ELECTRONIC WARFARE

INTERCONNECTION SOLUTIONS

More Choice in High-Technology, High-Quality, High-Reliability Interconnect Systems for C4ISR Applications

Rugged, Reliable Performance for EW

Reduce SWaP
Increase Bandwidth
Speed Design with Open Architecture Solutions

Electronic warfare systems—like Next Generation Jammer, Integrated Topside, CIRCM and JCREW—demand rugged, cutting-edge technology that keeps pace with the ever more complex and powerful capabilities. To be the master of the electromagnetic spectrum, it is crucial to have all the advantages of copper, fiber optic, and wireless technologies at your command.

Meeting the Needs of System Performance

TE Connectivity (TE) is focusing its technology to minimize size, weight and power consumption (SWaP), to increase bandwidth and to enable open architecture systems. When your system demands the best in technology solutions, we deliver.

From Components to Integrated Solutions

Our advanced portfolio provides the depth and breadth for complete end-to-end connectivity solutions. We are satisfying the need for faster digital communications with high-speed board-level interconnects and blazingly fast digital cable assemblies. We are developing composite enclosures, efficient power subassemblies, and integrated antenna technologies that save space and weight. We are meeting the demanding needs of battlespaces with ruggedized copper and fiber interconnect and cable assemblies. And we are protecting systems with lightweight shielding and EMI-immune datapaths.

Spanning the Range of Electronic Warfare

- Force protection
- Signals intelligence
- Electronics intelligence
- Communications intelligence
- Countermeasures
- Electromagnetic spectrum management
- C4ISR (Computing, Communications, Command, Control, Intelligence, Surveillance, Reconnaissance)

Electronic Warfare

Composite Enclosures

Weight-Saving Rugged Performance
- Lightweight – 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

Custom Power Distribution Units

Smaller, Lighter
- Optimize space and weight savings over discrete installations

Customized and Modular
- Contactors and relays
- Circuit breakers
- Sensing and protective devices
- Decades of experience designing custom panel assemblies

Raychem Data Bus Components

Comprehensive Solution
- A complete system of interconnection hardware for all MIL-STD-1553B multiplexing needs
- Couplers, cables, cable marker sleeves
- Triax connectors and contacts
- Bus and Stub terminators
- HarnWare harness design software

MiniMRP

Novel Electronics Packaging
- Reduces package size by up to 40%
- Reduces weight by up to 60%
- Increased sub-system design flexibility due to modular and configurable packaging
- Ideal for fiber optics, high speed copper, or power distribution
- Meets EN4165 and ARINC 836A standards

APPLICATION-SPECIFIC TECHNOLOGY

Selective Metallization

Proven Solutions
- Conductivity approaching that of bulk copper
- Key processes include laser direct structuring (LDS) and conductive coatings
- Repeatedly achieve traces and fine structures as small as 100 μm
- Suitable for creating three-dimensional antennas and traces on molded parts

Nickel PTFE Plating

RoHS-Compliant
- Environmental alternative to cadmium
- Sustainable environmental performance

High Performance
- -65°C to +175°C temperature range
- 500 mating cycles
- Excellent electrical performance

Black Zinc Nickel Plating

Qualified
- RoHS-Compliant alternative to cadmium plating
- Easily integrated into existing applications where cadmium plated connectors and backshells are used

High Performance
- -65°C to +175°C temperature range
- Corrosion resistance in harsh environments
- Excellent electrical performance
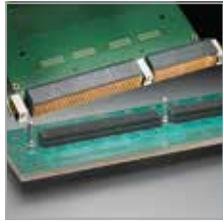
Sensors

Advanced
- Contactless and wearless monitoring of positions, linear and rotary motions

Versatile
- Binary (HIgh/Low), Linear (0 mm to 200 mm) and Rotation (360° absolute)

Electronic Warfare

BOARD-LEVEL CONNECTORS

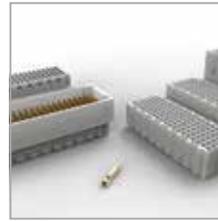### MULTIGIG RT Connectors

High Speed
- Data transfer rates up to 25+ Gb/s

High-Density Modular Design
- Modular design with backward interoperability

Ultra-Rugged
- Ruggedized multipoint contact system meets VITA vibration standards

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
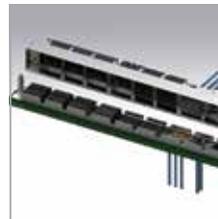

Fortis Zd Connectors

High Speed
- 12+ Gb/s data rates

Rugged
- Extreme mechanical and electrical performance

Versatile Application
- Modular, with standard, shielded, and machined metal shells

Fortis Zd LRM Connector System

High Performance
- Performance to 12+ Gb/s
- Low crosstalk

Weight-Saving Modular Design
- Lightweight aluminum shell
- 3, 4, 8 or 9 bays
- Easy mixing of signal, power, RF, and optical modules

Rugged Reliability
- M55320 four-point box contact design
- High-temperature, space-compatible materials

MULTI-BEAM XLE Power Connectors (VITA 62)

Capable
- 20 and 50-amp power contacts, plus signal contacts
- 3-beam high-conductivity-copper contact
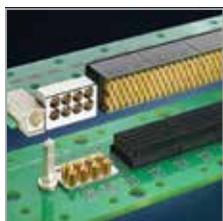- Vented housing allows for better heat dissipation
- Hot-plug capable

VITA 66.1 Connectors

Rugged
- Robust performance in backplane interconnects
- Locating posts for proper positioning

High Capacity
- One or two MT ferrules to accommodate up to 24 fibers

RF Modules (VITA 67)

Open Architecture
- Compatible with VPX

Versatile
- 4 or 8 SMPM contacts
- Modules available in stainless steel and aluminum

1 mm Free Height Connectors

Space Saving
- High-density packaging on 1.0 mm centerline spacing
- Board stacking heights available from 8 to 15 mm
- Used in IEEE 1386 PMC applications

Electronic Warfare

DEUTSCH DTS 38999 Connectors

Reliable
- Withstands severe vibration, corrosive, and high temperature environments
- High-vibration connector
- Over-travel system
- Anti-fire locking system

Versatile
- More choice in shell sizes, materials, inserts, filtering and EMI protection, and environmental sealing

DEUTSCH Wildcat Micro Connectors

For Size- and Weight-Critical Applications
- 3, 5, or 9 contacts in two shell sizes
- Lightweight aluminum shells
- Bayonet and threaded coupling

Rugged
- Environmentally sealed with rear-removable contacts
- Cable EMI shield and boot termination
- Small, lightweight reliability

DEUTSCH ACT Series Connectors

Durable Weight Savings
- Lightweight composite shell
- High corrosion resistance
- High density—up to 128 signal contacts

Standards Qualified
- MIL-DTL-38999 Series III
- AS39029 contacts

DEUTSCH ASHD Power Connectors

Heavy Duty
- High-current connectors for 3-phase power systems
- Positive locking coupling mechanism for excellent vibration resistance
- Environmentally sealed

Safe Handling
- Size 20 early brake/late mate signal contacts for a safety loop

DEUTSCH Wildcat 38999 Connectors

High Density
- Nearly double the density of equivalent 38999 Series III connectors
- Four housing sizes, 11 to 64 contacts

Reliability
- Robust, triple-start threaded coupling
- Extreme temperature, vibration, and corrosion resistance
- Accepts standard 38999 backshells and accessories

CeeLok FAS-X Connectors

High Speed
- Supports 10G Ethernet and beyond
- One or four 10G Ethernet channels in size 11 or 25 shells

Compatible
- AS39029 contacts
- Fast field termination and repair, using standard tools
- Available with aluminum or composite shells with a variety of finishes

CeeLok FAS-T Connectors

10G Ethernet
- Field-terminable, high-speed I/O connector
- Compact size 8 shell saves weight and space

Rugged
- Excellent shock, vibration, temperature, and sealing performance
- Integral backshell provides low cost, low-weight strain relief, and EMI protection

CeeLok FAS-T Nano Connectors

Extreme Space and Weight Savings
- .30" diameter
- Push-pull or threaded coupling

Fast
- 10G Ethernet-capable 8-position connector
- Improved signal integrity: innovative T-shaped contact pattern reduces crosstalk

Electronic Warfare

Metal-Shell Micro Circular Connectors

Compatible
- USB 2.0 signal compatible

Flexible Configurations
- Push-pull, bayonet, or threaded coupling
- Pin and socket or spring probe contacts
- Signal and signal/power versions

Environmentally Sealed
- Individual contact O-rings for improved sealing
- IP67 sealing

DEUTSCH DMC-M Series Multi-Module Connectors EN4165

Versatile
- Compact rectangular connectors with interchangeable modules
- Wide range of configurations for signal and power
- Choice of standard and shielded versions
- Wide range of backshells and accessories

DEUTSCH Mono-Module Connectors EN4165, BACC65, ARINC 809

Save Weight
- Robust composite shell
- Excellent EMI performance

Space Saving
- Compact single modules

Versatile
- Wide range of modules for signal and power
- Compatible with multi-module DMC-M Series connectors

NANONICS Nanominiature Connectors

Extreme Weight and Space Savings
- Rectangular, coax, and sealed circular configurations

Robust
- Excellent shock and vibration resistance
- Wide temperature range (-200°C to +200°C)

Ruggedized COTS I/O Connectors

Support for Common Protocols and Data Rates
- Ethernet, USB, IEEE 1394, DVI, and others

Flexible
- Options for different levels of ruggedization
- Variety of sealing levels up through IP68
- Plastic, composite, aluminum, and metal shells
- Support for copper and fiber

GPR Connectors

Compact I/O for LRUs and LRMs
- Use 2 to 3x less space than circular connectors

Flexible
- Signal, Quadrax, RF, optical, power
- Various blindmate and latching designs

ARINC Rack and Panel Connectors

Versatile I/O for LRUs and LRMs
- Signal, Quadrax, RF, power, and optical (ARINC 801 and expanded beam)
- Blindmate
- Rugged, high pin count

Weight Savings
- TE's next-generation ARINC 600 receptacle is up to 10% lighter

Electronic Warfare

RF AND OPTICAL CONNECTORS

RF Connectors

Wide Range of Rugged Connectors
- MIL-PRF-39012 and MIL-DTL-83517 qualified
- Miniature, subminiature, and microminiature types
- Bayonet, threaded, and push-on couplings

PRO BEAM Expanded-Beam Connectors

Robust
- Physically noncontacting mating of single-mode and multimode fibers

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

MC801 Connectors

Rugged
- Resists shock and vibration, moisture, and corrosion
- 100% scoop proof
- Self-locking threaded coupling for anti-vibration integrity

Lightweight
- High-strength aluminum shells
- 38999 Series III style
- ARINC 801 termini

VITA 66 Optical Modules

Industry Standard
- Compatible with VITA 46 VPX systems

Versatile
- MT: extreme density with up to 48 fibers/module
- VITA 66.1 full size modules
- VITA 66.4 half-size modules (Contact TE for VITA 66 EB and ARINC 801 modules)

DEUTSCH MC6 Connectors

High Density
- MT ferrules for 12 and 24 channels

Convenient
- Rear release contact using size 8 extraction tools
- Retrofit triple rear seal available
- MIL-DTL-38999 Series III anti-vibration coupling with tri-start thread

PRO BEAM EB16 Termini

Compact Size 16
- Fits standard size 16 cavity
- Drop-in replacement for M29504/4 and /5 physical contact termini

DEUTSCH DMC-M Connectors

Flexible
- Multi-insert configurations
- MC5, MT, and ARINC 801 interfaces
- Hybrid electrical/ ARINC 801 inserts

Lightweight
- Composite housing

DEUTSCH EN4165 Connectors

Flexible
- Interchangeable modular inserts
- MC5, MT, and ARINC 801 interfaces
- ARINC 801/electrical hybrid

Easy to Use
- Easy-to-use insertion/ extraction tool
- Easy access to optical contacts for cleaning and maintenance

Electronic Warfare

WIRE AND CABLE

Hook-Up Wire

SPEC 44 PA/PVDF Wire (AS27500)
- Dual-wall construction
- Resistant to most solvents, fuels and lubricants

SPEC 55 XL-ETFE Wire (AS22759)
- Excellent abrasion and cut-through resistance
- Excellent flexibility
- Low-fluoride and Electroloss filtering options

Raychem CANbus Cable

High Performance
- High performance, 120 ohm twisted pair
- Shielded and unshielded variations available

Rugged, Flexible Design
- Constructions available meeting SAE J1939 and SAE J1939-11 and -15 requirements
- Abrasion resistant

Raychem SHF-260 Power Cable

Extremely Flexible
- High flex 6x bend radius
- Tight routing bends without jacket wrinkling or cracking

High Temperature
- +260°C

Robust
- Chemical and fluid resistance
- Corona and arc track resistant
- FAR Part 25 flammability
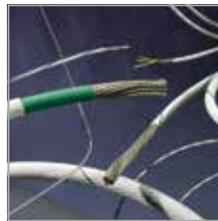
SPEC 80 Series Raychem ETFE Wire and Cable

Flexible
- Light weight and compact
- Highly flexible
- Broad range from hook-up wire to power cables

Capable
- Dual-wall and single-wall options
- -65°C to +200°C
- Fluid and solvent resistant

Cheminax Controlled Electrical Raychem 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 High-Speed Copper Cable

Rugged Choices
- Material choices to match application requirements
- Shielded and unshielded
- Low-smoke, zero-halogen versions to support increased safety

High-Speed Protocols
- Configurations to support various protocols: Ethernet, Quadrax, IEEE 1394, USB, Fibre Channel, etc.

DEUTSCH Alpen Microwave Assemblies

High Performance
- Exceptionally low attenuation and VSWR
- Frequencies to 65 GHz

Versatile
- MIL-T-81490 versions for flight
- High flexibility options
- Wide range of sizes and configurations

Raychem Multicore Cables

Light Weight and Highly Durable
- Industry-standard components
- Designed to meet specific application needs
- Signal, power, RF, high-speed digital, and optical conductors

Electronic Warfare

HARNESSING

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 Molded Parts

More Choice
- Wide range of size, shapes and materials
- Available to fit TE backshell adapters

Protects
- Provides excellent strain relief at connector cable terminations

INSTALITE Lightweight Raychem Boots

Weight Savings
- 20% to 30% lighter than standard -25 parts

Time Savings
- Optimized interior geometry speeds installation time
- Faster recovery

Rugged
- -75°C to +150°C range
- Resists most common military fuels, oils, and greases
- Abrasion resistant

INSTALITE Lightweight Raychem Braid

Weight Savings
- Up to 50% lighter than traditional braid

Excellent Shielding
- Covers wide frequency range
- Better low-frequency performance than expensive plated fibers or microfilaments
- Lightning protection

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 EMI Adapters

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 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

HarnWare Harness Design Software

Powerful
- Speeds and simplifies harness design

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

Electronic Warfare

REPAIR PRODUCTS

Raychem RT-555 Heat-Shrink Repair Tape

High Temperature
- Rated to +200°C continuous use

Fluid Resistant
- Resists aviation hydraulic fluids

Easy to Use
- Convenient tape form
- 4 standard widths
- Use as a system with RT-555 sealing sleeves

Raychem Rayseal Large Gauge Wire Repair

Versatile
- Side entry helps reduce repair times
- Designed for 8 AWG to 4/0 AWG cable
- Wide temperature range from -65°C to +260°C

Durable
- Adheres and seals for a permanent, robust repair

C-WRAP Side Entry Raychem Repair Sleeves

Mechanically Robust
- +150°C rated
- Long-term performance provides a permanent repair

Easy Installation
- Helps save time, manpower, and cost
- Color coded to ensure proper sizing
- Side entry for easy access

Tactical Optical Cable Repair Kit

Fast, Convenient Field Repairs
- Fusion splice for repairing up to four fibers at once
- Cable repair protection sleeves
- Solutions for rodent-resistant cables and standard tactical cable
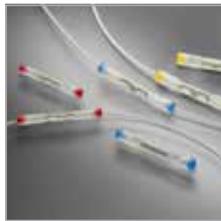
Raychem Cold-Applied Splice

Reliable Sealing
- Gel-based sealing
- Helps prevent water ingress under permanent pressure/weight

Easy to Use
- One-step termination
- No heating required

Raychem Side-Entry Bushings

Easy to Use
- Pre-coiled side-entry reusable silicone bushings
- Naturally conforms to circular wire bundles
- Fewer wraps needed than conventional silicone tapes
- No adhesive for easy removal and reuse

RUGGED FIBER OPTICS

SuperChassis Platform

Modular
- 2U chassis with 20 powered slots
- 5 and 10-slot options available

Flexible Choice of Modules
- 3G, HD-SDI, and HDMI video
- Gigabit Ethernet
- CWDM multiplexing
- Single mode-to-multimode wavelength conversion

SuperBullet Media Converter

Convenient
- Expanded beam connector interface
- RJ45 port
- Locally powered over Ethernet
- Up to 5 km standard transmission distance

Rugged and Compact
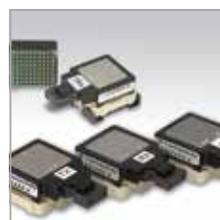- Lightweight, heavy gauge aluminum housing
- IP67 rated

SuperDrum Integrated Reel

Capable
- Integrated cable, connectors, and active electronics
- Modular: uses SuperChassis active modules

Convenient
- Quick deployment
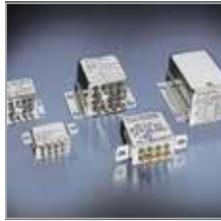- Expanded beam connectors standard

FO Transceivers

Standard Design
- Modules integrate 1 x 12 industry standard MT optical interface

Versatile
- Board mountable SMT with 10x10 BGA
- Pluggable mezzanine connector interface
- Blindmateable to VITA 66 compatible interface

Electronic Warfare

RELAYS AND CONTACTORS

CII Mid Range Relays

Wide Range
- Qualified to numerous Mil Specs
- TO-5/Minigrid Relays—1 and 2 poles, up to 1 amp switching

Robust
- Designed for applications in a wide range of extreme environments
- Hermetically sealed
- High shock and vibration ratings
- Multiple terminal and mounting styles available

HARTMAN Contactors

Superior Performance
- Lightweight, environmentally sealed
- Hermetically sealed enclosures available for many of the most severe environmental conditions or altitudes above 50,000 ft.
- Multiple main contact configurations
- Designed to meet application requirements of MIL-PRF-6106

DC Solid State Relays

High Performance
- Output ratings from low level to 2 amps
- Hermetically sealed
- Optically coupled
- Qualified to DSCC drawings 90091, 89116, 88062, 85092, and 87034

Versatile
- Short circuit protection and isolated status line
- Bidirectional output

Custom Tubular Solenoids

Versatile
- Designed and built to customer requirements
- Push, pull or combination motion
- Multiple termination and mounting options

Robust
- 200°C magnet wire insulation is standard
- Broad operating temperature range

AC Solid State Relays

Excellent Performance
- Output ratings from 2 to 25 amps
- Zero voltage turn-on for reduced switching noise
- Qualified to MIL-PRF-28750
- Qualified to DSCC drawing 86031

HARTMAN Lightweight 28 Vdc Contactors

Capable
- Main contact ratings to 1000 amps
- Hermetically or gasket sealed models in conventional or bus bar mounting

More Choice
- Available with a variety of auxiliary contact arrangements
- Side stable and latching models
- Standard, reverse current, and automatic dropout types
- AC models also available

KILOVAC Timers and Sensors

Capable
- Voltage isolation to 70 kV
- Current carrying capability to 110 amps
- Service life to 10 million cycles

Flexible
- Various contact forms available
- Flange, panel and PC board mounting styles
- Optional coils, mountings and terminals

KILOVAC Lightweight 270 Vdc Contactors

Advanced Performance
- Interrupt currents up to 2000 amps
- Voltage isoltaion from 5 to 1800 Vdc
- One- or two-pole models with normally open or normally closed main contacts

Robust and Versatile
- Latching and non-latching types
- Available with a variety of auxiliary contact arrangements

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.

te.com/C4ISR

ELECTRONIC WARFARE

AEROSPACE, DEFENSE & MARINE / ELECTRONIC WARFARE

TE
connectivity