

smiths interconnect



# Defense

Connectivity Solutions

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CUTTING-EDGE  
CONNECTIVITY

# About Smiths Interconnect



## We Offer



Smiths Interconnect is a leading provider of high reliability connectivity products and solutions serving segments of aerospace and defense, medical, semiconductor test, and industrial markets. It designs and manufactures technically differentiated electronic components, microwave, optical and radio frequency products and sub-systems that connect, protect and control critical applications.

Smiths Interconnect is the supplier of choice for safe, efficient and highly reliable connectivity in various military and defense applications. Our proven industry expertise lies in designing and manufacturing integrated microwave assemblies, subsystems, direction finders, SATCOM, datalinks, antennas, optical transceivers, connector solutions and cable assemblies that achieve optimal system performance in demanding environmental conditions.

Our technology brands (EMC, Hypertac, IDI, Lorch, Millitech, Plastronics, Reflex Photonics, RF Labs, Sabritec, TECOM, TRAK and HSI) are synonymous with exceptional performance in technologically advanced, high quality solutions required for a high degree of safety and durability. Our extensive product portfolio includes high reliability electrical connectors and cable assemblies, rugged embedded transceivers, solutions for antenna systems, and a wide range of innovative RF and microwave solutions.



## Defense & Aerospace



## Communications



## Industrial



# Your partner of choice for cutting-edge connectivity solutions

**80+** Years Experience

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### Technology

Broad Range of Advanced Interconnect Technologies

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### Flexibility

High Volume Product Platforms & Complete Tailored Solutions

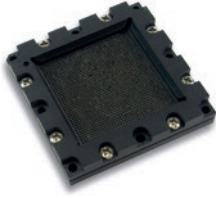
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### Service

Global Reach with Local Support

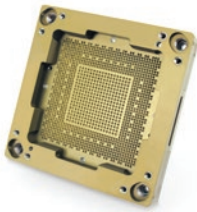
Smiths Interconnect is part of Smiths Group plc, a global leader in applying advanced technologies for markets in threat and contraband detection, energy, communications and engineered components.

# Technology Brands



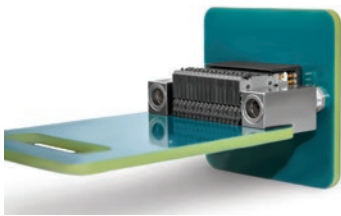
## PLASTRONICS

A leading supplier of burn-in test socket solutions for all the latest packaged devices. With the most comprehensive QFN catalog in the world, in addition to a large portfolio of sockets for burn-in, HAST, failure analysis and other test requirements for Leaded, LGA and BGA devices.



## IDI

World's most comprehensive offering of spring probe based solutions, including: contacts, connectors, interposers, semiconductor test sockets, and ATE interfaces. Proven off-the-shelf and custom products deliver the best solution for the customer's specific application.



## HYPERTAC

Premium interconnect solutions for electrical and electronic applications requiring optimized quality, performance, and reliability. Hypertac connectors utilize the original high performance hyperboloid contact technology; ideal for harsh environments and safety critical applications.



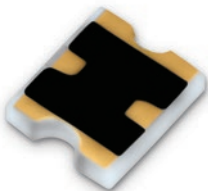
## HSI

Joint venture with Sichuan Huafeng Enterprise Group Co. Ltd, one of the major manufacturers of electronic components in China. Industry-leading connectivity solutions for commercial aerospace and railway markets in mainland China.



## SABRITEC

High speed quadrax, twinax, fiber optic, filter, coax and triax connectors, contacts and cable assemblies. Custom multi-pin circular, D-Sub rack and panel connectors and MIL-Spec interface type products.



## EMC

Board-level components incorporating advanced resistive and signal distribution technologies for a broad range of frequency spectrum applications. Extensive portfolio of RF devices used to attenuate, level, or terminate signals available in a variety of packages and footprints.



Connectors

Fiber Optics &amp; RF Components

Semiconductor Test

RF/MW Subsystems/Smiths Interconnect Inc (SII)



## LORCH

Innovative solutions for the electronics and communications industries. Ranging from high performance wireless and RF products to micro-miniature, cavity, discrete, waveguide, tunable, ceramic, and printed filters and integrated assemblies.



## REFLEX PHOTONICS

Embedded transceivers and transmit/receive modules for advanced interconnect-based solutions. Targeting high data rate interconnects where ruggedness and radiation resistance are required for defense, space, commercial aerospace and industrial applications.



## RF LABS

High performance microwave cable assemblies and coaxial components supporting high performance operations, application-specific premium interconnects for high durability and harsh environments.



## MILLITECH

Specializing in the engineering, manufacturing, and testing of millimeter-wave components, assemblies, and fully integrated subsystems for space, SATCOM, test and measurement, radar, and scientific applications.



## TECOM

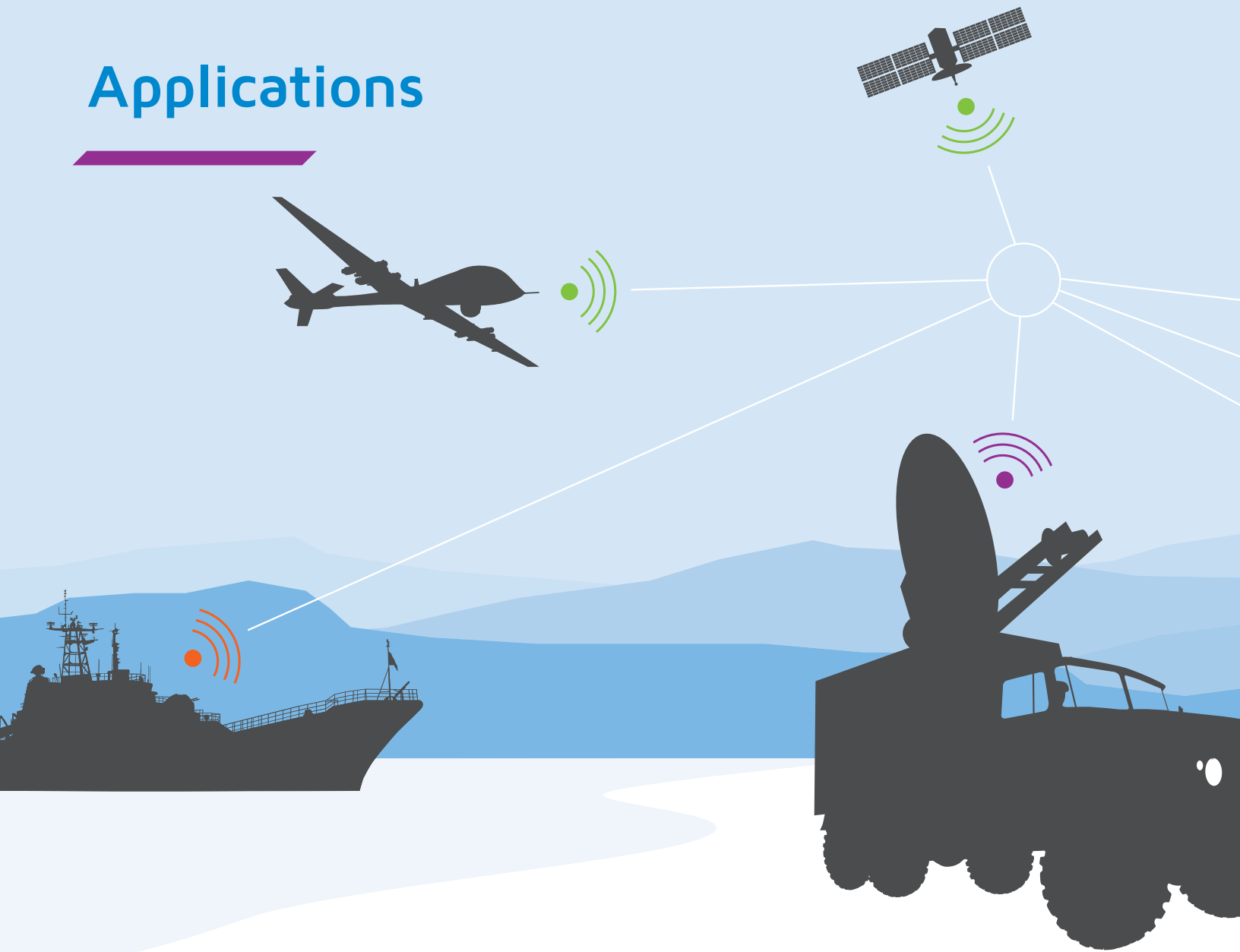
Industry leading innovator of antennas and positioning systems for SATCOM in-flight connectivity, instrumentation, datalink, command & control, and telemetry applications integrated into the world's most advanced commercial and military platforms.



## TRAK

High reliability multi-function RF systems, ferrite microwave products, and precision time & frequency systems for defense, commercial aerospace, space, homeland security, and public safety applications.

# Applications



## Communications

- Airborne, Vehicular and Naval
- Ground Based (Stationary & on the Move)
- Man-portable
- SATCOM
- Datalinks
- Missiles
- Timing & Networking

## Electronic Warfare

- Electronic Countermeasure (ECM)
- Electronic Protection (EP)
- Electronic Support Measures (ESM)
- Simulation

# Providing A Competitive Advantage

We offer a breadth of highly reliable, cutting-edge interconnect solutions proven in the harshest military environments. Our know-how and application expertise ensure the design, manufacture and supply of cost effective, high volume products and complete tailored solutions. We work closely with our customers to address their current needs and, as a technology leader, constantly enhance our capability to solve tomorrow's problems. Our technically differentiated solutions provide our customer with a competitive advantage when tackling the challenges of higher power, higher data rates, wider bandwidth, and greater connectivity all within a smaller footprint.



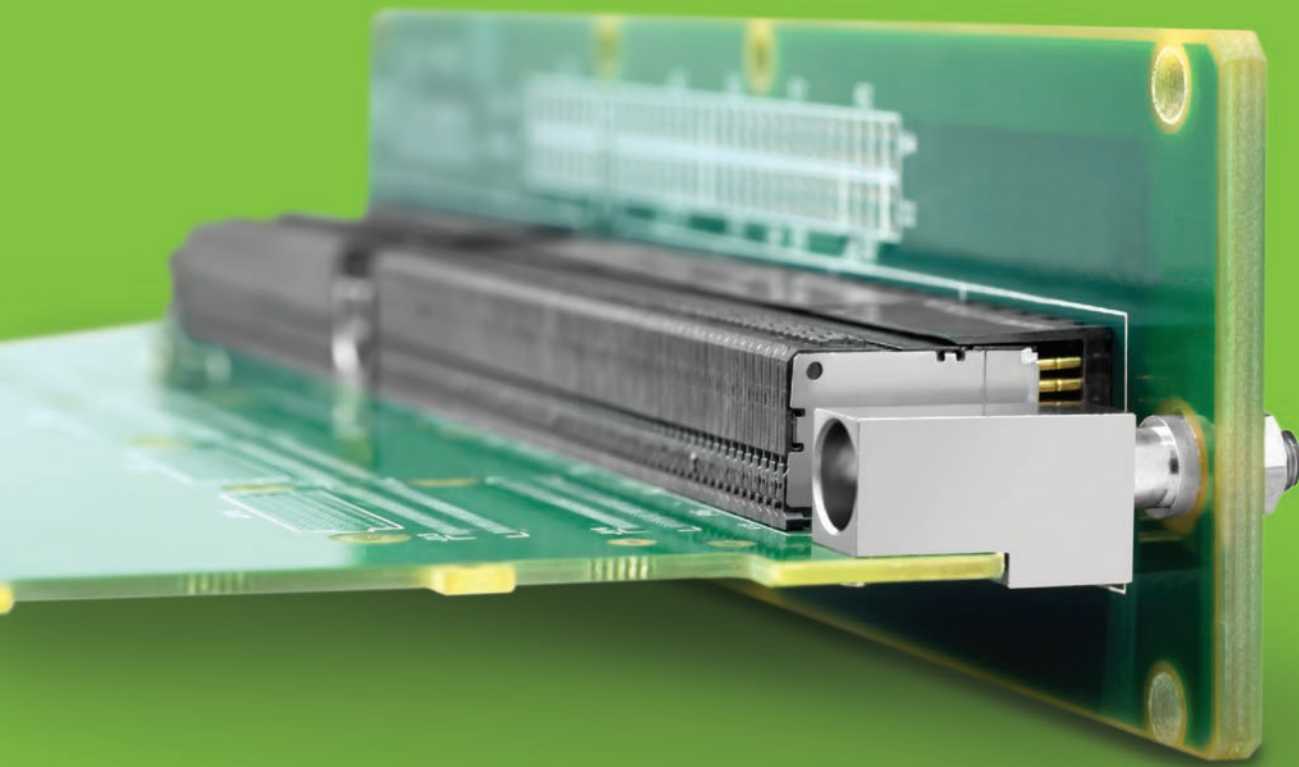
## ISR

- Remote Sensing and Surveillance
- Data Analysis
- Data Recording
- Data Distribution and Management
- Positioning and Networking

## Radar

- Surveillance Radar
- Precision Approach Radar
- Target Acquisition Radar
- Early Warning Systems
- Fire Control Radar
- Radar Altimeter

# Connectors



## Reliability & Safety

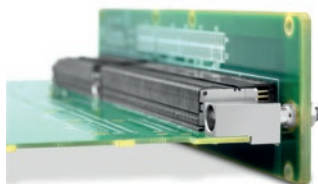
Through our Hypertac, HSI, IDI and Sabritec technology brands, we supply application-specific, high-reliability electrical interconnect solutions from highly integrated assemblies to microminiature connectors and spring probe contacts. The core of our advanced interconnect solutions is our contact technologies: Hyperboloid, Spring Probe, High Speed, Fiber Optic, High Power and High Temperature.

**Providing  
exceptional  
performance  
in critical  
applications**



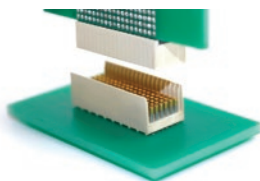
## High Speed Vita Backplane

- Fully footprint compatible with VITA 46/48 standards
- Flexible modular design for standard 3U, 6U and custom configurations
- 100  $\Omega$  impedance for differential pair configurations
- Data rate performance up to 16 Gbps



## Rugged 2mm Backplane

- NASA GSFC qualified
- High-temp LCP insulator meeting outgassing requirements
- Reverse gender to commercial 2mm products
- Keying feature ensures proper mating
- Modular design for 3U/6U configurations



## High Density LRM PCB

- Line removable module (LRM) connector, available in 132 through 594 positions
- Includes signal, power, fiber optic & coax options
- Conforms to MIL-DTL-55302 general requirements
- High density: 6-row chevron grid layout, 1.905 mm pitch, 0.6 mm pin dia.



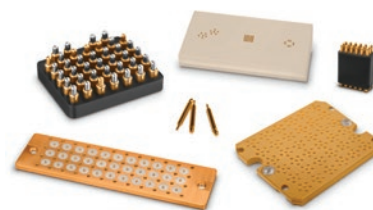
## High Speed Copper

- Standard 100 & 150 $\Omega$  quadrax & twinax contacts
- Micro twinax and quadrax connectors
- Rugged D-Sub, ARINC and MIL-DTL-38999 standard quadrax and twinax
- Data rates up to 6.25 Gbps
- Reverse gender quadrax contacts



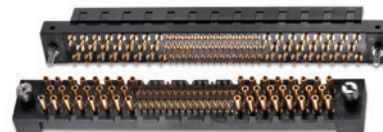
## PCB Interposers

- Low profile, high compliance ratio
- Compression mount termination options
- Mixed signals and functionality designed into a single connector
- Integrated alignment, latching and sealing features



## Signal & Power PCB

- Available with hyperboloid and spring probe contact technologies
- Ranges from 17 to 490 contacts, with straight dip, right angle solder, crimp, solder cup and wire wrap termination options
- Guiding devices with or without polarization (16 keys available)
- Front release, rear removable contacts





Enhancing  
reliability in  
mission-critical  
applications





## Quick Release Miniature

- Lightweight, robust, quick release, miniature size
- Exceptional signal integrity
- Spring loaded contacts
- IP67 sealing, circular or rectangular options, with or without over-molding and cabling
- Designed for extreme environmental conditions



## Fiber Optic

- Butt-joint and expanded beam
- Floating design (<math><-0.5\text{dB}</math>), low loss fiber options
- MIL-DTL-38999, ARINC 600 compatible
- PC or APC ferrule end face



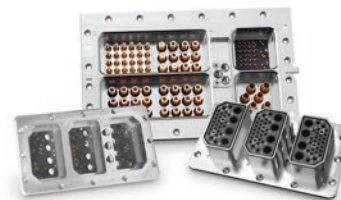
## RF Coax/Triax

- Spring loaded for optimum contact mating force
- Low VSWR
- Size 8: 1.15:1 Typ Mated Pair, Size 12; 1.25:1
- Insertion Loss: 0.15dB to 26.5 GHz Typ (Size 8) and 0.2dB to 40 GHz Typ (Size 12)



## EMI/EMP Filter

- MIL-DTL-38999, ARINC 600 compatible
- Intermateable and interchangeable with standard non-filter connectors
- Butt-joint and expanded beam
- TVS protection meeting the requirements of RTCA D160 section 22 up to level 5



## High Power Circular

- Compact and small size for weight savings available in both single and five pole version
- Quick locking device
- Current ratings from 300A to 500A
- 360° EMI/RFI shielding
- IP67 fully sealed
- Robust metal shells
- Finger proof IP2X

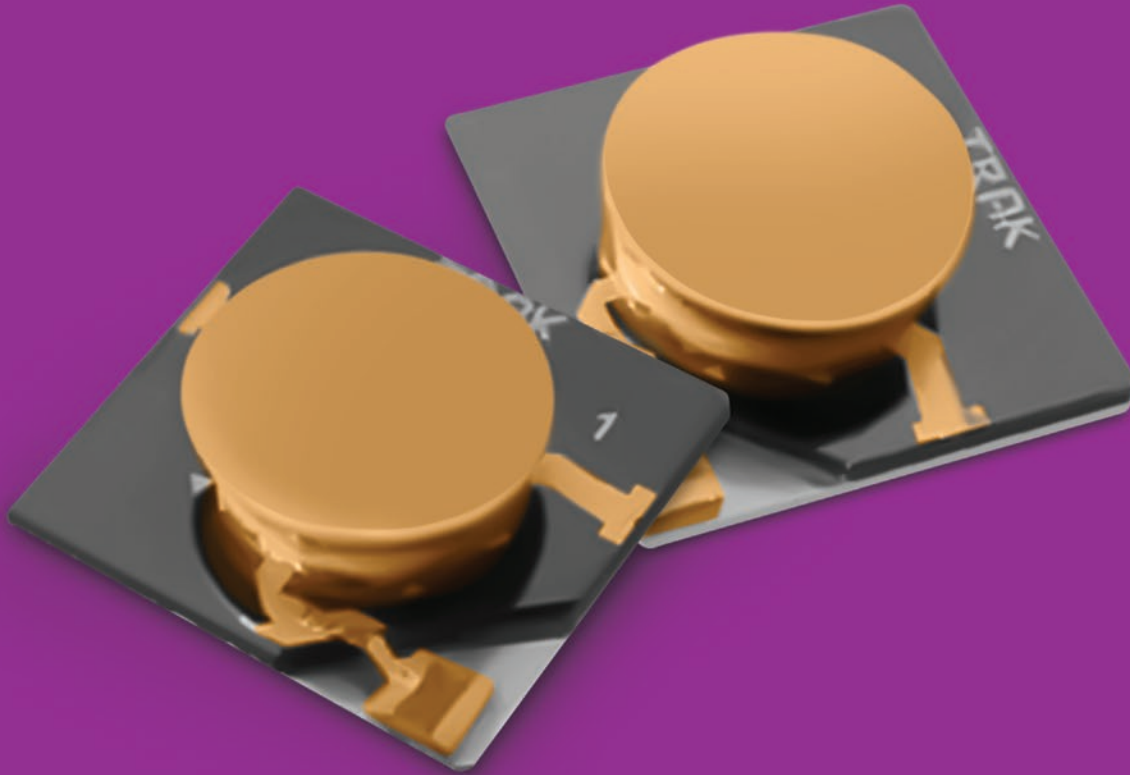


## Fiber Optic ARINC 801

- Compatible with multi-mode and single-mode fiber
- Standard 1.25 mm ferrule and sleeve
- Cable termination identical to LC connector process
- Standard MIL-DTL-38999 and ARINC 600 Size 16



# Fiber Optics & RF Components



## Advanced Technologies and Solutions

Through our EMC, RF Labs, Lorch, Reflex Photonics and Trak brands we provide RF/Microwave components including: resistive & signal distribution components; cable assemblies; ferrite devices and waveguide products; filters, multiplexers and integrated assemblies; embedded transceivers and transceiver modules for demanding high reliability environments.

**Extensive  
portfolio in a  
variety of  
packages and  
footprints**

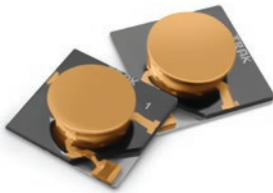
## Coaxial Isolators

- Wide range of isolators, circulators, loads, terminations and attenuators
- Designed to operate from 300 MHz to 26 GHz
- Unique solid connectors (male/female connector barrel machined to be integrated in housing) with female and male orientations, in SMA and TNC styles
- All products are optimized for thermal and dynamic operational environments



## Microstrip, Surface Mount & Stripline Isolators & Circulators

- Isolators and circulators
- Stripline devices operating in assigned bands from 0.4 to 18 GHz
- SMT devices in S, C & X-bands suitable for pick and place and re-flow soldering
- Microstrip offers a unique blend of broad band operation, low mass and low profile with devices available in assigned bands from 2.2 to 32 GHz



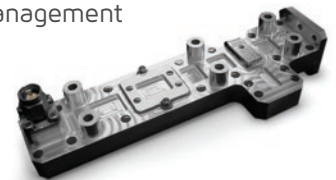
## RF Components

- Innovative design and material maximize power-to-size ratio
- Low and high power designs from 0.1 to 800W
- Alumina, ALN, BeO and CVD substrates
- Wide range of resistance values
- High precision and reliability



## Waveguides

- Isolators, circulators, combiners, couplers, loads, transitions, terminations, and multifunction assemblies
- High power waveguide circulators/isolators for protecting TWTs up to 32 GHz
- All products are optimized for thermal and dynamic operational environments
- High power devices are supplied as junction or differential phase shift types
- Where appropriate, devices are supplied with cooling/thermal management systems and additional functionalities as required



## Attenuators

- Operating frequencies up to 50 GHz
- Superior broadband performance
- Space and military qualified
- Wide range of attenuation values
- Surface mount and wire bondable packages



## Diamond RF Resistives

- Highest power to size ratio resistive components available
- Extremely low parasitic capacitance resulting in broadband performance
- Standard footprints available from 0402 (20 watts) up to 2010 (300 watts)
- Substantial size and weight reduction for space and high reliability applications
- Easy to implement packages; solderable & wirebondable chips or tabbed and flange options are available



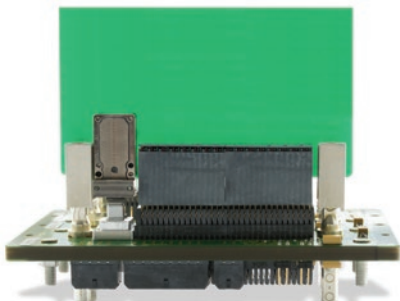


Advanced RF  
solutions for a broad  
range of frequency  
applications



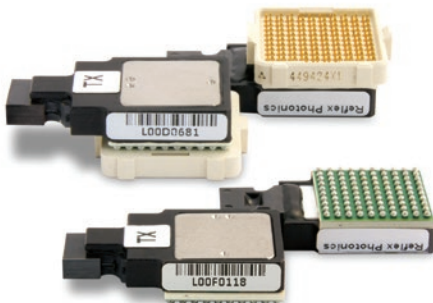
## Optical VPX Interconnects

- Blind-mate backplane interconnects for embedded computing systems
- 10 Gbps and 28 Gbps optical modules in small-SWaP ruggedized packages
- Mechanical Transfer (MT) ferrule with linear array of 24 parallel multimode fibers
- Designed following VITA 66.5 standard
- Rugged solution, MIL-STD 883/202/810 qualified



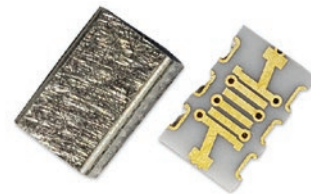
## Rugged Mid-Board Optical Transceivers

- Proven: Used in many defense applications
- Small: Height as low as 5.5mm with interposer
- Rugged: MIL-STD 883 shock and vibration qualified
- Sealed: Moisture and thermal shock resistant
- Storage temperature:  $-57^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- Performance: Up to 28 Gbps/lane
- Operating temperature: From  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- Sensitivity: Up to  $-12\text{dBm}$  @ BER  $10^{-12}$
- Low power consumption: As low as 100 mW/lane
- Channel configurations: 4TRx, 12TRx (10G only), 12Rx, and 12Tx



## RF Filters

- RF Filters, Multiplexers, Switched Filter Banks, and Integrated assemblies, from 100 KHz to 65 GHz
- Bandpass, lowpass, highpass, notch, diplexed & multiplex options
- Small footprint and light weight
- Surface mountable for pick and place applications with Planar X topology



## Coaxial Flexible Cables

- Low loss dielectric material for lower attenuation
- Up to 40 GHz
- Superior shielding effectiveness
- Direct solder sleeves to outer braids for superior reliability

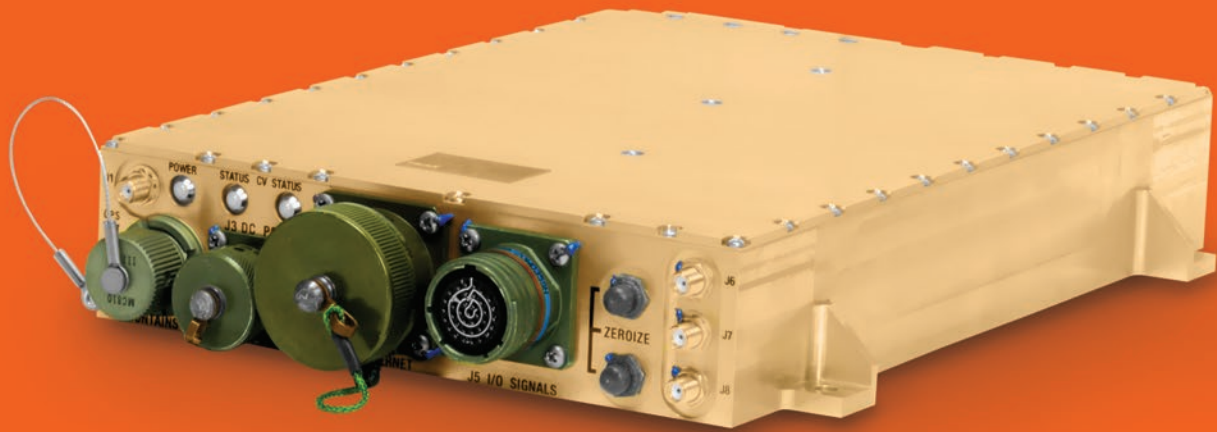


## RF Cable Assemblies

- Low-loss, high frequency cable assemblies available for dynamic and static applications
- Durable options for improved MTBF and reduced cost of ownership
- High power, low attenuation coaxial cable assemblies for longer assemblies in antenna use



# RF/MW Subsystems



## Emergency Response Systems

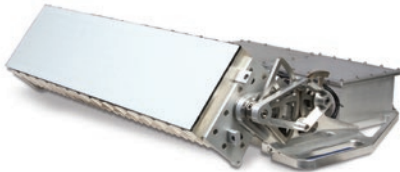
Whether it's a custom design or build-to-print, our Millitech, TECOM, and TRAK brands offer a broad range of advanced antenna systems as well as high-reliability RF/Microwave/Millimeter-wave components, assemblies and fully integrated subsystems, providing significant leverage in tackling mission critical defense, homeland, and aerospace system challenges.

**Advanced  
solutions for  
military and  
commercial  
platforms**



## Airborne SATCOM

- Continuous connectivity at any altitude
- Market leading reliability provides lower total lifecycle cost
- Network agnostic Ku-band terminal solution saves re-provisioning time and cost



## Tactical GPS

- Compact, rugged enclosure
- Contains a rubidium oscillator and low phase noise cleanup oscillator
- Remote configuration and monitoring via Ethernet and RS-232
- Standard C/A-Code GPS or optional SAASM GPS



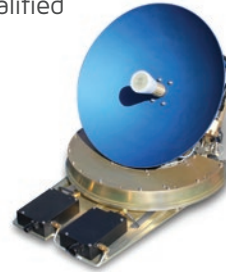
## Positioners/Controllers

- Fixed and mobile positioning systems
- Man-portable to 7 meter installations
- Reflector and feed assemblies reaching 0.5 to 100 GHz



## Ka-Band Antenna Systems

- Light weight fully integrated 3 LRU system
- Broad frequency coverage for c military applications
- Real time switchable dual polarization
- Operates on global Ka-band HTS satellite networks
- DO-160 qualified



## mmW Antenna

- Full range of millimeter wave antenna products and technologies including aperture, reflector, and lens-based
- Standard models from 18 to 100 GHz
- Custom designed antenna arrays available
- Additional offerings: polarizers, orthomode transducers, monopulse comparators, and waveguide rotary joints



## NTP Servers

- Designed for time synchronizing networks
- using IRIG-B as the time reference
- Accepts a fiber optic or wireline IRIG-B time code
- Time synchronization of SIPRNET and NIPRNET
- Remote configuration and monitoring via Ethernet and RS-232



Providing Innovative  
RF & MMW systems  
designed to meet  
end-user needs





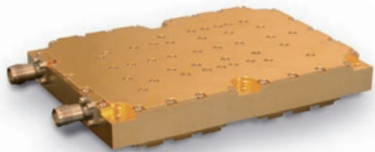
## Complex Frequency Sources

- Low phase noise
- Low spurious
- Synthesized and direct



## Radar Exciters

- Electronic and mechanical vibration mitigation
- Size/weight reduction
- Increased processing capability



## Receiver Protectors

- Discrete diode and MMIC limiters
- Receiver filter
- LNA
- T/R blanking switch
- Ferrite isolators



## Transceivers

- Single and multi-channel integrated assembly
- Up/Down Converter
- 10 MHz reference
- Power supply
- 25W PA



## Up/Down Converters & Receivers

- Single and multi-channel
- Integrated up/down converter and exciter with fast hopping synthesizer
- LO and vibration mitigated reference source
- Through 325 GHz



## Vibration Mitigated Master Oscillators

- Ultra-low phase noise
- Crystal based
- Ovenized and non-ovenized



# Global Capabilities



## Reliable Solutions

In-house capabilities encompassing design, development, manufacturing and testing to anticipate market needs, respond quickly and accurately to customers, and provide the most reliable connectivity solutions.

## Market-leading Engineering and Technology Solutions

# 80+

## Years Experience





## Certifications, Standards & Compliance

- AS9100D
- ISO 9001
- ISO 14001
- ISO 45001
- NF F 61-030
- NF F 61-032
- NF F 16-101
- NF F 16-102
- NF-C 93421
- DIN 41612
- DIN 43652
- EN 50124
- EN 45545-2
- IEEE-1101.2-'92
- IEC 1076-4 101
- IEC 61373
- IEC 61984
- HE 501
- HE 704
- UTE C93-425
- UL94 VO
- RoHS compliance
- IRIS

## Engineering

- 3D EM Modeling
- Advanced RF & System Modeling
- CAD/CAM & Solid Modeling
- Finite Element Analysis
  - Thermal Analysis
  - Shock & Vibration Analysis
- Reliability Analysis

## Prototyping

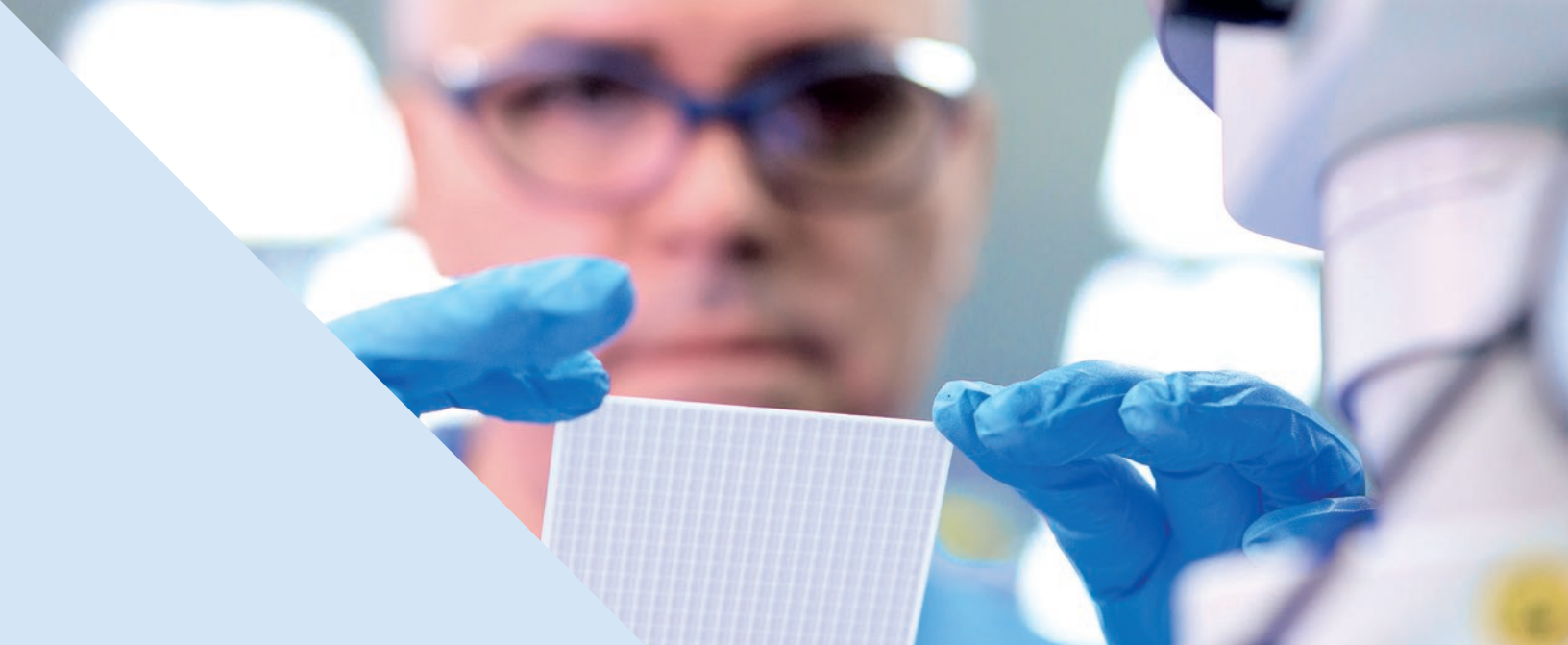
- CNC Turning & Milling Centers
- Cabling / Prototype Assembly
- 3D Printing
- Ceramic Grinding
- EDM
- Circuit Board Routing

## Manufacturing

- Precision Machine Shops
- Connector, Contact & Cable Assembly
- Automated PCB Assembly & Inspection
- Automated Hybrid Assembly
  - Die Placement
  - Wedge & Wire Bonding
  - Gap Welding
- NASA Certified Soldering
- Automated Test & Tune
- Optical Alignment
- System Integration
- Validation Testing

## Testing/Qualification

- Electrical Acceptance & LOT Test
- RF Test Capability, up to 325 GHz
- High Speed Digital
- Anechoic Chamber Testing
- ESS Environmental Qualification
- ESS Temperature, Shock & Vibration
- Metallurgical
- Real Time X-Ray
- Near Field/Compact Antenna Range
- Thermal Vacuum
- High Power RF Testing
- Optics Lab
- Multi paction, SRS mechanical shock



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## Connecting Global Markets

Smiths Interconnect's strong focus on serving international markets and customers is supported by our sales and technical teams across the Americas, Europe and Asia.

[smithsinterconnect.com](https://smithsinterconnect.com) | [in](#) [X](#) [YouTube](#) [WhatsApp](#)

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## Business Unit

Connectors

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Fiber Optics &  
RF Components

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Semiconductor  
Test

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RF/MW  
Subsystems



# Worldwide Support

## Americas

### Sales

connectors.uscsr@smithsinterconnect.com

### Technical Support

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### Sales

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### Technical Support

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### Sales

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### Technical Support

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# Pioneers of Progress

## Advancing the world through cutting-edge connectivity

We aim to be the partner of choice for innovative connectivity solutions where reliability, high quality, technical expertise, application knowledge, and a reputation for excellence is vital.



[smithsinterconnect.com](https://smithsinterconnect.com)

