



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

Solutions for Space

Proven Technology. Engineered for Reliability.

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)

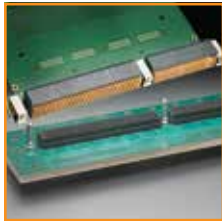
TE Components . . . TE Technology . . . TE Know-how . . .
AMP | AGASTAT | CII | HARTMAN | KILOVAC | MICRODOT | NANONICS | POLAMCO | Raychem | Rochester | DEUTSCH
SEACON Phoenix | LL Rowe | Phoenix Optix | AFP | SEACON

Get your product to market faster with a smarter, better solution.





CONNECTORS AND RF PRODUCTS



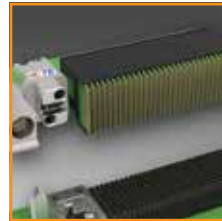
MULTIGIG RT 2-R Connectors SpaceVPX

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



Fiber-Optic Modules (VITA 66)

Full Range of Choices

- ARINC 801, expanded beam, or MT termini
- MT: extreme density with up to 48 fibers/module
- ARINC 801: excellent single-mode performance
- Expanded beam: noncontacting interface for frequent matings/unmatings



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



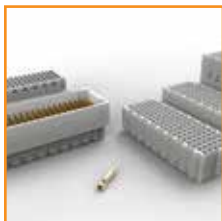
DEUTSCH DFE Series Bayonet Coupling Connectors MIL-DTL-26482 Series 2

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



Mezalok Mezzanine Connectors (VITA 61)

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 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



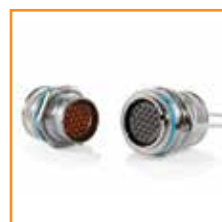
AMPLIMITE Military Subminiature-D Connectors

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



DEUTSCH DBAS Series Connectors MIL-C-26482, SAE AS81703

High Reliability

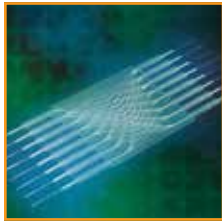
- Easy and secure locking with a circular push/pull coupling ring for 100% mating
- -55°C to +200°C

Versatile

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



CONNECTORS AND RF PRODUCTS



Optical Flex Circuits

Versatile

- Symmetrical and asymmetrical designs
- Tight bend radii
- Very low insertion loss

Highly Customizable

- Up to 6 levels of fiber crossings in a single layer
- Up to 12 layers
- Range of packaging options for environmental conditions



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



Quadrax 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



PRO-BEAM Expanded-Beam Connectors

Robust

- Physically noncontacting mating of SMF and MMF

Versatile

- Three sizes: Senior, Junior, and Mini
- Size 16 termini also 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



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



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



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



AFP Fiber Optic Penetrators

Space Saving

- Up to 24 fibers
- Ultraminiature packaging 1.5 to 20 mm diameter

Reliable

- Hermetic glass sealing technology
- Rated up to 20,000 psi



AFP Hybrid Penetrators

Space Saving

- Electrical and optical in one device
- Compact packaging
- Wide range of configurations and contact counts

Reliable

- Hermetic sealing



CONNECTORS AND RF PRODUCTS



MTC Connectors

Save Space and Weight

- Lightweight materials for weight savings
- Reliable, low profile, and stackable

Rugged Reliability

- Environmentally sealed
- EMI accessories available



Terminals and Splices

Comprehensive Selection

- High temperature
- Radiation resistant
- Gold, silver, nickel and tin platings available

WIRE, CABLE AND DEVICES



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, QuadraX, IEEE 1394, USB, Fibre Channel, etc.



Carbon Nanotube Cables

Extremely Light Weight

- CNT shields and conductors
- Weight savings >50% compared with copper
- Optimized for crimp and solder termination
- Hybrid copper/CNT versions

Continually Improving

- Dedicated CNT wire and cable pilot plant
- MIL-STD-1553B cables for 2015 and higher data rates to follow



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



HARNESSING



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



Raychem Adhesives and Sealants

Versatile

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



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 High-Temperature Devices

Reliable

- Provides environmentally protected shield termination on cables
- +150°C or +200°C temperature rating
- Insulates, strain relieves, and protects terminations



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



HarnWare Harness Design Software

Powerful

- Speeds and simplifies harness design

Comprehensive

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



Raychem Molded Parts

More Choice

- Space-grade versions for low outgassing
- 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



HIGH-PERFORMANCE RELAYS AND SOLENOIDS



KILOVAC High Voltage Relays

Space and Weight Savings

- Small size and weight for given power rating

Robust and Versatile

- High resistance to shock, vibration, and temperature extremes
- Low, stable contact resistance over relay life
- Usable in RF devices



HARTMAN N-Series Relays

High Reliability

- Magnetic latch or side stable
- Stainless steel-welded construction
- Hermetically sealed

Flexible Performance

- -55°C to +125°C
- Multiple mounting and auxiliary contact configurations
- Main contact current ratings 30 to 125 A



CII Mid-Range Relays

Comprehensive Selection

- Qualified to a variety of Mil Specs
- Designed to perform in a wide range of extreme environments

Flight Ready

- Hermetically sealed
- High shock and vibration ratings



Custom Tubular Solenoids

Versatile

- Tailored to specific applications
- Push, pull or combination linear motion
- 100,000 cycles

Reliable

- -65°C to +125°C
- High altitude, shock, acceleration and vibration resistance



CII DC Solid State Relays

Rugged Reliability

- Optically coupled input/output
- Hermetically sealed
- High shock and vibration resistance

Versatile

- Some relays incorporate short circuit protection and status
- Compatible with a wide range of extreme environments



Power Distribution Units

Smaller, Lighter

- Optimize floor space weight savings over discrete installations

Customized

- Accommodate whatever bill of material and point-to-point layout the application requires
- Decades of experience designing custom panel assemblies

INTEGRATED SOLUTIONS



Composite Enclosures

Weight-Saving Rugged Performance

- Light weight — up to 50% lighter than aluminum
- Extremely rugged and corrosion resistant

Customizable

- Conductive composites and plating options for grounding/EMI shielding
- Highly customizable with integrated wire traces, antennas, and connectors



Antennas

Convenient

- Low-profile conformal designs
- Support for wide variety of protocols

Cost Effective

- Can be embedded in composite enclosures

LET'S CONNECT

We make it easy to connect with our experts and are ready to provide all the support you need. Just call your local support number or visit www.te.com/industrial to chat with a Product Information Specialist.

Technical Support

te.com/support-center

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Smaller, Lighter, High-Reliability Products Designed to Optimize Your TE Interconnect Solutions and Built to Withstand the Extreme Environments of Space



te.com/space

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Consult TE for the latest dimensions and design specifications.

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