

smiths interconnect



Defense

Connectivity Solutions

CUTTING-EDGE
CONNECTIVITY

About Smiths Interconnect



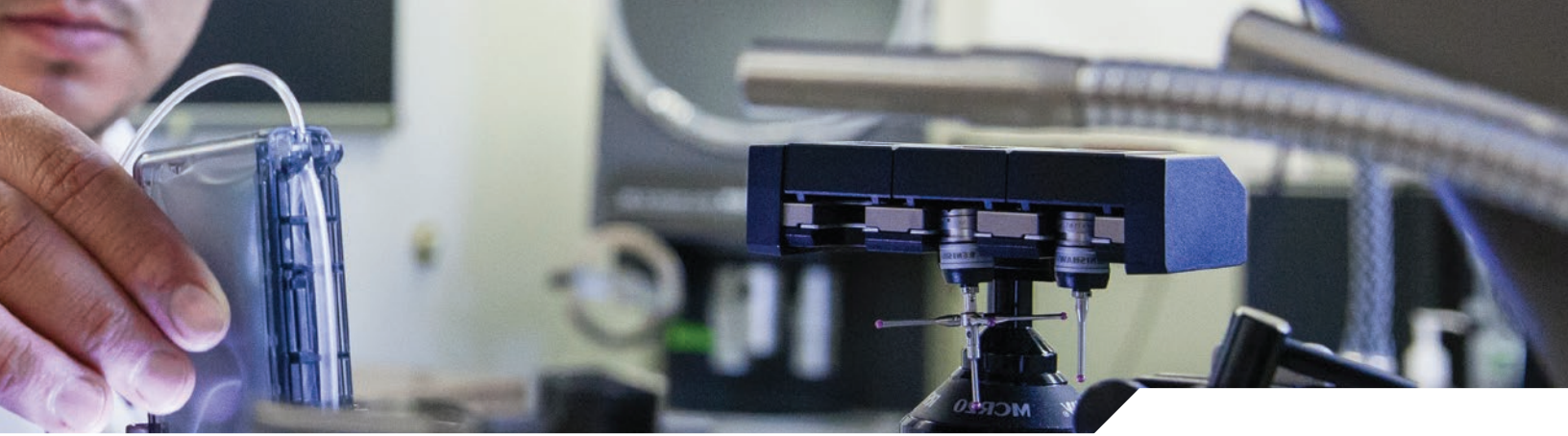
We Offer



Smiths Interconnect is a leading provider of technically differentiated electronic components, subsystems, microwave, optical and radio frequency products that connect, protect and control critical applications in the Defense and Aerospace, Communications and Industrial markets.

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, 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**

60+ Years
Experience

Technology

Broad Range of Advanced
Interconnect Technologies

Flexibility

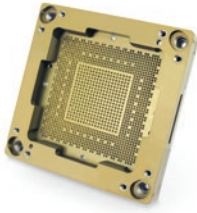
High Volume Product Platforms
& Complete Tailored Solutions

Service

Global Reach with
Local Support

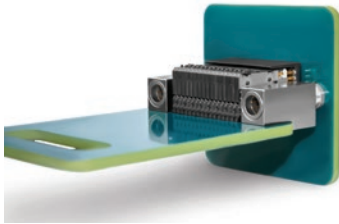
Smiths Interconnect is part of Smiths Group plc, a global leader in applying advanced technologies for markets in threat and contraband detection, energy, communications and engineered components. Smiths Group has a presence in more than 50 countries.

Technology Brands



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 quadrx, 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.



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 tubular 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.



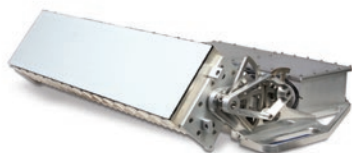
RF LABS

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.

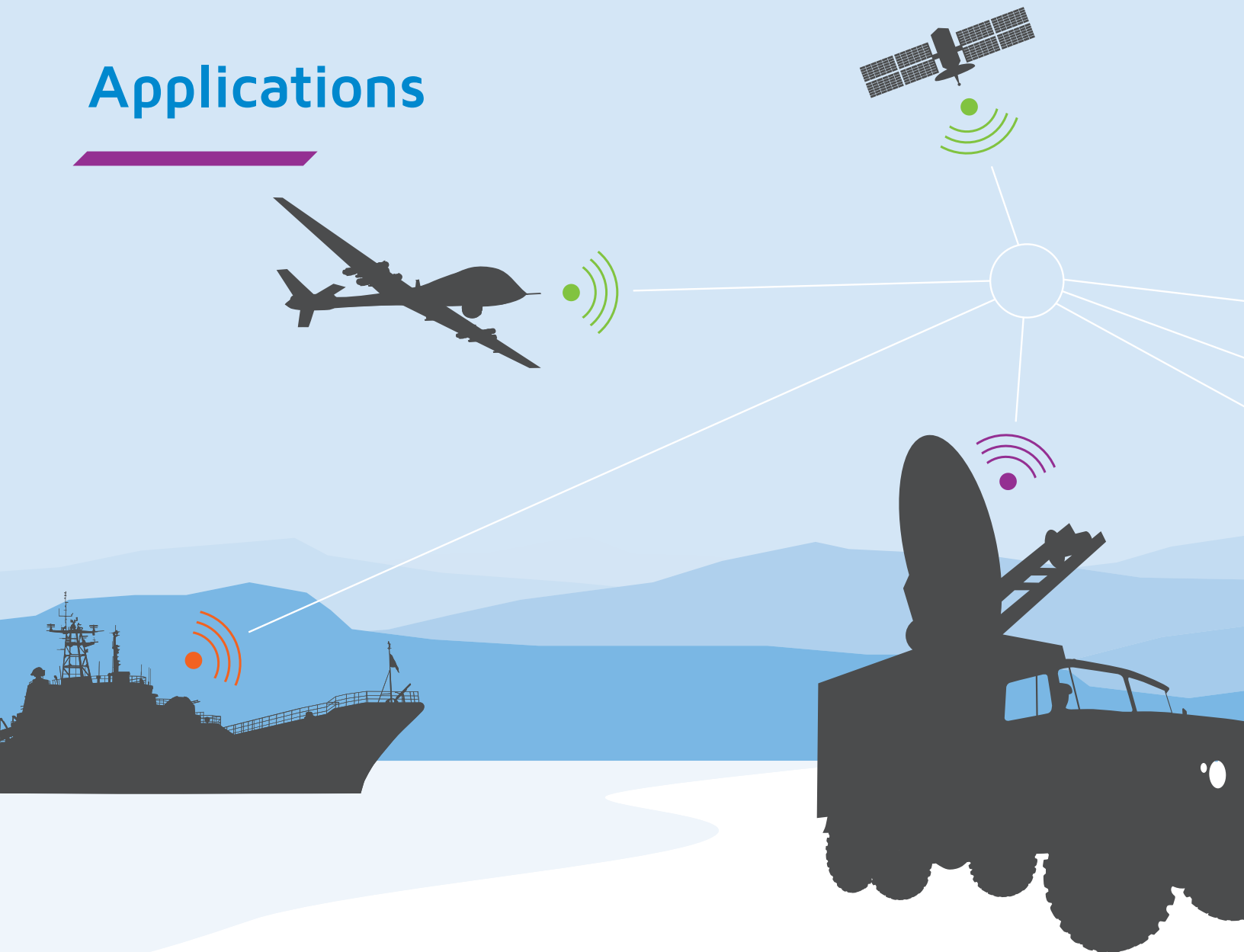


TRAK

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.

■ Connectors
 ■ Fiber Optics & RF Components
 ■ Semiconductor
 ■ RF/MW Subsystems/Smiths Interconnect Inc (SII)

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.



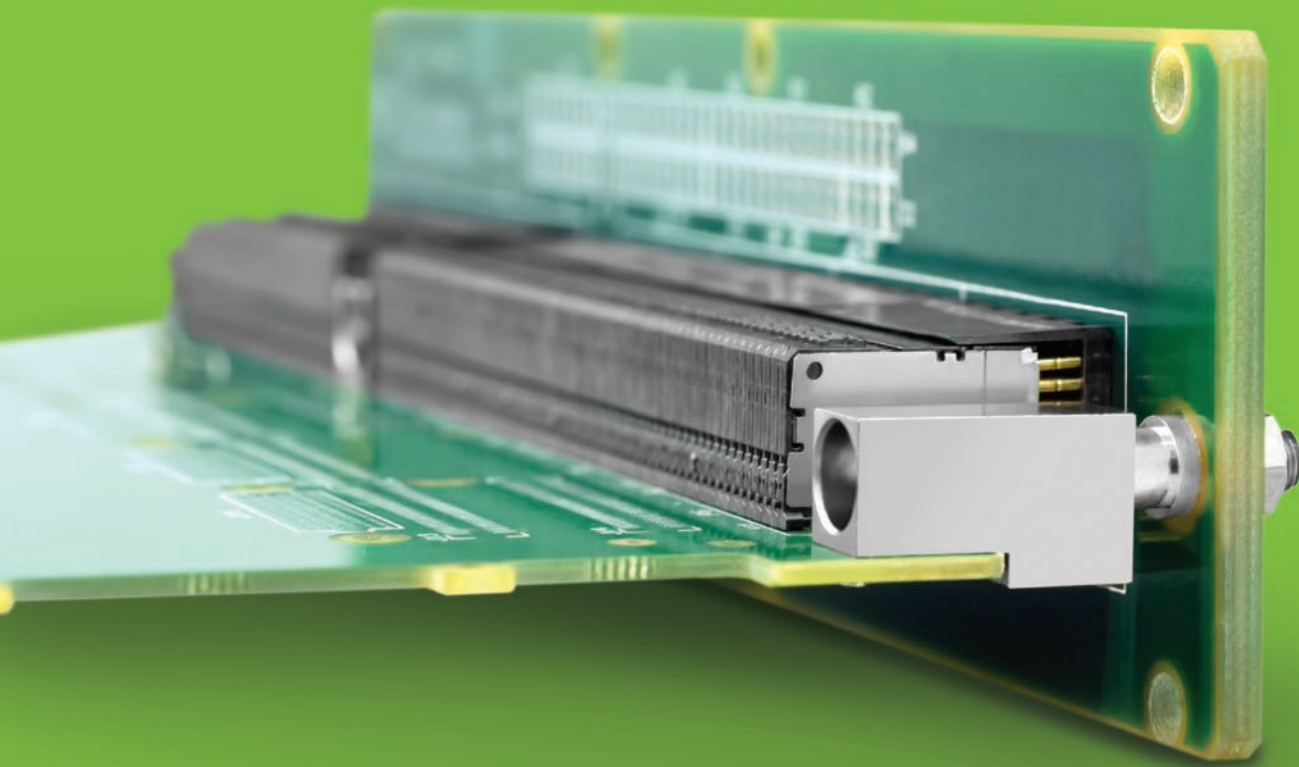
ISR

- 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



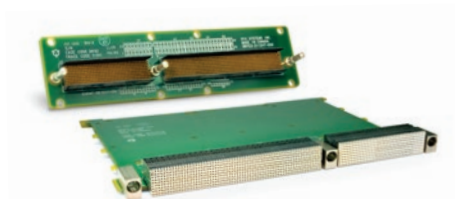
Reliability & Safety

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**

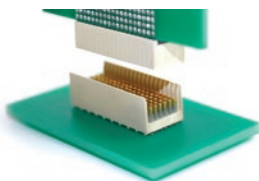
High Speed Vita Backplane

- Fully footprint compatible with VITA 46/48 standards
- Flexible modular design for standard 3U, 6U and custom configurations
- 100 Ω impedance for differential pair configurations
- Data rate performance up to 10 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.



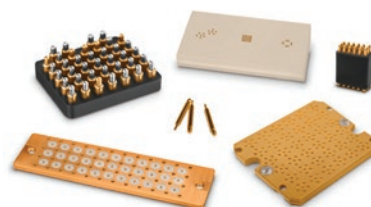
High Speed Copper

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



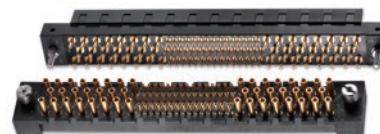
PCB Interposers

- 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 ($< -0.5\text{dB}$), low loss fiber options
- MIL-DTL-38999, ARINC 600 compatible
- PC or APC ferrule end face



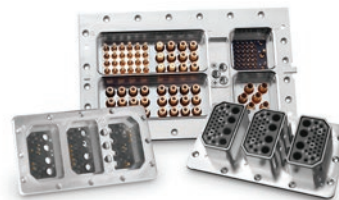
RF Coax/Triax

- 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

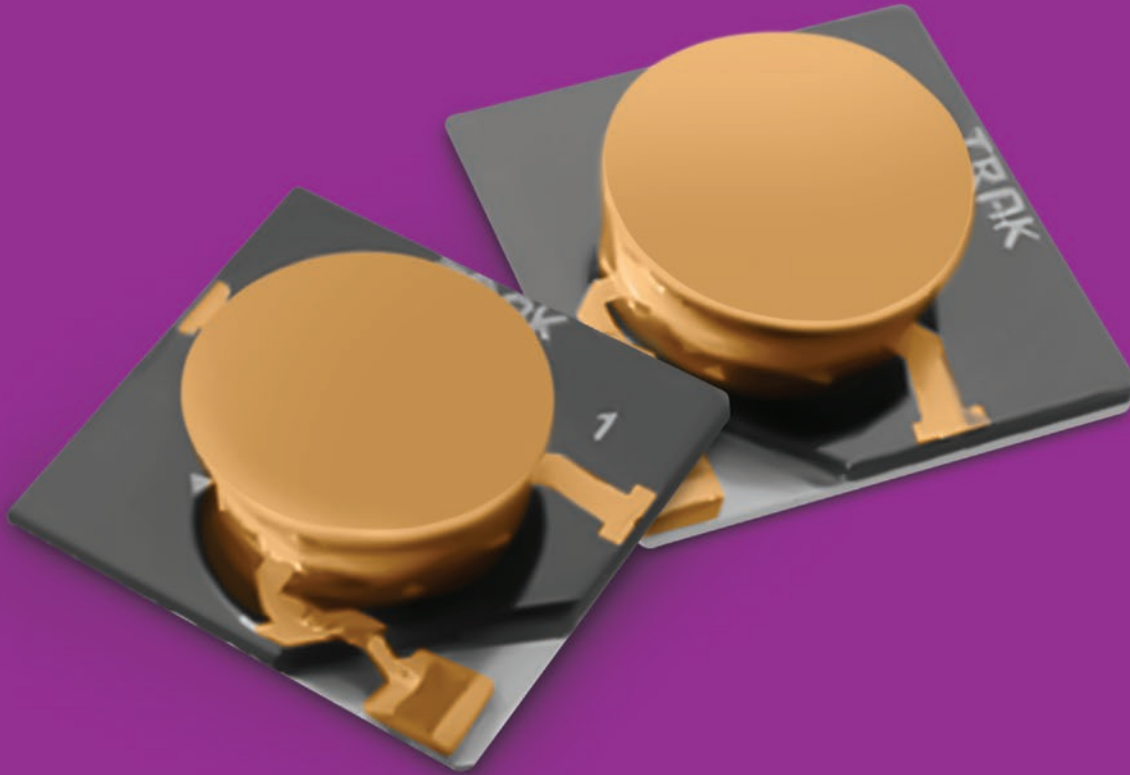


Fiber Optic ARINC 801

- 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 available including female & male orientations, and SMA, TNC & SMP styles
- Male/ female connector barrel machined to be integrated in housing
- Optimized for thermal and dynamic operational environments



Microstrip, Surface Mount & Stripline Isolators & Circulators

- Operating in assigned bands from 400 MHz to 31 GHz
- Used in a variety of interfaces including MIC, tabbed, and SMD interfaces
- Microstrip offers a unique blend of broad band operation, low mass and low profile
- Surface mount and stripline suitable for pick and place and reflow soldering



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



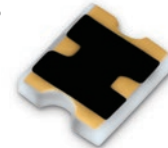
Waveguides

- Isolators, circulators, combiners, couplers, loads, transitions, terminations, & multi-function assemblies
- Full waveguide band isolators and circulators WR-42-WR-05 (18-220 GHz)
- High power waveguide circulators / isolators for protecting TWTs up to 100 GHz
- Breadth of passive products operate from 1.0 GHz to 325 GHz
- High power devices are supplied as junction or differential phase shift types
- Guaranteed low and stable insertion loss under maximum power



Attenuators

- Product versions from DC to 50 GHz
- Excellent RF broadband performance
- 50 years of proven space and military heritage
- Footprint compatibility with Thermopad®
- Surface mount, wire bond, tab, flange and coaxial configurations




Diamond RF Resistives

- High power-to-size ratings to 300W
- Excellent peak power performance
- Extremely low parasitic capacitance
- Super compact form factor
- Space and military qualified

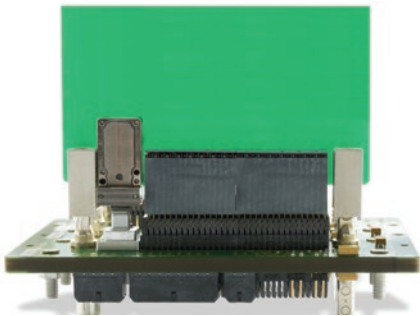


Advanced RF solutions for a broad range of frequency applications



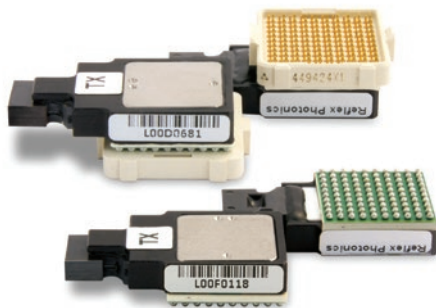
Optical VPX Interconnects

- 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



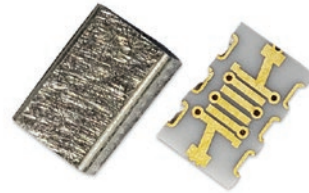
Optical Embedded Transceivers

- 12-channel TX and 12-channel RX
- Multimode 850 nm wavelength laser
- Over 100 m reach on OM3 ribbon fiber
- Standard MT parallel fiber connector
- Surface mountable or pluggable
- MIL-STD 883/202/810 qualified, radiation tested



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



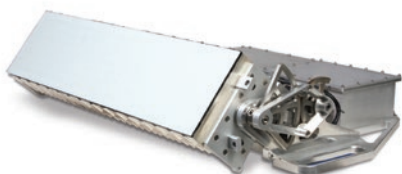
Emergency Response Systems

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



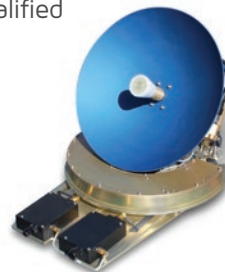
Positioners/Controllers

- Fixed and mobile positioning systems
- Man-portable to 7 meter installations
- Reflector and feed assemblies reaching 0.5 to 325 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 325 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

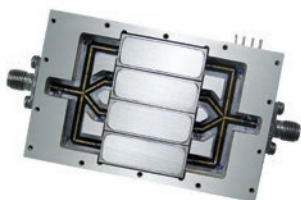


Providing Innovative
RF & MMW systems
designed to meet
end-user needs



Switched Filter Banks

- Offer high selectivity in broadband systems
- Optimized integration provides low loss and fast switching speed in a rugged package
- Ideal RF conditioning solution for frequency conversion and signal intelligence applications



Comb Generators

- SRD-based & NLTL-based comb generators
- Active & passive multiplier chains
- Up to full waveguide bandwidths
- Standard models available through 305 GHz



Wideband Antennas

- Used as stand-alone antennas or reflector feeds in parabolic antenna systems
- Standard models from 18 to 110 GHz
- Vast array of omnidirectional antennas



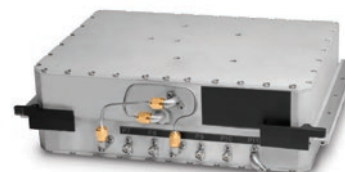
Integrated MW Assemblies

- Includes up/down converters, power amplifiers, modulators/demodulators, broadband, switched filter networks, LNA's, oscillators, switches, synthesizers, ferrite isolator and receiver protectors
- Designed for dynamically challenging environments
- Custom form factors



Up/Down Converters

- Single and multi-channel
- Compact size, up to 325 GHz
- Control at high dynamic range
- Phase and gain matching
- MIC/SMT content optimized for performance & cost
- Radiometer and RADAR front ends



mmW Amplifiers

- Broad array of power amplifiers (AMP) up to 16-way, and low noise amplifier (LNA) solutions
- Standard models from 18 to 110 GHz
- GaN, GaAs, InP, and SiGe technologies
- Custom variations of standard millimeter-wave amplifiers, as well as multi-component assemblies and solutions



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

60+

Years
Experience





Certifications, Standards & Compliance

- EN/AS 9100
- MIL-DTL-3933
- MIL-DTL-39030
- MIL-DTL-38999
- MIL-DTL-83723
- MIL-DTL-83527
- MIL-DTL-24308
- MIL-DTL-83513
- MIL-C-26500
- MIL-C-81511
- MIL-C-26482
- MIL-PRF-55342
- ARINC 404
- ARINC 600
- ARINC 628
- ARINC 800
- ARINC 801
- HE 801
- HE 704
- Nadcap
- NF C-UTE C93-424

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



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.

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Business Unit

Connectors

Fiber Optics &
RF Components

Semiconductor
Test

RF/MW
Subsystems

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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.



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