SPACE PRODUCTS

MISSION-CRITICAL RELIABILITY

Smaller, Lighter, High-Reliability Products Designed to Optimize Your TE Interconnect Solutions and Built to Withstand the Extreme Environments of Space
Innovative and reliable solutions from TE Connectivity (TE) meet the most demanding applications in the space industry with multiple products to address applications in satellites, spacecraft, launch vehicles, and ground support equipment.

TE’s products are engineered for high quality and high performance. Our agency and integrator-approved products are the cornerstone of our portfolio. We offer a wide variety of products designed to be space compatible. These products are ruggedized and manufactured with materials worthy of space flight and challenging terrestrial applications. Success is the only option in space applications.

TE’s space products have established themselves as dependable, durable, and reliable. Whether it is interconnects, wire, fiber optics, harnessing materials and devices, high performance relays, contactors and solenoids, switches or identification, we can assist with the enabling technology for your space applications. Our high-performance solutions give you the features you need in every space mission:

**Reliability**
- Very wide temperature ranges
- Low outgassing
- Radiation resistance

**Reduced SWaP**
- Smaller size
- Lighter weight

TE space solutions have been approved by the major space agencies:
- ESA (European Space Agency)
- ISRO (Indian Space Research Organization)
- JAXA (Japan Aerospace Exploration Agency)
- NASA (National Aeronautics and Space Administration)
Space Products

CONNECTORS AND RF PRODUCTS

DEUTSCH DBAS Series Connectors

**Ultra-Rugged**
- Withstand high shock and vibration levels

**Optimized Performance**
- Supports data rates to 10 Gb/s
- Compliant to VITA 46 standards
- Modularity and flexibility with a pinless wafer design

**Fortis Zd Backplane Connectors**

**High Speed**
- Allows 10+ Gb/s data rates

**High Performance**
- Extreme mechanical and electrical performance
- Modular design allows for user configurability
- Space-compatible materials

**Mezalok Mezzanine Connectors**

**Compatible**
- 114-position, compatible with XMC footprint
- 60 and 320-position versions also available

**Reliable**
- Mini-box contacts provide 4 points of contact
- LCP plastic housings for excellent thermal stability

**DEUTSCH DFE Series Bayonet Coupling Connectors**

**Rugged**
- High reliability, with hermetic, pyrotechnic, and custom configurations
- 500-mating-cycle durability
- -65°C to +200°C

**Adaptable**
- Signal, power, and coaxial contacts
- Meets ESA SCC 3401, Ariane 5, and Vega requirements

**DEUTSCH In-Line Connectors**

**Tough**
- Resistant to most fluids and solvents
- 1500-mating-cycle durability
- -65°C to +175°C temperature range

**Easy**
- Individual plug shells quickly mate or unmate from a stack

**DEUTSCH DSC Series Connectors**

**SWAP Reduction**
- Space and weight-saving micro screw coupling
- High performance
- Based on 38999 Series II connectors

**Flexible**
- Hermetic, EMI shielded, cryogenic, and custom configurations
- Meets Ariane 5 and Vega requirements

**DEUTSCH Military Subminiature-D Connectors**

**Weight-Saving Design**
- Ultra-lite connector features up to 20% weight savings
- Designed for input/output and product break harnessing

**Capable**
- Improved EMI performance
- NASA qualified designs

**MULTIGIG RT 2-R Connectors**

**Ultra-Rugged**
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**AMPLIMITE Military Subminiature-D Connectors**

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**DEUTSCH DBAS Series Connectors**

**High Reliability**
- Easy and secure locking with a circular push/pull coupling ring for 100% mating
- -55°C to +200°C

**Versatile**
- Hermetic, rackable, lanyard, dead-face, cryogenic, and custom configurations
- Meets ESA SCC 3401, Ariane 5, and Vega requirements

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**Space Products**

**CONNECTORS AND RF PRODUCTS**

**Quadrex Connectors, Contacts, and Cable**

**High Density, High Speed**
- Up to 10 Gb/s (over Cat 6A cable)
- 2 differential pairs in a size 8 contact shell

**Compatible**
- Inserts for many popular aerospace connectors

**MTC Connectors**

**Save Space and Weight**
- Lightweight materials for weight savings
- Reliable, low profile, and stackable

**Rugged Reliability**
- Environmentally sealed
- EMI accessories available

**Micro-D Nanominiature and Microminiature Connectors**

**Rugged Reliability**
- High shock and vibration ratings
- Wide temperature range (-200˚C to +200˚C)
- Lightweight and space-proven
- Low outgassing

**Raychem MIL-STD-1553B Data Bus Components**

**SWaP Reduction**
- Conserve space, weight, and power consumption
- Tin/nickel-plated metallic parts
- Baked silicone rubber components

**Optimum Performance**
- Low outgassing tubing
- Low-fluoride-outgassing cable
- Enhanced temperature range and radiation resistance

**DEUTSCH D-PASO Series Rectangular Connectors**

**Capable**
- Compact, ultra-flat designed for solar arrays
- Size 20 contacts: 7.5 A current rating

**Robust**
- High reliability, high density
- Extreme temperature range of -175˚C to +130˚C

**RF Connectors, Cable, and Cable Assemblies**

**More Choice, More Performance**
- Standard, subminiature, and microminiature interfaces and frequencies
- Flexible and semi-rigid cable
- Qualified to MIL-PRF-39012, MIL-DTL-83517, MIL-PRF-55339

**STRADA Whisper High Speed Backplane Connectors**

**High Speed**
- Transfers data at speeds of 25 Gbps and offers unparalleled scalability up to 112 Gbps

**Reliability**
- Industry leading crosstalk performance
- Robust signal pins and ground shields
- Simple upgrade path

**Terminals and Splices**

**Comprehensive Selection**
- High temperature
- Radiation resistant
- Gold, silver, nickel and tin platings available
**Space Products**

### FIBER OPTICS

#### DEUTSCH RSC Connectors
**Rugged**
- Single-channel connectors
- Manufactured from ARCAP alloy for corrosion resistance
- Anti-vibration coupling mechanism

**Versatile**
- RSC: M29504/4 and /S termini
- RSC EB: EB16 termini
- RSC-v: APC or tunable interface

#### PRO-BEAM EB16
**Durable**
- No wear on fiber optic interface
- Vibration and dirt resistant

**Low-Loss Performance**
- Low sensitivity to thermal fluctuations
- Stability over life of system

**Easy**
- Fits standard size 16 cavity
- Simplified cleaning process

#### DEUTSCH MC Series Physical Contact Connectors
**Sustained High Performance**
- Withstands a wide range of environmental conditions
- Compact 1.25-mm precision zirconia ceramic ferrules
- Extensive range with simple termination process and tooling

### WIRE AND CABLE

#### SPEC 55 Series Raychem Space Wire
**Save Space and Weight**
- Smallest and lightest performance wire

**Capable**
- -85°C to +200°C
- Low temperature flexibility
- Mechanically tough, low outgassing
- Excellent resistance to chemicals
- Minimizes effects of high-frequency EMI

#### Cheminax Series Raychem Controlled Electrical Cable
**High Performance**
- Low capacitance and attenuation
- High velocity of propagation
- Rated -65°C to +200°C

**Adaptable**
- Lightweight, small size
- Suitable for demanding video and RF applications
- Highly flexible

#### Raychem Space Wire and Cable
**High Performance**
- 125°C, 150°C, or 200°C temperature ratings
- Cross-linked “non-melting” insulation system
- Low fluorine insulation system and low outgassing

**Qualified**
- NASA and ESA-qualified designs

#### Raychem High-Speed Copper Cable
**Rugged Choices**
- Material choices to match application requirements
- Shielded and unshielded
- Low-smoke, zero-halogen versions for increased safety

**High-Speed Protocols**
- Configurations to support various Ethernet, Quadax, IEEE 1394, USB, Fibre Channel, etc.
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HARNESSING COMPONENTS

POLAMCO Backshells
**Full Range**
- Unshielded, shielded, and rugged conduit systems
- Rectangular and circular configurations
- Straight, 45, or 90-degree options

**Rugged**
- Versions to match any harsh environment

HexaShield Series
Raychem Backshells

**High Performance**
- 360° shield termination system for shielded wires and cables
- Excellent mechanical and environmental resistance
- Efficient strain relief

**Versatile and Flexible**
- Aluminum, stainless steel, and composite versions available
- Simple installation and easy re-entry

Raychem Adhesives and Sealants

**Versatile**
- Matched to application requirements
- Matched to Raychem molded parts and tubing

Raychem Heat Shrinkable Tubing

**Excellent Performance**
- Space-grade versions for low outgassing
- With or without adhesive lining
- Wide range of sizes, shrink ratios, and environmental resistance

Raychem High-Temperature Devices

**Reliable**
- Heat shrinkable technology for one-step shield
- Transparent insulation sleeve saves time during installation
- Provides strain relief with ratings of up to 150°C
- Minimal tools required to achieve connection, insulation and protection
- Inhouse design and quality controlled process offers reliability and traceability

Raychem Molded Parts

**More Choice**
- Available to fit TE backshell adapters

**Protects**
- Provides excellent strain relief at connector cable terminations

Raychem Sealed Harnesses

**Lightweight and Tough**
- Small, lightweight, rugged, and environmentally sealed

**Customized**
- Designs are customer specific, tailored to help meet your strictest requirements

**Complete**
- Harnesses include TE cables, connectors, backshells, tubing, molded parts, and adhesives

Raychem Sealed Harnesses

**HarnWare Harness Design Software**

**Powerful**
- Speeds and simplifies harness design

**Comprehensive**
- Component selection
- Layout
- Assembly drawings
- Bills of material

HARNESSING COMPONENTS
Space Products

HIGH-PERFORMANCE RELAYS AND CONTACTORS

<table>
<thead>
<tr>
<th>KILOVAC High Voltage Relays</th>
<th>HARTMAN N-Series Relays</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Space and Weight Savings</strong></td>
<td><strong>High Reliability</strong></td>
</tr>
<tr>
<td>• Small size and weight for given power rating</td>
<td>• Magnetic latch or side stable</td>
</tr>
<tr>
<td><strong>Robust and Versatile</strong></td>
<td>• Stainless steel-welded construction</td>
</tr>
<tr>
<td>• High resistance to shock, vibration, and temperature extremes</td>
<td>• Hermetically sealed</td>
</tr>
<tr>
<td>• Low, stable contact resistance over relay life</td>
<td><strong>Flexible Performance</strong></td>
</tr>
<tr>
<td>• Usable in RF devices</td>
<td>• -55˚C to +125˚C</td>
</tr>
<tr>
<td></td>
<td>• Multiple mounting and auxiliary contact configurations</td>
</tr>
<tr>
<td></td>
<td>• Main contact current ratings 30 to 125 A</td>
</tr>
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<thead>
<tr>
<th>CII Mid-Range Relays</th>
<th>DRI Mid-Range Latching Relays</th>
</tr>
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<tbody>
<tr>
<td><strong>Comprehensive Selection</strong></td>
<td><strong>Versatile</strong></td>
</tr>
<tr>
<td>• Qualified to a variety of Mil Specs</td>
<td>• 5A to 25A product</td>
</tr>
<tr>
<td>• Designed to perform in a wide range of extreme environments</td>
<td>• Internal voltage suppression options</td>
</tr>
<tr>
<td><strong>Flight Ready</strong></td>
<td><strong>Reliable</strong></td>
</tr>
<tr>
<td>• Hermetically sealed</td>
<td>• Qualified to M83536</td>
</tr>
<tr>
<td>• High shock and vibration ratings</td>
<td>• Hermetically sealed</td>
</tr>
<tr>
<td></td>
<td>• Magnetic latching assures improper switching</td>
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<thead>
<tr>
<th>CII DC Solid State Relays</th>
<th>Power Distribution Units</th>
</tr>
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<tbody>
<tr>
<td><strong>Rugged Reliability</strong></td>
<td><strong>Smaller, Lighter</strong></td>
</tr>
<tr>
<td>• Optically coupled input/output</td>
<td>• Optimize floor space weight savings over discrete installations</td>
</tr>
<tr>
<td>• Hermetically sealed</td>
<td><strong>Customized</strong></td>
</tr>
<tr>
<td>• High shock and vibration resistance</td>
<td>• Accommodate whatever bill of material and point-to-point layout the application requires</td>
</tr>
<tr>
<td><strong>Versatile</strong></td>
<td>• Decades of experience designing custom panel assemblies</td>
</tr>
<tr>
<td>• Some relays incorporate short circuit protection and status</td>
<td></td>
</tr>
<tr>
<td>• Compatible with a wide range of extreme environments</td>
<td></td>
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<tr>
<th>KILOVAC Contactors</th>
<th>Composite Enclosures</th>
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<tr>
<td><strong>Rugged Reliability</strong></td>
<td><strong>Weight-Saving Rugged Performance</strong></td>
</tr>
<tr>
<td>• Lightweight high power DC or high-voltage DC</td>
<td>• Light weight — up to 50% lighter than aluminum</td>
</tr>
<tr>
<td>• Hermetically sealed, available with a variety of electrical configurations, power ratings, voltage ratings, and mounting styles to make your electrical system more reliable and capable</td>
<td>• Extremely rugged and corrosion resistant</td>
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<tr>
<td></td>
<td><strong>Customizable</strong></td>
</tr>
<tr>
<td></td>
<td>• Conductive composites and plating options for grounding/EMI shielding</td>
</tr>
<tr>
<td></td>
<td>• Highly customizable with integrated wire traces, antennas, and connectors</td>
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INTEGRATED SOLUTIONS
CONNECT WITH US
We make it easy to connect with our experts and are ready to provide all the support you need. Visit te.com/support to chat with a Product Information Specialist.

QUALITY STARTS WITH THE RIGHT APPLICATION TOOLING
Creating a quality crimp connection is essential to delivering high performance and reliability in extreme environments. From low to high volume wire processing, TE has you covered with a full range of application tooling and a global field service team.

• View all application tooling
• Connect with our experts to find the right tool for your application