CONNECTED MOBILITY SOLUTIONS
ENABLING TOMORROW’S AUTONOMOUS AND CONNECTED VEHICLES
Redefining the Connected Car

Established in 1938, Molex is one of the world’s largest manufacturers of interconnect products and system solutions for cables, connectors, media modules, Ethernet switches and gateways.

Our expertise and deep experience in high-speed networking, datacom, rugged industrial and automotive solutions enable OEMs and Tier 1 manufacturers to incorporate next-generation vehicle architecture and develop the intelligent vehicles of the future.

COMPLETE SOLUTIONS TO ACHIEVE YOUR VISION

Our capabilities are constantly evolving to meet the demanding requirements for autonomous driving, infotainment and connectivity. We take a holistic solutions mentality to achieve end-to-end connectivity and optimal performance.
We believe that complete end-to-end signal integrity within a full-vehicle network architecture can be achieved. To accomplish this, we are developing groundbreaking solutions, establishing an ecosystem, investing in key technologies and working alongside industry-leading suppliers and collaborators who share our vision.

ADAS/AD (Advanced Driver Assist Systems/Autonomous Driving)
Molex develops connectivity solutions that enable vehicle-to-vehicle and vehicle-to-infrastructure communication. The center of our solutions is the Molex Gateway, a secure hub that gathers and processes data from all components and zones, then routes it to a functional domain. The Molex Gateway seamlessly integrates multiple hardware and software systems as well as legacy automotive protocols.

In-Vehicle Infotainment
Molex solutions provide the in-vehicle processing power and connectivity needed for effective communication within an intelligent vehicle network. Our cutting-edge connectivity solutions enable high-speed data and content transmission to vehicle displays and user interfaces, creating an optimal user experience.

Connectivity
With our expertise in high-speed data transmission, prioritization, scalability and security, Molex is enabling faster, more streamlined vehicle connectivity than ever before. Our Ethernet Automotive Network delivers end-to-end data integration and prioritization for a range of vehicle profiles. The network allows for OTA updates, diagnostics, telematics and analytic smart learning integration, with seamless communication between the vehicle and the cloud.
Molex’s award-winning Automotive Ethernet Network Platform addresses the needs of automotive OEMs for a safe and safe-operational vehicle. We are translating automakers’ needs for a secure, reliable and connected vehicle foundation into a high-performance computing network platform on wheels.

This future-ready, Ethernet-based vehicle architecture delivers seamless multi-zone integration across multiple hardware and software systems — with the flexibility to incorporate legacy automotive protocols. With the 10 Gbps automotive Ethernet platform from Molex, the fully autonomous vehicle is one step closer.

**Key Capabilities**

- Automotive Ethernet Connectivity
- Legacy Automotive Connectivity
- PKI Authentication Certificate
- Multi-Zone Fail Operational
- Machine Learning Integration
- Firewalls and VLAN Routing
- Diagnostics: BIST, DIOP, Link QoS
- AUTOSAR Classic
- Time Sensitive Network (TSN) - AVB

**Key Interface**

- 10 Gbps 10GBase-TX Ethernet Ports
- 2.5 Gbps Base-TX Ethernet Port
- 1 Gbps 1000Base-T1 Ethernet Ports
- 100Mbps 100Base-T1 Ethernet Ports
- USB 2.0 OTG
- CAN-FD Ports
- LIN Ports

**Next Generation**

- USB 3.1 Gen1 (5 Gbps)
- LVDS Inputs
- HDBase-T Port
- MOST, FlexRay

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**Multi-Zone Gateway Vehicle Architecture**

**Key Capabilities**

- Legacy Networks
- Legacy Network Redundancy
- 100 Mbps
- 1 Gbps
- 1 Gbps Redundancy
- 10 Gbps
- 10 Gbps Redundancy
Molex is a leading supplier of high-speed networking cables supporting OEMs in the development of in-vehicle networks that are secure, reliable and provide high bandwidth. We are addressing the increased demand for in-vehicle processing power by providing an end-to-end Ethernet-based solution that operates at high bandwidths across multiple hardware and software components. This allows us to seamlessly connect high-speed sensor, sensor clusters and Ethernet network platforms.

### Application Based on Data Speed Performance

<table>
<thead>
<tr>
<th>Data Speed</th>
<th>Applications</th>
<th>Product</th>
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</thead>
<tbody>
<tr>
<td>20 Gbps+</td>
<td>ADAS/AD sensor data</td>
<td>HSAutoGig</td>
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<td></td>
<td>Autonomous driving instrument cluster</td>
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<td></td>
<td>ADAS Modules</td>
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<tr>
<td>20 Gbps</td>
<td>ADAS/AD sensor data</td>
<td>HFM</td>
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<td>Autonomous driving</td>
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<td>Camera</td>
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<td>Antenna</td>
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<td>GPS</td>
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<td></td>
<td>Gateway/switch</td>
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<td></td>
<td>4K displays</td>
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<td>Infotainment</td>
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<td></td>
<td>Internet</td>
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<td></td>
<td>Navigation</td>
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<td></td>
<td>NextGen wireless LAN</td>
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<td></td>
<td>Sensors</td>
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<td></td>
<td>Surround view</td>
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</table>

### Protocols by Data Speed Performance

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<thead>
<tr>
<th>Data Speed</th>
<th>Protocols</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 G</td>
<td>GMSL3</td>
<td>HSAutoGig</td>
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<td></td>
<td>NGAUTO</td>
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<tr>
<td></td>
<td>10GBase-Tx</td>
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<tr>
<td>10 G</td>
<td>USB3.0</td>
<td>HSAL2</td>
</tr>
<tr>
<td></td>
<td>HDMI</td>
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<td></td>
<td>DisplayPort</td>
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<tr>
<td>1 G</td>
<td>1000Base-T1</td>
<td>HSAL2</td>
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<tr>
<td></td>
<td>FPD-Link-Illuminated</td>
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<tr>
<td>100 M</td>
<td>A2B</td>
<td>Illuminated</td>
</tr>
<tr>
<td>10 M</td>
<td>A2B</td>
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</table>

Molex High-Speed Networking Cable Solutions are offered at a variety of data rates to meet the needs of ADAS and AD, in-vehicle infotainment or connectivity applications while running at different protocols to transmit the data.
As a leading supplier of high-speed networking solutions, Molex is supporting OEMs in the development of in-vehicle networks that are secure, prioritized, reliable and high bandwidth. Building upon its strength in cables, connectors, media modules and signal integrity innovations, Molex is addressing the increased demand for in-vehicle processing power.

### Gateway Solutions

**HSAUTOLINK I**

- **Speed**: 2 Gbps
- **Protocol**: Up to 100 Base, USB 2.0
- **Cable type**: UTP, STP
- **Application**: Connected vehicle services, Diagnostics/Data upload, Infotainment, Navigation, Telematics, Display

**HSAUTOLINK II**

- **Speed**: 13 Gbps
- **Protocol**: Up to 1000 Base, USB 2.0/3.0, DisplayPort, FTP
- **Cable type**: UTP, STP, TwinAx
- **Application**: Camera sensor based, Camera, Controller, Diagnostics/Data upload, Infotainment, Navigation, Telematics, ADAS

**HSAutolink II Hybrid**

- **Speed**: 6 Gbps
- **Protocol**: Up to 1000 Base
- **Cable type**: UTP, STP, TwinAx
- **Application**: Camera sensor based, Camera, Controller, Diagnostics/Data upload, Infotainment, Navigation, Telematics, ADAS

**High-Speed Fakra Mini**

- **Speed**: 20 Gbps
- **Protocol**: Up to MultiGig Ethernet
- **Cable type**: Coax
- **Application**: Instrument cluster, ADAS, Modules, Camera, Antenna, GPS, Gateway/Switch, 4K displays, Infotainment, Internet, Navigation, NextGen wireless LAN, Sensors, Surround view

### HSAutoGig

- **Speed**: 20 Gbps
- **Protocol**: Up to MultiGig Ethernet
- **Cable type**: STP, TwinAx
- **Application**: Instrument cluster, ADAS, Modules, Camera, Antenna, GPS, Gateway/Switch, 4K displays, Infotainment, Internet, Navigation, NextGen wireless LAN, Sensors, Surround view, Buses, Trucks, Taxi, Self driving

### USB Illuminated

**USB Power Delivery Module**

- **Speed**: Type A 480 Mbps, Type C 480+ Mbps
- **Protocol**: USB 2.0, USB 3.0
- **Cable type**: STP
- **Application**: Infotainment, Navigation, Media modules

**Media Modules & Smart Charger Solutions**

- **Smart Charger Solutions**
  - **Features & Benefits**: USB-A, Type C interfaces and BC 1.2, MFI and Type C charging protocols, LED back lighting, Optional covers

  - **USB Illuminated**
    - **Features & Benefits**: Supports up to 60W charging on two USB-C devices simultaneously at 75°C and 12V
    - **Application**: Supports up to 45W charging on two USB-C devices simultaneously at 75°C and 9V
    - **Surface-mount solution with compact package size (75x65x28)**
    - **Molex Mega-Fit power connector on the rear**

  - **USB Power Delivery Module**
    - **Features & Benefits**: Supports up to 60W charging on single USB-C Device at 65°C and 9V
    - **Application**: Surface-mount solution with compact package size (75x65x28)

**Media Hub Solutions**

- **Features & Benefits**: USB-A and Type C interface, USB 2.0 support, BC 1.2, MFI and Type C charging protocols, Apple CarPlay, Android Auto and CarLife host sharing support, SD card and digital and analog Aux jack support, LED back lighting

**Ethernet Gateway/Switch Solutions**

<table>
<thead>
<tr>
<th>Speed</th>
<th>Protocol</th>
<th>Cable type</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>1G Ethernet</td>
<td>1G Base T1 Ethernet ports with PoDl, 1000 Base T1 ports, 1G Tx diagnostic port, CAN ports, USB ports, Power ports</td>
<td></td>
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</tr>
<tr>
<td>10G Ethernet</td>
<td>10G Ethernet ports, 2.5G Ethernet port, 100 Base T1 Ethernet ports with PoDl, 1000 Base T1 ports, 1G Tx diagnostic port, CAN ports, USB ports: Power ports, Software stack</td>
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