CONNECTED MOBILITY SOLUTIONS ›

Innovative solutions for automated driving and connected vehicles

molex

ENGINEERING TOMORROW'S VEHICLES ›

THE FOUNDATION FOR AUTOMOTIVE OEMs IN THEIR DRIVE TOWARD THE FULLY AUTONOMOUS VEHICLE

Redefining the Automated and 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 enables the automotive industry to incorporate next-generation vehicle architectures and develop the intelligent vehicles of the future.

In addition, Molex delivers a powerful product portfolio of external communication solutions — including vehicle antennas, telematics control units and V2X connectivity platforms.

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 vehicle connectivity and optimal system performance.

HIGH-SPEED NETWORKING SOLUTIONS
BEST-IN-CLASS DATA SPEEDS FOR SEAMLESS CONNECTIVITY

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 sensors, sensor clusters and Ethernet network platforms.

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.

Applications by Data Speed Performance

Data Speed	Applications		Product
20 Gbps+ **20 Gbps**	ADAS/AD Antenna Camera Display Gateway/Switch	Infotainment Sensors Telematics Vehicle Computer	**HSAutoGig** **HFM** Licensed by Rosenberger
13 Gbps	ADAS/AD Camera Charging Display	Infotainment Sensors Telematics	**HSAL2** **HSAL2** Hybrid
2 Gbps	Charging Display	Infotainment Telematics	**HSAL1**
480 Mbps+ Pending Update	In-vehicle networks Charging Media modules		**Illuminated**

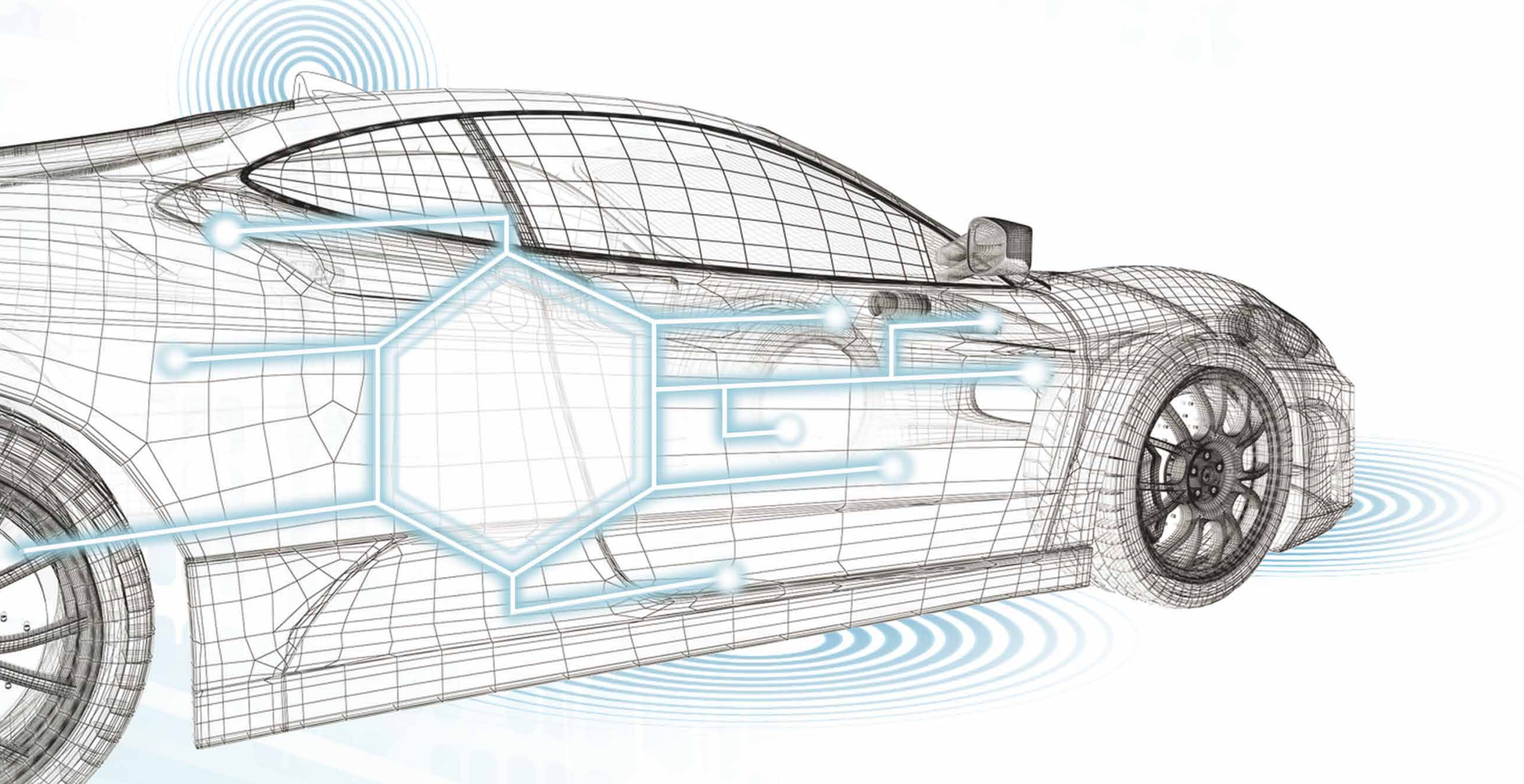
ADAS/AD · In-vehicle Infotainment · Connectivity

Protocols by Data Speed Performance

Protocols	HSAL1	HSAL2	HFM Licensed by Rosenberger	HSAutoGig
Data Speed	0-2 Gbps	0-13 Gbps	0-20 Gbps	0-20 Gbps+
A2B	✓	✓		
100Base-T1	✓	✓		
USB2.0	✓	✓		
1000Base-T1	✓	✓		
FPD-LINK-II		✓	✓	✓
Apix2		✓	✓	✓
GMSL		✓	✓	✓
FPD-LINK-III		✓	✓	✓
Apix3			✓	✓
DisplayPort		✓		
GMSL2		✓	✓	✓
USB3.X		✓		
GMSL3		✓	✓	✓
NGAUTO				✓
FPD-Link-IV		✓	✓	✓
10GBase-Tx				✓

END-TO-END DATA CONNECTIVITY

We believe that complete end-to-end signal integrity within a full-vehicle network architecture is fundamental. To support 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

At the center of our solutions are the Molex Gateways, secure hubs that gather and process data from all components and zones, then route it to a vehicle computer platform. 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 connectivity needed for effective communication within an intelligent vehicle network and the smart device vehicle integration expected by today's drivers and passengers.

Vehicle Connectivity

Seamless communication with the cloud is one of the most critical factors for the connected vehicle. As a company trusted by the world's leading automotive brands, we are providing sophisticated antenna design combined with the development of vehicle-communication devices.

ETHERNET-BASED VEHICLE ARCHITECTURE › APPROACHING FULL VEHICLE AUTONOMY

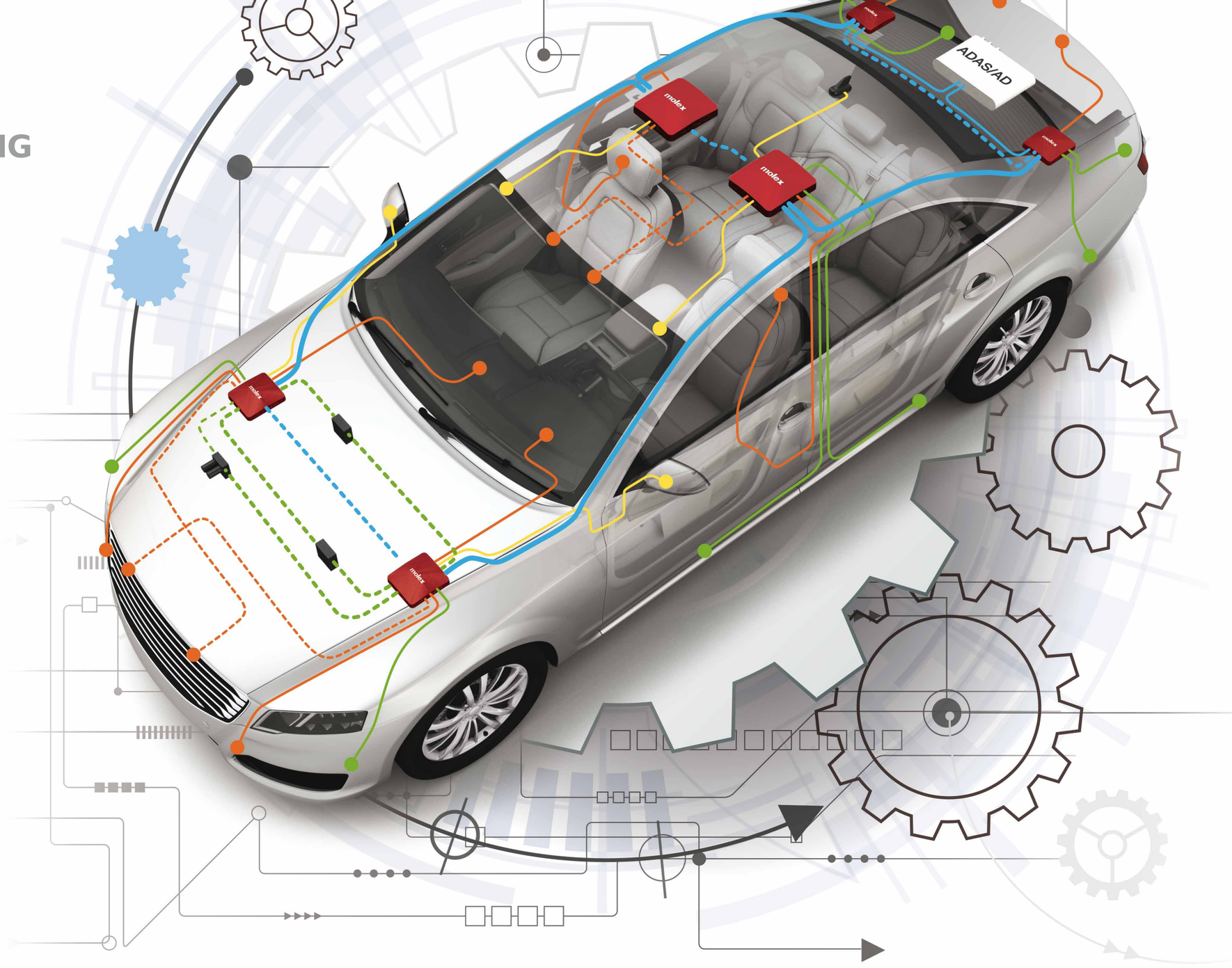
ADAS/AD

Molex's award-winning Automotive Ethernet Network Platform addresses the needs of automotive OEMs for a safe and fail-operational vehicle. We are translating automakers' needs for a secure, reliable and connected vehicle foundation into a 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.

Multi-Zone Gateway Vehicle Architecture

- Legacy Networks
- Legacy Network Redundancy
- 100 Mbps
- 1 Gbps
- 1 Gbps Redundancy
- 10 Gbps
- 10 Gbps Redundancy



Ethernet Gateway and Switch Solutions –
Driving the transformation of in-vehicle networks.

Key Capabilities	Key Interface	Next Generation
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	10 Gbps 10GBase-TX Ethernet Ports 2.5 Gbps Base-TX Ethernet Port 1 Gbps 1000Base-T1 Ethernet Ports 100 MBps 100Base-T1 Ethernet Ports USB 2.0 OTG CAN-FD Ports LIN Ports	USB 3.1 Gen1 (5 Gbps) LVDS Inputs HDBase-T Port Most, FlexRay

NEXT-GEN PROCESSING POWER ›
FOR A MORE INFORMED, LESS DISTRACTED RIDE

In-Vehicle Infotainment

Molex has developed best-in-class wireless charging systems and antenna coupling with multiband compensers that deliver rapid charging and cellular signal — all resulting in an optimal in-vehicle user experience.

COMPENSER

Best mobile reception with patented high-frequency technology

MINI 50

Reliable receptacle performance in tight and limited spaces

USB HUB

The full USB-C power delivery integration of mobile devices into the car

HIGH-SPEED CABLING

Delivering 20 Gbps+ of data speed, supporting radar, camera, LiDAR, sensor applications and more

WIRELESS CHARGING

The smart way to charge mobile devices

Our cutting-edge connectivity solutions enable high-speed data and content transmission to vehicle displays, user interfaces and smart consumer devices.

SEAMLESS COMMUNICATION BETWEEN THE VEHICLE AND THE CLOUD

Vehicle Connectivity

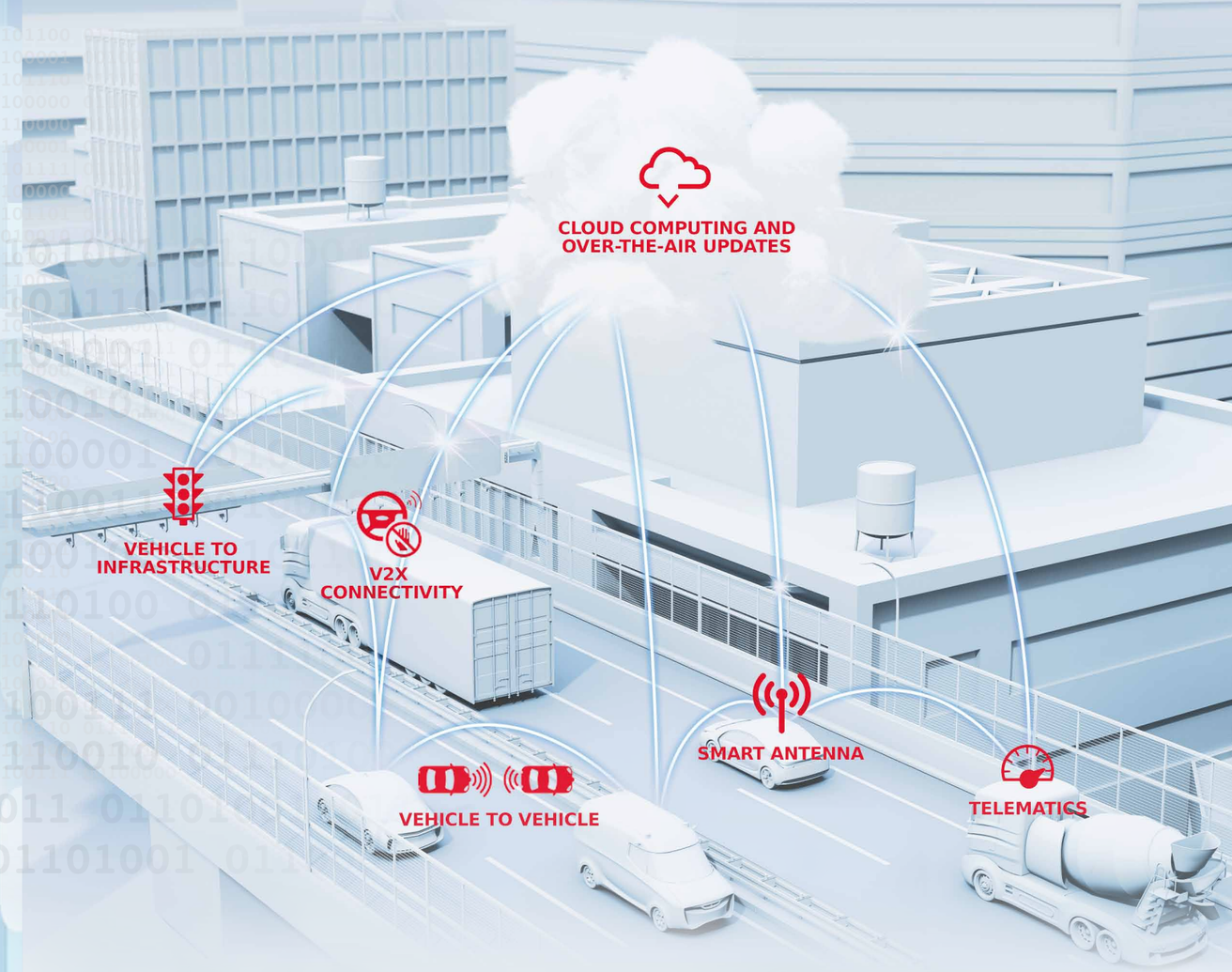
Vehicle Antenna Solutions

Molex antenna products are developed with industry-leading RF expertise to ensure the best possible connectivity. Molex specializes its custom OEM antenna to exactly fit customers' needs by offering a wide variety of single and multi-band antennas. To fulfill the growing requirements of connected vehicles, Molex developed multi-band antennas.

Vehicle Communications Devices

The requirements for in-vehicle connectivity hardware grow with new scenarios and use cases. Specifications become more complex and demanding. Molex MAX (Modular Automotive Connectivity Solution) is a secure modular and scalable Linux-powered solution which enables services and can be customized optimally to vehicle class and conditions of the OEM by individual configuration.

Expert studies predict that all new vehicles will soon be connected through the Internet of Things (IoT). Molex understands this need and offers complete vehicle embedded connectivity solutions, including cellular and DSRC-based V2X-Technologies.



Modular Connectivity Capabilities

CELLULAR CONNECTIVITY
- LTE Advanced
- LTE
- 3G
- 2G
- eSIM
- SIM

GNSS
- Multi-Constellation
- Gyro
- Dead reckoning
- RTK/PPP (optional)

FOTA

DIGITAL I/OS

DEVICE CONNECTIVITY
- USB 2.0
- Bluetooth
- Wlan 802.11 n/ac
- Bluetooth Low Energy

SECURITY
- Mechanisms
- HSM

AUDIO
- Speaker
- MIC
- A2B

APPLICATION PROCESSOR
- PAN EU
- Flashmemory extension (eMMC)
- Telematics Software API
- Molex Automotive Linux and Power Management

VEHICLE CONNECTIVITY
- Automotive Ethernet
- AutoSAR (optional)
- J1708
- CAN
- LIN / K-Line

ECALL/SVT
- PAN EU
- ERA/GLONASS (optional)
- Accerlerometer
- BUB

5G ›
IN THE FUTURE CONNECTED VEHICLE

New Mobile Standard Brings the Connected Vehicle to Life

Mobile communication has become an essential part of our daily lives, and users are demanding faster data speeds and more reliable services. To solve these challenges, the whole infrastructure ecosystem is undergoing some transformational changes — the move to 5G, the next-generation network to deliver increased bandwidth for higher data rates at low latency. It will enable new technologies and uses cases as well as the next phase in connected vehicles.

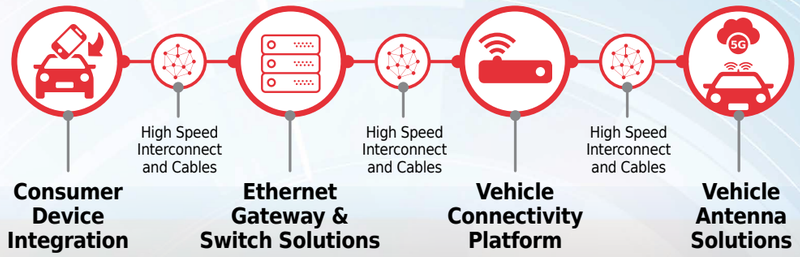
Ultra-Reliable Low Latency

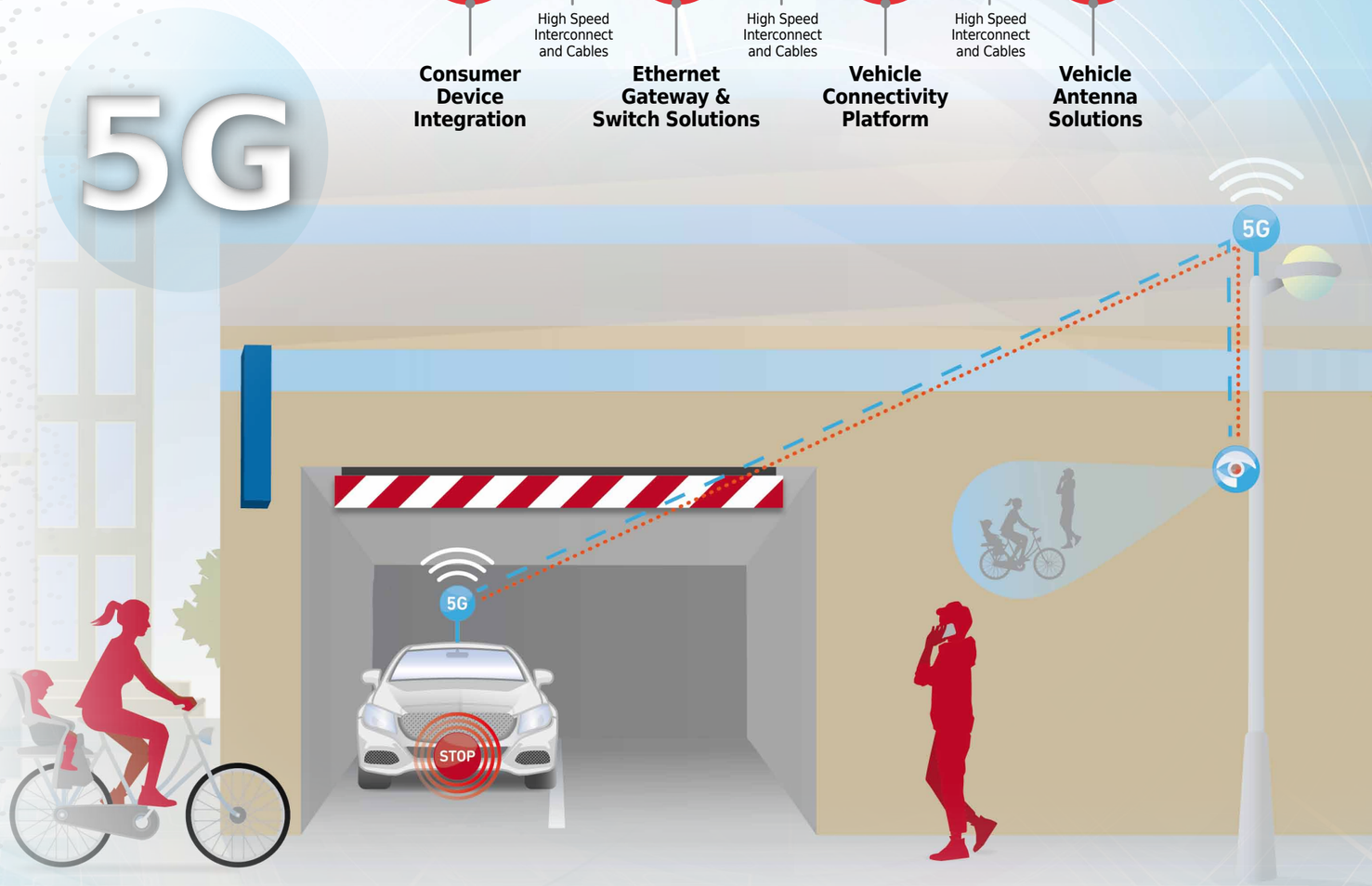
With ultra-reliability delivering lower latency, high-speed is essential for autonomous/automated driving and the implementation of security features in the connected vehicle.

Ready for 5G

Molex smart antennas are ready for 5G technology in order to transfer data between vehicles and infrastructure.

Molex Automotive Connectivity Solution





Use Case Illustration

- Street lamp camera detects pedestrian and cyclist
- Camera transmits data to 5G smart antenna of vehicle
- Vehicle Connectivity Platform (TCU) sends data to gateway
- Gateway transmits data via Automotive Ethernet to braking system
- Car stops to allow pedestrian and cyclist to pass safely

Discover the future of connected mobility at:
www.molex.com/connected-mobility

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