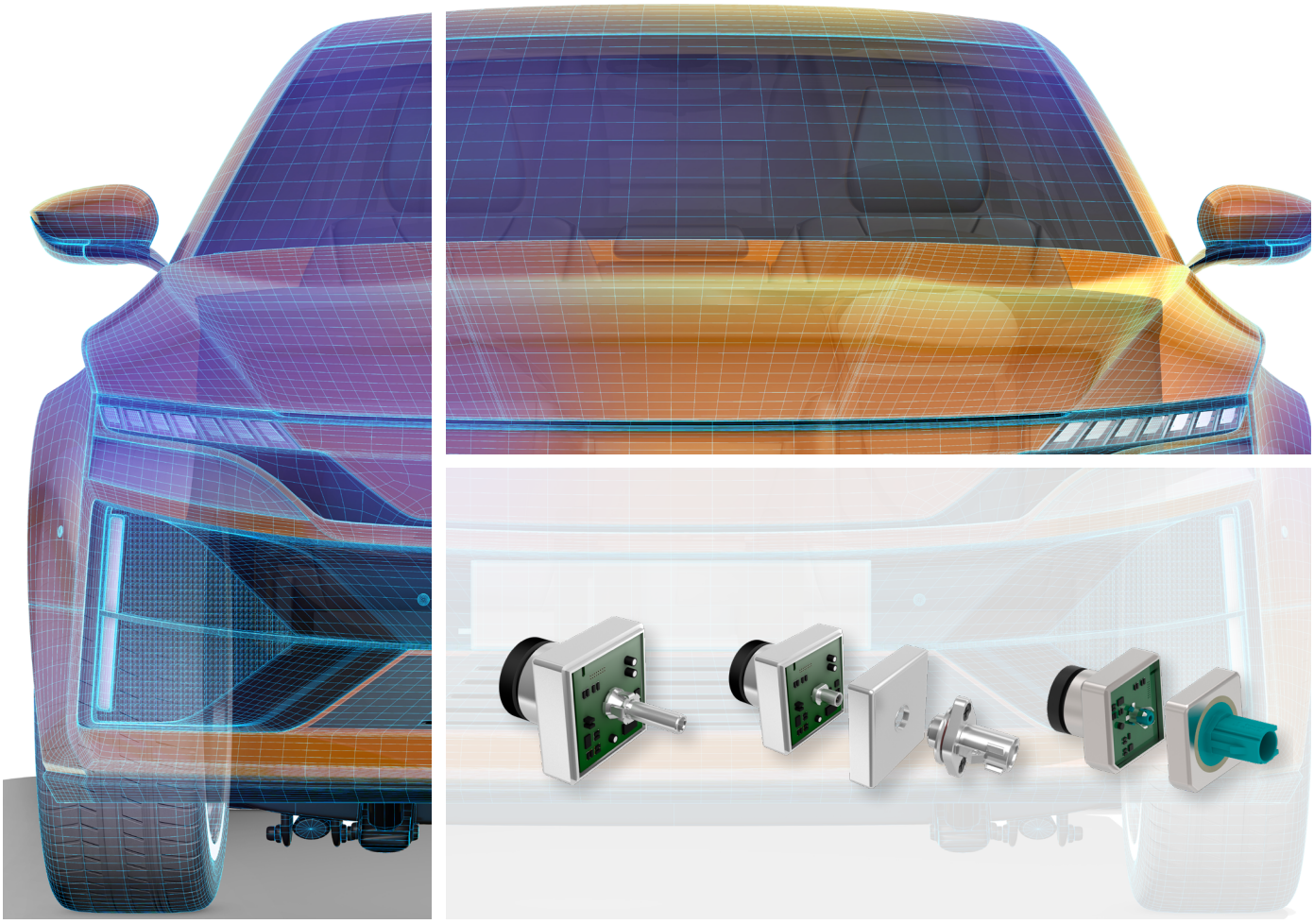
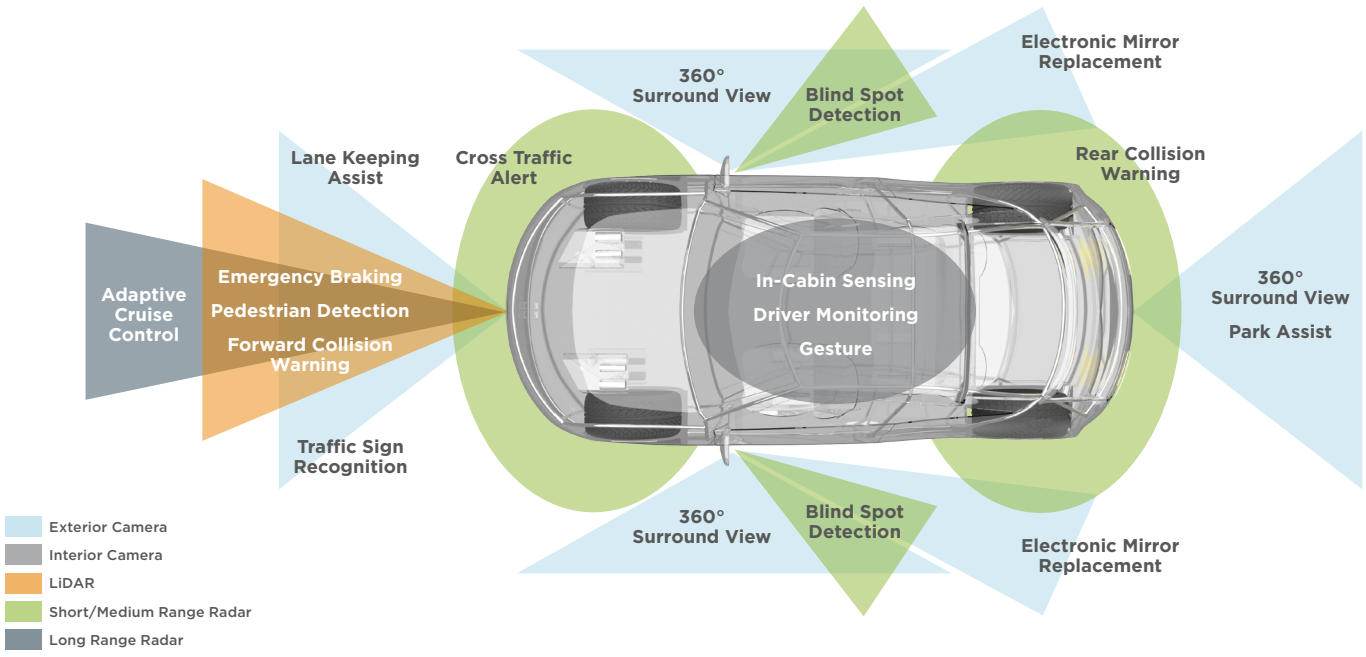
COAXIAL CONNECTIVITY SOLUTIONS FOR AUTOMOTIVE CAMERAS



Compared to LiDAR (Light Detection and Ranging) and RADAR (Radio Detection and Ranging), cameras offer a number of advantages such as being able to see colors, making them an excellent solution for environmental interpretation. They can also be deployed as a stereo vision system or in conjunction with LiDAR and RADAR for advanced driver assistance applications that provide accurate information about objects' distance and speed. Applications include surround view, lane departure warning, adaptive cruise control, blind spot recognition and smart cameras that recognize the environment.

Increased ADAS (Advanced Driver Assistant Systems) safety levels, including increasing vehicle automation, is driving the need for advanced camera capabilities with higher resolution and frame rates. This leads to an increased amount of data that must be reliably transmitted from the ADAS system, including the camera itself, to the signal-processing control unit.

To meet these increasing demands, TE Connectivity (TE) offers an innovative broadband coaxial connector portfolio that is precisely tailored to the requirements of next-generation automotive camera systems.



The safety relevance of camera modules presents specific requirements and challenges in relation to data connectivity performance, robustness and reliability.

TE Connectivity offers a comprehensive portfolio of broadband coaxial camera connectivity solutions covering the requirements of almost all automotive cameras available on the market.

Floating Header Solutions

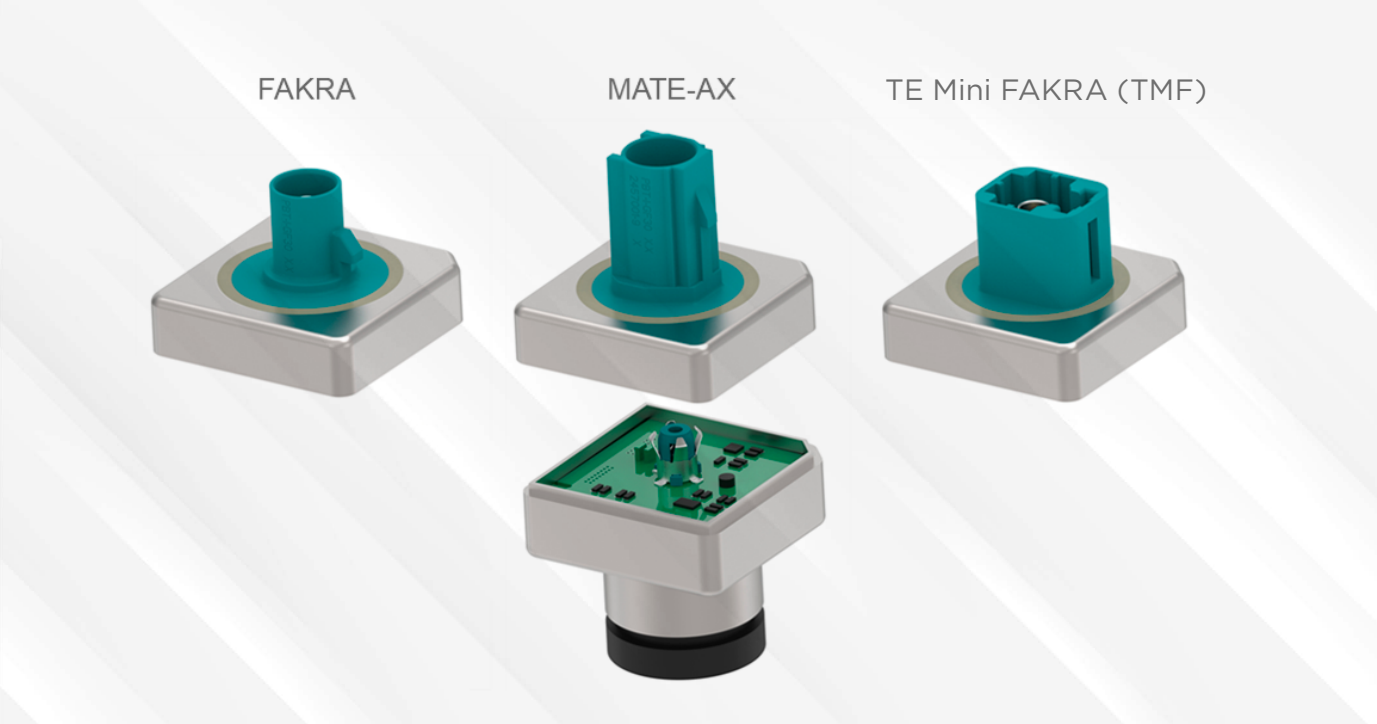
Our standard floating connectors support high-end 8-12 megapixel cameras with frame rates of 30-60 frames per second (fps). They combine compact design with high bandwidth and a high-level misalignment compensation.*

We offer 2-piece HD connectors that support a bandwidth of 6 GHz and beyond providing misalignment compensation of ± 0.5 mm in all directions.

The 2-piece floating solution is designed for very low normal insertion forces to the PCB and is therefore an excellent solution for a one-PCB camera design, with an imaging sensor positioned opposite the floating header.

* Further compact solutions for specific assembly space requirements are available on request

2-Piece Floating Header Solution

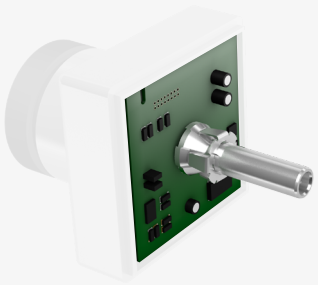


- Misalignment compensation of ± 0.5 mm in all dimensions
- 6 GHz for HD camera systems
- Customizable housing including press-fit and over-moulded options
- Choice of FAKRA, MATE-AX or TMF interconnection system interfaces
- High sealing class: Up to IP6K9K

Fixed Header Solutions

Our fixed header solutions combine outstanding RF and EMI EMI performance. The header is soldered directly to the PCB and, with the availability of SMT (Surface Mounted Technology) and through-hole (TH) variants, are highly suited to both single or multi-PCB cameras.

In addition, optimal EMI shielding can be warranted with a spring-loaded connection between the connector grounding to a metal camera housing.



- **Non-floating design**
- **SMT or TH variant available**
- **Excellent signal integrity and shielding**
- **Optional spring-loaded GND connection**
- **Choice of interfaces (FAKRA interconnection system or MATE-AX interconnection system)**
- **High sealing class: IP6K9K**

Overview

Our solution variants are customizable and adaptable for a perfect fit to your camera module, including: length; interface (FAKRA interconnection system or MATE-AX interconnection system) or PCB mounting technology (surface-mounted, through-hole or solderless).

Connectors‘ interfaces are interchangeable between FAKRA interconnection system and TE’s MATE-AX interconnection system and are available with 180° and 90° mounting direction.

In addition to an outer sealing, variants feature an inner sealing for water proofing IP6K9K.

TE Connectivity’s Coaxial Connectivity Solutions at a Glance

- Floating and fixed header solutions
- Single and multi-PCB support
- High-level of misalignment compensation: ±0.5 mm in all directions for floating solutions
- Highly compact design
- Broadband connectivity to support 8-12 megapixel HD cameras with up to 60 frames per second
- Water resistant of IP6K9K
- Support the current and next-generation automotive coaxial SerDes protocols
- Supports phantom power supply
- Compatible to metal and plastic camera housings

Coaxial Connectivity Solutions for Automotive Cameras

1P Fixed Camera Connector

- Non-floating design
- TH variant available (SMT potential in the future)
- Excellent signal integrity and shielding
- Optional spring-loaded GND connection
- Choice of interface (FAKRA or Mini coaxial connectors)
- RF performance up to 6 GHz
- High sealing class: IP6K9K on request

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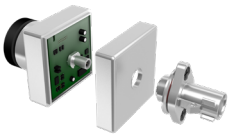
2P Fixed Camera Connector



- RF performance up to 6 GHz
- VSWR: < 1.6 up to 6 GHz
- IP6K9K dust and water protection
- High pressure air leak rate: ≤0.1cc/min
- Air pressure 200±10Kpa, Charge time 5s,
- Keep balance time 10s, Test time 15s
- Operating temperature: -40°C to +105°C
- Vertical compensation of up to ±0.50mm
- TH and SMT variant available

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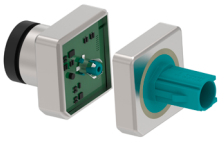
180 deg pigtail

90 deg pigtail

2P Floating Camera Connector



- RF performance up to 6 GHz
- IP6K9K dust and water protection
- Operating temperature: -40°C to 125°C
- x- and y-axial floating range of up to ±0.50mm
- Vertical compensation of up to ±0.50mm
- VSWR: < 1.6 up to 6 GHz
- Surface mount – single side PCB usage
- Choice of FAKRA, MATE-AX, TMF harness-side interface

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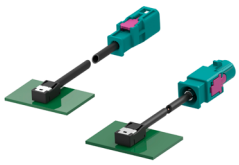
Coax Insulation Displacement Connector (IDC)



- Low overall height of 5.1 mm
- Compatible to standard RG174 cable type
- Simple, fully automatable mating process due to novel coaxial IDC technology
- VSWR: < 1.6 up to 6 GHz
- Excellent shielding efficiency
- Especially designed for In-cabin camera systems

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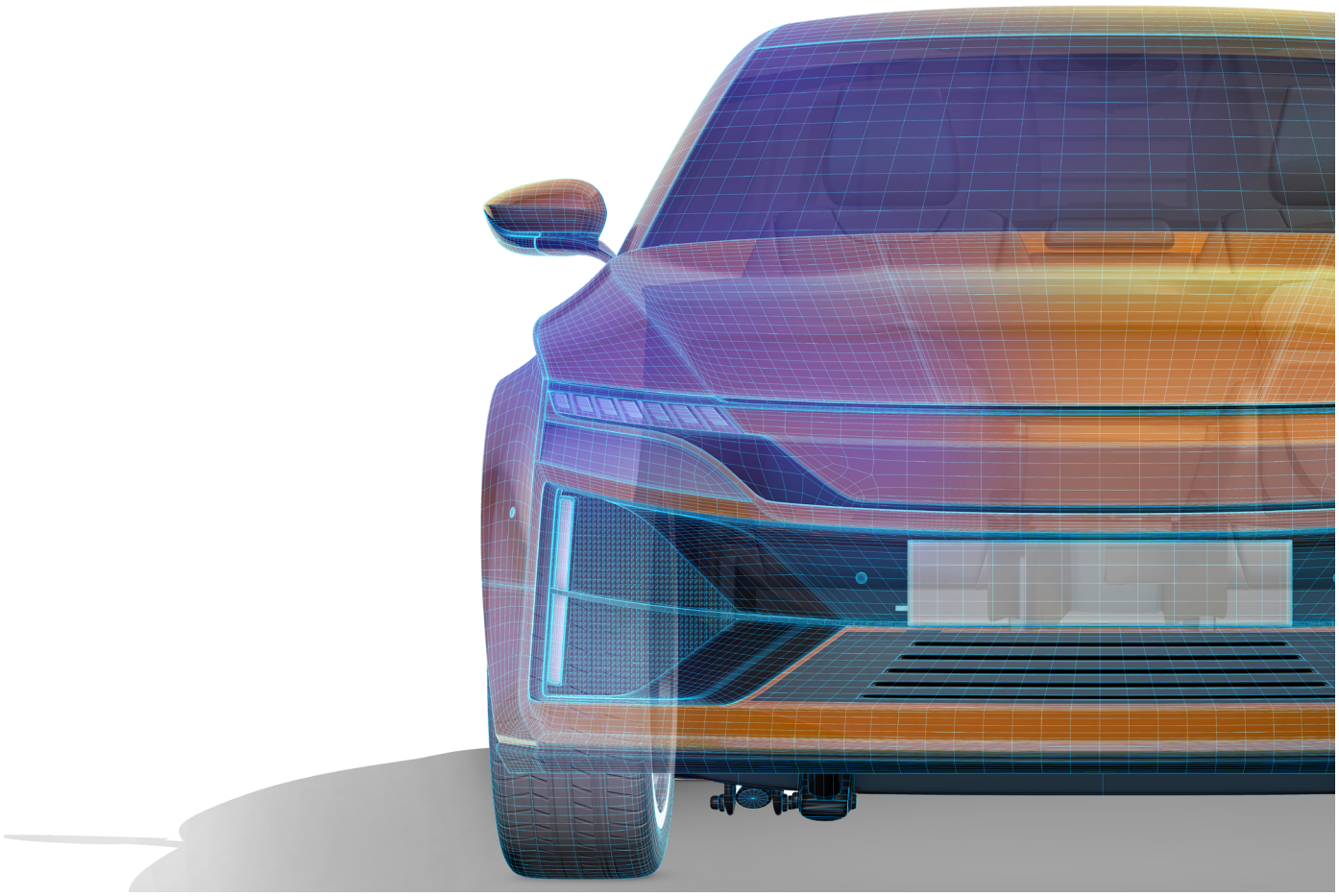

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