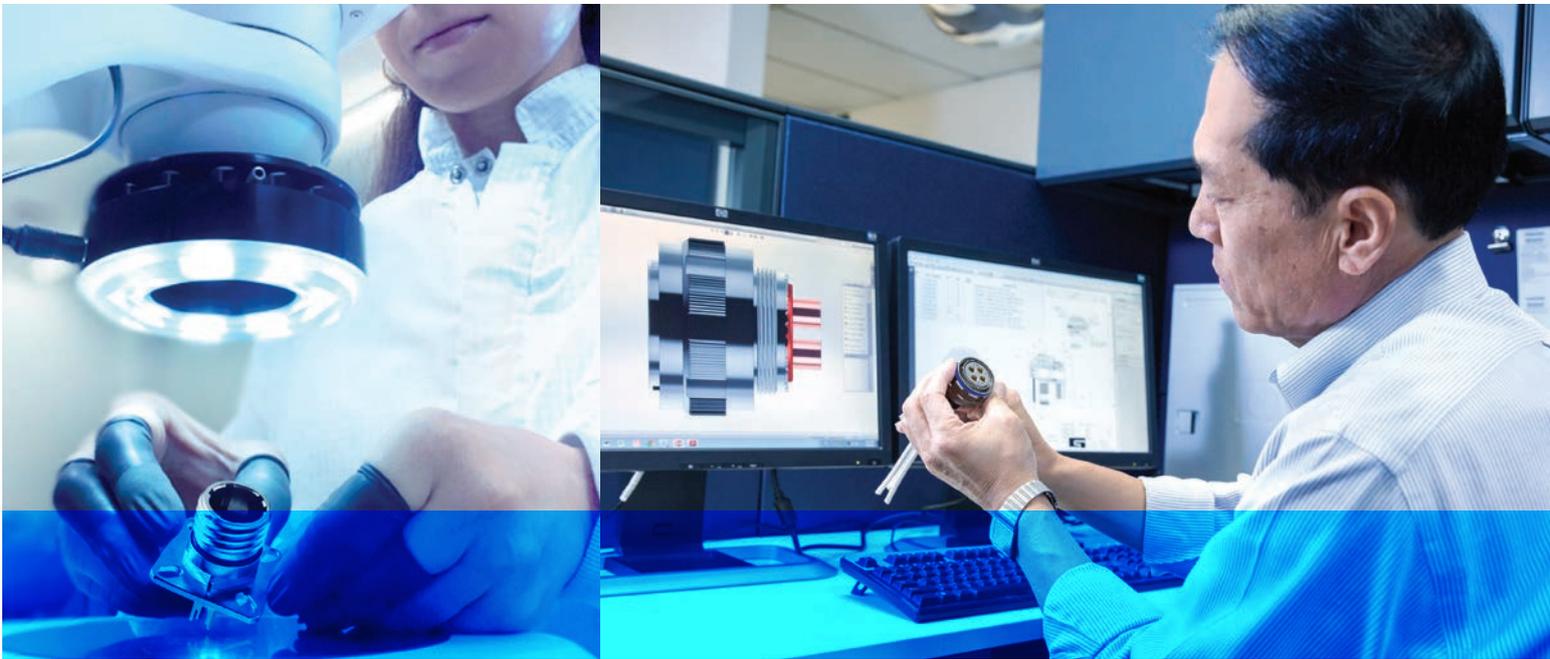


smiths connectors

CORPORATE OVERVIEW





SMITHS CONNECTORS

Smiths Connectors is a leading supplier of application-specific, high-reliability electrical interconnect solutions from highly integrated assemblies to microminiature connectors and spring probe contacts.

Smiths Connectors is comprised of Hypertac, IDI and Sabritec brands, which are synonymous of exceptional performance when critical applications require a technologically advanced, high quality, multi-pin electrical connection to ensure reliability and safety.

Alongside Smiths Microwave and Smiths Power, Smiths Connectors is part of the Smiths Interconnect division of Smiths Group, a global leader in applying advanced technologies for markets in threat and contraband detection, energy, medical devices, communications and engineered components. Smiths Group employs around 23,000 people in more than 50 countries.



By unifying the competencies and capabilities of three world leading interconnect brands, Smiths Connectors offers:

- ▶ Broad Range of Advanced Interconnect Technologies
- ▶ Vast Knowledge of Served Markets & Applications
- ▶ High Volume Product Platforms
- ▶ Complete, Tailored Solutions
- ▶ Unmatched Reliability & Durability
- ▶ Global Reach with Local Support





Smiths Connectors' in-house capabilities encompass design, development, manufacturing and testing. Providing operational excellence tailored to volume manufacturing requirements, global sourcing, world class engineering talent and rapid prototyping enable, Smiths Connectors to respond quickly and accurately to customers' needs, and provide the most reliable interconnect solutions.

We are a global provider of interconnect solutions that create value for our customers by providing them with a competitive advantage. We leverage our engineering and application specific expertise to design and manufacture superior connectors, contacts and systems that ensure optimal performance, reliability, durability and safety in critical applications.

We meet the customer's needs, whether it is a single specialised contact, custom interconnect, cable harness or a complete pretested sub-system. Our success does not rely on our technology alone, but also on data management, manufacturing systems, forward planning tools, quality control and the ability to supply functional prototypes.

First-class materials, state-of-the-art development methods, advanced know-how and exact processing are the essential ingredients of our quality expertise. This, combined with the maintenance of ISO certifications and quality assurance programs, makes Smiths Connectors the leading provider of superior interconnect solutions.

ENGINEERING DESIGN & DEVELOPMENT

- ▶ CAD/CAM & Solid Modelling
- ▶ Electromagnetic & Moulding Simulation
- ▶ Finite Element Analysis

PROTOTYPING

- ▶ CNC Turning & Milling Centres
- ▶ Cabling / Prototype Assembly
- ▶ 3D Printing

TESTING / QUALIFICATION

- ▶ Precision Machine Shops
- ▶ Contact Assembly
- ▶ Connector & Cable Assembly
- ▶ System Integration
- ▶ Validation Tests

CERTIFICATIONS

- ▶ AS9100C
- ▶ AN/EN 9100
- ▶ ISO 9001
- ▶ ISO 14001
- ▶ ISO 13485
- ▶ OHSAS 18001
- ▶ QPL (MIL-DTL-55302)
- ▶ MIL-I-45208A
- ▶ IRIS



BRINGING TECHNOLOGY TO LIFE



Hyperboloid

Hypertac® hyperboloid is the original superior performing contact technology for use in demanding environments where 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. The smallest practical pin diameter is 0.3 mm but there is effectively no upper limit.

Features

- ▶ Excellent signal and power performance
- ▶ High number of mating cycles
- ▶ Low insertion forces
- ▶ Resistance to fretting
- ▶ Long life and low cost of ownership
- ▶ High density design with Tortac® technology (up to 60 ways per cm²)
- ▶ High power, high temperature, high speed, high volume and non-magnetic options



Spring Probe

Spring probes are designed to optimise performance in high reliability, multi-cycle applications. Spring probes are compliant which makes them ideal for blind mate applications as they self-correct for x, y, z, rotational and angular misalignment of the target.

Offered in compressed heights less than 2 mm and utilized on pitches as tight as 0.4 mm, they are well suited for high density, board-to-board, battery contact and high frequency applications.

Features

- ▶ Low profile, high compliance ratio
- ▶ Low, stable resistance
- ▶ Z-axis compliance
- ▶ Blind mate engagement
- ▶ Long cycle life
- ▶ High density
- ▶ Extreme miniaturisation
- ▶ Non-magnetic options



EMI/EMP Filter

EMI filter connectors use multi-layer ceramic capacitor arrays together with inductive materials to realise robust, high performance low pass filter networks.

Where required, protection can be provided against high energy transients from direct lightning strikes, standard EMP, high altitude EMP (HEMP), non-nuclear EMP (NNEMP) and electromagnetic interferences (EMI).

Features

- ▶ C, L and Pi filter styles available
- ▶ Filtering technology (planar arrays, discoidal) to suit application
- ▶ Unfiltered (high speed) and ground lines
- ▶ Transient protection compliant with RTCA D160F Section 22 levels 3, 4 and 5
- ▶ Can be combined with high energy TVS for high transient protection



Fibre Optics

Smiths Connectors offers both multi-mode and single-mode fibre optic contacts. Both types consist of two basic components: the core and the cladding, which traps the light in the core.

Fibre optic contacts support wide bandwidth applications and are suitable for inclusion in a broad variety of connector styles. All fibre optic connectors and contacts are offered fully terminated and tested ensuring signal integrity for rugged application environments.

Features

- ▶ Floating fibre, butt-joint and expanded beam technologies
- ▶ Single and multi-mode applications
- ▶ Extremely wide bandwidth
- ▶ Low insertion loss



High Speed Copper

Quadrax and twinax contacts are designed for transmission of Ethernet high speed signal in harsh environments where integrity and reliability are essential.

Consisting of an outer shield and either two (twinax) or four (quadrax) inner contacts, the high speed copper contacts can be setup in a number of formats including MIL-DTL-38999, ARINC 600, MIL-DTL-83527 and D-subminiature.

Features

- ▶ Data rates exceeding 2 Gbps
- ▶ Matched impedance solutions for 100, 110 and 150 Ω characteristic applications
- ▶ Bandwidth: up to 3 GHz
- ▶ High speed data transmission
- ▶ Minimised jitter and data rate errors
- ▶ Manufacturing protocols: Fibre Channel, Ethernet Firewire, USB, DVI and InfiniBand



RF Coax/Triax

Our complete line of RF coaxial and triaxial connectors and contacts include standard formats: MIL-DTL-38999, ARINC 404 and ARINC 600. RF micro connectors include high frequency coax, MDCX and MDHC.

Triax interconnect products include concentric twinax/triax connectors, contacts and cable assemblies. The triax connector line features our ultra-miniature NDLC connector offered in both threaded and quick disconnect versions.

Features

- ▶ Compact size
- ▶ Superior RF high frequency electrical performance
- ▶ Rugged mechanical performance
- ▶ Float mount design ensuring high performance and low VSWR
- ▶ Size 5, 8, 9 and 12 contacts for various cable types and PC tail configurations
- ▶ Magnetic permeability preventing image distortion



ENGINEERING SUPERIOR SOLUTIONS



Circular

Complete range of circular connectors with metal and plastic shells, and crimp and solder terminations for multichannel hybrid electrical/optical insert arrangements, supporting a wide range of allowable contact voltages and currents, easy environmental sealing and rugged mechanical performance.



EMI/EMP Filter

The filter connector series includes EMI/EMP/ESD circular, ARINC, D-subminiature and micro-D connector styles. They can be combined with high energy TVS diode technology to achieve lightning and EMP transient protection.



Fibre Optic

Fibre optic offerings include floating fibre, ARINC 801, butt-joint and expanded beam technologies for single and multi-mode applications. Fibre optic contacts support wide bandwidth applications and can be used in a broad variety of connector styles.



Heavy Duty

Modular solutions with signal, power, data and fibre optic contacts for high resistance to harsh environments.



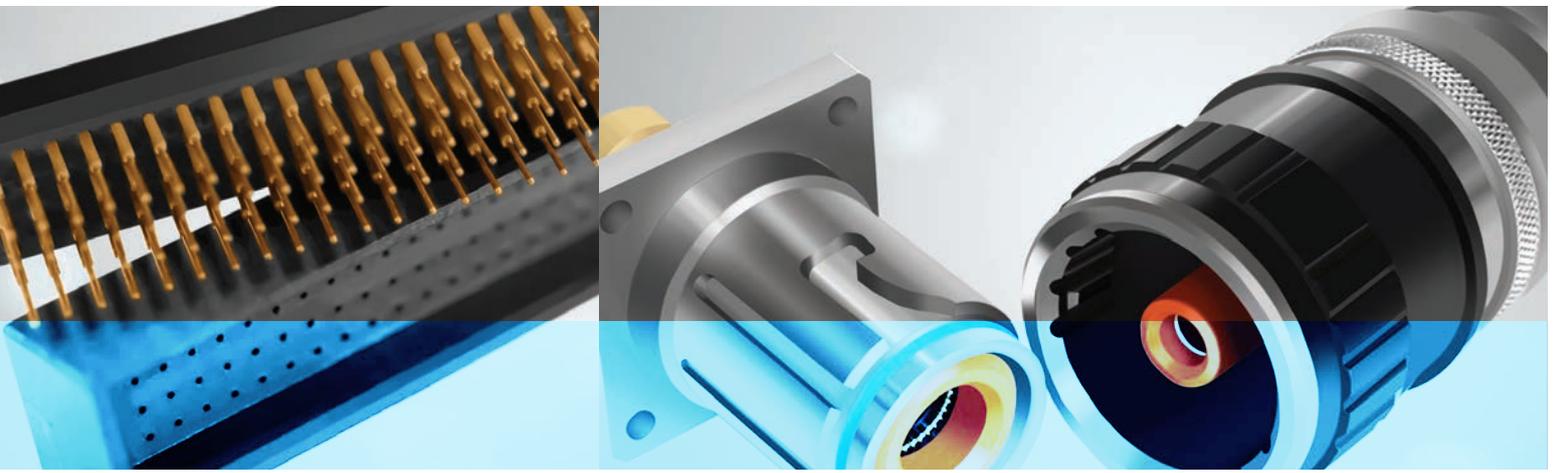
High Power

Circular and rectangular style available as single and multi-way connectors with power up to 1,200 A and excellent performance in harsh environments.



High Speed Copper

Comprehensive array of high speed interconnects including quadax and twinax connectors. Manufacturing protocols: Fibre Channel, Ethernet Firewire, USB, DVI and InfiniBand.



Mil/Aero Standards

Wide range of standard interconnect solutions including rectangular, circular, D-subminiature, rack and panel, and ARINC style connectors.



Modular/Rectangular

Complete line of modular solutions that allow users to configure and combine signal, power, coax, twinax, triax, quadax and fibre optic contacts into a single connector.



PCB

Extensive offering of low, medium and high density board-to-board, cable to cable and stacking connectors with signal, power, coaxial and high speed configurations.



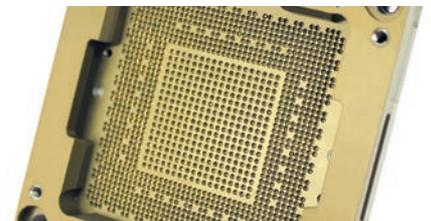
RF Coax & Triax

RF coaxial and triaxial lines include standard size: MIL-DTL-38999, ARINC 404 and ARINC 600. RF micro connectors include high frequency coax, MDCX and MDHC.



Spring Probe

Spring probe technology utilized in custom connector designs. Mixed signals and functionality can be designed into a single connector.



Semiconductor Test

Broad portfolio of spring probe and other contact technologies coupled with design standards for high quality test sockets and probe cards; providing flexibility and fast delivery for optimal cost / performance ratio.



CONNECTING GLOBAL MARKETS

Commercial Aviation

APPLICATIONS

- ▶ Flight Control & Communication Systems
- ▶ Radar & Navigation Systems
- ▶ Aircraft Management Systems
- ▶ Power Distribution & Management
- ▶ Electronic Engine & Power Controllers
- ▶ Wing & Engine Ice Protection
- ▶ Landing Gear & Brake Control
- ▶ In-Flight Entertainment & Cabin Equipment

SPECIFICATIONS

- ▶ MIL-DTL-38999
- ▶ MIL-DTL-83723
- ▶ MIL-DTL-83527
- ▶ MIL-DTL-24308
- ▶ MIL-DTL-83513
- ▶ MIL-C-26500
- ▶ MIL-C-81511
- ▶ MIL-C-26482
- ▶ ARINC 404
- ▶ ARINC 600
- ▶ ARINC 628
- ▶ ARINC 801
- ▶ AS/EN 9100
- ▶ HE 801
- ▶ HE 704
- ▶ NF C-UTE C93-424

Smiths Connectors is committed to developing advanced interconnect solutions for the latest generation of aircraft. Our technology is well-suited to address both the reliability required for flight critical systems as well as environmental concerns such as shock, vibration and extreme temperature ranges.

We deliver lightweight standard and custom connectors, featuring high density, high power, EMI/EMP protection, RF and high speed capabilities in line with the next generation of cockpit avionics, communication equipment, navigation systems and various other airframe applications.

Our continuous investment in technology and our commitment to excellence, allow us to offer innovative solutions that improve system performance and effectiveness while reducing consumption and environmental impact.



Signal & Power PCB

MHD, MDD & MDP Series

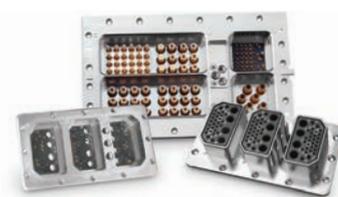
- ▶ Signal and HE 801 cavities for power and coaxial contacts
- ▶ Rugged metal or plastic shell
- ▶ ESA qualified: ESCC 3401/065
- ▶ High density: up to 400 signal contact positions



High Power

HBB Series

- ▶ Current rating 300 A and 500 A
- ▶ 1, 2 or 3 pole variants
- ▶ Push lock to mate connector
- ▶ Rugged metal shell
- ▶ 360° EMI/RFI shielding option
- ▶ Sealed IP69 and IP6K9K when mated



High Speed Data

Copper & Fibre Optic Solutions

- ▶ Standard 100 and 150 Ω quadrax and twinax contacts
- ▶ Micro twinax and quadrax connectors
- ▶ Rugged D-subminiature, ARINC and MIL standard quadrax and twinax
- ▶ ARINC 801, butt-joint, expanded beam, low loss fibre and plastic optical interconnects



RF Coax & Triax

MDCX, MDHC & SCX Series

- ▶ Compact size for high density packaging
- ▶ Low VSWR, up to 40 GHz
- ▶ High frequency coax size 8 and 12 contacts
- ▶ Constant 50 Ω impedance
- ▶ Standard coax and triax contacts



EMI Filter

Transient Protected Solutions

- ▶ Intermateable and interchangeable with standard non-filter connectors
- ▶ C, L and Pi style EMI filters
- ▶ Insertion loss simulation for actual circuit configurations
- ▶ TVS protection meeting the requirements of RTCA D160 section 22 up to level 5



Value Added

Solutions

- ▶ Custom and conductive insert arrangements
- ▶ Theme and variation on platform products
- ▶ Hermetic connector options
- ▶ Full custom design capabilities



CONNECTING GLOBAL MARKETS

Defence

APPLICATIONS

- ▶ Land Based
- ▶ Communication Equipment
- ▶ Future Combat Soldier
- ▶ Marine/Naval
- ▶ Aviation

SPECIFICATIONS

- ▶ MIL-DTL-38999
- ▶ MIL-DTL-83723
- ▶ MIL-DTL-83527
- ▶ MIL-DTL-24308
- ▶ MIL-DTL-83513
- ▶ MIL-DTL-55302
- ▶ MIL-C-26500
- ▶ MIL-C-81511
- ▶ MIL-C-26482
- ▶ ARINC 628
- ▶ ARINC 404
- ▶ ARINC 600
- ▶ ARINC 801

Smiths Connectors offers an extensive range of standard and custom interconnect solutions engineered to ensure the highest possible performance in demanding environmental conditions such as shock, vibration and extreme temperatures, which is mandatory for military and defence projects.

We work closely with our customers to design and manufacture fit-form-function connector solutions that achieve optimal system performance with low cost of ownership. Our robust, lightweight connectors combine our application experience with knowledge of electrical connectivity and cabling expertise.

Smiths Connectors' connectors for defence range from PCB, circular, EMI/EMP filter, high power, to mil/aero standard, high speed data, modular, rectangular and spring probe connectors.



Rugged PCB

KVPX Series

- ▶ Fully footprint compatible with VITA 46 /48
- ▶ Immune to shock and vibration fretting
- ▶ Faceplate protection of daughtercard pins for durable mating and maintenance
- ▶ Data rate performance up to 10 Gbps



High Density PCB

HDLP, HPH, C9394, C128, C160

- ▶ 0.5 and 0.6 mm hyperboloid contacts on 1.905 mm and 2.54 mm pitch
- ▶ 0.8 mm Tortac® contacts on 1.27 mm pitch
- ▶ High shock and vibration proof
- ▶ Shielded aluminium faraday cage
- ▶ Multiple styles of contact terminations



High Power

HBB Series

- ▶ Current rating: 300 A and 500 A
- ▶ Quick release latch to unmate
- ▶ Rugged metal shell
- ▶ Cable and panel mount variants
- ▶ 360° EMI /RFI shielding option
- ▶ 1, 2 and 3 pole variants



Spring Probe

Snaptac Series

- ▶ Push /pull mating with snap-on locking system
- ▶ HyperSpring® loaded contacts
- ▶ Sealed when both mated and unmated
- ▶ Lightweight, robust miniature connector
- ▶ Available in both circular (7, 13, 19 ways) and rectangular (12, 21, 30 ways)



High Speed Copper

MIL-DTL-38999 Connectors

- ▶ Data rates exceeding 2 Gbps
- ▶ Bandwidth: up to 3 GHz
- ▶ Ideal for reliable, high speed transfer of digital audio and video signals
- ▶ Shell sizes 9 through 25
- ▶ Houses size 8 quadrx contacts, 100 and 150 Ω



EMI Filter

Transient Protected Solutions

- ▶ Optimised filter style and value on receipt of signal type and data rate
- ▶ Improved shock and vibration resistance
- ▶ Low impedance control system
- ▶ Transient protection in accordance with RTCA D 160F waveform and level specifications



CONNECTING GLOBAL MARKETS

Industrial

APPLICATIONS

- ▶ Machinery
- ▶ Industrial Robots
- ▶ Factory Automation
- ▶ Conveyor Systems
- ▶ Laser & Welding Equipment
- ▶ Network Components
- ▶ Sensors & Actuators
- ▶ Servomotors & Drives
- ▶ Encoders
- ▶ Probers
- ▶ In-Circuit Board Test Systems
- ▶ Interfaces Direct Probe Contacting
- ▶ Hardware-in-the-Loop (HIL) Test
- ▶ Test & Measurement

SPECIFICATIONS

- ▶ DIN IEC 61984 (VDE 0627)
- ▶ DIN IEC 61076-2-101
- ▶ DIN IEC 60512
- ▶ RoHS

Smiths Connectors' interconnect technologies are used in industrial signal and power applications around the world. Smiths Connectors' extensive range of standard and custom solutions are designed to maintain the highest possible performance in demanding environmental conditions by combining rugged backshells with high reliability contact technologies and easy assembly procedures. Both customised solutions and platform products designed in modular or circular bodies guarantee a perfect fit within the industrial environment wherever a connector is needed to steer, control, power or monitor devices.

Smiths Connectors' offerings include application specific industrial interconnect solutions and cable assemblies, as well as high power interconnects requiring a significant degree of engineering and system integration. Our innovative solutions facilitate the increasing demands of an ever-changing marketplace.



Circular

M12, M23, M40 & M58 Series

- ▶ Signal and power options
- ▶ Metal and plastic housings
- ▶ Ground connection for power connectors
- ▶ 360° EMI shielding
- ▶ Machined and stamped contacts
- ▶ Stainless steel versions



Modular

L, H & N Series

- ▶ Mixed signal, power and coaxial modules
- ▶ Provides up to 300 A power
- ▶ Cable to chassis, cable to cable, and rack and panel
- ▶ Metal and plastic backshell with adjustable cable clamp and half turn quick disconnect jackscrew



Rectangular

REP Series

- ▶ 2, 6 and 12 way standard insulators
- ▶ PCB receptacle with straight or bent termination
- ▶ Voltage rating up to 400V
- ▶ Extended crimp contact capability
- ▶ Allows wire sections from 0.5 mm² to 2.5 mm²



Spring Probe

Customisable Solutions

- ▶ Custom connector designs
- ▶ Mixed signals and functionality designed into a single connector
- ▶ Surface mount, thru-hole and solder cup terminations
- ▶ Million cycle mechanical life



High Power

HBB Series

- ▶ Metal and plastic housings
- ▶ 300 A and 500 A current ratings
- ▶ Push lock to mate connector, quick release latch to unmate
- ▶ Cable and panel mount variants
- ▶ Gender reversible
- ▶ Polarised 360° EMI/RFI shielding option



Wiring Systems

Individual Cablings

- ▶ Wire, cable and harness interconnects
- ▶ Custom interconnect assemblies
- ▶ Pre-wired encoding connectors and adapters
- ▶ 100% testing
- ▶ Small to large volume capacity
- ▶ Overmoulding capabilities



CONNECTING GLOBAL MARKETS

Medical

APPLICATIONS

- ▶ MRI
- ▶ PET
- ▶ CT Scanning Equipment
- ▶ Digital X-Ray
- ▶ Ultrasound
- ▶ Patient Monitoring
- ▶ Home Health Monitors
- ▶ Portable Applications
- ▶ Catheters
- ▶ EEG/ECG Systems
- ▶ Invasive Probes
- ▶ Defibrillators
- ▶ Infusion Pumps
- ▶ Stimulators
- ▶ Dialysis Equipment

SPECIFICATIONS

- ▶ ISO 9001
- ▶ ISO 14001
- ▶ ISO 13485
- ▶ OHSAS 18001

Smiths Connectors is a vital partner to the medical device industry. Our interconnect solutions are used extensively in areas where integrity and reliability are essential to the well-being of a patient. Our products facilitate medical trends toward less invasive procedures, disposable components, embedded electronics, high cycle life and sterilisation.

Smiths Connectors' dedicated medical team offers complete and scalable end-to-end solutions designed to meet the specific requirements of the medical industry. Our platform products and tailored connectors include lightweight, high density, high power, EMI protection, RF performance, long cycle life, low contact resistance, shock and vibration immunity solutions and exceptional design flexibility.

Additionally, we provide a complete system including assembly from one source.



Circular Plastic

HyperGrip Series

- ▶ 5, 12, 19, 33 and 80 contact positions
- ▶ 1 A per contact
- ▶ IP67 sealed when mated
- ▶ Innovative customer keyability in six standard positions and five colour options
- ▶ EMI/RFI shielding option
- ▶ Push/pull latching design



Circular Plastic

D Series

- ▶ 3, 4, 5, 7, 9, 12 and 25 contact positions
- ▶ 1 to 8 A per contact
- ▶ Alignment provided by housing
- ▶ Crimp and solder cup contacts
- ▶ Recessed contact terminations
- ▶ Push button release for mating and unmating



Modular

L Series

- ▶ Mixed signal, power and coaxial modules
- ▶ Provides up to 200 A power
- ▶ Cable to chassis and rack and panel
- ▶ Plastic backshell with strain relief and half turn quick disconnect jackscrew
- ▶ Float mountable for blind mating



Mini-Modular

N & H Series

- ▶ 20 to 900 signal contact positions
- ▶ Removable signal and coax
- ▶ Cable to chassis, cable to cable, and rack and panel
- ▶ Metal backshell with adjustable cable clamp and half turn quick disconnect jackscrew
- ▶ Float mountable for blind mating



Non-Magnetic

Products

- ▶ Signal, power, coax, fibre optic and spring probe solutions available
- ▶ Designed to transmit video signals along with RF signals
- ▶ Easy in-field maintenance and serviceability
- ▶ Designed to breakaway at the coil to system cable interface



Value Added

Solutions

- ▶ Customised high quality cable assembly solutions
- ▶ Custom over-moulded connectors
- ▶ Integral electronics and PC boards
- ▶ Application specific connectors to mate with existing systems
- ▶ Signal, power, coax and fibre optic terminations



CONNECTING GLOBAL MARKETS

Oil & Gas

APPLICATIONS

- ▶ Geo-Streamers
- ▶ Off-Shore Exploration
- ▶ Land Seismic
- ▶ Vibrator Trucks
- ▶ 3D Geophysical Mapping
- ▶ Seismic Instrumentation
- ▶ Downhole Monitoring
- ▶ Measurement While Drilling (MWD)
- ▶ Logging While Drilling (LWD)
- ▶ Wireline
- ▶ Smart PIGs
- ▶ Subsea Trees
- ▶ Telemetry
- ▶ Data Logging
- ▶ Control Systems
- ▶ Smart Completions
- ▶ Electrical Submersible Pumps

Smiths Connectors is a leading supplier of high performance connector solutions for demanding applications found within the oil and gas industry.

We offer multiple contact technologies which are capable of withstanding the harsh environments of extreme temperature, pressure, shock and vibration, ensuring system quality and reliability.

Our rugged high power, signal and high speed products for the oil and gas markets are fluid resistant and rated to industry standard temperatures. Additionally, high pressure bulkhead connectors are offered for geophysical exploration and drilling. Smiths Connectors' in-house capabilities encompass design, development, manufacturing and testing.



HPHT

HPHT Series

- ▶ High pressure, high temperature sealing system
- ▶ Glass-to-metal or thermoplastic bodies dependent on pressure and temperature needs
- ▶ Gold/nickel plated contacts
- ▶ Shock and vibration resistant



Fibre Optic

ARINC 801 Series

- ▶ Return loss -50 dB single mode
- ▶ Low insertion loss: 0.3 dB max. mated pair
- ▶ Robust solution designed for high shock and vibration environments
- ▶ PC or APC ferrule endface
- ▶ Easy cleaning



High Power

HBB Series

- ▶ Bayonet lock to mate for easy opening and closing
- ▶ Rugged metal and plastic versions available
- ▶ IPX7 sealing when mated
- ▶ 360° EMI/RFI shielding
- ▶ Temperature range: -55°C to 150°C



Spring Probe

Customisable Solutions

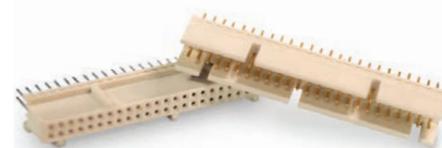
- ▶ Low profile, high compliance ratio
- ▶ Custom connector designs
- ▶ Mixed signals and functionality designed into a single connector
- ▶ Surface mount, thru-hole and solder cup terminations
- ▶ Million cycle mechanical life
- ▶ Suited for blind mate applications



High Frequency Coax

MDCX, MDHC & MHC Series

- ▶ Hyperboloid or bifurcated socket contact technology used for both inner and outer socket contacts
- ▶ Low VSWR < 1:3:1 up to 30 GHz
- ▶ True 50 Ω impedance
- ▶ Robust for harsh environments



High Density PCB

KA & KFT Series

- ▶ Fine pitch: 0.05" (1.27 mm) spacing
- ▶ 2 and 3 contact rows
- ▶ Extensive variety of termination options and guides
- ▶ Fretting proof
- ▶ Glass filled LCP insulation



CONNECTING GLOBAL MARKETS

Railway

APPLICATIONS

- ▶ Automatic Braking Systems
- ▶ Automatic Train Control
- ▶ Operation & Traffic Control
- ▶ High Speed Trains & Main Lines
- ▶ Intercity Trains & Metros
- ▶ ERTMS /ETCS
- ▶ Computer-Based Interlocking
- ▶ Passenger Information & Security
- ▶ In-Train Entertainment

SPECIFICATIONS

- ▶ NF F 61-030; 032
- ▶ NF F 16-101; 102
- ▶ NF-C 93 421
- ▶ IEEE-1101.2-92
- ▶ IEC 1076-4 101
- ▶ DIN 41612
- ▶ DIN 43652
- ▶ HE 501
- ▶ HE 704
- ▶ UTE C93-425
- ▶ RoHS
- ▶ EN 45545-2
- ▶ EN 50467
- ▶ EN 61373

Based on the expertise gained over the last 50 years, Smiths Connectors has become the supplier of choice to ensure safe, efficient and reliable passenger and freight transportation all around the world. Our experience in signal, power and high speed connectors for rolling stock, signalling and infrastructure applications result in custom, reliable solutions for our customers.

We offer proven quality and innovative, environmentally friendly solutions conforming to the primary international railway standards. We constantly adapt our connectors to tomorrow's technologies while meeting customer requirements. Our comprehensive range of products is optimised to mitigate the effects of shock, vibration and fretting corrosion which is key in rail applications.

Typical applications include ERTMS/ETCS, high speed trains, metros, computer-based interlocking, automatic train control, automatic braking systems, operation and traffic controls.



Modular Power

Transformer Series

- ▶ Building block tailoring system
- ▶ Up to 4 poles, supporting 700 A
- ▶ HPC contact technology in aluminium or copper
- ▶ Cross section cables from 25 mm² to 240 mm²
- ▶ Compliant with fire and smoke standards



Circular Metal

M12 Series

- ▶ Up to 8 contact positions
- ▶ Compact IP67 metal shell
- ▶ 360° EMI shielding
- ▶ Hyperboloid contact technology
- ▶ Compliant with fire and smoke standards
- ▶ A and D coded versions



Modular

L Series

- ▶ Mixed signal, power, data and coaxial modules
- ▶ Provides up to 200 A power
- ▶ Cable to chassis and rack and panel
- ▶ Gold plating contacts with a large crimp section
- ▶ Numerous termination styles



Circular Plastic

D Series

- ▶ Up to 25 contact positions
- ▶ 1 to 8 A per contact
- ▶ Alignment provided by housing
- ▶ Crimp and solder cup contacts
- ▶ Recessed contact terminations
- ▶ Push button release for easy one-hand mating



Heavy Duty

F Series

- ▶ Mixed signal, power, data and fibre optics
- ▶ IP68 heavy duty aluminium shell
- ▶ Suitable for EN Railway cables
- ▶ Removable and interchangeable modules
- ▶ Complete solution with cable



Rack & Panel

LHS Series

- ▶ Flat floating connector, ideal for blind mating
- ▶ Mixed power, signal, coaxial and quadrx contacts
- ▶ Compliant with NF F 61-032 standards
- ▶ High contact density, up to 70 signal contacts



CONNECTING GLOBAL MARKETS

Semiconductor

APPLICATIONS

- ▶ Wafer Level Test
- ▶ Area Array
- ▶ Peripheral Package Test
- ▶ Strip Test
- ▶ Package on Package (3D) Test

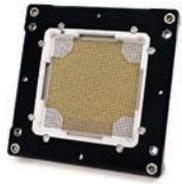
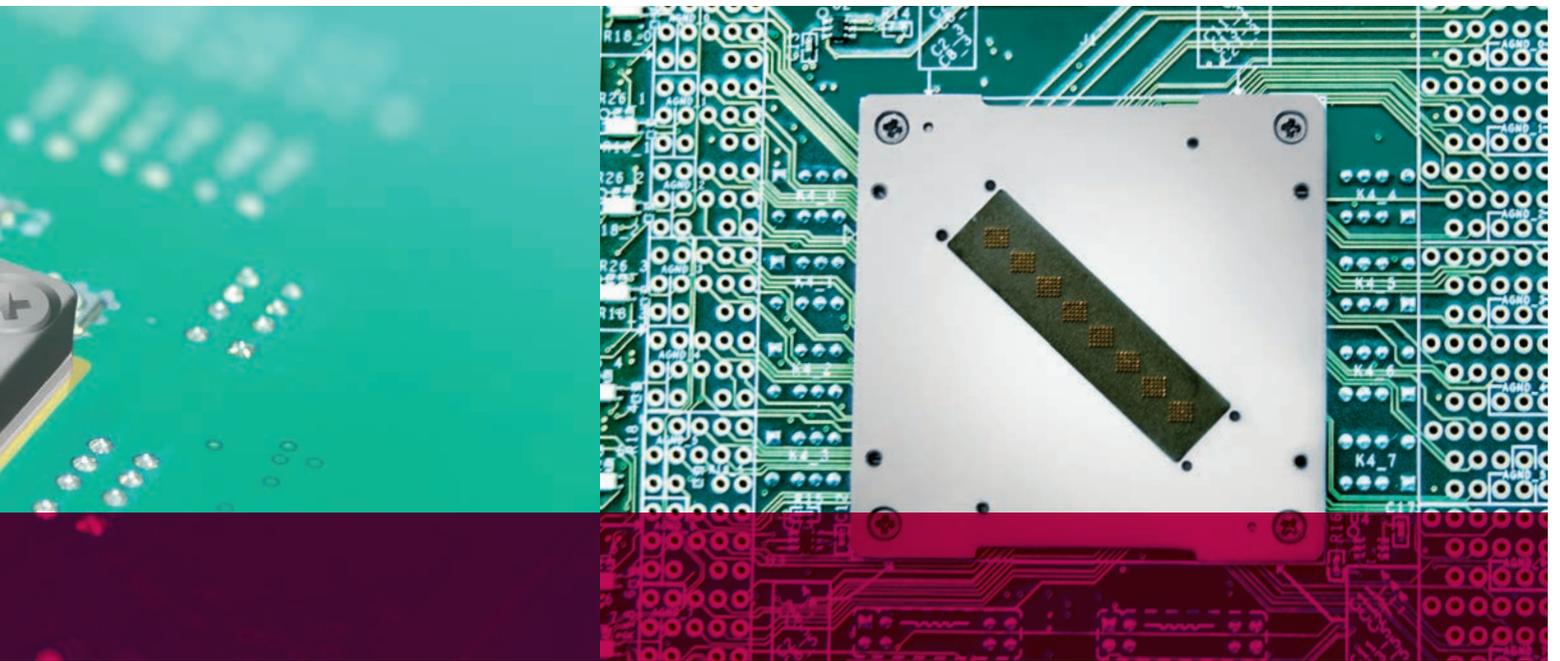
SPECIFICATIONS

- ▶ ISO 9001
- ▶ ISO 14001
- ▶ OHSAS 18001

Smiths Connectors is the premier designer and manufacturer of test solutions for the semiconductor test market. Our socket and probe card products utilize IDI contact technology to provide unsurpassed quality and reliability in testing applications.

Smiths Connectors is a pioneer in semiconductor contact technology with products supporting bandwidths up to 40 GHz and on pitches as fine as 200 microns.

We are an essential supplier to key global developers across the industry. Our engineering, development and technical expertise allows us to support automated, system level and development platforms for area array and peripheral packages as well as wafer level, strip and package on package (3D) test.



Standard Array

Test Sockets

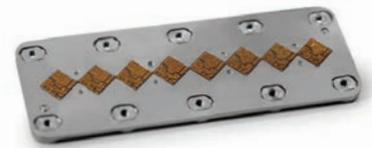
- ▶ Precision alignment calculation
- ▶ Floating device nest
- ▶ Customisation and flexibility
- ▶ Z-axis tolerance stacking analysis



Peripheral Tri-Temp

Celsius Test Sockets

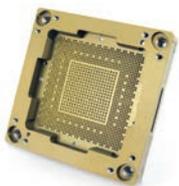
- ▶ Resistance < 20 mΩ
- ▶ Bandwidths > 10 GHz @ -1 dB
- ▶ Wiping action ensures good device contact with minimal board side scrub
- ▶ Minimal cleaning required
- ▶ Patented technology



Standard WLCSP

Micro Series Probe Heads

- ▶ Suited for pitches 300 to 500 μm
- ▶ High degree of parallelism
- ▶ High density
- ▶ Stable C-res over 750K cycles
- ▶ Excellent co-planarity



High Speed Array

DaVinci Test Sockets

- ▶ 50 Ω controlled impedance
- ▶ High speed: > 40 GHz / 20 Gbps
- ▶ Outstanding thermal properties
- ▶ Extreme rigidity, superior durability
- ▶ Developed for ≥ 0.8 mm pitch
- ▶ Improved coaxial structure
- ▶ Patented technology



PoP Array

Euclid Test Sockets

- ▶ Memory-bearing, memory-less and manual sockets
- ▶ Advanced alignment features for both top and bottom devices
- ▶ Refined analysis tools that guarantee production-ready solutions
- ▶ Controlled impedance available for maximum signal integrity



WLCSP

Monet Probe Heads

- ▶ Ideal for pitches ≥ 200 μm
- ▶ Superior signal integrity
- ▶ Short signal path, < 3 mm
- ▶ Stable C-res over 750K cycles
- ▶ High degree of parallelism
- ▶ Patented technology



CONNECTING GLOBAL MARKETS

Space

APPLICATIONS

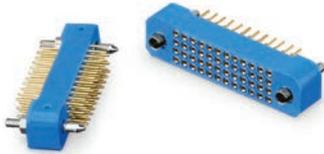
- ▶ Satellite
- ▶ Propulsion
- ▶ Solar Panels
- ▶ Radiation Probes
- ▶ Space Telescopes
- ▶ Launchers
- ▶ Communications
- ▶ Mobility & Navigation Systems
- ▶ Docking Systems
- ▶ Ground Stations
- ▶ Mars Rover

SPECIFICATIONS

- ▶ ESA/SCC 3401/016 & 017
- ▶ ESA/SCC 3401/039
- ▶ ESA/SCC 3401/065
- ▶ ESA/SCC 3401/076
- ▶ NASA EEE-INST-002
- ▶ NASA GSFC S-311-P-822, 826 & 835
- ▶ SSQ22680 & 681
- ▶ S-311-P-626
- ▶ S-311-P-826
- ▶ S-311-P-835
- ▶ S-311-P-822
- ▶ MIL-DTL-55302

Smiths Connectors' engineering and application specific expertise results in the design and manufacture of industry-leading connectors, contacts and systems that ensure optimal performance, reliability, durability and safety in space-related operating environments. Smiths Connectors is an approved vendor for international space agencies including NASA, ESA and CSA, and maintains strict ISO certifications and quality assurance programs.

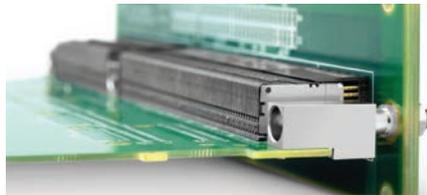
From planetary rovers to space stations, Smiths Connectors' broad range of interconnect solutions provide insurance of continuous connection within environments where severe shock and vibration, corrosive atmosphere and intense thermal deviations are prevalent.



High Density PCB

55302 Compliant Connectors

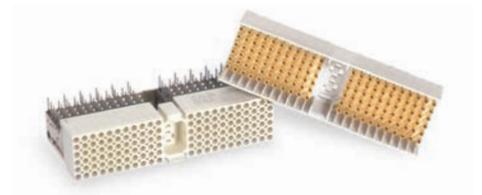
- ▶ Over 2,500 configurations
- ▶ ESA qualified: ESCC 3401 039
- ▶ Guiding devices with or without polarisation (16 keys available)
- ▶ Wire wrap, solder bucket and through-board solder termination styles
- ▶ 5,000 mating cycles



Rugged PCB

KVPX Series

- ▶ Fully footprint compatible with VITA 46/48
- ▶ Immune to shock and vibration fretting
- ▶ Faceplate protection of daughtercard pins for durable mating and maintenance
- ▶ Data rate performance up to 10 Gbps



Compact PCB

2 mm / cPCI Series

- ▶ Qualified to NASA GSFC: S-311-P-822
- ▶ Rugged implementation of the Compact PCI standard
- ▶ Hyperboloid contact technology
- ▶ COTS adapters and solder fixtures
- ▶ MPC keying hardware available



High Speed Copper

Rugged D-Subminiature Connectors

- ▶ Designed to ground the outer shield of a twinax/quadrax contact directly to the connector shell
- ▶ Multi-point contact engagement for superior EMI shielding
- ▶ High durability up to 1,000 mating cycles
- ▶ 100 and 150 Ω quadrax and/or differential pair twinax contacts



Modular Power

MRG Series

- ▶ Mate detection system
- ▶ Custom single pole, dual pole, tri-pole and multi-pole configurations
- ▶ Common amperage-rated moulded components
- ▶ Up to 1,000 A current carrying capacity



Modular

L & N Series

- ▶ Mixed signal, power and coaxial modules
- ▶ Up to 200 A power
- ▶ Cable to chassis and rack and panel
- ▶ Plastic backshell with strain relief and half turn quick disconnect jackscrew
- ▶ Float mountable for blind mating

SMITHS CONNECTORS GLOBAL SUPPORT

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