

smiths interconnect



# Medical

Connectivity Solutions

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 defence, 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 and reliable connectivity in the medical device industry. Our interconnect solutions are used extensively in areas where signal integrity and reliability are essential to the well-being of the patient. We create value while mitigating risk through expert design and manufacturing, reliable end-to-end solutions and a deeply consultative approach to meet the specific requirements of the medical industry.

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.



## Defence & Aerospace



## Communications



## Industrial



# Your partner of choice for cutting-edge connectivity solutions

**80+** Years Experience

### Technology

Broad Range of Advanced Interconnect Technologies

### Flexibility

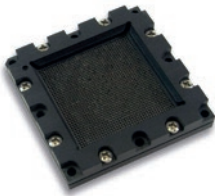
High Volume Product Platforms & Complete Tailored Solutions

### Service

Global Reach with Local Support

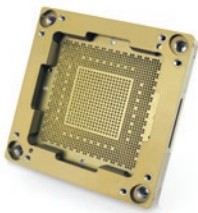
Smiths Interconnect is part of Smiths Group plc, a global leader in applying advanced technologies for markets in threat and contraband detection, energy, communications and engineered components.

# Technology Brands



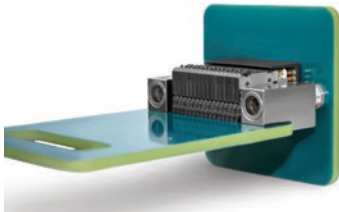
## PLASTRONICS

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 optimised quality, performance, and reliability. Hypertac connectors utilise the original high performance hyperboloid contact technology; ideal for harsh environments and safety critical applications.



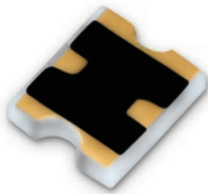
## HSI

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 quadax, 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.

Connectors

Fibre 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 defence, space, commercial aerospace and industrial applications.



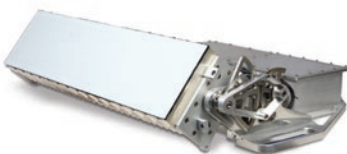
## RF LABS

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

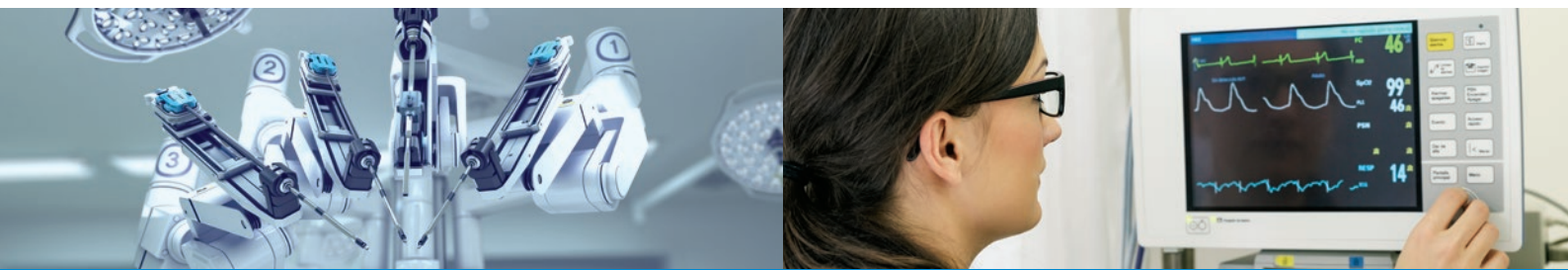
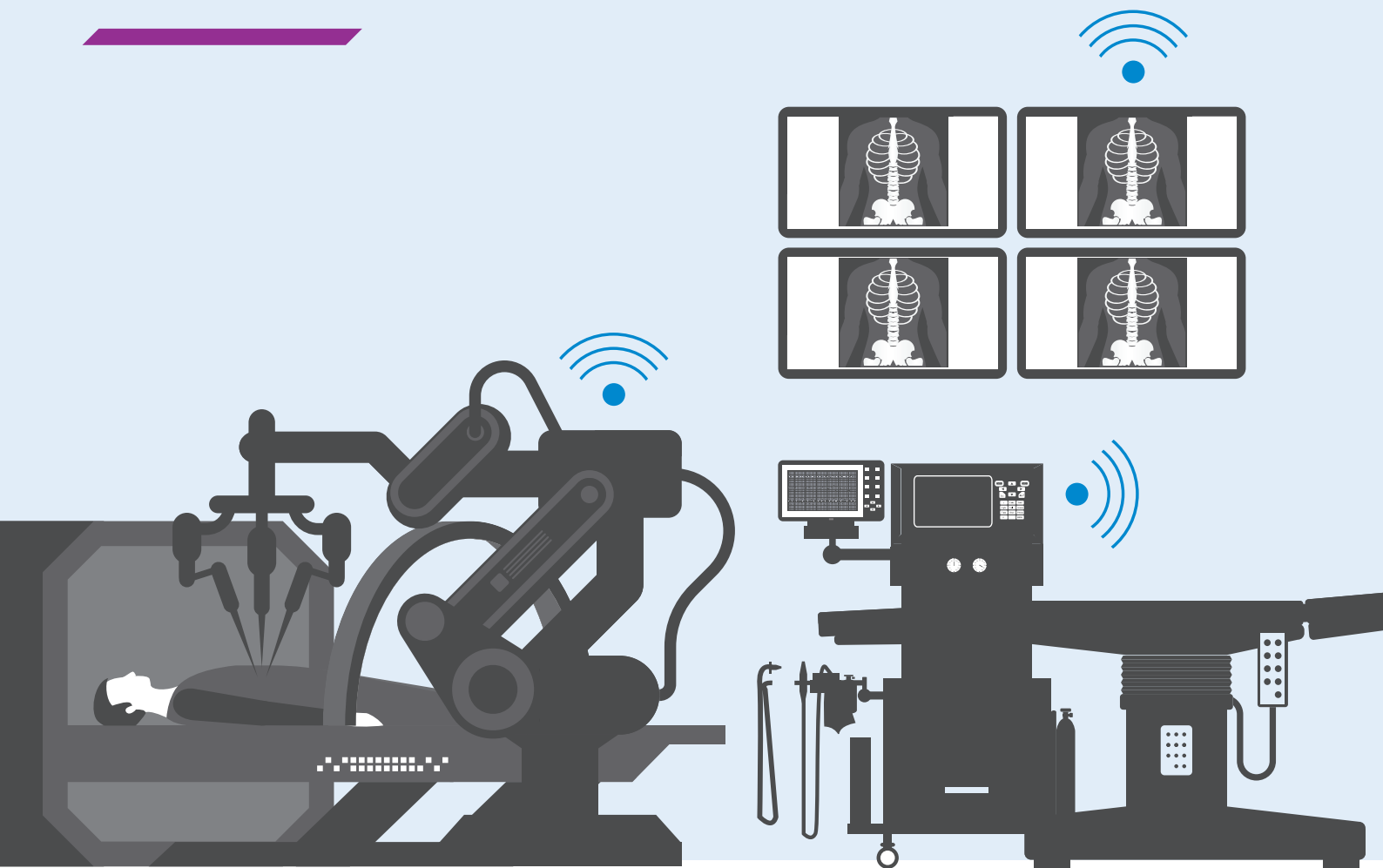
Industry leading innovator of antennas and positioning systems for SATCOM in-flight connectivity, instrumentation, datalink, command & control, and telemetry applications integrated into the world's most advanced commercial and military platforms.



## 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



## Surgical & Monitoring Systems

- Surgical Robots
- Surgical Equipment
- Hybrid Operating Rooms
- Endoscopy
- Infusion Pumps
- Patient Monitoring
- Dental Tools/Chairs
- Portable and Wearable Devices
- Home Health Monitors
- Automated External Devices

# Providing A Competitive Advantage

Reliability is the essential attribute in the cutting-edge technologies that we utilize. We offer proven quality and innovative connectivity solutions, constantly adapting our products to tomorrow's needs while meeting our customer requirements. We leverage our application specific expertise to design and manufacture superior connectors and cable assemblies, RF components and sub-systems that ensure optimal performance, durability and safety.



## Imaging Systems

- Magnetic Resonance Imaging (MRI)
- CT Scanning Systems
- Digital X-ray
- Ultrasound
- Positron Emission Tomography

## Disposables

- Electrophysiology Catheters
- Invasive Probes
- Painless Needle Systems
- Blood Gas Analysers

# 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**



## Push Pull High Density

### HyperGrip® Series

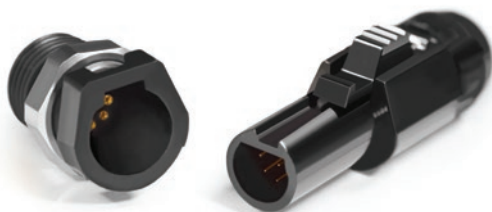
- Mechanical keying and colour coding connector with push/pull latching design allowing for one-hand disconnect
- Signal, power, coax, fibre optic and spring probe solutions available
- Sterilisable: Autoclave, EtO, Sterrad protocols
- Finger proof design to IEC 60601 and flammability rated to UL94 V0
- Shielded versions with continuous EMI and RFI shielding protection of 50dB @3GHz available
- Disposable receptacle and plug options that withstand at least 30 cycles



## Push Button

### D Series

- From 3 to 82 contact positions
- Virtually intuitive mating, D-shaped housings prevent mismating
- Hybrid signal, power and coaxial contact technologies
- Housing alignment and polarization
- Disposable and reusable versions available
- Custom cable assemblies and autoclavable versions available



## Edge Card

### Eclipta-ECL Series

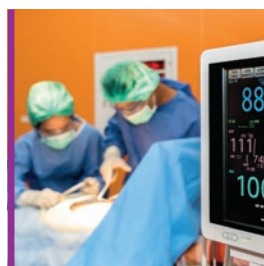
- Double-ended edge card contact design
- Mates to PCB board on the disposable connector side
- High mating cycle life
- Plug and play design
- Meets typical sterilization requirements
- Quick intuitive mating
- Embedded electronic for greater design flexibility



## Custom Grid Array

### RF Performance Contact Layouts

- Cost-effective and smaller alternative to coaxial RF contacts
- Multiple custom configurations for different purposes
- Low cost of ownership due to high number of mating cycles (up to 100,000)
- Low contact resistance  $\leq 50m \Omega$
- RF performance from DC to 300MHz



### Did you know?

Our medical contact technologies within monitoring systems help improve patient outcomes from reliable and accurate diagnostic results.

# Bringing technology to life



## PCB

### Multiple Configurations

- Low, medium and high-density connectors with long life cycle
- Signal, power, coaxial and high speed, RF contacts and spring probe solutions
- Immunity to shock and vibration fretting
- Straight dip, right angle solder, crimp, solder cup and Wire Wrap® terminations
- Board-to-board, cable-to-board, cable-to-cable and stacking



## Modular Rack & Panel

### L Series

- Mixed signal, power, coaxial, data, fibre optic and pneumatic modules
- Provides up to 200 amp power
- Cable to chassis and rack & panel; plastic backshell with strain relief and half turn quick disconnect jackscrew
- Float mountable for blind mating
- Configurations compliant to EN 45545 standards
- Large offering thanks to the modularity
- High reliability contact technology
- Several locking devices and hood are proposed
- Floating version



## Mini Modular

### H/N Series

- High-density mini modular connectors
- Allows up to 900 contact positions
- Building block system composed of custom module combinations within a unique connector frame
- Keying system available
- Jack screws available in half-turn quick disconnect
- Float mountable for blind mating



## Cable to Board Solutions

### KS10 Series

- Single and dual row connector designs
- Up to 100,000 mating cycles
- Immune to shock and vibration
- Minimal contact resistance
- Robust insulator design
- Broad temperature rating: -55°C to 85°C
- Available "first mate, last break" system



When  
integrity is  
essential to  
health

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## Cable Assemblies

### Rugged Hybrid & Custom Cable Assemblies

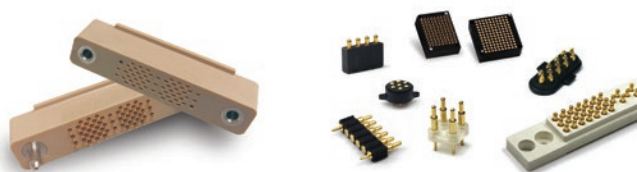
- Signal, power, coax, fibre optic and spring probe solutions customised high quality cable harnessing
- Customisable overmoulds for cable bend/strain reliefs
- Integrated electronics and PC boards
- Coax and fibre optic terminations
- Fine wire termination down to 48AWG for single/multi strand, twisted pair and coax
- Biocompatible materials: ISO 10993, USP class VI
- Customer specified connectors to mate with existing systems
- Advanced testing capabilities



## Miniature and Docking Systems

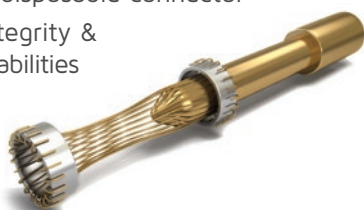
### Spring Probe Connectors & Interposers

- Standard probes offered in custom configurations
- Ground, power and signal probe options
- Non-magnetic high density docking connectors
- Lowest stacking height
- Surface mount, thru-hole & solder cup terminations



## Hypertac Contacts

- Reusable Hypertac contact mating to simple drawn pins in the disposable connector
- Ultimate signal integrity & power contact capabilities
- Up to 100,000 mating cycles



## MR Socket Contacts

- Screw machined 0,4 mm crimp contact
- Standard industry cycle life: mechanical life minimum 2,000 cycles
- Low level contact resistance and low insertion/extraction forces



## Spring Probe Contacts

- Reusable spring probe connectors mating to PCB in the disposable connector
- Extremely high density
- Allows for self-correction of target misalignment



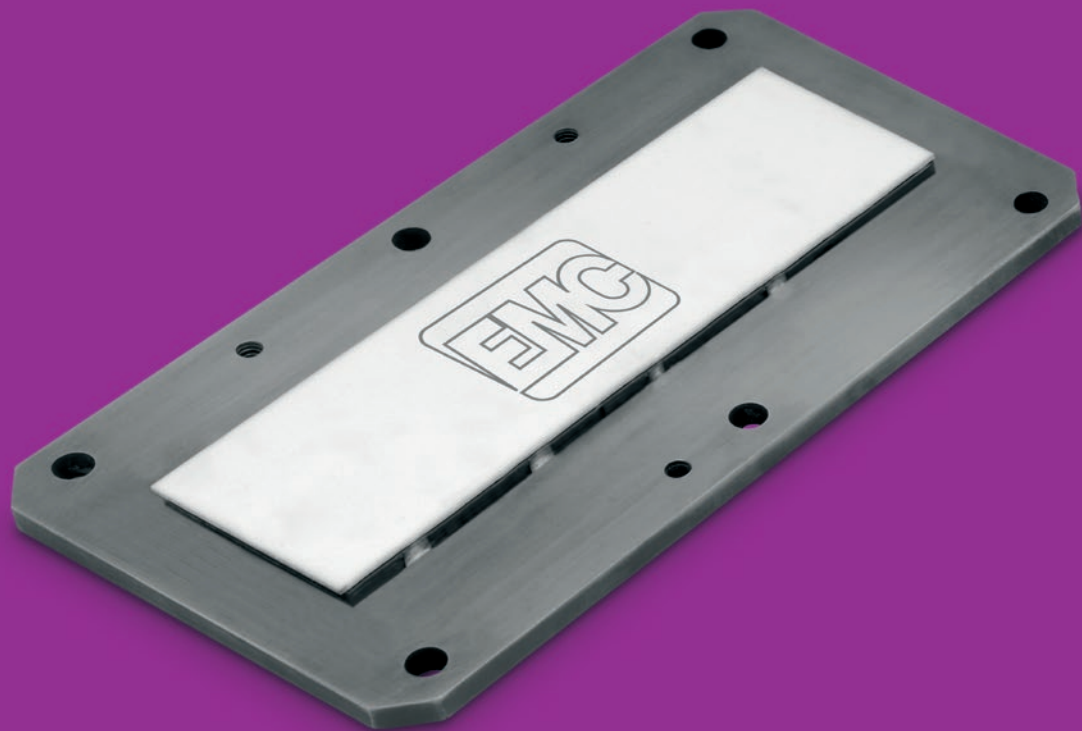
## Disposable Contacts

### Stamped Hyperboloid Contacts HCS

- Ideal for high volumes requiring a fully automated crimping process
- Delivered on reels for crimping machines with automatic feeder lines
- High reliability wire and insulation crimp



# RF Components



## Superior Performance

Medical imaging equipment requirements continue to drive interconnect solutions to enable high-quality images to be generated faster and with superior resolution. Smiths Interconnect's innovative and durable connectivity solutions allow large volumes of data to be transmitted at high-speeds with high signal integrity.

**High  
reliability in  
a sensitive  
environment**

## Non-Magnetic RF Components

### Terminations

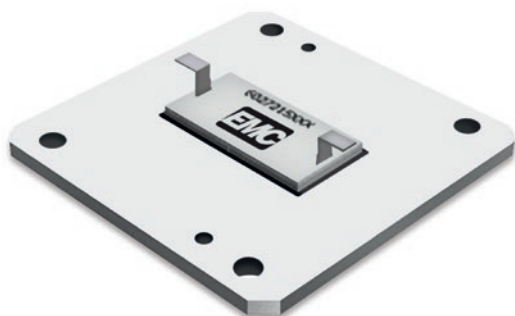
- Wide band response
- High power
- Low VSWR
- Easy installation
- Excellent heat transfer
- RoHs complaint ALN solution



## Non-Magnetic RF Components

### Resistors

- 10 to 400 Ohms
- High power
- Low VSWR
- Easy installation
- Excellent heat transfer
- RoHs complaint ALN solution



## High Power Waveguide Load

### 10TE25

- High power water cooled
- S-Band waveguide
- Designed for imaging and clinical oncology treatment machines



## Did you know?

Smiths Interconnect's non-magnetic technologies help hospitals increase the number of patients they can scan in a day. Our connectivity solutions are used for connecting the mobile MRI scanner beds to the main system.

# 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 10993
- ISO 13485
- 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 60601
- IEC 61373
- IEC 61984
- HE 501
- HE 704
- UTE C93-425
- UL94
- RoHS compliance
- IRIS
- FDA registered

## Engineering

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

## Prototyping

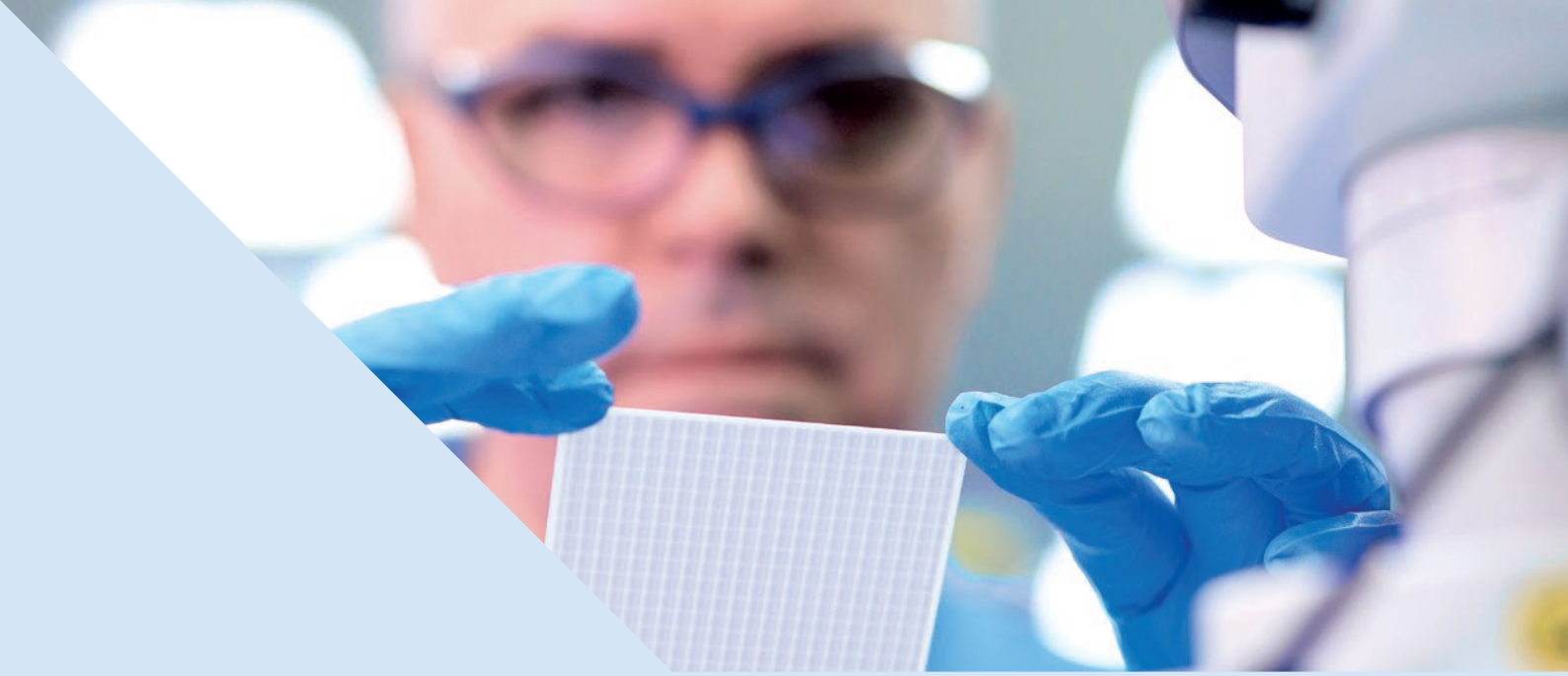
- CNC Turning & Milling Centres
- Cabling / Prototype Assembly
- 3D Printing
- Ceramic Grinding
- EDM
- Circuit Board Routing

## 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



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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)



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## Business Unit

Connectors

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Fibre 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

connectors.ustechsupport@smithsinterconnect.com

## Europe

### Sales

connectors.emeacsr@smithsinterconnect.com

### Technical Support

connectors.emeatechsupport@smithsinterconnect.com

## Asia

### Sales

asiacsr@smithsinterconnect.com

### Technical Support

asiatechsupport@smithsinterconnect.com

### Sales

focom.uscsr@smithsinterconnect.com

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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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