripline</b>					
1.00 mm	DC - 110 GHz	Solderless/Field-Replaceable Stripline Trace	1 mm Female; 2 Hole Flange Type	TMB-V1F2-2L1	
1.85 mm	DC - 65 GHz		1.85 mm Female; 2 Hole Flange Type	TMB-V8F2-3L1	
2.4 mm	DC - 50 GHz		2.4 mm Female; 2 Hole Flange Type	TMB-V4F2-3L1	
2.92 mm	DC - 40 GHz		2.92 mm Female; 2 Hole Flange Type	TMB-V9F2-3L1	
3.5 mm	DC - 34 GHz		3.5 mm Female; 2 Hole Flange Type	TMB-V5F2-3L1	
<b>Edge Launch - Solderless Standard</b>					
1.00 mm	DC - 110 GHz	Solderless/Field-Replaceable; CPW Trace	1 mm Female Straight	TMB-E1F2-1L1	
1.85 mm	DC - 65 GHz		1.85 mm Female Straight	TMB-E8F2-1L1	
2.4 mm	DC - 50 GHz		2.4 mm Female Straight	TMB-E4F2-1L1	
2.92 mm	DC - 40 GHz		2.92 mm Female Straight	TMB-E9F2-1L1	
3.5 mm	DC - 34 GHz		3.5 mm Female Straight	TMB-E5F2-1L1	
<b>Edge Launch - Solderless Narrow Body</b>					
1.85 mm	DC - 65 GHz	Solderless/Field-Replaceable; CPW Trace	1.85 mm Female Narrow Body	TMB-E8F2-1L1-01	
2.4 mm	DC - 50 GHz		2.4 mm Female Narrow Body	TMB-E4F2-1L1-01	
2.92 mm	DC - 40 GHz		2.92 mm Female Narrow Body	TMB-E9F2-1L1-01	
3.5 mm	DC - 34 GHz		3.5 mm Female Narrow Body	TMB-E5F2-1L1-01	
<b>Edge Launch - 30° Angled</b>					
1.85 mm	DC - 65 GHz	Solderless/Field-Replaceable; CPW Trace	1.85 mm Angled Connector Jack	TM14-0089-00	
2.4 mm	DC - 50 GHz		2.4 mm Angled Connector Jack	TM14-0143-00	
2.92 mm	DC - 40 GHz		2.92 mm Angled Connector Jack	TM14-0141-00	
3.5 mm	DC - 34 GHz		3.5 mm Angled Connector Jack	TM14-0142-00	



# RF Adapters



With the introduction of the industry's first swept right-angle microwave adapter in the 1970s, we have become synonymous with precision RF and microwave adapters.

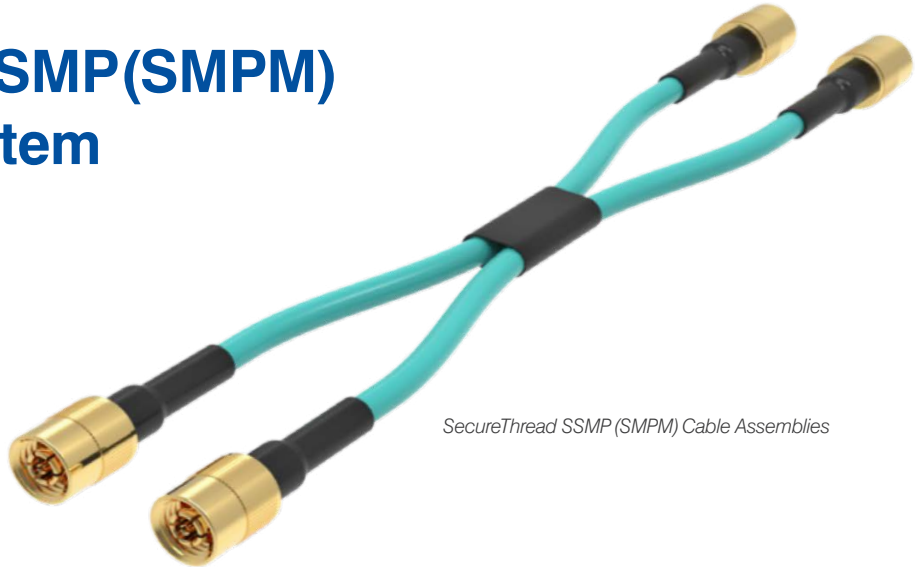
We offer a full-gender family of precision RF adapters in different connector options to cover applications ranging from DC – 65 GHz. These adapters come standard in a passivated stainless steel body with a captivated beryllium copper center conductor to ensure mating repeatability. In addition, options such as gold-plated housing or non-captivated center conductor are also available to fit the desired application. All of our adapters are 100% tested to ensure optimum performance over their respective frequency range.

- » Complete family of in-series and inter-series adapters
- » These adapters come standard in a passivated stainless steel body with a captivated beryllium copper center conductor to ensure mating reliability
- » 50 Ω impedance, low VSWR, and insertion loss for high signal integrity

Series	Type	Series	Type	Series	Type	Series	Type
1.85 mm	Male to Male	2.4 mm	Male to Male	2.92 mm	Male to Male	3.5 mm	Male to Male
	Female to Male		Female to Male		Female to Male		Female to Male
	Female to Female		Female to Female		Female to Female		Female to Female
1.85 mm to 2.4 mm	Male to Male	1.85 mm to 2.92 mm	Male to Male	1.85 mm to 3.5 mm	Female to Female	2.4 mm to 2.92 mm	Female to Female
	Female to Male		Female to Male		Male to Female		Male to Female
	Female to Female		Female to Female		Female to Male		Female to Male
	Male to Male		Male to Male		Male to Male		Male to Male
		2.4 mm to 3.5 mm	Female to Female	2.92 mm to 3.5 mm	Female to Female		
			Male to Female		Male to Female		
			Female to Male		Female to Male		
			Male to Male		Male to Male		

## SecureThread™ SSMP(SMPM) Interconnect System

SecureThread™, our high-performance interconnect system, uses a blind-mateable push-on interface with a threaded coupling nut that prevents the cable assembly from moving once the connection is made. It supports frequencies from DC - 65 GHz with excellent signal integrity.



SecureThread SSMP (SMPM) Cable Assemblies

### Key Features

- Easily and repeatedly configurable into applications, significantly reducing time and cost
- Compatible with several CarlisleIT cables, including:
  - AccuPhase®
  - IntegraPhase
  - Semi-Rigid
  - Semi-Flex
- Phase matching up to 2 ps for cable pairs
- Surface mount type and field replacement board-side connectors
- Compression pin mount solderless secure CoreHC solution

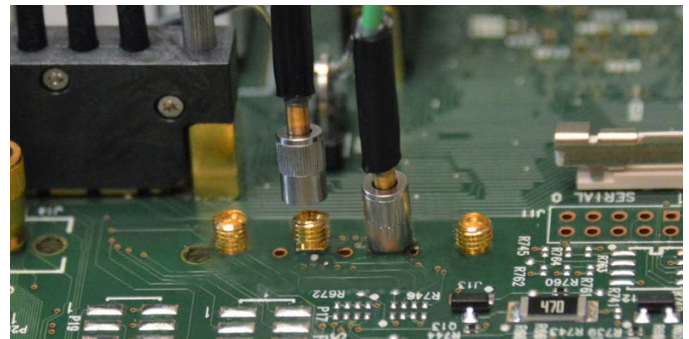
### Connector Options

#### Solderless Direct Attach

The solderless system uses a compression mount type connector on cable side and a hollow plastic housing that is mounted on standard SMA connector footprint on board, using screws on bottom side. The board side connector can be moved on the PCB as long as the footprint is there.

#### Solder

The board-mount solutions include a surface-mount board-side connector and a coaxial cable assembly. The threaded-lock female SSMP (SMPM) board-mount connector needs to be soldered onto the board using surface-mount technology. In order to support automatic pick-and-place assembly, it is available in tape-and-reel packing with a maximum of 500 connectors per 13" diameter reel.



SecureThread WMP (SMPS)

### Cable Assembly Options

- CoreHC to CoreHC
- CoreHC to Precision Connector (1.85 mm, 2.4 mm, 2.92 mm, and 3.5 mm)
- SecureThread SSMP (SMPM) to SecureThread SSMP (SMPM)
- SecureThread SSMP (SMPM) to Precision Connector (1.85 mm, 2.4 mm, 2.92 mm, and 3.5 mm)

The interconnect consists of coaxial cable assembly with male SSMP connector and a threaded coupling nut. There is a female SSMP board mount connector on the board side, which needs to be soldered.

## AltaVel™ High-Speed Digital Connector Family

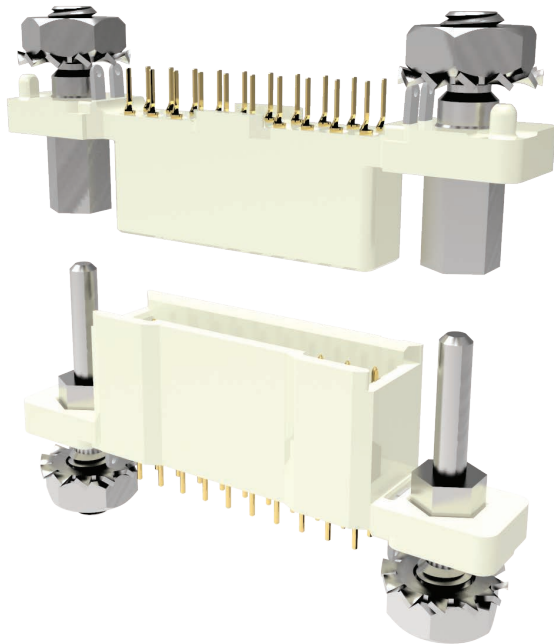
AltaVel™, our family of open-pin-field high-speed digital interconnect solutions, is optimized to provide scalability and reliability in dense, high mate/demate cycle applications with data rates greater than 25 Gbps. This product offering is part of our full lineup of cost-effective, off-the-shelf, and customizable interconnect solutions delivering signal integrity performance and value.

### Available Configurations

- Board to Board
- Board to Cable
- Cable to Cable
- Cable to Panel

### Available Styles:

- Vertical to Vertical
- Right-Angle to Vertical
- Right-Angle to Right-Angle



## Key Features

### 10,000 mate/de-mate cycles

- High signal integrity and reliability in a long life package ensures high performance and lower cost of ownership

### Flexible, scalable design

- High-density, scalable design provides multiple configurations, enabling optimum performance at the lowest total cost. Size ranges from 10 to 200 pins; configurable in 1 to 4 rows by 10, 20, 30, 40, or 50 positions. Configurable by Pin/Spacer height, 8 mm, 12 mm, 16 mm, and 20 mm.

### With or without metal shells

- Rugged/EMI housing option is a readily available option for applications used in extreme environments

### Open pin field design

- Design allows for flexibility in routing and coding schemes, including: single-ended, differential pair, power, ground, and sideband signals

### Impedance

- Multiple impedance options ensure a solution to meet your application

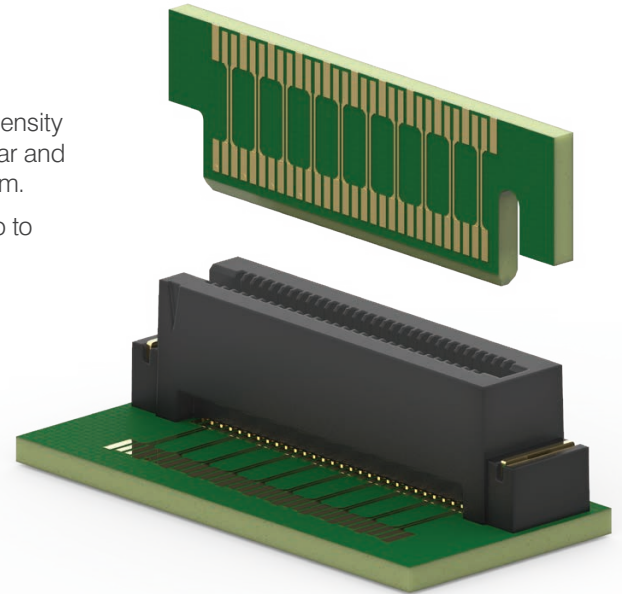
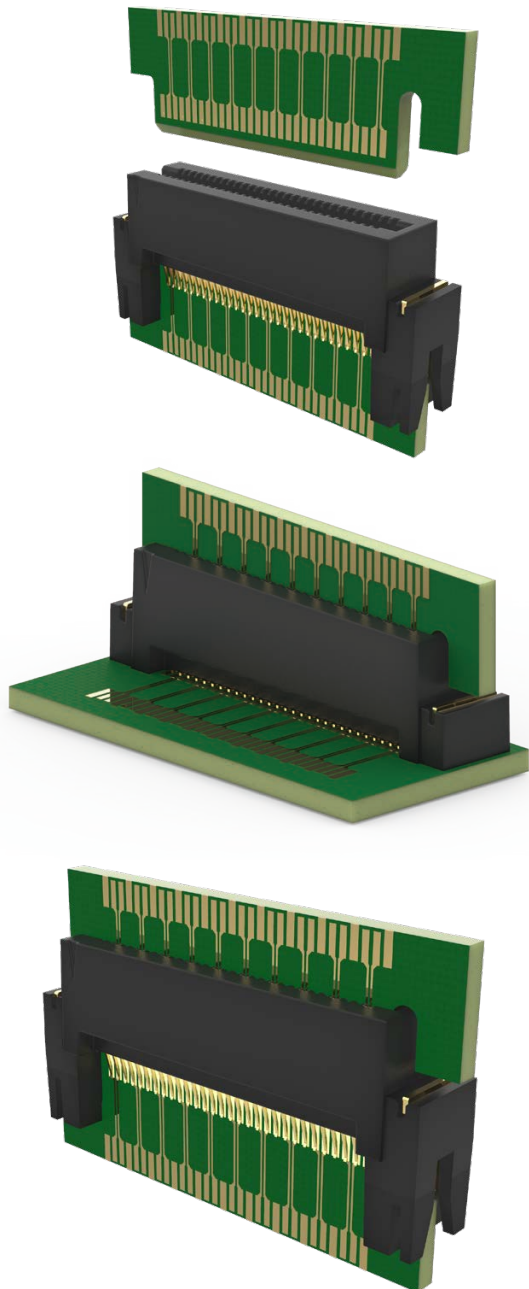
### Board mounting options

- Termination styles: Surface Mount (SMT), Paste-In-Hole (PIH), and Plated Through-Hole (PTH)

## Card Edge Connectors

Our card edge connectors contact system is designed for high-speed, high-density applications. They have a smooth mating surface area, which reduces the wear and tear of contacts and increases the durability and cycle life of the contact system.

They also lower insertion and withdrawal forces while supporting data rates up to 32 Gbps with excellent signal integrity.



### Key Features

#### High-speed differential data rate

- Offers excellent signal integrity and performance up to 32 Gbps

#### Multiple PCB thicknesses (0.062" and 0.093")

- Allows for complex PCB designs

#### Surface mount and edge mount options

- Enables high-speed, pick-and-place assembly

#### 0.8 mm pitch

- Access signals in dense environments and save PCB space

#### 8.5 mm max height

- Up to 60 pins for low-profile system designs

#### 500 mate/demate cycles

- High reliability and low cost of ownership

#### Wide operating temperature

- -55 °C to 155 °C

## Passive Probes

We offer low-cost, high-performance, compact CAT III and CAT IV-rated probes in a UL-certified plastic body suitable for a variety of applications. The passive probe is a standard, commercial, off-the-shelf system engineered to deliver consistent, repeatable, and dependable results. It provides an industry-leading combination of high bandwidth and high voltage in a low-cost, rugged, general-purpose probing solution.

### Key Features

#### 500 MHz bandwidth and 1,000 V Cat III, 600 V CAT IV

- A combination of high bandwidth and high voltage reduces the number of probes needed for a variety of applications, simplifying the toolkit and lowering costs

#### 1X, 10X, and 100X configurations

- Multiple configurations give the flexibility to choose the passive probe that fits your application

#### Third-party certified, exceeds UL61010-31, IEC61010-31

- Superior product quality and safety greatly reduces risk in high-voltage applications

#### Small, compact probe head and body

- Enhanced visibility to small, dense geometry circuit elements within the contact device-under-test (DUT) ensures correct and accurate test point



## Signal Integrity Services

We offer signal integrity services to our customers to optimize the complex designs for best possible system performance. CST, Solidworks, and ProE are some of the tools used to simulate the customer's printed circuit board stack-ups integrated with our RF connector footprints. Board designs are optimized for the lowest return loss, insertion loss, and crosstalk. PCB materials like Megtron, Nelco, Rogers, and High-Speed FR4 affect the signal integrity including insertion loss, return loss, and board impedance. Additionally, the size and layout of signal traces, vias, and ground layers in the board stack-up need to be optimized for lowest losses and matched impedance in the required frequency range of operation.

VNA and Time Domain Reflectometry measurements are also performed to validate the simulations and characterize the designs.

# 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 us know they're partnering with the 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 goals.



## Our Family of Brands



# Global Manufacturing. Local Support.

Wherever you are, so are we. With manufacturing centers around the globe, our highly qualified team 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.



## FACILITIES CERTIFICATIONS



Visit our website to view certifications listed by site.

## HEADQUARTERS

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

## PRODUCT CERTIFICATIONS



Contact us directly for products engineered to your specific compliance needs.



**CARLISLE**  
*INTERCONNECT TECHNOLOGIES*

See our full line of Test & Measurement products at:  
[CarlisleIT.com/markets/test-measurement](https://CarlisleIT.com/markets/test-measurement)

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