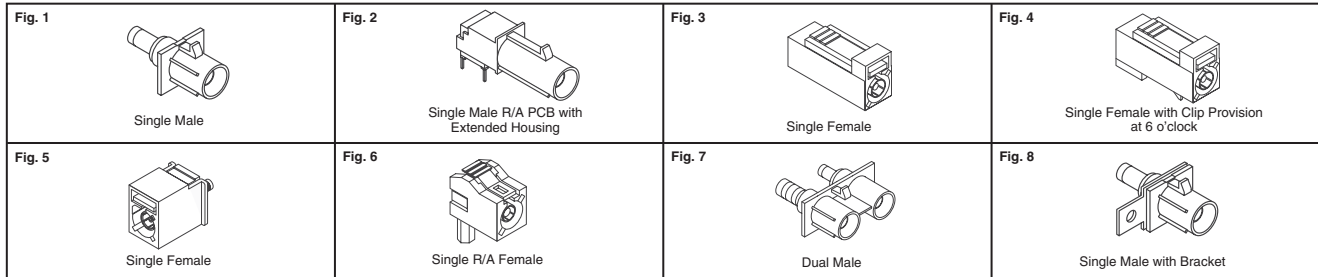


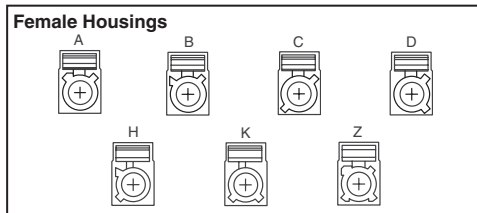
With recent advancements in communications technology and increased consumer demand for a diverse array of on-board telematics services, RF communications systems have become indispensable components of the modern automobile. To keep RF interconnection costs low and ensure high levels of electrical and mechanical performance the German and American automotive industries have standardized a high-performing, cost-effective RF connector based on the FAKRA and USCAR standards. Utilizing a standard metal SMB connector embedded within a plastic housing that can

be designed with multiple colored codes for easy identification, FAKRA connectors are designed to perform up to 4GHz and meet the particular mechanical and environmental requirements of the automobile industry. **FEATURES: Electrical:** • Impedance: 50Ω • Frequency Range: DC-4GHz • Performance Specification: SAE/USCAR-17 • Insulation Resistance: 1000MΩ minimum • Center Contact Resistance: center contact <20mΩ; outer contact <10mΩ • Dielectric Withstanding Voltage (sea level): >1000VRMS **Mechanical:** • Durability (matings): 100 minimum • Plastic Housing Engagement

Force: ≤20 N • Plastic Housing Disengagement Force: ≥25 N • Coding: 13 mechanical and colored codings • Plastic Housing: PBT with 15% Glass Fiber • Secondary Locking Clip: PBT with 15% Glass Fiber • Center Contact (female): Beryllium Copper; (male): Brass • Body: Brass • Barrel: Brass • Retainer Ring: Beryllium Copper • Ferrule: Copper • Insulator: TFE • Center Contact Plating: Gold • Body, Barrel and Ferrule Plating: Nickel. FAKRA connectors incorporate machined components. FAKRA II connector series utilizes die cast as well as stamped and formed components.



FAKRA Keying Codes



Mechanical and Color Coding

Coding	Rib Combination	Color	Similar RAL No.
A	A - B1	Deep Black	9005
B	A - B2	Signal White	9003
C	A - C	Signal Blue	5005
D	A - D	Bordeaux Violet	4004
H	B2 - C	Heather Violet	4003
K	C - D	Curry Yellow	1027
Z	Neutral Coding	Water Blue	5021

Male Housings

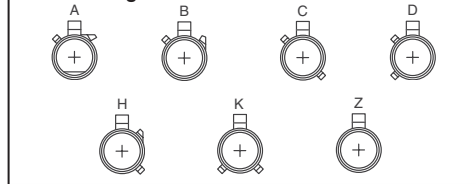


Fig.	Cable Group RG/U	Digi-Key Part No.	Price Each				Amphenol RF Part No.
			1	10	25	100	
FAKRA Coding "A" (Deep Black)							
1	RG-174, 188, 316	ARF1253-ND	2.62	2.19	1.41	1.31	FA1-NASP-C01-1
	RG-58, 141	ARF1255-ND	2.35	1.97	1.27	1.18	FA1-NASP-C04-1
2	—	ARF1655-ND [†]	2.74	2.29	1.48	1.37	FA1-NARP-PCB-8
3	RG-174, 188, 316	ARF1266-ND	2.50	2.09	1.35	1.25	FA1-NASJ-C01-0
	RG-58, 141	ARF1268-ND	2.95	2.47	1.60	1.48	FA1-NASJ-C04-0
4	RG-174, 188, 316	ARF1272-ND	2.86	2.39	1.54	1.43	FA1-NARJ-C01-0
	RG-58, 141	ARF1273-ND	3.00	2.51	1.62	1.51	FA1-NARJ-C04-0
FAKRA II Coding "A" (Deep Black)							
1	RG-174, 188, 316	ARF1605-ND	2.16	1.81	1.17	1.09	2FA1-NASP-C01-1
5	RG-174, 188, 316	ARF1600-ND	2.21	1.85	1.19	1.11	2FA1-NASJ-C01-0
FAKRA Coding "B" (Signal White)							
2	—	ARF1656-ND [†]	2.74	2.29	1.48	1.37	FA1-NBRP-PCB-8
3	RG-174, 188, 316	ARF1287-ND	2.50	2.09	1.35	1.25	FA1-NBSJ-C01-0
	RG-58, 141	ARF1289-ND	2.57	2.15	1.39	1.29	FA1-NBSJ-C04-0
FAKRA II Coding "B" (Signal White)							
5	RG-174, 188, 316	ARF1607-ND	2.21	1.85	1.19	1.11	2FA1-NBSJ-C01-0
	RG-58, 141	ARF1609-ND	2.28	1.91	1.23	1.15	2FA1-NBSJ-C04-0
FAKRA Coding "C" (Signal Blue)							
1	RG-174, 188, 316	ARF1316-ND	2.62	2.19	1.41	1.31	FA1-NCSP-C01-1
2	—	ARF1657-ND [†]	2.74	2.29	1.48	1.37	FA1-NCRP-PCB-8
4	RG-174, 188, 316	ARF1310-ND	2.50	2.09	1.35	1.25	FA1-NCSJ-C01-0
	RG-58, 141	ARF1312-ND	2.57	2.15	1.39	1.29	FA1-NCSJ-C04-0
5	RG-174, 188, 316	ARF1311-ND	2.57	2.15	1.39	1.29	FA1-NCSJ-C01-6
6	RG-174, 188, 316	ARF1618-ND	3.15	2.63	1.70	1.58	FA1-NCRJ-C01-3
7	RG-174, 188, 316	ARF1323-ND	4.68	3.91	2.53	2.35	FA2-NCSP-C01-9
FAKRA II Coding "C" (Signal Blue)							
1	RG-174, 188, 316	ARF1619-ND	2.16	1.81	1.17	1.09	2FA1-NCSP-C01-1
	RG-58, 141	ARF1620-ND	2.21	1.85	1.19	1.11	2FA1-NCSP-C04-1
5	RG-174, 188, 316	ARF1614-ND	2.21	1.85	1.19	1.11	2FA1-NCSJ-C01-0
	RG-58, 141	ARF1616-ND	2.28	1.91	1.23	1.15	2FA1-NCSJ-C04-0
6	RG-174, 188, 316	ARF1615-ND	2.33	1.95	1.26	1.17	2FA1-NCSJ-C01-6

Fig.	Cable Group RG/U	Digi-Key Part No.	Price Each				Amphenol RF Part No.
			1	10	25	100	
FAKRA Coding "D" (Bordeaux Violet)							
1	RG-174, 188, 316	ARF1343-ND	2.62	2.19	1.41	1.31	FA1-NDSP-C01-1
8	RG-174, 188, 316	ARF1331-ND	3.10	2.59	1.67	1.55	FA1-NDSP-C01-0
3	RG-174, 188, 316	ARF1339-ND	2.50	2.09	1.35	1.25	FA1-NDSJ-C01-0
	RG-58, 141	ARF1341-ND	2.57	2.15	1.39	1.29	FA1-NDSJ-C04-0
4	RG-174, 188, 316	ARF1340-ND	2.57	2.15	1.39	1.29	FA1-NDSJ-C01-6
6	RG-174, 188, 316	ARF1337-ND	2.86	2.39	1.54	1.43	FA1-NDRJ-C01-0
FAKRA II Coding "D" (Bordeaux Violet)							
1	RG-174, 188, 316	ARF1626-ND	2.16	1.81	1.17	1.09	2FA1-NDSP-C01-1
	RG-58, 141	ARF1627-ND	2.21	1.85	1.19	1.11	2FA1-NDSP-C04-1
5	RG-174, 188, 316	ARF1621-ND	2.21	1.85	1.19	1.11	2FA1-NDSJ-C01-0
	RG-58, 141	ARF1623-ND	2.28	1.91	1.23	1.15	2FA1-NDSJ-C04-0
FAKRA Coding "H" (Heather Violet)							
3	RG-174, 188, 316	ARF1428-ND	2.50	2.09	1.35	1.25	FA1-NHSJ-C01-0
2	—	ARF1658-ND [†]	2.74	2.29	1.48	1.37	FA1-NHRP-PCB-8
FAKRA II Coding "H" (Heather Violet)							
1	RG-174, 188, 316	ARF1633-ND	2.16	1.81	1.17	1.09	2FA1-NHSP-C01-1
5	RG-58, 141	ARF1630-ND	2.28	1.91	1.23	1.15	2FA1-NHSP-C04-0
FAKRA Coding "K" (Curry Yellow)							
3	RG-174, 188, 316	ARF1487-ND	2.50	2.09	1.35	1.25	FA1-NKSJ-C01-0
	RG-58, 141	ARF1489-ND	2.57	2.15	1.39	1.29	FA1-NKSJ-C04-0
4	RG-174, 188, 316	ARF1478-ND	2.86	2.39	1.54	1.43	FA1-NKRJ-C01-0
FAKRA II Coding "K" (Curry Yellow)							
1	RG-174, 188, 316	ARF1640-ND	2.16	1.81	1.17	1.09	2FA1-NKSP-C01-1
	RG-58, 141	ARF1641-ND	2.21	1.85	1.19	1.11	2FA1-NKSP-C04-1
5	RG-174, 188, 316	ARF1635-ND	2.21	1.85	1.19	1.11	2FA1-NKSJ-C01-0
FAKRA Coding "Z" (Water Blue)							
1	RG-174, 188, 316	ARF1533-ND	2.62	2.19	1.41	1.31	FA1-NZSP-C01-1
	RG-58, 141	ARF1535-ND	2.35	1.97	1.27	1.18	FA1-NZSP-C04-1
3	RG-174, 188, 316	ARF1526-ND	2.50	2.09	1.35	1.25	FA1-NZSJ-C01-0
	RG-58, 141	ARF1528-ND	2.57	2.15	1.39	1.29	FA1-NZSJ-C04-0
4	RG-174, 188, 316	ARF1523-ND	2.86	2.39	1.54	1.43	FA1-NZRJ-C01-0

[†] Tin Plated

(Continued)

A

Fig.	Cable Group RG/U	Digi-Key Part No.	Price Each				Amphenol RF Part No.
			1	10	25	100	
FAKRA II Coding "Z" (Water Blue)							
1	RG-174, 188, 316	ARF1647-ND	2.16	1.81	1.17	1.09	2FA1-NZSP-C01-1
	RG-58, 141	ARF1648-ND	2.21	1.85	1.19	1.11	2FA1-NZSP-C04-1
5	RG-174, 188, 316	ARF1642-ND	2.21	1.85	1.19	1.11	2FA1-NZSJ-C01-0
5	RG-58, 141	ARF1644-ND	2.28	1.91	1.23	1.15	2FA1-NZSJ-C04-0
6	RG-174, 188, 316	ARF1646-ND	3.15	2.63	1.70	1.58	FA1-NZRJ-C01-3
Adapter							
5	—	ARF1012-ND	32.58	27.15	17.55	16.29	APH-FKJ-SMAJ

0 Tin Plated

Description	Digi-Key Part No.	Price Each
Tool Crimp Open Frame without Die	ARF1649-ND	324.04
Crimp Tool	ARF1650-ND	386.30
Tool Die Center Pin RG-174, 188, 316	ARF1651-ND	81.71
Tool Die Set Center Pin RG-58	ARF1652-ND	75.04
Tool Die Set Ferrule RG-174, 188, 316, 179B, 186A, 187A	ARF1653-ND	171.09
Tool Die Set Ferrule RG-58, 55, 141, 142, 223, 303, 400	ARF1654-ND	151.75

AMC Connector Series

Amphenol Micro Coaxial (AMC) Connectors are for use in applications with 50Ω impedance requirements. AMC connectors are low profile (2.5mm of the board) and offer an extremely small board footprint (3mm X 3mm). • Impedance: 50Ω • Frequency Range: 0 - 6 GHz • Temperature Range: -40°C - 90°C

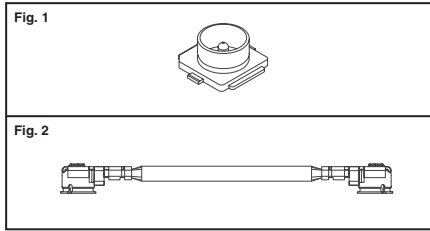


Fig.	Description	Digi-Key Part No.	Price Each			Amphenol RF Part No.
			1	10	25	
1	Jack Straight 50Ω SMD	ARF1579CT-ND†	.62	.53	.35	A-1JB
	Jack Straight 50Ω SMD	ARF1579TR-ND‡	675.68/2,500			A-1JB
2	Cable Jumper Plug-Plug 100mm, Black	ARF1580-ND	2.92	2.02	1.82	A-1PA-113-100B2
	Cable Jumper Plug-Plug 100mm, Gray	ARF1733-ND	3.24	2.71	1.80	A-1PA-113-100G2
	Cable Jumper Plug-Plug 125mm, Black	ARF1581-ND	3.35	2.31	2.08	A-1PA-113-125B2
	Cable Jumper Plug-Plug 150mm, Black	ARF1577-ND	3.60	3.01	2.00	A-1PA-113-150B2
	Cable Jumper Plug-Plug 180mm, Black	ARF1734-ND	3.60	3.01	2.00	A-1PA-113-180B2
	Cable Jumper Plug-Plug 300mm, Black	ARF1578-ND	3.77	3.15	2.09	A-1PA-113-300B2
—	Adapter Plug-RP BNC Jack	ARF1583-ND	6.25	4.69	4.42	31-6109
—	Adapter Plug-RP SMA Jack	ARF1585-NDA	8.17	6.81	4.52	901-10097

† Cut Tape ‡ Tape and Reel Δ -65°C - 165°C

SMP Connector Series

The SMP interface is a subminiature interface in the same scale as MMCX connectors but offers a frequency range of DC to 40 GHz. It is commonly used in miniaturized high frequency coaxial modules. • Impedance: 50Ω • Frequency Range: DC - 26.5 GHz • Contact Current: 1.2 A DC maximum • Temperature Range: -65°C - 165°C

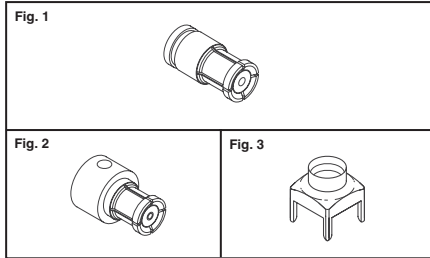


Fig.	Description	Digi-Key Part No.	Price Each			Amphenol RF Part No.
			1	10	25	
1	Jack Straight .047 Semi-Rigid	ARF1592-ND	17.35	11.38	8.54	SMP-FS-C06
	Jack Straight .086 Semi-Rigid	ARF1593-ND	15.78	10.35	7.76	SMP-FS-C07
2	Jack R/A .047 Semi-Rigid	ARF1586-ND	17.35	11.38	8.54	SMP-FR-C06
	Jack R/A .086 Semi-Rigid	ARF1587-ND	15.78	10.35	7.76	SMP-FR-C07
3	Plug Limited Detent SMD	ARF1594-ND	8.91	6.79	6.32	SMP-MSLD-PCS
	Plug Limited Detent PCB	ARF1595-ND	15.87	10.41	7.80	SMP-MSLD-PCT
	Plug Smooth Bore SMD	ARF1596-ND	8.91	6.79	6.32	SMP-MSSB-PCS
	Plug Smooth Bore PCB	ARF1597-ND	15.87	10.41	7.80	SMP-MSSB-PCT
—	Adapter Straight 6.45mm	ARF1590-ND	14.86	9.76	7.32	SMP-FSBA-645
—	Adapter Straight 9.90mm	ARF1591-ND	16.35	10.74	8.05	SMP-FSBA-990
—	Adapter Straight 22.4mm	ARF1589-ND	17.55	11.52	8.63	SMP-FSBA-224

QMA Connector Series



The QMA connector is a quick disconnect version of the SMA connector and shares the same internal construction, which allows the connector to have excellent performance. Because of the innovative coupling mechanism, a 360-degree butt joint is maintained which results in low RF leakage. Since the RF line is identical to the SMA series, QMA connectors also offer the same high power handling capability. This gives the series significant advantages over other quick disconnect connectors, although QMA and SMA are not intermatable. Typically, these connectors can be installed into a system 10 times faster than an SMA connector. Another benefit of eliminating the threaded coupling is the denser packaging.

SPECIFICATIONS:

Electrical:

• Impedance: 50Ω • Frequency Range: DC - 6GHz • Return Loss: DC - 3GHz > 32dB, 3 - 6GHz > 25dB

Mechanical:

• Engagement Force: 5.6 lbs (25 N) • Disengagement Force: 4.5 lbs (20 N) • Retention Force for Interface: ≥ 13.5 lbs (60 N) • Mating Cycles: 100

Environmental:

• Temperature Range: -40°C - 80°C

Fig.	Description	Digi-Key Part No.	Price Each			Amphenol RF Part No.
			1	10	25	
1	R/A Plug for .141 Semi-Rigid	ARF1555-ND	16.01	10.50	7.88	930-103P-51A
	R/A Plug for LMR240	ARF1557-ND	14.81	9.72	7.29	930-106P-51A
	R/A Plug for RG-58	ARF1559-ND	16.30	10.69	8.02	930-110P-51A
2	Straight Plug for .086 Semi-Rigid	ARF1560-ND	13.17	8.63	6.48	930-119P-51S
	Straight Plug for RG-58	ARF1561-ND	14.73	9.65	7.24	930-120P-51S
	Straight Plug for RG-316	ARF1562-ND	14.73	9.65	7.24	930-129P-51S
3	Bulkhead Jack R/A SMD	ARF1569-ND	11.80	9.83	6.53	930-111J-51P
4	Jack 2-Hole Flanged	ARF1570-ND	14.55	9.55	7.17	930-117J-51S
5	Straight Bulkhead Jack for .086	ARF1571-ND	12.47	8.18	6.14	930-121J-51S
	Straight Bulkhead Jack for RG-316	ARF1574-ND	12.69	8.32	6.24	930-124J-51S
6	R/A PCB Jack Thru-hole MT	ARF1576-ND	15.00	9.84	7.37	930-128J-51P
7	Adapter Jack to SMA Jack	ARF1563-ND	52.52	34.45	25.84	930-100A-51S
8	Adapter Plug to SMA Jack	ARF1564-ND	59.76	39.18	29.40	930-101A-51S
9	Adapter Jack to SMA Plug	ARF1566-ND	64.10	42.04	31.53	930-131A-51S

