

smiths interconnect



# Defence

Connectivity Solutions

CUTTING-EDGE  
CONNECTIVITY

# About Smiths Interconnect



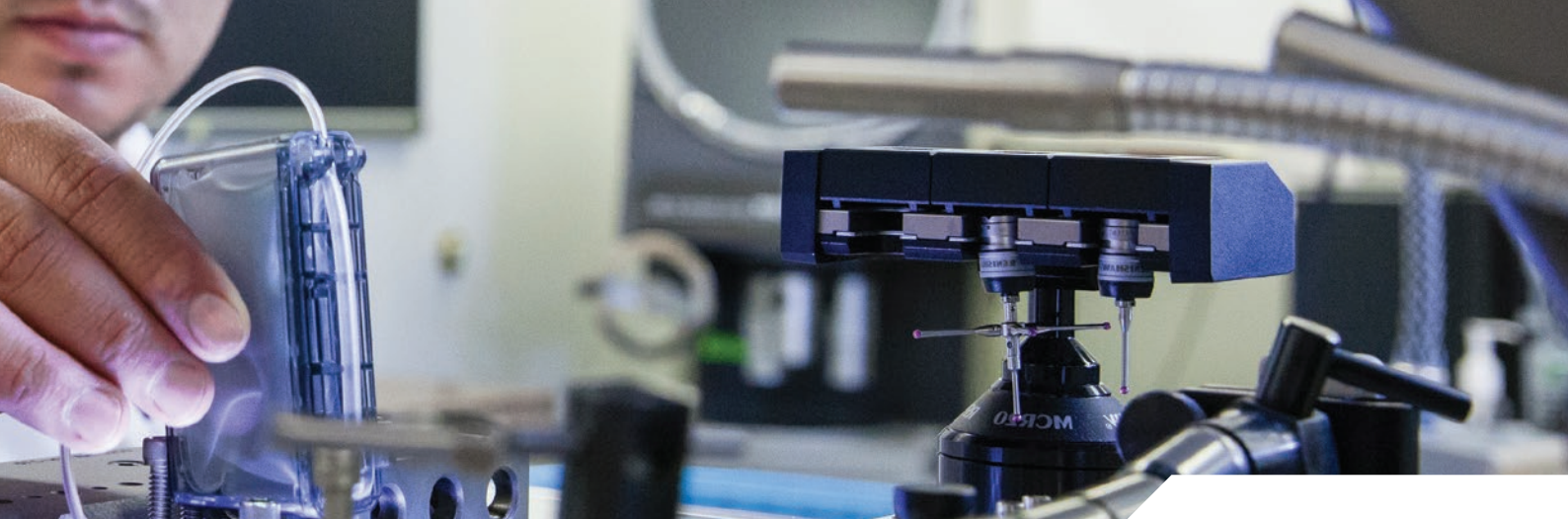
## We Offer



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 Defence and Aerospace, Communications and Industrial markets.

Smiths Interconnect is the supplier of choice for safe, efficient and highly reliable connectivity in various military and defence 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.



## Defence & 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

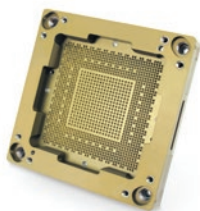
### Service

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.

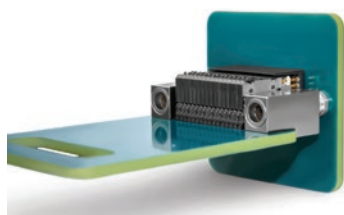


# Technology Brands



## 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 optimised quality, performance, and reliability. Hypertac connectors utilise 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, fibre 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 defence, 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

Specialising in the engineering, manufacturing, and testing of millimetre-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 defence, commercial aerospace, space, homeland security, and public safety applications.

# Applications



## Communications

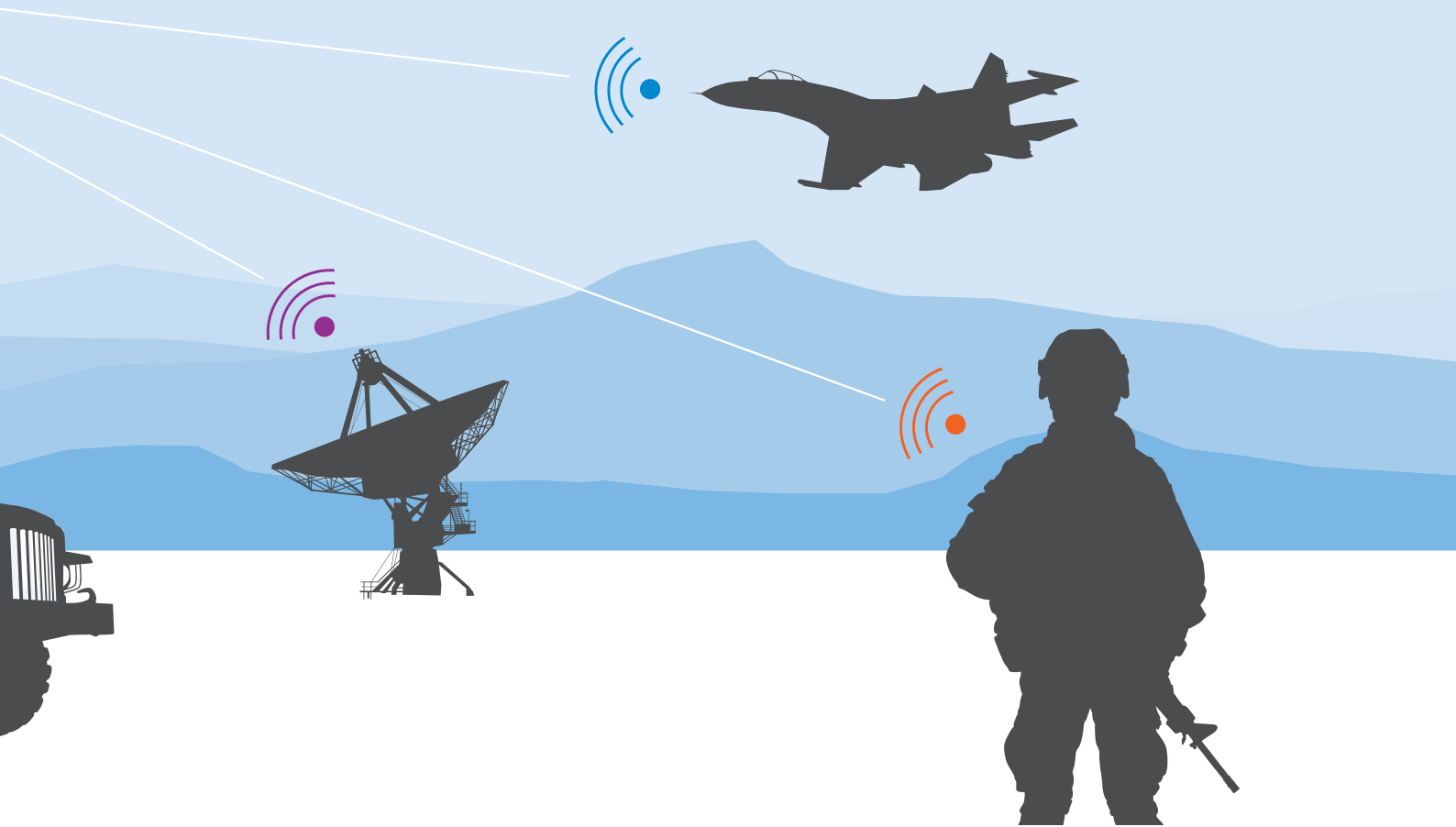
- Airborne, Vehicular and Naval
- Ground Based (Stationary & on the Move)
- Man-portable
- SATCOM
- Datalinks
- Missiles
- Timing & Networking

## Electronic Warfare

- Electronic Countermeasure
- Electronic Protection
- Electronic Support Measures
- 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.



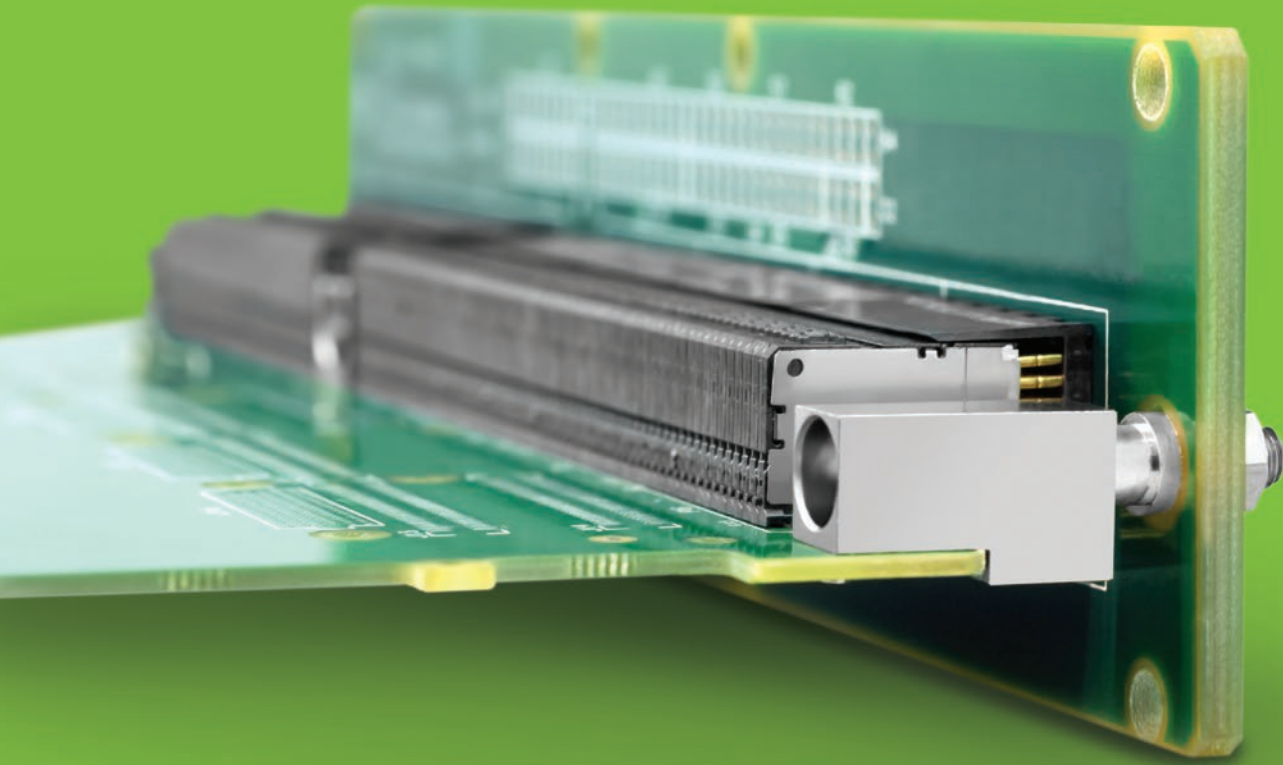
## ISR

- 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. Our reliable contact technologies are the core of our advanced interconnect solutions: Hyperboloid, Spring Probe, High Speed, Fibre Optic, High Power and High Temperature.

**Providing  
exceptional  
performance  
in critical  
applications**



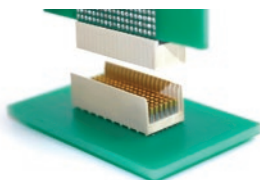
## High Speed Vita Backplane

- 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 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, fibre 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.



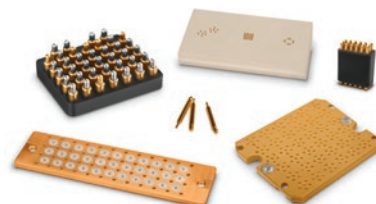
## High Speed Copper

- Standard 100 & 150 $\Omega$  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



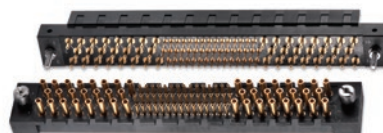
## PCB Interposers

- 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

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## 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-moulding and cabling
- Designed for extreme environmental conditions



## Fibre Optic

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



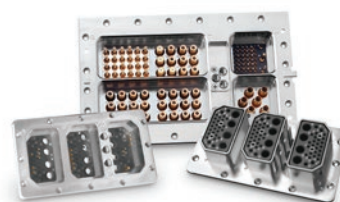
## RF Coax/Triax

- 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

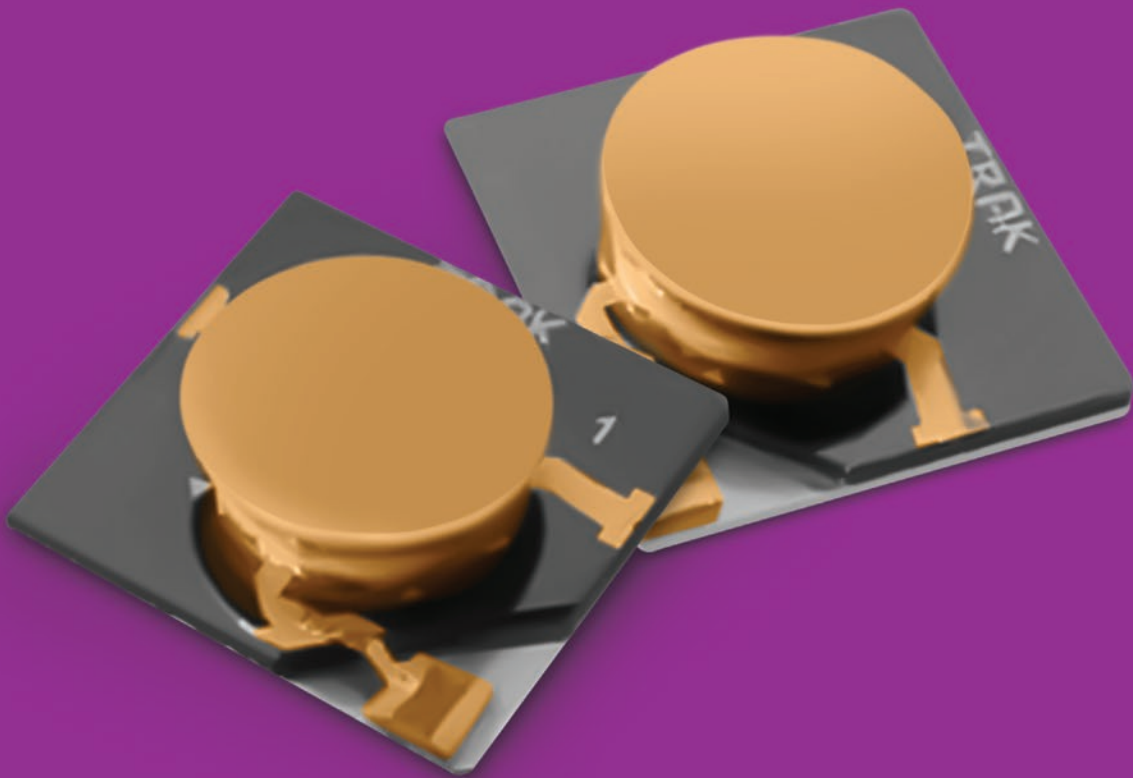


## Fibre Optic ARINC 801

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



# Fibre 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**



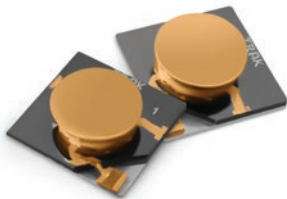
## Coaxial Isolators

- 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
- Optimised 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



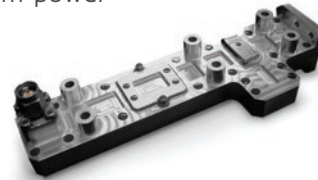
## RF Components

- Innovative design and material maximise 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



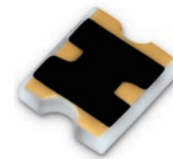
## Waveguides

- 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

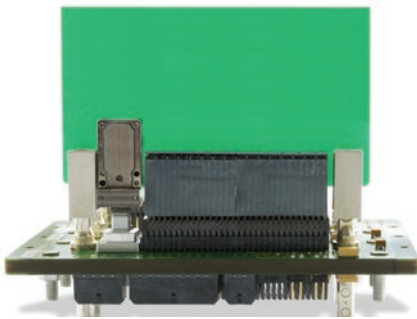


# Advanced RF solutions for a broad range of frequency applications



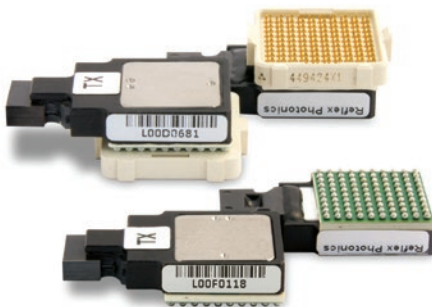
## Optical VPX Interconnects

- 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 fibres
- Designed following VITA 66.5 standard
- Rugged solution, MIL-STD 883/202/810 qualified



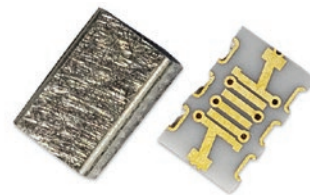
## Optical Embedded Transceivers

- 12-channel TX and 12-channel RX
- Multimode 850 nm wavelength laser
- Over 100 m reach on OM3 ribbon fibre
- Standard MT parallel fibre 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



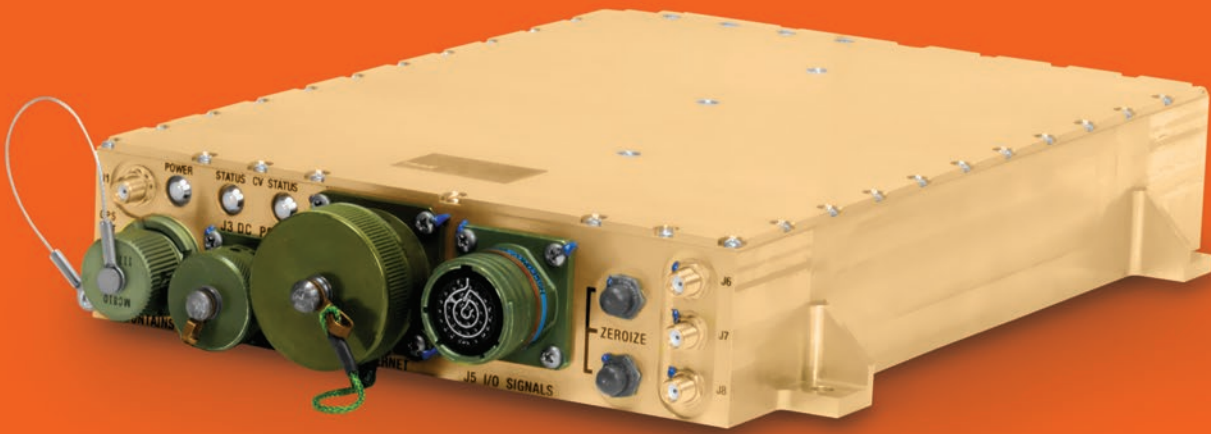
## RF Cable Assemblies

- 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

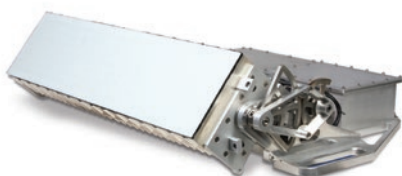
Whether it's a custom design or build-to-print, our Millitech, TECOM, and TRAK brands offer a broad range of advanced antenna systems as well as high-reliability RF/Microwave/Millimetre-wave components, assemblies and fully integrated subsystems, providing significant leverage in tackling mission critical defence, 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 clean-up oscillator
- Remote configuration and monitoring via Ethernet and RS-232
- Standard C/A-Code GPS or optional SAASM GPS



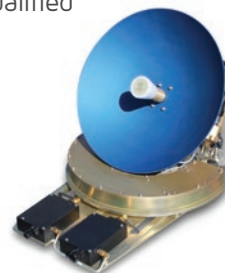
## Positioners/Controllers

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



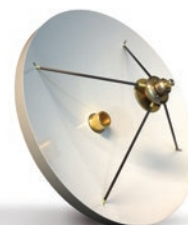
## Ka-Band Antenna Systems

- 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 millimetre wave antenna products & technologies including aperture, reflector, & 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 synchronising networks using IRIG-B as the time reference
- Accepts a fibre optic or wireline IRIG-B time code
- Time synchronisation of SIPRNET and NIPRNET
- Remote configuration and monitoring via Ethernet and RS-232

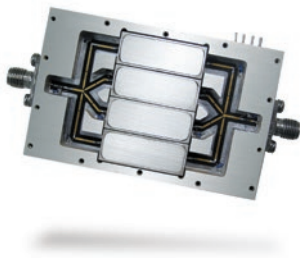


Providing Innovative  
RF & MMW systems  
designed to meet  
end-user needs



## Switched Filter Banks

- Offer high selectivity in broadband systems
- Optimised 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



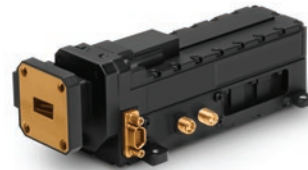
## Wideband Antennas

- 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, synthesisers, 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 optimised 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 millimetre-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
- NF C-UTE C93-424

## Engineering

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

## Prototyping

- CNC Turning & Milling Centres
- 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.

[more > smithsinterconnect.com](#) | [in](#) [twitter](#) [youtube](#)

### Business Unit

Connectors

Fibre Optics &  
RF Components

Semiconductor  
Test

RF/MW  
Subsystems

# Worldwide Support

## Americas

### Sales

connectors.uscsr@smithsinterconnect.com

### Technical Support

connectors.ustechsupport@smithsinterconnect.com

## Europe

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## Asia

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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.



more > [smithsinterconnect.com](https://smithsinterconnect.com) | [in](#) [twitter](#) [youtube](#)

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