

MINIATURIZED CONNECTIVITY SOLUTIONS



APPLICATION GUIDE

WHY IS MINIATURIZED CONNECTIVITY IMPORTANT?

As electronic systems become smaller, smarter, and more interconnected, engineers face increasing pressure to deliver greater functionality, higher data speeds, and improved efficiency within increasingly constrained design envelopes. Across automotive, industrial, commercial transportation, and data infrastructure applications, market trends such as electrification, automation, advanced safety systems, and high-speed connectivity are accelerating the need for compact, high-performance solutions.

TE Connectivity (TE) helps customers overcome these challenges with an integrated portfolio of miniaturized connectivity, advanced materials, and manufacturing solutions designed to maximize space utilization without compromising

reliability, performance, or manufacturability. TE's miniaturized connectivity portfolio—including PicoMQS, NanoMQS, Gen50, MCON 0.50, CH2 (Control Header Unit), MATE-AX, MATEnet, and GEMnet—enables high-density signal and data connectivity in increasingly compact architectures. Complemented by advanced solutions for thermal management, EMI shielding, sealing, and protection, as well as precision tooling that supports efficient and scalable manufacturing, TE provides a complete miniaturization ecosystem, including signal connectors, high-speed data connectivity, materials expertise, shielding, thermal management, and manufacturing technologies, helping engineers reduce size without sacrificing performance.

INDUSTRY CHALLENGES DRIVING THE NEED FOR MINIATURIZED CONNECTIVITY



Increasing Electronic Content & System Complexity

The growing integration of electronic features increases interconnect density, driving demand for compact, high-performance connectivity solutions.



Packaging Constraints & Space Limitations

As available space within system architectures continues to shrink, manufacturers require high-density connectivity solutions that maximize functionality without increasing footprint.



High-Speed Data & Connectivity

Bandwidth and increasing data transmission requirements from connected, autonomous, and software-defined industry systems are driving the need for miniaturized connectivity solutions that deliver high-speed performance without compromising reliability.



Weight Reduction & Sustainability

Regulatory requirements and efficiency targets are driving manufacturers to reduce weight and environmental impact, increasing demand for compact connectivity solutions that support lightweight, high-performance vehicle designs.



Higher Density & Performance in Smaller Footprints

Increasing demands for functionality, signal density, and reliability are driving the need for compact, high-density connectivity solutions that deliver greater performance within increasingly constrained spaces.



Thermal Management Demands

Increasing power density and more compact electronic architectures are driving demand for advanced thermal management solutions that maintain system reliability, efficiency, and performance within constrained spaces.



Advanced Safety & Autonomous Systems

Growing sensor density and data requirements are driving demand for miniaturized connectivity solutions that enable reliable communication, signal integrity, and electromagnetic compatibility within compact system architectures.

MINIATURIZED CONNECTIVITY APPLICATIONS ACROSS INDUSTRIES



AUTOMOTIVE >

INFOTAINMENT & CONNECTIVITY



- Displays
- Audio control
- USB
- Vehicle networking
- Antennas and RF links
- Infotainment/Head Unit

WIRING HARNESS & TERMINALS



- Signal Distribution
- ECU Interfaces

ELECTRIFICATION & POWERTRAIN



- Inverters and converters
- Onboard chargers
- DC-DC converters

BATTERY



- Battery Management Systems
- Cell Controller Electronics

ADAS, SAFETY & CONTROL



- Sensor power & control
- Zonal / central controllers
- Airbags
- Radar power interface
- Camera power distribution

BODY, COMFORT & CONVENIENCE



- Lighting
- HVAC Panels and Control Modules
- Doors, seats, mirrors
- Steering wheel controls and switches
- Window lift module
- Sunroof controller
- Body Control Modules

INDUSTRIAL & COMMERCIAL TRANSPORTATION >

SENSING & CONTROL



- Sensor and actuator connections
- ECU & module interfaces
- Signal architecture across systems

IN-VEHICLE DATA SYSTEM



- Ethernet backbone (zonal architecture)
- Ultra-high-speed links for HPCs
- AI compute & future scaling

POWER DISTRIBUTION & CONTROL



- ECUs & control modules
- BMS
- Inverters
- E-axles
- Lighting power circuits

EXTERNAL SENSING & COMMUNICATIONS



- Cameras
- RADAR and LIDAR
- Telematics
- Ethernet-based cameras and sensors

INDUSTRIAL >

SMART FACTORY



- Machine vision
- High-speed compute
- Industrial Ethernet links
- Edge AI systems

CONTROL & POWER SYSTEMS



- Motors and drives
- ECU/PLC and control module interfacing
- Standardized platform connectivity across machine architectures

MACHINE LEVEL SENSING & INTELLIGENCE



- Sensor and low-power signal connections
- Sensor and actuator integration
- Standardized interfaces across sensor networks

CONNECTED MACHINES



- Coax/RF for cameras
- Antennas
- Ethernet-based vision and sensor systems

DIGITAL DATA NETWORKS >

COMPUTE & CONTROL SYSTEMS



- Power and signal in control & compute modules
- Standardized modular architectures across platforms (data centers, industrial control, transportation compute nodes)

EDGE DEVICE & SENSOR NETWORKS



- Low-power device connections
- Dense sensor/actuator integration
- Standardized signal and power interfaces

HIGH-SPEED NETWORK INFRASTRUCTURE



- Ethernet interconnects in networking equipment
- Ultra-high bandwidth links for compute-heavy & AI-driven systems

SMART DEVICES & SENSOR NETWORKS



- Coax/RF connections for antennas, cameras, and high-frequency sensing
- Ethernet-based sensors and device connectivity

DESIGN THE NEXT-GENERATION OF SYSTEMS WITH MINIATURIZED SIGNAL AND DATA CONNECTIVITY



SIGNAL CONNECTOR SYSTEMS



PicoMQS Miniature Connector System



Ideal for high-density, unsealed signal connectivity requiring the smallest connector footprint with proven automotive-grade reliability.



NanoMQS Miniature Connector System



Ideal for harsh-environment signal applications requiring higher current capability in a compact design.



Generation 50 Connector System



Ideal for compact PCB and device-level signal connectivity requiring space savings, robust retention, reliable mating, and USCAR2 performance.



MCON 0.50 Miniature Connector System



Ideal for compact, sealed signal connectivity requiring space savings, robust environmental protection, high vibration resistance, and automotive-grade reliability.



Control Unit Header (CH2) Solution for Mixed Signal and Power



Ideal for consolidating multiple signal and power interfaces into a single compact wire-to-board connector.

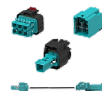
DATA CONNECTIVITY SYSTEMS



MATE-AX Miniaturized Automotive Coaxial Connectors



Ideal for compact, high-frequency RF and coaxial data connections with maximum packaging efficiency.



MATEnet Ethernet Connector System



Ideal for space-constrained Automotive Ethernet applications requiring scalable, high-speed data connectivity.



GEMnet Multi-Gigabit Ethernet Connector System



Ideal for next-generation multi-gigabit Ethernet and SerDes applications requiring maximum bandwidth and EMI performance.

MATenet Ethernet Connector Systems

MATenet connectors are modular and scalable miniaturized data connector system for Automotive Ethernet. Based on TE's proven NanoMQS terminals, MATenet connector system offers true automotive robustness and is compatible with both unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) variants. MATenet connector system can transmit up to 1 Gbps according to 100BASE-T1 and 1000BASE-T1 standard. In addition, MATenet connector system uses higher modulation data transmission technologies, enabling it to support data rates up to 4 Gbps.

MATenet helps manufacturers address the challenge of providing flexible, high-speed data connectivity even within space-constrained Ethernet architectures. Its support for multiple Ethernet standards and scalable ecosystem approach enables efficient interface-level integration across evolving vehicle networks.

APPLICATIONS FIT-FOR-PURPOSE

AUTOMOTIVE



Infotainment & Connectivity



ADAS, Safety & Control

INDUSTRIAL



Smart Factory

INDUSTRIAL & COMMERCIAL TRANSPORTATION



In-Vehicle Data System



External Sensing & Communications

DIGITAL DATA NETWORKS



High-Speed Network Infrastructure

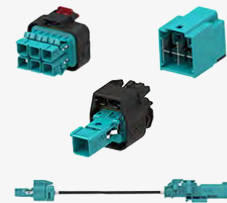
KEY ATTRIBUTES

Up to 1 Gbps

Higher modulation technologies enabling up to 4 Gbps

Available in UTP & STP which offers flexibility within one ecosystem

Supports 100BASE-T1 & 1000BASE-T1



PREFERRED PARTS

[1802162-1](#)

[2304372-2](#)

[2305987-1](#)

RESOURCES FOR ENGINEERS

[Portfolio Page: MATenet Ethernet Connector Systems](#)

[e-CARD: MATenet Ethernet Connector System](#)

[Product Catalog: MATenet Ethernet Connector Systems](#)

MATE-AX Miniaturized Automotive Coaxial Connectors

TE Connectivity's (TE) MATE-AX miniaturized automotive coaxial connector system provides advanced data transmission performance, supporting up to 9GHz. The MATE-AX system features an extensive portfolio offering a wide range of connector types and sizes to support all types of RF-based applications. Offering a higher packaging density, MATE-AX terminals can support up to 75% reduction in PCB footprint and by using existing wire types, it enables flexible integration into existing coaxial architecture.

MATE-AX addresses the growing demand for higher-speed automotive data transmission within tighter space and weight constraints. Its miniaturized coax architecture enables efficient high-frequency connectivity while supporting the transition to Ethernet backbone vehicle platforms.

APPLICATIONS FIT-FOR-PURPOSE

AUTOMOTIVE



Infotainment & Connectivity

INDUSTRIAL



Smart Factory



Connected Machines

INDUSTRIAL & COMMERCIAL TRANSPORTATION



External Sensing & Communications

DIGITAL DATA NETWORKS



Smart Devices & Sensor Networks

KEY ATTRIBUTES

Up to 9 GHz (up to 15 GHz optimized designs)

Supports existing wire types for easier integration

Automotive Ethernet and RF Applications

Supported protocols: GMSL2/3, FPD-Link III/IV, APIX3, MIPI ASA.

Interface released by USCAR; Tested to USCAR 49

Up to 75% reduction in PCB footprint

34% Maximum weight savings capability



PREFERRED PARTS

[2394925-1](#)

[2394925-2](#)

[2394925-9](#)

RESOURCES FOR ENGINEERS

[Portfolio Page:](#)
[MATE-AX Coaxial Connector Systems](#)

[eCARD:](#)
[MATE-AX Coaxial Connector Systems](#)

[Product Catalog:](#)
[MATE-AX Coaxial Connector Systems](#)

GEMnet Multi-Gigabit Ethernet Connector Systems

GEMnet connector systems are designed to meet the multi-gigabit (10 Gbps+) data links requirements needed by today's manufacturers. Supporting data transmission up to 56 Gbps, TE Connectivity's new fully shielded twisted pair connector system is designed to meet the requirements of current and next-generation multi-gigabit Ethernet and SerDes applications.

GEMnet addresses the challenge of bridging legacy architectures to next-generation multi-gigabit automotive networks within compact, EMI-sensitive system architectures. Its fully shielded high-speed differential design enables robust SerDes and Ethernet connectivity while helping bridge legacy systems to future multi-gig vehicle platforms.

APPLICATIONS FIT-FOR-PURPOSE

AUTOMOTIVE



Infotainment & Connectivity

INDUSTRIAL



Smart Factory



Connected Machines

INDUSTRIAL & COMMERCIAL TRANSPORTATION



In-Vehicle Data System



External Sensing & Communications

DIGITAL DATA NETWORKS



High-Speed Network Infrastructure



Smart Devices & Sensor Networks

KEY ATTRIBUTES

15 GHz bandwidth

Up to 56 Gbps

Supported Protocol: Ethernet 100BASE-T1/1000BASE-T1 /2.5/5/10/25GBASE-T1, SerDes APIX®, FPD-Link, GMSL™, MIPI® A-PHYSM, PCIe®, USB, GVIF, HDBase-T™, ASA Motion Link

Offers flexibility with multi-port and orientation options with strong EMI capability



PREFERRED PARTS

[1-2397129-4](#)

[2374900-1](#)

[2397129-1](#)

RESOURCES FOR ENGINEERS

[Portfolio Page: GEMnet Multi-Gigabit Ethernet Connector Systems](#)

[eCARD: GEMnet Multi-Gigabit Ethernet Connector Systems](#)

[Product Catalog: GEMnet Multi-Gigabit Ethernet Connector Systems](#)

PicoMQS Miniature Connector System

TE Connectivity's (TE) automotive-grade PicoMQS miniaturized connector system extends the MQS and NanoMQS product families with an ultra-compact solution for space-constrained, unsealed signal interfaces. Designed to maximize signal connectivity within increasingly compact automotive architectures, PicoMQS delivers high pin density with a compact 1.27 mm pitch, helping reduce connector size, weight, and overall packaging requirements. Its reduced pitch and crimp size enable shorter wire lengths and efficient integration, while LV214 qualification and proven automotive-grade reliability help ensure robust performance in demanding vehicle applications.

APPLICATIONS FIT-FOR-PURPOSE

AUTOMOTIVE



Infotainment & Connectivity



Wiring Harness & Terminals



ADAS, Safety & Control



Body, Comfort & Convenience



Battery (BMS)

INDUSTRIAL & COMMERCIAL TRANSPORTATION



Power Distribution & Control

DIGITAL DATA NETWORKS



Compute & Control Systems



Edge Device & Sensor Networks

KEY ATTRIBUTES

1.27 mm pin-to-pin pitch;
Mating for 0.5 x 0.4 blade size

Wire range 0.13–0.22 mm²;
Current capacity 4A (90°C)

SG2 vibration grade
max temp 130°C (Sn)
/ 150°C (Ag)

Most compact LV214
compliant crimped connection

Locking lance design (primary
+ secondary contact locking)

78% reduced packaging
weight (compared to MQS)



PREFERRED PARTS

[2339202-2](#)

[2339203-3](#)

[2339204-4](#)

RESOURCES FOR ENGINEERS

[Portfolio Page: PicoMQS Connector System](#)

[eCARD: PicoMQS Connector System](#)

[Whitepaper: Automotive Connector Strategies & Solutions for Space Reduction](#)

[Whitepaper: Battery Connectivity, Management, and Protection](#)

MINIATURIZED SIGNAL AND DATA CONNECTIVITY SOLUTIONS >

NanoMQS Miniature Connector System

As vehicles evolve toward increasingly complex electronic and zonal architectures, engineers must deliver more functionality within limited space while maintaining automotive-grade reliability. TE Connectivity's NanoMQS connector system addresses this challenge by reducing connector volume by up to 50%, enabling higher contact density, optimized PCB layouts, reduced system weight, and improved packaging efficiency – helping contribute to vehicle sustainability objectives. Based on TE's proven MQS platform, NanoMQS supports wire sizes from 0.13 mm² to 0.35 mm² and offers design flexibility through top-latch, side-latch, terminal, and header configurations, helping engineers optimize connectivity across a wide range of automotive electronic modules.

APPLICATIONS FIT-FOR-PURPOSE

AUTOMOTIVE

-  Infotainment & Connectivity
-  Wiring Harness & Terminals
-  ADAS, Safety & Control
-  Body, Comfort & Convenience
-  Battery (BMS)

INDUSTRIAL

-  Machine Level Sensing & Intelligence

INDUSTRIAL & COMMERCIAL TRANSPORTATION

-  Sensing and Control
-  Power Distribution & Control

DIGITAL DATA NETWORKS

-  Compute & Control Systems
-  Edge Device & Sensor Networks

KEY ATTRIBUTES

1.8 mm pin pitch; Up to 50% PCB footprint reduction (compared to MQS)

Up to 6A nominal current

0.13 mm² to 0.35 mm² wire range; Mating for 0.5 x 0.4 blade size

Max operating temp 170°C (Ag)

LV214 compliant; SG4 vibration grade

Locking lance terminal design; Click-Audible Connector Position Assurance (CPA); FFC/FPC connectivity



PREFERRED PARTS

[2317509-1](#)

[2317515-1](#)

[2315411-1](#)

RESOURCES FOR ENGINEERS

[Portfolio Page: NanoMQS Miniature Connector System](#)

[eCARD: NanoMQS Miniature Connector System](#)

[Product Catalog: NanoMQS Miniature Connector System](#)

[Whitepaper: Automotive Connector Strategies & Solutions for Space Reduction](#)

[Whitepaper: Battery Connectivity, Management, and Protection](#)

[Video: Miniaturized Automotive Connectivity with NanoMQS and MCON 0.50](#)

Generation 50 Miniature Connector System

TE Connectivity's (TE) Generation 50 (Gen50) is a 0.50 mm automotive connector system designed for compact, lightweight applications requiring USCAR2 performance. The portfolio includes terminals, connectors, and headers engineered to reduce packaging space and harness weight while delivering reliable mating, strong PCB retention, and robust performance in demanding automotive environments. Optimized for PCB and device-level miniaturized signal interfaces, Gen50 incorporates anti-stubbing features that support reliable assembly and connection integrity. Gen50 also complements TE's NanoMQS system, with compatibility in select configurations providing greater design flexibility and helping simplify adoption and migration between the two platforms.

APPLICATIONS FIT-FOR-PURPOSE

AUTOMOTIVE



Electrification & Powertrain



Battery



Infotainment & Connectivity



Body, Comfort & Convenience

INDUSTRIAL



Control & Power Systems

INDUSTRIAL & COMMERCIAL TRANSPORTATION



Power Distribution & Control

DIGITAL DATA NETWORKS



Compute & Control Systems

KEY ATTRIBUTES

Mating for 0.5 x 0.4 blade size

1.8 mm pin-to-pin pitch

0.13 - 0.35mm² wire; current capacity at 4A @80C

Locking lance and clean body design

Connector Position Assurance (CPA)

Vibration Class V1, Sealing Class 1

Sealed/Unsealed



PREFERRED PARTS

[2291329-1](#)

[2272399-1](#)

[2293333-1](#)

RESOURCES FOR ENGINEERS

[Portfolio Page: Generation 50 Connector System](#)

[eCARD: Generation 50 Connector System](#)

[Product Catalog: Generation 50 Connector System](#)

[Whitepaper: Automotive Connector Strategies & Solutions for Space Reduction](#)

MCON 0.50 Miniature Connector System

TE Connectivity's (TE) MCON 0.50 interconnection system is a miniaturized, sealed automotive connector system designed for reliable signal connectivity in harsh vehicle environments. Featuring a compact 0.50 mm terminal interface and 1.8 mm pin pitch, MCON 0.50 enables up to 50% PCB footprint reduction while providing robust protection against moisture, vibration, and high temperatures. Its clean-body terminal design helps protect sealing integrity, while IPX9K protection and SG4 vibration performance support demanding applications. MCON 0.50 meets LV214 Level 3 requirements for close-proximity installations and Level 4 for direct engine mounting, making it well suited for space-constrained applications requiring compact, rugged, and reliable connectivity.

APPLICATIONS FIT-FOR-PURPOSE

AUTOMOTIVE



Electrification & Powertrain



Body, Comfort & Convenience



Wiring Harness & Terminals



ADAS, Safety & Control

INDUSTRIAL



Control & Power Systems

INDUSTRIAL & COMMERCIAL TRANSPORTATION



Power Distribution & Control



Sensing and Control

DIGITAL DATA NETWORKS



Compute & Control Systems



Edge Device & Sensor Networks

KEY ATTRIBUTES

1.8 mm pin-to-pin pitch

0.13 mm² to 0.35 mm² wire range

Mating for 0.5 x 0.4 blade size

Current capacity: 3A @90°C

Vibration Class SG4 (Ag)

Sealed system for harsh environments (Sealing Class IPx9k)

Clean body terminal design

Temperature range:
-40°C to +170°C

Connector Position Assurance (CPA) & primary and secondary contact locking

Meets LV214 and VW 75174 standards

1- and 2-row designs



PREFERRED PARTS

[2203881-1](#)

[2272897-1](#)

[1-2177908-1](#)

RESOURCES FOR ENGINEERS

[Portfolio Page: MCON 0.50 Connector System](#)

[eCARD: MCON 0.50 Connector System](#)

[Product Catalog: MCON 0.50 Connector System](#)

[Whitepaper: Automotive Connector Strategies & Solutions for Space Reduction](#)

[Brochure: Miniaturized Connector Solutions featuring MCON 0.50, PicoMQS & NanoMQS](#)

[Video: Miniaturized Automotive Connectivity with NanoMQS and MCON 0.50](#)

Control Unit Header (CH2) - Miniaturize Wire-to-Board Connector System

TE Connectivity's new Control Unit Header Gen 2 (CH2) is a compact, scalable mixed-connectivity platform designed to support the automotive industry's evolution toward zonal and domain-based vehicle architectures. As vehicle electronics become increasingly complex, OEMs need connectivity solutions that accommodate growing signal and power requirements while maximizing PCB space, simplifying controller design, improving packaging efficiency and enabling greater design flexibility.

CH2 addresses these requirements by combining trusted TE terminal technologies into a compact, space-efficient, horizontal (90°), stackable header design. By integrating signal, and low-medium power connectivity within a single platform, CH2 helps reduce connector complexity and optimize valuable PCB space. Its flexible, scalable architecture supports multiple configurations to address varying connectivity and pin-count requirements while helping streamline ECU design and development.

APPLICATIONS FIT-FOR-PURPOSE

AUTOMOTIVE



Body, Comfort & Convenience



ADAS, Safety & Control



Infotainment & Connectivity

INDUSTRIAL & COMMERCIAL TRANSPORTATION



Sensing & Control



Power Distribution & Control



External Sensing & Communications

DIGITAL DATA NETWORKS



Compute & Control Systems



Edge Device & Sensor Networks

INDUSTRIAL



Machine-Level Sensing & Intelligence

MINIATURIZED SIGNAL AND DATA CONNECTIVITY SOLUTIONS >

KEY ATTRIBUTES

Platform-optimized miniaturized design for maximum PCB space efficiency

Horizontal (90°) stackable header design with multiple mixed-pin variants (12P, 23P, 28P, 29P, 52P and 73P).

Spliceable architecture for maximum application flexibility

Mechanical keying features ensure error-proof assembly across multiple positions

Streamlined assembly process for ease and efficiency

Supports applications from 6A to 52A across multiple wire sizes (0.22 mm² - 6 mm²)



PREFERRED PARTS

[4-2418400-2](#)

[2418383-1](#)

[2418382-1](#)

[4-2418700-4](#)

RESOURCES FOR ENGINEERS

[Portfolio Page: Control Unit Header \(CH2\) - Miniaturize Wire-to-Board Connector System](#)

[Brochure: Control Unit Header \(CH2\) - Miniature Wire-to-Board Connector System](#)

[Applications Infographic: Connectivity Solutions for Automotive High-Performant Computers and Zone Controllers](#)

[Applications Infographic: Connectivity Solutions for Automotive LiDAR and Radar](#)

MINIATURE CONNECTIVITY SOLUTIONS FOR AUTOMOTIVE APPLICATIONS



Focus Application		Sub-Applications Addressed	TE Product Family
	Body, Comfort & Convenience	- Lighting - HVAC Panels and Control Modules - Doors, seats, mirrors - Steering Wheel Controls & Switches - Window Lift Module - Sunroof Controller - Body Control Modules	NanoMQS Miniature Connector Systems Control Unit Header (CH2) Connector Solutions Generation 50 Sealed Connector Systems MCON 0.50 Miniature Connector Systems PicoMQS Miniature Connector Systems
	Wiring Harnesses & Terminals	- Signal Distribution - ECU Interfaces	NanoMQS Miniature Connector Systems MCON 0.50 Miniature Connector Systems PicoMQS Miniature Connector Systems
	Electrification & Powertrain	- Inverters and converters - Onboard chargers - DC-DC converters	Generation 50 Sealed Connector Systems MCON 0.50 Miniature Connector Systems
	Infotainment & Connectivity	- Displays - Vehicle networking - Antennas and RF links - Audio Control - USB - Infotainment/Head Unit	PicoMQS Miniature Connector Systems NanoMQS Miniature Connector Systems Generation 50 Sealed Connector Systems Control Unit Header (CH2) Connector Solutions GEMnet Multi-Gigabit Ethernet Connector Systems MATEnet Ethernet Connector Systems MATE-AX Coaxial Connector Systems
	ADAS, Safety & Control	- Sensor power and control - Zonal / central controllers - Airbags - Radar Power Interface - Camera Power Distribution	NanoMQS Miniature Connector Systems PicoMQS Miniature Connector Systems Control Unit Header (CH2) Connector Solutions MCON 0.50 Miniature Connector Systems MATEnet Ethernet Connector Systems
	Battery	- Battery Management Systems - Cell Controller Electronics	PicoMQS Miniature Connector Systems NanoMQS Miniature Connector Systems Generation 50 Sealed Connector Systems

MINIATURIZED CONNECTIVITY APPLICATIONS ACROSS INDUSTRIES ➤

MINIATURE CONNECTIVITY SOLUTIONS FOR INDUSTRIAL & COMMERCIAL TRANSPORTATION APPLICATIONS



Focus Application		Sub-Applications Addressed	TE Product Family
	Sensing & Control	• Sensor and actuator connections • ECU & module interfaces • Signal architecture across systems	• NanoMQS Miniature Connector Systems • Control Unit Header (CH2) Connector Solutions • MCON 0.50 Connector System
	Power Distribution & Control	• ECUs & control modules • BMS • Inverters • E-axles • Lighting power circuits	• Generation 50 Sealed Connector System • NanoMQS Miniature Connector Systems • Control Unit Header (CH2) Connector Solutions • MCON 0.50 Connector System • PicoMQS Miniature Connector Systems
	In-Vehicle Data Systems	• Ethernet backbone (zonal architecture) • Ultra-high-speed links for HPCs • AI compute & future scaling	• GEMnet Multi-Gigabit Ethernet Connector Systems • MATEnet Ethernet Connector Systems
	External Sensing & Communications	• Cameras • RADAR and LIDAR • Telematics • Ethernet-based cameras and sensors	• GEMnet Multi-Gigabit Ethernet Connector Systems • MATEnet Ethernet Connector Systems • MATE-AX Coaxial Connector Systems • Control Unit Header (CH2) Connector Solutions

MINIATURIZED CONNECTIVITY APPLICATIONS ACROSS INDUSTRIES >

MINIATURE CONNECTIVITY SOLUTIONS FOR INDUSTRIAL APPLICATIONS



Focus Application		Sub-Applications Addressed	TE Product Family
	Control & Power Systems	• Motors and drives • ECU/PLC and control module interfacing • Standardized platform connectivity across machine architectures	• MCON 0.50 Connector System • Generation 50 Sealed Connector System
	Machine-Level Sensing & Intelligence	• Sensor and low-power signal connections • Sensor and actuator integration • Standardized interfaces across sensor networks	• NanoMQS Miniature Connector Systems • Control Unit Header (CH2) Connector Solutions
	Smart Factories	• Machine vision • High-speed compute • Industrial Ethernet links • Edge AI systems	• GEMnet Multi-Gigabit Ethernet Connector Systems • MATEnet Ethernet Connector Systems • MATE-AX Coaxial Connector Systems
	Connected Machines	• Coax/RF for cameras • Antennas • Ethernet-based vision and sensor systems	• MATE-AX Coaxial Connector Systems • GEMnet Multi-Gigabit Ethernet Connector Systems

[MINIATURIZED CONNECTIVITY APPLICATIONS ACROSS INDUSTRIES](#) ➤

MINIATURE CONNECTIVITY SOLUTIONS FOR DIGITAL DATA NETWORKS APPLICATIONS



Focus Application		Sub-Applications Addressed	TE Product Family
	Compute & Control Systems	- Power and signal in control & compute modules - Standardized modular architectures across platforms (data centers, industrial control, transportation compute nodes)	MCON 0.50 Connector System Generation 50 Sealed Connector System NanoMQS Miniature Connector Systems PicoMQS Connector System Control Unit Header (CH2) Connector Solutions
	Edge Device & Sensor Networks	- Low-power device connections - Dense sensor/actuator integration - Standardized signal and power interfaces	NanoMQS Miniature Connector Systems PicoMQS Connector System MCON 0.50 Connector System Control Unit Header (CH2) Connector Solutions
	High-Speed Network Infrastructure	- Ethernet interconnects in networking equipment - Ultra-high bandwidth links for compute-heavy & AI-driven systems	GEMnet Multi-Gigabit Ethernet Connector Systems MATEnet Ethernet Connector Systems
	Smart Device & Sensor Networks	- Coax/RF connections for antennas, cameras, and high-frequency sensing - Ethernet-based sensors and device connectivity	MATE-AX Coaxial Connector Systems GEMnet Multi-Gigabit Ethernet Connector Systems MATEnet Ethernet Connector Systems

MINIATURIZED CONNECTIVITY APPLICATIONS ACROSS INDUSTRIES >



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