



smiths interconnect

# Industrial

Connectivity Solutions

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CUTTING-EDGE  
CONNECTIVITY

# About Smiths Interconnect



## We Offer

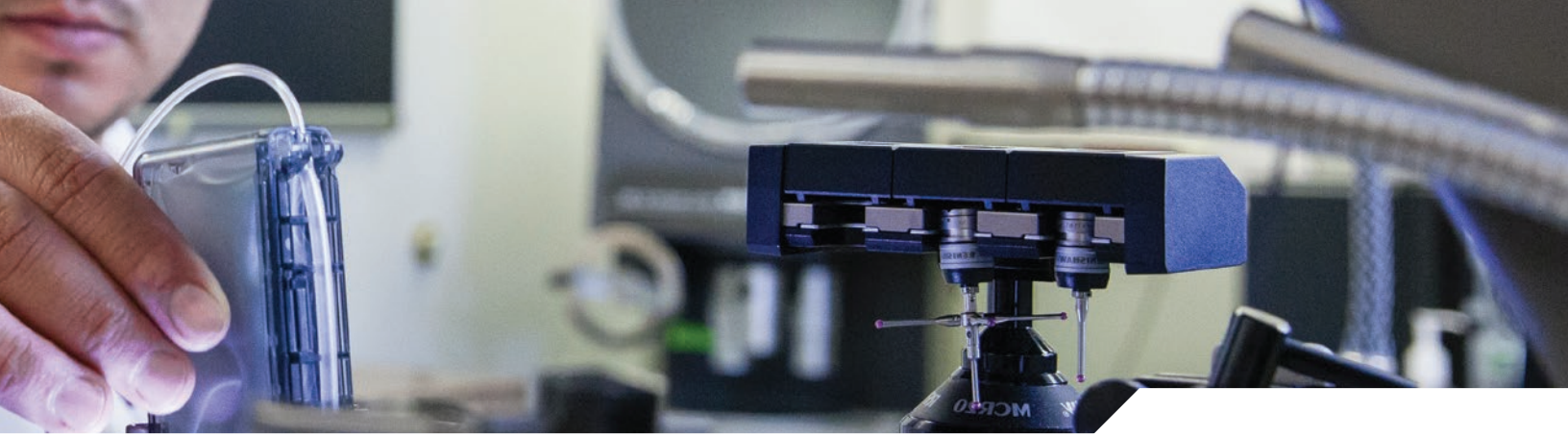


Smiths Interconnect is a leading provider of technically differentiated electronic components, subsystems, microwave, optical and radio frequency products that connect, protect and control critical applications in the Defense and Aerospace, Communications and Industrial markets.

Smiths Interconnect is a leading provider of innovative solutions for demanding industrial applications. Smiths Interconnect's cutting-edge connectivity solutions offer superior quality and reliability, providing customers with a competitive advantage.

Our best-in-class engineering and technical expertise ensure the development of durable and robust platform products and customized solutions combining rugged backshells with high reliability contact technologies and easy assembly procedures.

Our extensive product portfolio ranges from highly integrated assemblies to microminiature connectors. We offer a number of value added services to customers, including cable assembly, prototyping, instrumentation housing, electrical modelling and testing.



## 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.

# Original Hypertac<sup>®</sup>

## Hyperboloid Contact Technology

Hypertac (HYPERboloid conTACT) is the original superior performing hyperboloid contact technology designed for use in all applications and in harsh and demanding environments where high reliability and safety are critical.

The shape of the contact sleeve is formed by hyperbolically arranged contact wires, which align themselves elastically as contact lines around the pin, providing a number of linear contact paths. This construction allows a very tight control of the spring forces and consequently of the insertion and withdrawal forces.

The inherent electrical and mechanical characteristics of the Hypertac hyperboloid contact ensure unrivalled performance in terms of reliability, number of mating cycles, low contact force and minimal contact resistance.

### Hypertac hyperboloid contact provides the following commercial benefits:

- **Low cost of ownership**  
Does not need replacement during equipment life
- **Reduced system costs**  
Equipment design is less critical
- **Reduced qualification costs**  
No re-testing due to contact failures

## Unrivalled Performance

100,000

Number of Mating Cycles

## Shock

& Vibration Immunity

## Low

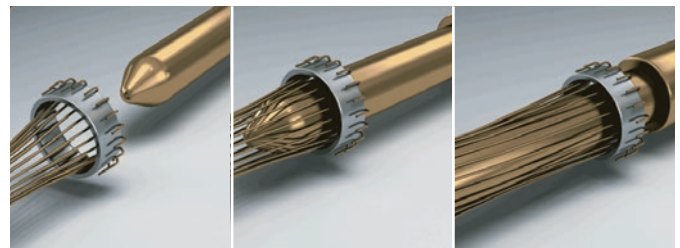
Insertion & Extraction Force

## Low

Contact Resistance

## High

Current Ratings



Wire sleeve before insertion of pin

Pin partially inserted into sleeve

Pin completely inserted into sleeve

## Hypertac® Hyperboloid Contacts - HC

- Extremely low insertion/extraction forces
- Industry-leading mating cycles (up to 100,000)
- No fretting corrosion during life cycle
- Very low contact resistance



## Screw-Machined Contacts – MR

- Rail standard contact life up to 500 mating cycles
- Tested signal integrity, no contact interruption >50 ns
- Low level contact resistance and low insertion/extraction forces



## High-Speed Contacts

- Twinax, triax and quadax contacts suitable for high speed signal up to 100 MHz
- Fit various insert arrangements for d-sub, circular, PCB and rack and panel connectors



## High-Power Contacts

- Current ratings up to 650A
- Fit various insert arrangements for waterproof modular & circular connectors



## Stamped Hyperboloid Contact - 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



## Spring Probes

- Low Profile, High Compliance Ratio
- High Frequency, Current Ratings and Insertion Life
- Exceptional Misalignment Tolerance



# Industrial Automation

Application-specific solutions  
for reliable and durable  
connectivity



High Power M40 & M58  
Connectors



High Density  
Mini-Modular  
Connectors

## Stability

Increasingly automated production environments require stable connectivity, as network failures can result in expensive line stops. Our interconnect solutions embed leading contact technologies that offer high reliability and the optimum balance between performance and cost, making them the ideal choice for demanding environment where the cost of failure is high.

- Factory Automation
- Industrial Robots
- Processing Equipment
- Servo-Drives & Encoders
- Power Suppliers
- Scientific Instrumentation



Shielded Circular  
Metal Connectors



Robust Power &  
Signal M23 Connectors

## Wide Product Offering

Our diverse product offering, from off-the-shelf products to customized solutions, provides unrivalled performance under the most stringent industry conditions.

# Test & Measurement

Superior longevity  
and electrical  
stability



Compact Signal & Ethernet  
PCB Connectors



Robust & Reliable  
M12 Connectors

## Integrity

Test equipment applications rely on the integrity of the components used within them. Our connectors ensure superior longevity with exceptionally low mating forces even when using high pin counts as requested in test applications, including microchips, wafer, burn-in, Hardware-In-Loop and automotive testing.



- Production Test & Laboratory Equipment
- Semiconductor Testing
- Automatic Test Equipment



Rugged High Density Modular Connectors



High Density Mini-Modular Connectors

## Reliable Test Solutions

Test instrumentation devices are connected and disconnected many times, thus requesting the high mating cycles and low insertion/extraction forces of the Hypertac contact system. Our hyperboloid and pin loop and spring contact technologies are also suitable for Burn-In-Test equipment.

# Other Applications That We Serve:

## High Shock, Vibration Applications

- Mining drill vehicles
- Portable pneumatic tools



## Commercial Robotic Drones & Drone-Based Solutions

- Power supply and charging
- Mating with base station





# Other Applications

## Wind Energy Generation

- Drive systems
- Pitch systems
- In-turbine systems



## Heating, Ventilation & Air Conditioning Systems

- Heat pump controls & thermostats
- Evaporator & condenser coils
- Service valves & heat exchangers
- Compressors & pressure vessels
- HVAC-R testing
- Packaged & split system AC units

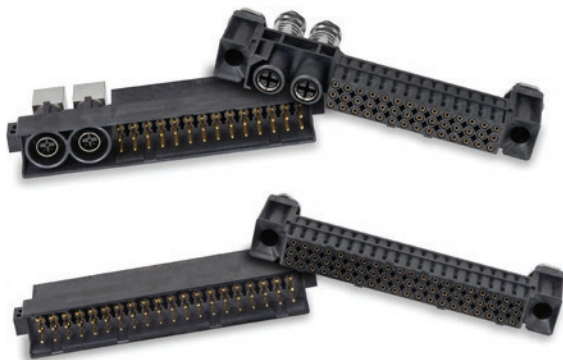
## High Power Quick Release

- 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



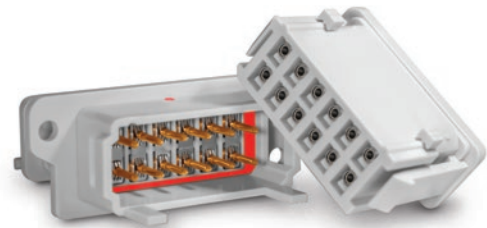
## Signal & Ethernet PCB - Intercompact

- Compact Signal and Ethernet PCB Connectors
- Compliance with the main European Railway standards
- Insulators in Liquid Cristal Polymer material for an optimized insulation resistance in severe environment conditions



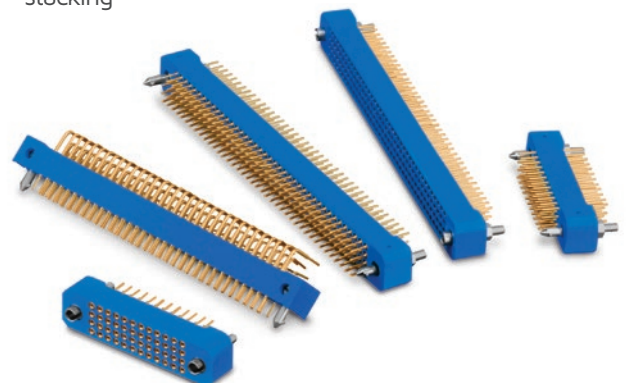
## Environmentally Sealed Rectangular Plastic - REP

- Available with the proven Hypertac® hyperboloid contact technology (up to 20,000 mating cycles) and with the MR screw machined contacts (up to 500 mating cycles)
- Conforms to EN 45545 and EN 50124 standards
- Voltage rating up to 400 V
- Allows wire sections from 0.5 mm<sup>2</sup> to 2.5 mm<sup>2</sup> (20-12AWG)
- Shunt function available
- 2, 6, and 12 way standard sealed insulators
- Crimp, straight or bent termination options



## High Density PCB

- Long life cycle connectors with immunity to shock and vibration fretting
- Signal, power, coaxial and high speed, RF contacts and spring probes solutions
- Straight dip, right angle solder, crimp, solder cup and Wire Wrap® terminations
- Board-to-board, cable to board, cable to cable and stacking



## Robust & Reliable M12

- Compact IP67 metal shell
- 360° EMI shielding
- Hyperboloid contact technology
- Compliant with fire and smoke standards
- Straight and right angle 90° rotatable backshell
- Compatible with most commonly used rail cables
- Easy to terminate, field attachable



## High Power M40 & M58

- Heavy drive applications & high current applications
- Hypertac® hyperboloid contact technology
- 360° EMC shielding & corrosion resistant
- UL/CSA approval file No. 178462



## Robust Power & Signal M23

- Outstanding protection against electromagnetic interference through a full 360° screen shielding
- RoHS compliant and UL/CSA approved
- Metallic and plastic versions available
- Hypertac® contact technology ensures immunity to shock and vibration and minimal contact resistance
- O-rings for protection against vibration



## Did you know?

Smiths Interconnect are driving revolution in automotive testing by providing connectors that can perform reliably and consistently in the relentlessly unforgiving test environment.

# Intelligent drone-based solutions saving time and increasing workflow



## Rugged High Density Modular

- Mixed signal, power, coaxial, fiber 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 EN45545 standards
- Large offering thanks to the modularity
- High reliability contact technology
- Several locking devices and hood are proposed



## High Density Mini-Modular

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



## Spring Probe Interposers

- High density spring probe technology
- Low, stable contact resistance throughout long insertion life
- Optimal signal integrity  $\geq 40$  GHz
- Ingress protection to IP68 and MIL-810 available



## Cable Assemblies & Wire Harnesses

- Wide range of cable assemblies and wire harnesses, consisting of point-to-point or multi-branch connections for efficient transmission of power, data or signal
- Pre-wired encoding connectors and adapters
- In-house capabilities to design, development, prototyping, manufacturing and testing
- Custom solutions tailored to volume manufacturing requirements and customers' technical needs



# 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

- AS9100D
- EIA-364-06C
- EIA-364-28E
- EIA-364-27B
- EIA-364-70B
- EN 45545-2
- EN 61984
- EN 50124-1
- EN 60664-1
- EN 50264-2-1
- EN 50467
- EN 60529
- EN 50155
- EN 60512
- EN 61000-1/2/3/4
- EN 61373
- IEC 61076-2-101
- IPC-WHMA-A-620
- IRIS
- ISO 9001
- ISO 14001
- ISO 45001
- MIL-DTL-55302
- MIL-DTL-5015
- MIL-C-28748
- MIL-STD-1344
- MIL-STD-202
- NF F 16-101
- NF F 16-102
- NF F 61-030
- ROHS II Compliance (exemption 6c) and REACH Regulation
- UL 94

## Engineering

- Advanced RF & System Modelling
- CAD/CAM & Solid Modelling
- 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

# Worldwide Support

## Americas

### Sales

connectors.uscsr@smithsinterconnect.com

### 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.



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