



Quantum Technologies- ISOTEC

Product Description



Specific interconnect features are required including ability to withstand Cryogenic (very low) temperatures as well as being Non-Magnetic with High-frequency and Low Loss.

ISOTEC offer a range of high quality Cryogenic and Non-Magnetic RF Components with the capability of performing at extremely low temperatures.

Connectors are manufactured under strict quality controls and this strict adherence to quality control ensures all precautions are taken to avoid any contact with ferromagnetic materials during manufacturing process.

Features

- Snap-on, push-on or threaded couplings
- Available in custom non-magnetic solutions including contacts, connectors and Cable assemblies

Applications

- Medical Equipment
- Military Communications
- Quantum computing
- Aerospace Satellites

Connector Types

- K-CONNECTOR
- MMCX
- SMB
- SMA
- 3.5 mm SMA
- MCX
- Additional types available on request

Materials

Plug and Receptacle Bodies- Non-Magnetic Brass

Outer Contacts-Beryllium Copper Per ASTM B 196 For MCX Type

Insulators-Teflon(PTFE)Per ASTM D 1710

Male Contacts-Non-Magnetic Brass For SMA Connector.

Female Connects-Beryllium Copper Per ASTM B 196.

Retaining Rings-Beryllium Copper Per ASTM B 196 For MMCX,SMB,SMA Types.

Ferrules and Caps-Non-Magnetic Brass.

Gaskets-Silicone Rubber.



Non-Magnetic test method

We clip a small piece each off of the connectors and put it in a glass tray with a magnet with 10,000 gaussses of power.

We move the magnet closer and closer until we determine if the connector piece is magnetic or not. If an engineer is not satisfied with that test alone, they will tape the connectors onto one of our MRI Coils and take it to the System scanner. If the connector is magnetic, there will be a dark void in the image from the scanner. All connectors are 100% tested either or both way.

Electrical Ratings

● MMCX Non-Magnetic Connectors

Impedance: 50 Ohms

Frequency Range:

Connectors 0-6 GHz

VSWR: (f = GHz)

	Straight Cable connectors	Right Angle Cable connectors
.047 dia flexible.....	1.20	1.14 + 0.7f
RG-178, RG-316, RG-316 DS.....	1.20	1.25

Working Voltage:

Connectors..... 170 VRMS at sea level

Dielectric Withstanding Voltage:

Connectors..... 500 VRMS at sea level

Insulation Resistance: 1000 megohms min

Contact Resistance: (milliohms maximum)

	Initial	After Environmental
Center contact(straight cabled connectors and uncabled receptacles)··	5.0	8.0
Center contact(right angle cable connectors).....	5.0	15.0
Outer contact(all connectors).....	1.0	1.5

Corona Level:

Connectors.....190 volts min at 70,000 feet

Insertion Loss: (dB max tested at 1 GHz)

Straight cabled connectors.....	0.1
Right angle cabled connectors.....	0.2
Uncabled receptacles.....	N/A

RF Leakage: (dB minimum, tested at 2.5 GHz)

Flexible cable connectors.....-60 dB

400 VRMS MIN (tested at 4 and 7 MHz)



● MCX Non-Magnetic Connectors

Impedance: 50 Ohms

Frequency Range: 0~6 GHz

	<u>Cable connectors</u>	<u>Cable connectors</u>
RG-178 cable.....	1.17 + 0.9f	1.07+ 0.6f
RG-316 cable.....	1.13 + 0.4f	1.07+ 0.4f
Uncabled receptacles.....		N/A

Working Voltage: (VRMS maximum)

Connectors for Cable Type	<u>Sea Level</u>	<u>70K Feet</u>
RG-178.....	250	65
RG-316.....	335	85

Dielectric Withstanding Voltage: (VRMS minimum at sea level)

Connectors for RG-178,uncabled receptacles.....	750
Connectors for RG-316,uncabled receptacles.....	1000

Insulation Resistance: 10,000 megohms minimum

Contact Resistance: (milliohms maximum)

	<u>Initial</u>	<u>After Environmental</u>
Center contact(straight cabled connectors, uncabled receptacles).....	5.0	8.0
Center contact(right angle cabled connectors).....	5.0	15.0
Outer contact.....	1.0	1.5
Braid to body.....	1.0	N/A

Corona Level: (Volts minimum at 70,000 feet)

Connectors for RG-178,uncabled receptacles.....	190
Connectors for RG-316,uncabled receptacles.....	250

Insertion Loss: (dB maximum, tested at 1 GHz)

Straight cable connectors.....	0.1 d B
Right angle cable connectors.....	0.2 d B

RF High Potential Withstading Voltage: (VRMS minimum,tested at 4 and 7 MHz)

Connectors for RG178.....	500
Connectors for RG316.....	700
Uncabled receptacles.....	600



● SMB Non-Magnetic Connectors

Impedance: 50 Ohms

Frequency Range:

Connectors 0-4 GHz

VSWR: (f = GHz)

	Straight Cable connectors	Right Angle Cable connectors
RG-316.....	1.25 + 0.4f	1.35 + 0.4f
Uncabled receptacles.....	N/A	

Working Voltage: (VRMS maximum)

Connectors for Cable Type	<u>Seal Level</u>	<u>70K Feet</u>
Rg-316,uncabled connectors.....	335	85

Dielectric Withstanding Voltage: (VRMS minimum at sea level)

Connectors for RG-316,uncabled receptacles..... 1000

Insulation Resistance: 1000 megohms min

Contact Resistance: (milliohms maximum)

	<u>Initial</u>	<u>Environmental</u>
Center contact(straight cabled connectors and uncabled receptacles)··	6.0	8.0
Center contact(right angle cabled connectors).....	12.0	16.0

Outer contact.....	1.0	1.5
Braid to body.....	1.0	N/A

Corona Level: (Volts minimum at 70,000 feet)

Connectors for RG-316.....	250
Uncabled receptacles.....	N/A

Insertion Loss: (dB maximum, tested at 1.5 GHz)

Straight cable connectors.....	0.30 d B
Right angle cable connectors.....	0.60 d B
Uncabled receptacles.....	N/A

RF Leakage: (dB minimum, tested at 2.5 GHz)

Cable connectors.....	-55 dB
Uncabled receptacles.....	N/A

RF High Potential Withstading Voltage: (VRMS minimum, tested at 4 and 7 MHz)

Connectors for RG-316.....	700
Uncabled receptacles.....	600



● SMA Non-Magnetic Connectors

Impedance: 50 Ohms

Frequency Range: Flexible cable connectors..... 0-12.4GHz
 Uncabled receptacles..... 0-18.0GHz

VSWR: (f = GHz)

	Straight	Right Angle
	<u>Cable connectors</u>	<u>Cable connectors</u>
RG-316.....	1.15 + 0.2f	1.15 + 0.3f
RG-58.....	1.15 + 0.1f	1.15 + 0.2f
Uncabled receptacles.....		N/A

Working Voltage: (VRMS maximum)

Connectors for Cable Type	<u>Seal Level</u>	<u>70K Feet</u>
RG-316.....	250	65
RG-58,uncabled receptacles.....	335	85

Dielectric Withstanding Voltage: (VRMS minimum at sea level)

Connectors for RG-316.....	750
Connectors for RG-58,uncabled receptacles.....	1000

Insulation Resistance: 5000 megohms min

Contact Resistance: (miliohms maximum)

		<u>Initial</u>	<u>After</u> <u>Environmental</u>
Center contact(straight cabled connectors and uncabled receptacles)··		3.0	4.0
Center contact(right angle cable connectors).....		4.0	6.0
Outer contact(All connectors).....		2.0	N/A
Braid to body.....		0.5	N/A

Corona Level: (Volts minimum,tested at 70,000 feet)

Connectors for RG-316.....	190
Connectors for RG-58,uncabled receptacles.....	250

Insertion Loss: (dB maximum)

Straight flexible cable connectors.....0.06√f(CHz),tested at 6GHz
 Right angle flexible cable connectors.....0.15√f(CHz),tested at 6GHz
 Uncabled receptacles.....N/A

RF Leakage: (dB minimum, tested at 2.5 GHz)

Flexible cable connectors.....	-60 d B
Uncabled receptacles.....	N/A

RF High Potential Withstading Voltage: (VRMS minimum,tested at 4 and 7 MHz)

Connectors for RG-316.....	500
Connectors for RG-58,ncabled receptacles.....	670