



# AVIONICS SOLUTIONS

FOR COMMERCIAL AEROSPACE

More Bandwidth, More Space and Weight Savings . . .  
From Components to Integrated Solutions

**iS** Rayfast

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For Commercial Aerospace

## Performance on Board: End-to-End Connectivity

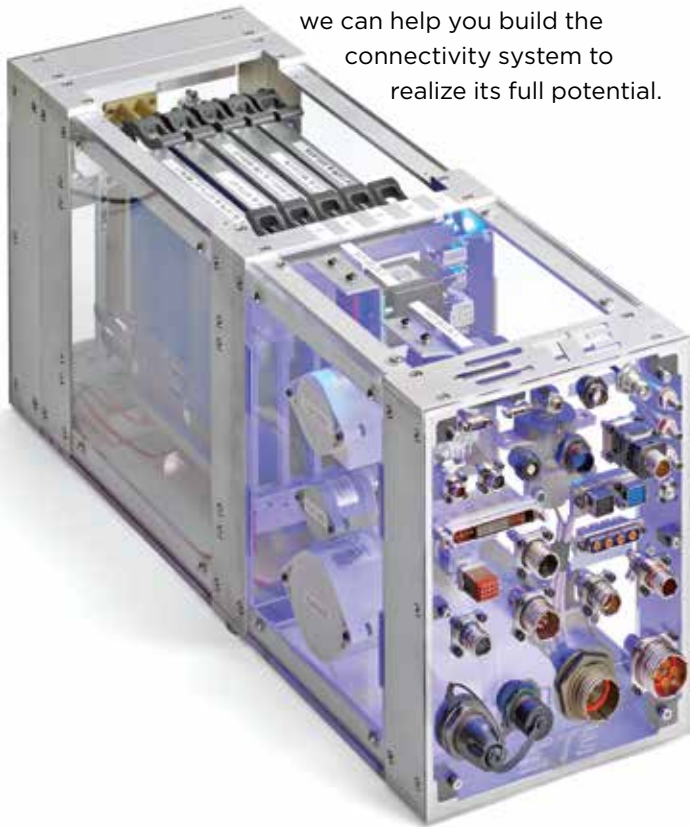
Whether you are looking for better packaging solutions inside the box, sturdy and lightweight enclosures, or high-performance I/O to connect your systems, count on TE Connectivity (TE) for a comprehensive range of solutions.

Today's sophisticated networked aircraft require avionics with the bandwidth to ensure monitoring and control of all flight systems—while offering the size and weight reductions needed to increase efficiency. We can help you keep pace with the higher densities and increased capabilities of electronic systems.

With integrated modular avionics and compact MiniMRP packaging offering new levels of networked sophistication and capabilities, we can help you build the connectivity system to realize its full potential.

At TE, we can help you design and build avionics systems with connectivity solutions that:

- Save weight with advanced materials
- Reduce space requirements with smaller, space-efficient components
- Increase bandwidth with high-speed connectivity
- Decrease complexity with integrated solutions
- Enhance signal integrity with EMI and filter products
- Achieve robust, reliable systems



## TE Components . . . TE Technology . . . TE Know-how . . .

AMP | Agastat | CII | Hartman | Kilovac | Microdot | Nanonics | Polamco | Raychem | Rochester | DEUTSCH  
SEACON Phoenix | L.L. Rowe | Phoenix Optix | SEACON

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



**INTEGRATED SOLUTIONS**



**Composite Enclosures**

**Rugged Weight Savings**

- 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**

**Low-Profile, Form-Fitting Conformal Designs**

- Multiband and wideband antennas and arrays
- Rugged embedded antennas in engineered composite enclosures

**Cost Effective**

- Customized designs with integrated RF and DC traces, cables, and connectors

**BACKPLANE AND BOARD-TO-BOARD CONNECTORS**



**Z-PACK 2 mm HM Connectors**

**Modular High-Speed Performance**

- Modular units in 4, 5, 8, and 12-row configurations
- Open-pin-field connector supporting 2.5 Gb/s data rates

**Industry-Standard Configurations**

- Versions for VME64 Extensions and CompactPCI
- IEC 917-2-2 and IEC 61076-4-101



**Fortis Zd Connectors**

**High Speed**

- 12+ Gb/s data rates

**Rugged**

- Extreme mechanical and electrical performance

**Versatile Application**

- Modular, with plastic, shielded, and machined metal shells



**Mezalok Mezzanine Connectors (VITA 61)**

**Compatible**

- 114-position, compatible with XMC footprint
- 60-position, half-size versions

**Reliable**

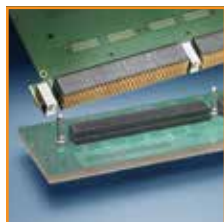
- Mini-box contacts provide 4 points of contact
- LCP plastic housings for excellent thermal stability



**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



**MULTIGIG RT 2-R Connectors (VITA 41 VXS/VITA 46 VPX)**

**High Speed**

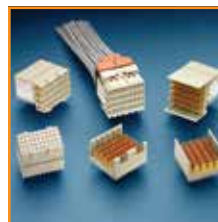
- Data rates up to 10 Gb/s

**High-Density Modular Design**

- Up to 56 high-speed lines per cm of board space
- Configurable for differential, single-ended, RF, optical, and power

**Ultra-Rugged**

- Meets VITA 72



**Z-PACK HM-Zd Connectors**

**High Speed**

- Designed for differential signals at rates up to 12 Gb/s
- 25.00 mm standard module
- 2, 3, or 4 contact pairs per column

**Solderless Application**

- Vertical and right-angle press-fit pin headers and receptacles



**RACK-AND-PANEL CONNECTORS**



**ARINC 404 and 600 Connectors**  
**Versatile I/O for LRUs and LRMs**

- Signal, Quadrax, RF, power, and optical (ARINC 801 and mini expanded beam)
- Blindmate
- Rugged, high pin count



**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



**Next-Generation ARINC Connectors**  
**Lower Cost**

- Monoblock insert and stamped-and-formed contacts
- Applied-cost savings with solderless, press-fit PCB contact

**Lower Weight**

- Up to 10% weight reduction per connector
- ARINC Qualified
- Meet ARINC 600 performance requirements

**I/O CONNECTORS**



**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)

**HIGH-SPEED NETWORKING**



**CeeLok FAS-T Connectors**  
**Compact 10 GbE Performance**

- Compact size 8 shell for space and weight savings
- Rugged
- Excellent shock, vibration, temperature, and sealing performance

**Convenient**

- Field terminable, with integral backshell for low cost, low-weight strain relief, and EMI protection



**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



**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



**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





I/O CONNECTORS



Micro-D Connectors

**Space-Saving Performance**

- Pre-wired per MIL-DTL-83513 or crimp contacts for customization
- Lightweight aluminum shells plated in nickel or cadmium



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 DMC-M Series Multi-Module EN4165 Connectors

**Compact Flexibility**

- Interchangeable modules for signal and power
- Wide range of configurations, backshells, and accessories for signal and power
- Standard and shielded versions



DEUTSCH 369 Series Connectors

**Low-Cost, Space-Saving Design**

- Based on ARINC 809/EN4165
- 3, 6, or 9 positions

**Reliable**

- Fully sealed cable and mating interface
- Aerospace-grade low-smoke and -toxicity materials



D-Subminiature Connectors

**Versatility for I/O and Production Breaks**

- Ultra-light version—up to 20% lighter with improved EMI performance
- Standard and high-density configurations
- Hybrid versions for coax, Quadrax, and optical



DEUTSCH EN4165/ARINC 809 Connectors

**Save Weight, Control EMI**

- Wide range of modules for signal and power
- Excellent EMI performance
- Robust composite shell saves weight

FIBER-OPTIC CONNECTORS



Optical Inserts

**Full Range of Connector Solutions**

- ARINC, GPR, DMC-M, EN4165, and 38999
- Support for ceramic ferrules, expanded beam termini, and MT ferrules



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



**FIBER-OPTIC CONNECTORS**



**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



**Optical Termini**

**Full High-Performance Range**

- 1.25- and 2.5-mm precision ceramic ferrules
- MT array ferrules
- Expanded beam



**MC5 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



**Optical Flex Circuits**

**Versatile**

- Symmetrical and asymmetrical designs
- Very low insertion loss over a broad temperature range
- Range of packaging options for environmental conditions

**RF AND HIGH-SPEED DIGITAL**



**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



**Digital Cable Assemblies**

**More Speed, Less Weight**

- Support for high-speed protocols
- Compact, lightweight designs
- Fully tested and documented by TE

**HIGH-SPEED CABLE**



**Fiber-Optic Cable**

**Complete Selection**

- Single mode and multimode
- Tight-buffered and loose-tube constructions
- Low-smoke, zero-halogen versions to support increased safety



**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 Ethernet, Quadradx, IEEE 1394, USB, Fibre Channel, etc.



**HARNESING**



**Raychem Sealed Harnesses**  
**Lightweight and Tough**  
 • Small, lightweight, rugged, and environmentally sealed  
**Customized**  
 • Designs are customer specific  
 • Performance matched to application requirements



**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



**Polamco Backshells**  
**Full Range**  
 • Unshielded, shielded, and rugged conduit systems  
 • Rectangular and circular configurations  
 • Straight, 45, or 90-degree options  
**Rugged**  
 • Versions to match most harsh environments



**Raychem HexaShield 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 High-Temperature Terminations**  
**Versatile**  
 • Crimp and controlled-solder splices and shield terminations  
**High Temperature**  
 • Rated to 200°C or 260°C  
 • Low temperature versions also available  
**Environmentally Sealed**  
 • Heat-shrinkable insulation sleeve for sealing and strain relief

**RELAYS AND CONTACTORS**



**KILOVAC High-Voltage Relays**  
**Capable**  
 • Voltage isolation to 70 kV  
 • Current ratings to 110 amps  
 • Service life to 10 million cycles  
 • Frequencies to 32 MHz  
**Versatile**  
 • Various contact forms available  
 • Flange, panel and PC board mounting styles  
 • Optional coils, mountings and terminals



**CII Low Signal Relays**  
**High Performance**  
 • Miniature hermetically sealed relays  
 • High-frequency models capable of switching up through 6 GHz  
 • Excellent isolation, insertion loss, and VSWR  
**Flexible Packaging**  
 • Non-latching and latching designs  
 • 1/5, 1/2 and full-size crystal can, TO-5 and .100 grid  
 • Variety of mounting styles

MORE BANDWIDTH, MORE SPACE AND WEIGHT SAVINGS ...  
FROM COMPONENTS TO INTEGRATED SOLUTIONS



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