

Non-Magnetic Coaxial Connectors

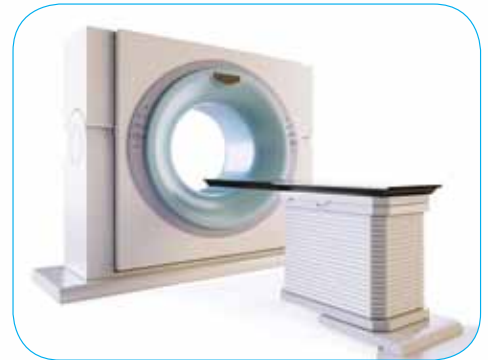
MCX Series

General

- Low magnetic susceptibility for minimal magnetic field distortion and better image quality
- Full detent versions for exceptional resistance in high-vibration environments
- Large range for complete connectivity solutions: board-to-board, cable-to-board, or cable-to-cable
- Choice of surface-mount and through-hole board-mount options
- Non-magnetic materials
- Excellent electrical and mechanical performance

Applications

- Medical imaging equipment



Radiall has released non-magnetic versions of its MCX line of miniature coaxial connectors. With a frequency range from DC to 6 GHz, the non-magnetic connectors' small size make them well suited for use in newer compact magnetic resonance imaging (MRI) equipment for hands, feet, for knees where space is at a premium. The non-magnetic materials mean the connectors do not distort the magnetic field produced by the coils, which allows higher signal-to-noise ratios and higher image quality.

The connectors use low permittivity materials to achieve a magnetic susceptibility lower than 10^{-5} , about three orders of magnitude lower than brass/nickel connectors (10^{-2})—resulting in extremely low distortion of the magnetic fields. The non-magnetic MCX line includes straight and right-angle board-mount receptacles and cable-mount plugs for RG-178 and RG-316 cable.

The connectors offer excellent mechanical performance in MRI and similar applications. They meet the vibration requirements of EIA-364-28 with 20 g at 2000 Hz in Highly Accelerated Aging Tests (equivalent to MIL-STD-202, Method 204, Condition D).



MCX Series

CHARACTERISTICS

Impedance	50 Ω
Frequency range	0 – 6 GHz
VSWR (with 2.6/50/S and 2/50S cable) Straight styles RA styles	1.1 + 0.08 * F(GHz) max 1.1 + 0.075 * F(GHz) max
Insulation resistance	1000 M Ω
Dielectric withstanding voltage max	750 Vrms
Mating cycles	500 cycles 50 cycles (full detent versions)
Engagement force	25 N max 40 N max for full-detent plug
Disengagement force	20 N max, 8 N min 65 N max, 30 N min for full-detent plug
Contact retention (min)	10 N

ENVIRONMENTAL

Vibration (MIL-STD-202, Method 204)	Condition D
Thermal shock (MIL-STD-202, Method 107)	Condition C
Corrosion (MIL-STD-202, Method 101)	Condition B
Temperature range	-55/+155°C

MATERIAL

Part	Material	Plating
Body	Non-magnetic bronze	BBR
		GBR for PCB connectors
Outer contact	Beryllium copper	BBR
Center contact	Non-magnetic bronze/ beryllium copper	Gold
Insulator	PTFE	

BBR: Bright Bronze Radiall; **GBR:** Golden Bronze Radiall
For detailed specifications, please refer to the corresponding data sheet at www.radiall.com.

STRAIGHT PLUG CRIMP TYPE FOR FLEXIBLE CABLE



Cable type	Cable group dia.	Note	Part number
RG-178	2/50/S	—	R113 081 097
RG-316	2.6/50/S	—	R113 082 097
RG-316	2.6/50/S	Full detent	R299 122 097

STRAIGHT PCB RECEPTACLE



Part number	Termination	Type
R113 426 097	Solder legs	Female
R113 424 097	SMT Type	Female
R113 425 097	Solder legs	Male

RIGHT-ANGLE PLUG CRIMP TYPE FOR FLEXIBLE CABLE



Cable type	Cable group dia.	Note	Part number
RG-178	2/50/S	—	R113 181 097
RG-316	2.6/50/S	—	R113 182 097
RG-316	2.6/50/S	Full detent	R299 122 087

RIGHT-ANGLE PCB RECEPTACLE



Part number	Termination style	Type
R113 665 097	Solder legs	Female

STRAIGHT JACK CRIMP TYPE FOR FLEXIBLE CABLE



Cable type	Cable group dia.	Part number
RG-316	2.6/50/S	R113 240 097

CABLE ASSEMBLIES



Cable type	Cable group dia.	Part number
RG-178	2/50/S	C291 140 087
RG-316	2.6/50/S	C291 170 079
.085" semi-rigid	.085	C291 851 001
.141" semi-rigid	.141	C291 861 061