



UNRIVALLED PERFORMANCE IN CRITICAL ENVIRONMENTS SOLVES INTERCONNECT CHALLENGES

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From satellites and next generation aircrafts to life-saving defibrillators and railway systems, connectivity requires superior quality products that offer great performance and optimal reliability under extreme temperature, mechanical shock and vibration, difficult access, water or dirt ingress, and fretting corrosion.

To ensure reliable signal integrity by keeping the product undamaged through a long-life cycle, the manufacturer itself needs to guarantee three key aspects:

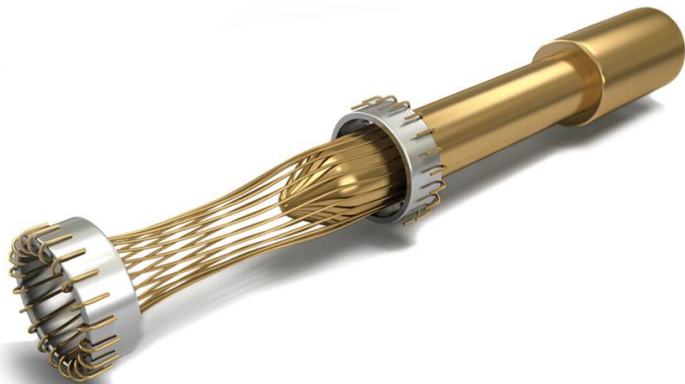
1. Selection of rugged and appropriate product materials

2. Proven technical characteristics of the product technology
3. Product compliance with the main international standards for the relevant market

Choosing the right product materials is an important step toward ensuring that the connector will provide a stable connection despite being subjected to a variety of harsh conditions. Connectors that are lightweight and compact have the added benefits of cost- and space-savings.

A connector with very low contact resistance ensures the minimum temperature rise at high currents. The peak temperature of the insulator material is

normally the primary limiting factor in demanding conditions. Materials must be chosen to support the widest ambient temperature range (from -55°C to 125°C) and withstand temperature peaks during assembly, even those generated during vapor phase soldering, while complying with the rail market requirements for fire and smoke.



The shape of the contact sleeve in Smiths Interconnect's Hypertac socket is formed by hyperbolically arranged contact wires, which align themselves elastically as contact lines around the pin to provide multiple linear contact paths, giving the product immunity to shock and vibration.

CONNECTORS FOR RAIL AND INDUSTRY

Connectors must meet the main European railway standards (EN45545-2, NF F61030, EN50155:2017, STM-S-001ind.D, and more) and comply with MIL-C-28748 and MIL-STD-202-301 standards and EIA and IEC standards for contact resistance and environmental testing.

To gain assurance that the connector's quality is suitable for current rail and industrial standards and that it can maintain exceptional connectivity for devices in high-speed trains or other harsh environment markets, it must hold up through tests of reasonable duration that simulate the service conditions seen throughout its expected life. These tests include endurance, contact retention and resistance, insertion loss, salt spray, dry heat bake, and fire resistance.



Smith's Interconnect's new Intercompact series is a lightweight, compact signal and Ethernet PCB connector specifically designed to provide a stable connection in demanding rail and industrial applications. The Intercompact series has been qualified in compliance with the main European railway standards.

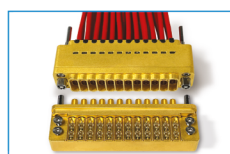
CONNECTORS FOR SPACE

Space applications are a perfect example of the importance of unrivalled performance in critical environments. Interconnect solutions for space must meet the reliability and efficient design needs of today's satellite and spacecraft challenges. Space satellites are moving away from RF analog-based

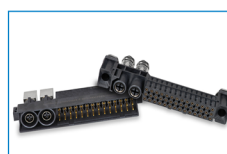
smiths interconnect

High Speed Interconnect Solutions for Critical Environments

Ultra-High Density Space Qualified Interconnect System for Data Rate Applications up to 10 Gbps per Channel



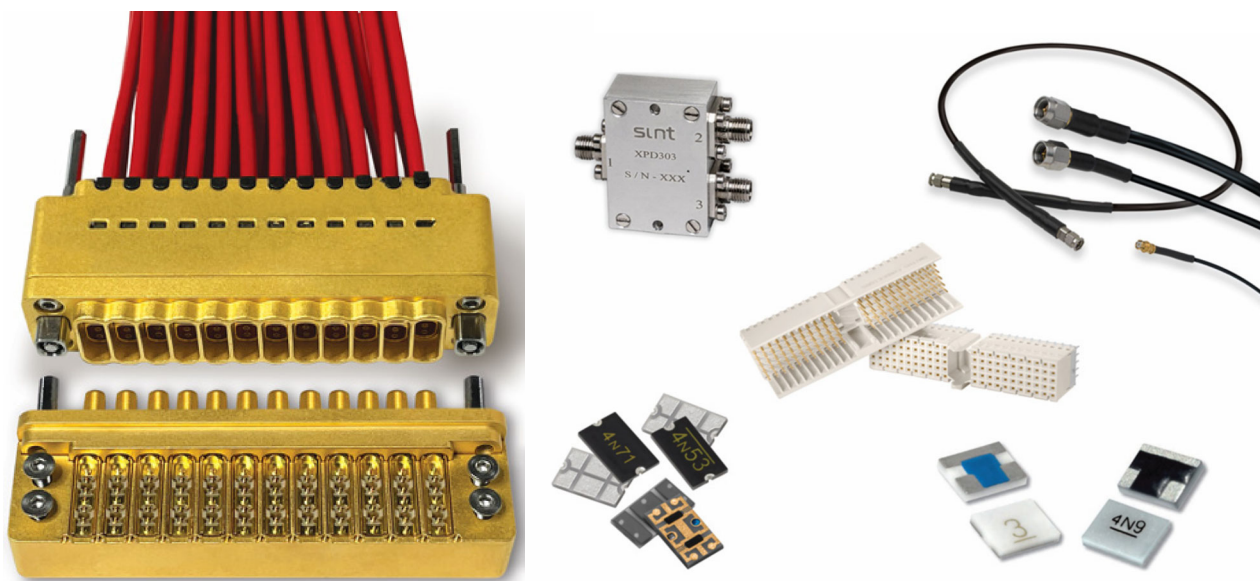
NXS Series



Intercompact Series

Signal and Ethernet Connectors for PCB to PCB and Floating Mounting Rack and Panel Applications

Learn more > smithsinterconnect.com



Smiths Interconnect's NXS Series is an advanced high-speed, high-density interconnect equipped with the proven Hypertac hyperboloid contact technology to withstand data rate application requirements up to 10 Gb/s (per channel), including extreme levels of vibration, shock, and climatic testing above 2100 G. The NXS Series is designed in a robust construction with 4 or 12 high speed quadrx modules containing 2 dual twinax at 100 Ω each pair. This ultra-high contact density and compact form factor allow the customer to make a 90° transition within a very small footprint. It is blind mateable, hot pluggable, with ultra-low mating forces, and low outgassing materials.

payloads that provide low-speed telecommunication signaling to a new Digital Transparent Processor (DTP) architecture for high throughput satellites. DTP architectures increase the demand for rugged and higher speed connectivity.

Satellite manufacturers often use large singular printed circuit boards featuring very high value components. The solderless PCB mount design that the NXS Series provides, for example, can be placed and replaced with very low risk to the customer's board, reducing the cost of ownership. The connector is mounted after reflow and has no impact on nearby components. Each product is engineered using 3D electromagnetic simulation (EM) software to provide excellent performance in a total thin film process.

Smiths Interconnect's SpaceNXT initiative is a full range of higher reliability products for next-generation space applications with a lower cost of ownership.

Meeting those industry needs requires high-speed, high-density interconnects that can provide next-generation data on demand and can withstand high data rate application requirements, including extreme levels of vibration, shock, and climatic testing above 2100 G. To be qualified, they must meet rigorous testing and performance criteria ESCC 3401, ESCC 3402, ECSS-Q-ST-70C, ECSS-Q-ST-70-02, ECSS-Q-ST-70-08C, ECSS-Q-ST-70-38C, and ECSS-Q-70-71.

The selection of rugged, qualified, and dependable materials combined with proven, reliable, and flexible contact technology and full compliance to industry standards is critical to creating successful connectivity solutions for the challenges presented by space.

Visit [Smiths Interconnect - High Reliability Connectors Solutions](#) to learn more.