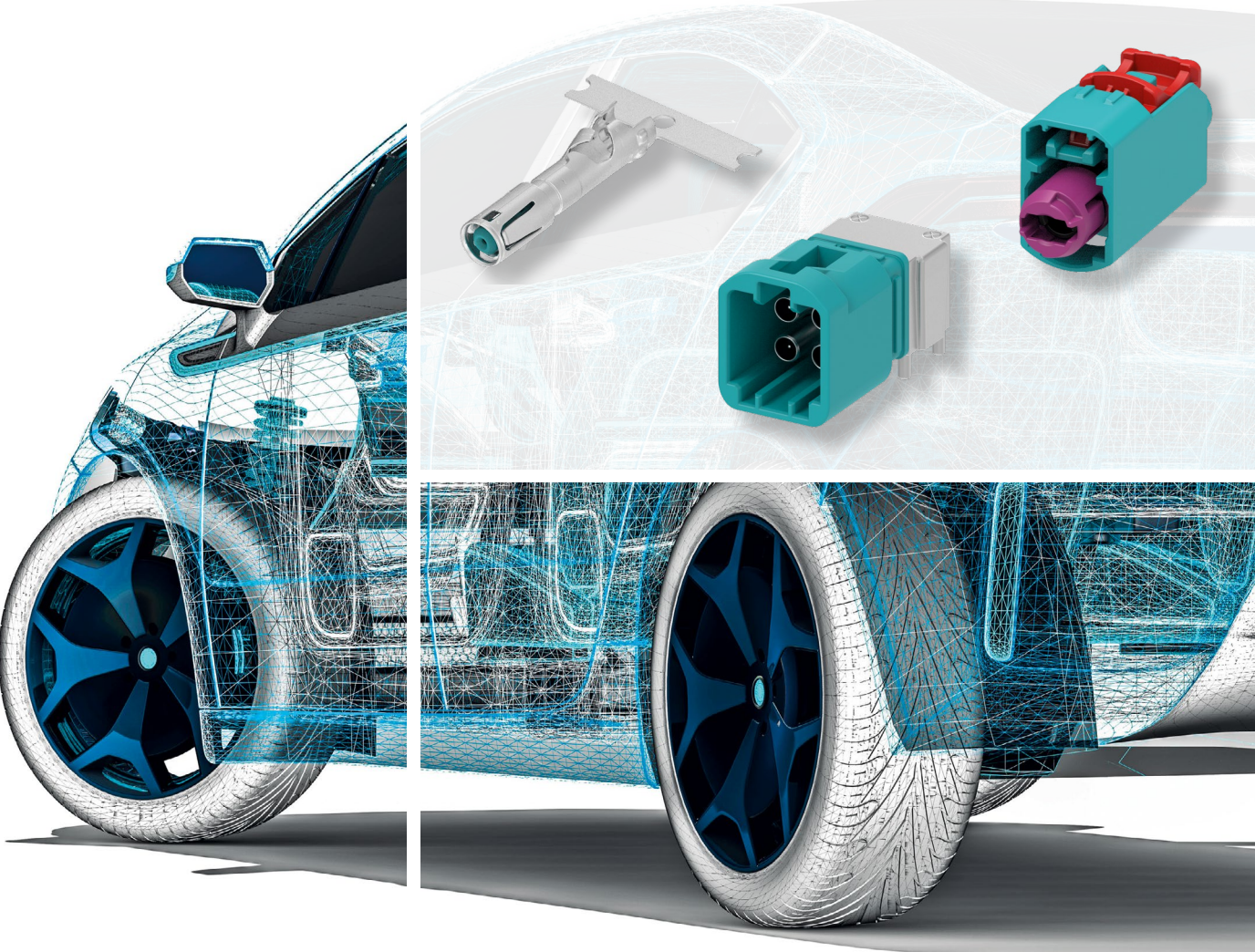# MATE-AX
MINIATURIZED COAXIAL
CONNECTOR SYSTEM

Enabling up to 9 GHz Performance
for Automotive Applications

MATE-AX
Miniaturized Automotive Coax Connector System

RF CONNECTIVITY SOLUTION DRIVERS

A growth in ADAS technologies and applications requiring wireless connectivity is leading to an increase in the number of sensors, cameras and antennas within vehicles. These components receive and transmit large data volumes at high frequency over coaxial cables. At the same time, an increase in the number of electronic devices and components within vehicles is reducing available space and driving the need for component miniaturization and weight reduction.

- **UP TO 75% SPACE REDUCTION**
- **UP TO 34% WEIGHT REDUCTION**
(4x 1pos. FAKRA connector vs. 4pos. MATE-AX connector)

MATE-AX MINIATURIZED COAXIAL CONNECTOR SYSTEM

TE Connectivity's (TE) MATE-AX automotive coax connector system provides a miniaturized solution for high frequency data transmission. This highly robust, EMI-resistant, coaxial connector system for analog signal and digital data transport. The MATE-AX connector system offers higher packaging density, supporting up to 75% space reduction and 34% weight savings, compared to standard FAKRA connectors.

Our MATE-AX connector system is designed to enable modern electrical architectures with high pin-count suitability and a diverse range of headers. In addition, the MATE-AX connector system supports existing cables, enabling easy integration into existing architectures.

Features/Advantages

- Interface released by USCAR
- Tested to USCAR 49
- Anti-stubbing features circumvent bent pins and improper connection
- Fully protected terminals with contact points facing inward
- Shortest terminal on the market allows for additional space in the installation area compare to competition

Market Compatibility

- MIPI
- ASA (Automotive SerDes Alliance)
- GMSL2/3
- FPD-Link III/IV
- APIX3

Typical Applications

- Cameras: Surround View, Lane Assist, High Beam Assist, Blind Spot Detection, Traffic Sign Recognition, Rear View, Driver Monitoring, Gesture Control, Night Vision, Mirror Replacement
- Antennas: 4G, LTE, Smart 5G, Keyless entry, remote parking, BT, WLAN (Hotspot), V2X, DSRC, C-V2X
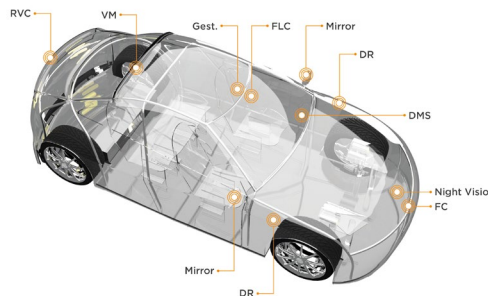
SUPPORTS UP TO 9 GHZ

APPLICATIONS

ADAS
e.g. Surround View, Lane Assist, High Beam Assist, Blind Spot Detection, Traffic Sign Recognition, Rear View, Driver Monitoring, Gesture Control, Night Vision, Mirror Replacement, …

Mono, Stereo, Multi, Rear, Front, Surround, Mirror, …

RVC VM Gest. FLC Mirror DR DMS Night Vision FC Mirror DR

Broadcast (Satellite)
e.g. GNSS/GPS, RTM, AM/FM, DAB, …

Communicaton
e.g. 4G, LTE, Smart 5G, Keyless Entry, Remote Parking, BT, WLAN (Hotspots), V2X, Dedicated Short Range Communication (DSRC), C-V2X, …

Roof Top, Celluar (Film), Head Unit, Internior, …

GNSS RTM FM/AM V2X Cellular BT/WLAN Amplifier V2X Cellular
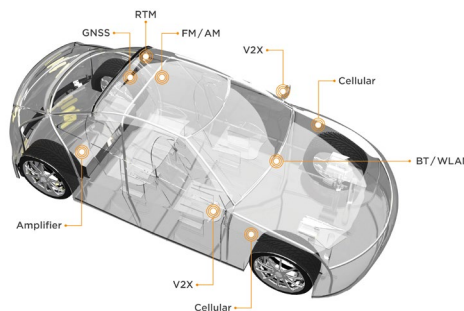
Protocols

SerDes:
GMSL 2/3,
FPD Link III & IV,
APIX 3,
MIPI

MATE-AX HOUSINGS 180° | UNSEALED

	Description	TE Part Number
	1P 180° MATE-AX Female Housing	2310137-1/-2/-3/-4/-5/-6/-9
	1P 180° MATE-AX Female Housing (w/ CPA)	2-2310137-1/-2/-3/-4/-5/-6/-9
	1P 180° MATE-AX Male Housing	2310138-1/-2/-3/-4/-5/-6
	1P 180° MATE-AX Male Housing (EMEA 11 mm Clip Slot)	2-2310138-1/-2/-3/-4/-5/-6
	1P 180° MATE-AX Male Housing (EWCAP 7 mm Slip Slot)	4-2310138-1/-2/-3/-4/-5/-6
	2P 180° MATE-AX Female Housing	2306868-1/-2/-3/-4/-5/-6/-9
	2P 180° MATE-AX Female Housing (w/ CPA)	2-2306868-1/-2/-3/-4/-5/-6/-9
	2P 180° MATE-AX Male Housing	2306498-1/-2/-3/-4
	4P 180° MATE-AX Female Housing	2298721-1/-2/-3/-4/-5/-6/-9
	4P 180° MATE-AX Female Housing (w/ CPA)	2-2298721-1/-2/-3/-4/-5/-6/-9
	4P 180° MATE-AX Male Housing (EMEA 11 mm Clip Slot)	2298724-1/-2/-3/-4/-5/-6/-9
	4P 180° MATE-AX Male Housing (EWCAP 7 mm Slip Slot)	2-2362803-1/-2/-3/-4/-5/-6/-9

Application Specification: 114-94468

Key Code*	A	B	C	D	E	F	Z
Suffix	-1	-2	-3	-4	-5	-6	-9

* Additional key codes available upon request.

MATE-AX HOUSINGS 90° | UNSEALED

	Description	TE Part Number
	1P 90° MATE-AX Female Housing	2343137-1/-2/-3/-4-9
	1P 90° MATE-AX Female Housing (w/ CPA)	2-2343137-1/-2/-3/-4-9
	2P 90° MATE-AX Female Housing	2357600-1/-2/-3/-4/-5/-6/-9
	2P 90° MATE-AX Female Housing (w/ CPA)	2-2357600-1/-2/-3/-4/-5/-6/-9
	4P 90° MATE-AX Female Housing	2343139-1/-2/-3/-4/-5/-6/-9
	4P 90° MATE-AX Female Housing (w/ CPA)	2-2343139-1/-2/-3/-4/-5/-6/-9

Application Specification: 114-94468

Key Code*	A	B	C	D	E	F	Z
Suffix	-1	-2	-3	-4	-5	-6	-9

* Additional key codes available upon request.

MATE-AX HOUSINGS 180° | SEALED

	Description	TE Part Number
	1P 180° MATE-AX Female Sealed Housing	2312192-1/-2/-3/-4/-5/-6/-9
	1P 180° MATE-AX Female Sealed Housing (w/ CPA)	2-2312192-1/-2/-3/-4/-5/-6/-9
	1P 180° MATE-AX Male Sealed Housing	2312193-1/-2/-3/-4/-5/-6/-9
	1P 180° MATE-AX Male Sealed Housing (w/ Clip Slot)	2-2312193-1/-2/-3/-4/-5/-6/-9
	4P 180° MATE-AX Female Sealed Housing	2354439-1/-2/-3/-4/-5/-6/-9
	4P 180° MATE-AX Female Sealed Housing (w/ CPA)	2-2354439-1/-2/-3/-4/-5/-6/-9
	4P 180° MATE-AX Male Sealed Housing	2354440-1/-2/-3/-4/-5/-6/-9

Application Specification: 114-94468

Key Code*	A	B	C	D	E	F	Z
Suffix	-1	-2	-3	-4	-5	-6	-9

* Additional key codes available upon request.

MATE-AX HEADERS 180°

	Description	TE Part Number
	1P 180° MATE-AX Header (w/o Cap)	2380600-1/-2/-3/-4/-5/-6/-9
	1P 180° MATE-AX Header (w/ Cap)	1-2380600-1/-2/-3/-4/-5/-6/-9
	2P 180° MATE-AX Header (w/o Cap)	2357501-1/-2/-3/-4/-5/-6/-9
	2P 180° MATE-AX Header (w/ Cap)	1-2357501-1/-2/-3/-4/-5/-6/-9
	4P 180° MATE-AX Header (w/o Cap)	2378550-1/-2/-3/-4/-5/-6/-9
	4P 180° MATE-AX Header (w/ Cap)	1-2378550-1/-2/-3/-4/-5/-6/-9

Application Specification:
1P Header   114-94571
2P Header   114-94572
4P Header   114-94443

Key Code**	A	B	C	D	E	F	Z
Suffix	-1	-2	-3	-4	-5	-6	-9

* Vertical headers available with or without cap. Add 1- prefix to PN for version with cap.
** Additional key codes available upon request.

MATE-AX HEADERS 90°

	Description	TE Part Number
	1P 90° MATE-AX Header	2394925-1/-2/-3/-4/-5/-6/-9
	2P 90° MATE-AX Header	2306368-1/-2/-3/-4/-5/-6/-9
	4P 90° MATE-AX Header (EMEA)	2304168-1/-2/-3/-4/-5/-6/-9
	4P 90° MATE-AX Header 6 o'clock (EMEA)	1-2304168-1/-2/-3/-4/-5/-6/-9
	4P 90° MATE-AX Header (CN)	2321775-1/-2/-3/-4/-5/-6/-9
	4P 90° MATE-AX Header 6 o'clock (CN)	1-2321775-1/-2/-3/-4/-5/-6/-9
	16P 90° Sealed MATE-AX Header	2401856-1
	4P 90° Sealed MATE-AX Header	2404815-1/-2/-9

Application Specification:
1P Header   114-94571
2P Header   114-94572
4P Header   114-94443

Key Code**	A	B	C	D	E	F	Z
Suffix	-1	-2	-3	-4	-5	-6	-9

* Vertical headers available with or without cap. Add 1- prefix to PN for version with cap.
** Additional key codes available upon request.

MATE-AX TERMINALS

180°

	Description	TE Part Number
1	Ferrule, RTK031	2298126-1 /-2
2	Female 180° Center Contact, RTK031	2298121-1
	Male 180° Center Contact, RTK031	2298125-1
3	Female 180° Outer Contact, RTK031	2298116-1
	Male 180° Outer Contact, RTK031	2298123-1
1	Ferrule, RG174	2298509-1 /-2
2	Female 180° Center Contact, RG174	2298496-1
	Male 180° Center Contact, RG174	2298508-1
3	Female 180° Outer Contact, RG174	2298494-1
	Male 180° Outer Contact, RG174	2298506-1

Application Specification: 114-94413

90°

	Description	TE Part Number
1	Ferrules	2298126-1/-2 2298509-1/-2
2	90° Interface Adapter Assembly (Short)	2327550-1
3	90° Interface Adapter Assembly (Long)	2327550-3
4	Female 90° Center Contact, RTK031	2327554-1
	Female 90° Center Contact, RG174	2327554-2
5	Female 90° Outer Contact, RTK031	2327551-1
	Female 90° Outer Contact, RG174	2327551-2

Application Specification: 114-94566

MATE-AX CABLE ASSEMBLY (EXAMPLE)

Possible configurations: Cable RTK031 - RG174

4P 180° MATE-AX connector, female –
4P 180° MATE-AX connector, female

4P 180° MATE-AX connector, male –
4P 180° MATE-AX connector, female
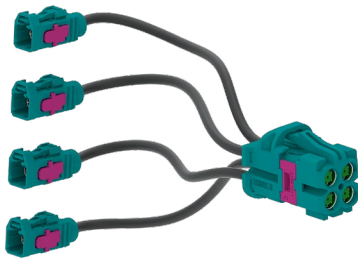
PN 2360001
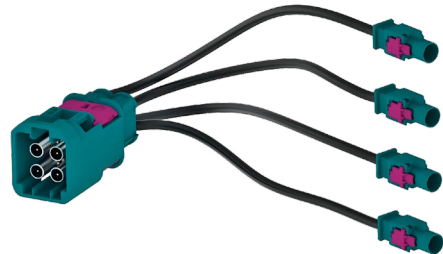4x 1P 180° FAKRA connector, female –
4P 180° MATE-AX connector, female
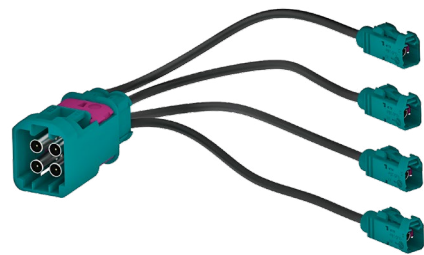
4P 180° MATE-AX connector, male -
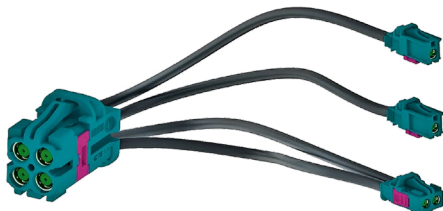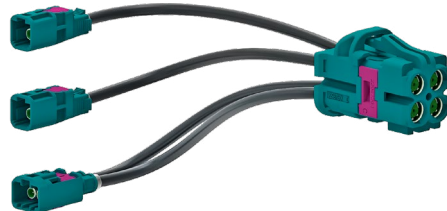4x 1P 180° FAKRA connector, female
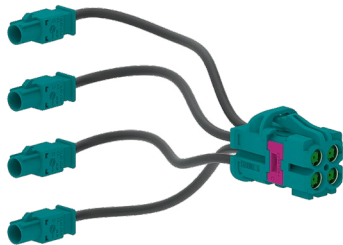
PN 2360000
4x 1P 180° FAKRA connector, male –
4P 180° MATE-AX connector, female

4P 180° MATE-AX connector, male –
4x 1P 180° FAKRA connector, male

4P 180° MATE-AX connector, female –
2x 1P 180° MATE-AX connector, female –
2P 180° MATE-AX connector, female

4P 180° MATE-AX connector, female –
2x 1P 180° MATE-AX connector, male –
2P 180° MATE-AX connector, male

ADAPTERS TEST ADAPTERS

	Description	TE PN
	1P MATE-AX Male RF Adapter	2318194-1
	1P MATE-AX Female RF Adapter	2318195-1
	2P MATE-AX Female RF Adapter	2318196-1
	2P MATE-AX Male RF Adapter	2318197-1
	4P MATE-AX Female RF Adapter	1-523216-0
	4P MATE-AX Male RF Adapter	1-523216-1

APPLICATION TOOLING HAND TOOLS

| Description	Terminal PN	TE PN
MATE-AX Hand Tool Crimping Kit	–	2403795-1
Inner Ferrule Tool (RTK031)	2298126-1	2335290-1
Inner Ferrule Tool (RG174 with foil)	2298509-1	2335290-2
Inner Ferrule Tool (RG174 without foil)	2298509-1	2335290-3
Center Contact Tool (RTK031)	2298121-1 (Socket) 2298125-1 (Pin)	2335280-1
Center Contact Tool (RG174)	2298496-1 (Socket) 2298508-1 (Pin)	2335280-2
Outer Contact Tool (RTK031)	2298116-1 (Socket) 2298123-1 (Pin)	2335300-1
Outer Contact Tool (RG174)	2298494-1 (Socket) 2298506-1 (Pin)	2335300-2

Usage of hand tools only intended for prototyping. Hand tools are not released to use for serial production or validation parts.

APPLICATION TOOLING SEMI-AUTOMATED TOOLING

Description	TE PN
MATE-AX Assembly Line; Includes all 5 workstations.	2415535-1
Cable Processing Kit RG174, 180°; includes all the applicators and 5 locating fixtures or RG174 cable.	2415539-1
Cable Processing Kit RTK031, 180°; includes all the applicators and 5 locating fixtures for RTK031 cable.	2415539-2

APPLICATION TOOLING APPLICATORS

Component PN	Standard Applicator PN	Component PN	Standard Applicator PN
2298116-1	2836234-1	2298508-1	2836900-2
2298123-1	2836899-1	2298509-1	2836798-1
2298121-1	2836263-2	2327551-1	2837745-2
2298125-1	2836902-2	2327554-1	2837746-2
2298126-1	2836235-1	2298126-2	2836235-1
2298494-1	2830797-1	2327551-2	2837747-2
2298506-1	2836901-1	2327554-2	2837748-2
2298496-1	2836602-2	2298509-2	2836798-1
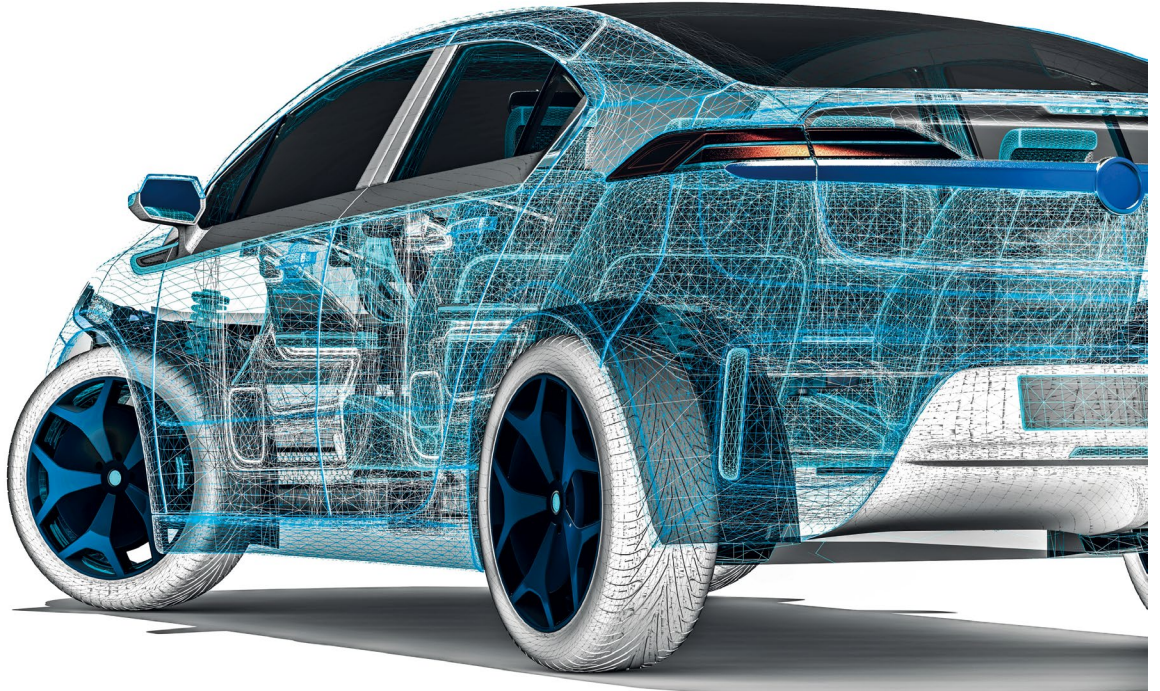
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