



Generation  
**4.0**  
**FAKRA**  
**Connector Series**  
Fully Automated Solution

**Amphenol<sup>®</sup> RF**

[www.amphenolrf.com/automotive](http://www.amphenolrf.com/automotive)

# Overview

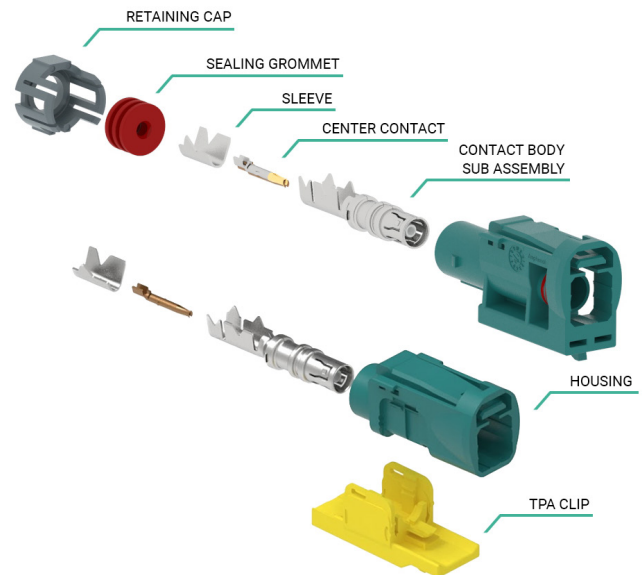
The latest generation of FAKRA connectors, generation 4.0, features an upgraded SMB connector design with stamped and formed construction for fully automated cable termination. The connectors feature removable connector housings for field replacement, if necessary, and are mechanically keyed and color-coded to prevent mismating on the production line. This generation of USCAR and FAKRA 2 compliant connectors is compatible with all previous FAKRA products.

Generation 4.0 FAKRA connectors meet the increasing demands of the automotive industry by offering low-cost, high-quality interconnect solutions. This generation of products is specifically intended for high volume users with factories which utilize high-speed automated cable assembly production. Traditional uses for FAKRA connectors include LVDS surround camera systems, infotainment, GPS navigation and satellite radio. This series of connectors also supports emerging applications such as blind spot monitoring, emergency vehicle warning systems and autonomous capabilities.

This updated line of FAKRA connectors is an integral part of the movement towards autonomous vehicles and supports the infrastructure necessary for cars and roadside applications where this technology is being implemented. These connectors are also being used increasingly in non-automotive markets within “smart” technology while remaining a staple in the automotive space.

## Features and Benefits

- Ruggedized housing with audible locking mechanism
- 14 different mechanical and visual key codes
- Minimum of 25 mating cycles
- Reliable electrical performance up to 6 GHz
- Available in a variety of PCB and cable-mount configurations
- Stamped & formed construction for fully automated cable termination
- FAKRA 2 compatible with enhanced TPA functionality
- Mechanical pull to 90N min.
- Chamber compatible per FAKRA 2 specification
- Connector housings are removable for field replacement



## Applications











































- 360-degree surround view cameras
- Wireless remote controls
- Sensor connections
- Infotainment
- Vehicle controls
- Compute modules
- GPS
- Bluetooth
- Satellite radio and AM/FM radio



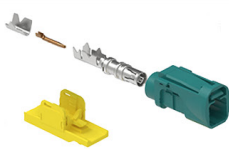






# FAKRA/USCAR Mechanical Coding

## FAKRA/USCAR MECHANICAL CODING

	JACK	PLUG	RAL	COLOR	APPLICATION
<b>A</b>			9005	 Jet Black	DAB/AM-FM
<b>B</b>			9001	 Cream	DAB with Power / AM-FM
<b>C</b>			5005	 Signal Blue	GPS
<b>D</b>			4004	 Claret Violet	Cellular Phone
<b>E</b>			6002	 Leaf Green	TV / SDARS Terrestrial
<b>F</b>			8011	 Nut Brown	TV / SDARS Terrestrial / Camera
<b>G</b>			7031	 Blue Grey	SDARS Terrestrial
<b>H</b>			4003	 Heather Violet	GPS Navigation
<b>I</b>			1001	 Beige	Bluetooth / VPM
<b>K</b>			1027	 Curry	SDARS Satellite AM-FM
<b>L</b>			3002	 Carmine Red	VPM
<b>M</b>			2003	 Pastel Orange	RKE / TPMS
<b>N</b>			6019	 Pastel Green	DSRC / VPM
<b>Z</b>			5021	 Water Blue	Universal (Neutral) Code

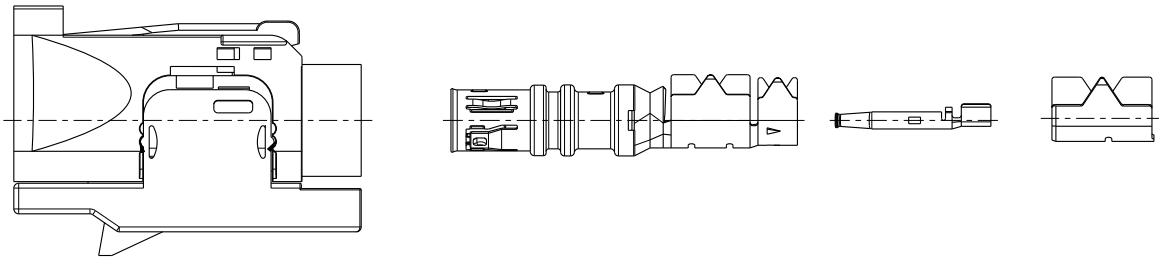
# FAKRA Generation Chart

		Design Features	Tooling	Production	Compliance	Packaging
	<b>GEN 4.0</b>	Stamped Body Stamped Contact Stamped Sleeve Unassembled Housing	Fully Automated Tooling	High Volume	USCAR-17 USCAR-18 DIN 72594-1 6Q0.90.961D 6Q0.90.961E FAKRA 2	Tray Pack for Housing  Other components sold on tape and reel  TPA included
	<b>GEN 3.0</b>	Die Cast Body Stamped Contact Pre-Assembled Housing	Automated Tooling Semi-Automated Tooling	High Volume	USCAR-17 USCAR-18 DIN 72594-1	Tray Pack  Contacts sold separately on tape and reel
	<b>GEN 2.5</b>	Die Cast Body Stamped Contact Pre-Assembled Housing	Automated Tooling Semi-Automated Tooling	High Volume	USCAR-17 USCAR-18 DIN 72594-1	Tray Pack  Contacts sold separately on tape and reel
	<b>GEN 2.0</b>	Die Cast Body Singulated Stamped or Machined Contact Pre-Assembled Housing	Hand Tooling	Low Volume	USCAR-17 USCAR-18 DIN 72594-1	Tray Pack  Bulk Components
	<b>GEN 1.0</b>	Machined Body Machined Contact Unassembled Housing	Hand Tooling	Low Volume	USCAR-17 USCAR-18 DIN 72594-1	Tray Pack  Bulk Components

# FAKRA 4.0 Ordering Information

## FAKRA Generation 4.0 Connectors

FAKRA Generation 4.0 cable connectors consist of (4) components purchased separately; a housing with TPA clip(s), a contact body sub-assembly, contact pin and crimping sleeve. Components vary by cable type.







## Cable Groups

Amphenol RF's FAKRA Generation 4.0 series connectors support industry standard 50 ohm automotive cable types:

C01 – RG-174LL, DACAR462

C30 – TFC-302LL, DACAR 302, RTK031

Item	Description	Cable Group	Image
4FA1-NXSPAC01WS	Single Straight Plug	C01	
4FA1-NXSJAC01W6	Single Straight Jack	C01	
4FA1-NXSPAC30WS	Single Straight Plug	C30	
4FA1-NXSJAC30W6	Single Straight Jack	C30	

Note: Contact factory for component part numbers.

# FAKRA 4.0 Ordering Information

	<b>4FA</b>	<b>1</b>	<b>—</b>	<b>N</b>	<b>X</b>	<b>S</b>	<b>J</b>	<b>A</b>	<b>C30</b>	<b>WS</b>
<b>Generation</b> <b>4FA</b> = Gen 4.0										
<b>Housing</b> <b>1</b> = Single										
<b>Options</b> <b>—</b> = (dash) <i>Other options available, please consult factory</i>										
<b>Tab Location</b> <b>N</b> = North										
<b>Key Code: See Key Code Chart</b>										
<b>Style</b> <b>S</b> = Straight <b>R</b> = Right Angle										
<b>Gender</b> <b>J</b> = Jack <b>P</b> = Plug										
<b>Options</b> <b>—</b> = (dash) PCB <b>A</b> = Fixed Character										
<b>Termination</b> Cable Mount Connectors <b>C01</b> = RG-174/316, DACAR 462 <b>C30</b> = TFC302, RTK031, DACAR 0302 <b>PCB</b> = Printed Circuit Board										

## Options

- WS** = unsealed without clip slot
- W6** = unsealed with clip slot
- ES** = Sealed without clip slot (jack only)
- E1** = Sealed without clip slot (plug only)
- E6** = Sealed with clip slot

Note: All Gen 4.0 unsealed connectors have TPA's.  
Suffix may vary for PCB products, please consult factory.

## Electrical

Impedance	50Ω Nominal
Frequency Range	DC - 6 GHz
VSWR	1.4 Max (DC - 2 GHz)
	1.5 Max (2 - 3 GHz)
Insertion Loss	0.3 dB Max
Insulation Resistance	100 mΩ Min
Center Contact Resistance	24 mΩ Max
Outer Contact Resistance	5 mΩ Max
Dielectric Withstanding Voltage	800 Vrms Min

## Mechanical

Durability (Mating Cycles)	25 Min
Engage Force	45N Max
Disengagement Force	75N Max
Cable Retention Force	90N Min
Coding	14 Mechanical and Colored Codes
Interface	USCAR-18, DIN

## Environmental

Temperature Range	-40 to +105°C
Thermal Shock	USCAR-2
Vibration	USCAR-2
Shock	USCAR-2

## Materials

Plastic Housing	PBT
Clip	PBT
Center Contact	Copper Nickel Alloy
Body	Phosphor Bronze
Sleeve	Phosphor Bronze
Insulator	Nylon PA12

## Plating

Center Contact	Nickel with Selective Gold in Mating Areas
Body	Tin
Sleeve	Nickel

Note: Technical specifications are typical and may vary by specific part number. Please see component drawing.

## Supported 50 Ohm Cable Types

Amphenol Cable Type	Alternate Cables	Temp Range	Jacket OD (mm)	Center Cond. OD (mm)	Dielectric
TFC-302	Dacar 302-4	-40°C to +105°C	3.3 ± 0.1	0.76 (Stranded)	Foam PP
TFC-302, TFC-302LL	RTK 031	-40°C to +105°C	3.30	0.81 (Stranded)	Foam PP
TFC RG-174LL	Dacar 462	-40°C to +105°C	2.74	0.50 (Stranded)	Solid PP

Note: Please check with cable manufacturer for latest specs.





# Amphenol® RF

[www.amphenolrf.com](http://www.amphenolrf.com)

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