SiO2 RF Coaxial Cable

General Information

Doc Name: SiO2 RF Coaxial Cable General Information

Doc ID: 62001_2B

Revision B

Version 2

Jan 16, 2025

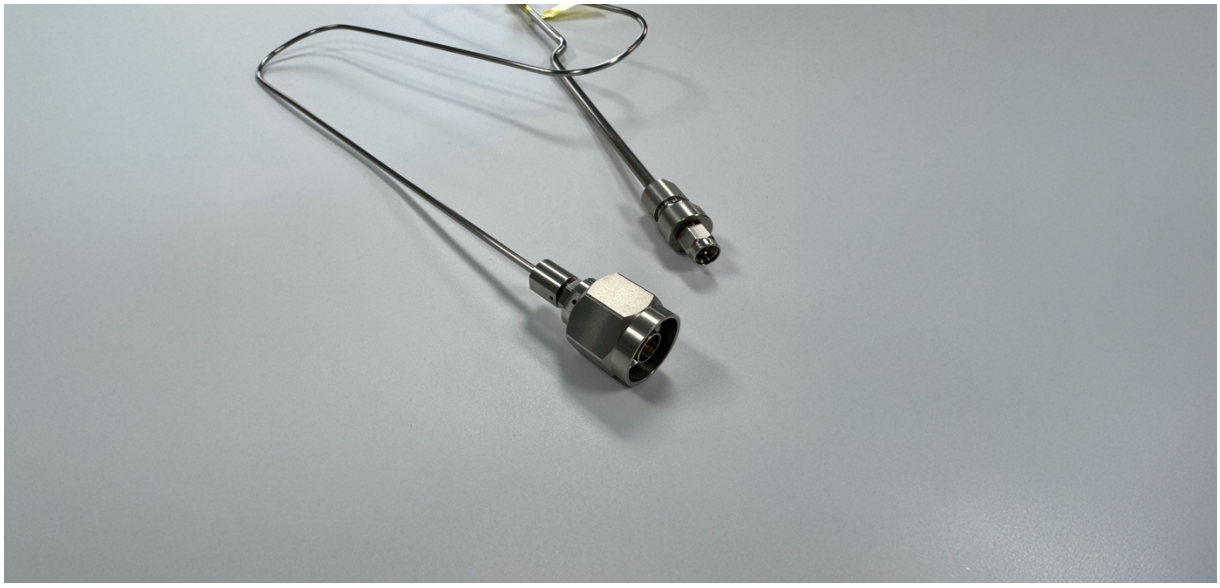
Note: It is the responsibility of the user to verify document validity prior to use. Please contact T-Axel if you are uncertain about document revision status

General - Moisture-Resistant SiO_2 RF Coaxial Cable TDS

About

T-Axel's SiO_2 dielectric semi-rigid phase stable cable assemblies for high-temperature applications. Our cables are the only moisture-resistant offerings on the market, adding an additional layer of redundancy in the event the hermetic connector fails. Additionally, this allows for uses without hermetic connectors which reduces cost and ease of use for wider applications.

Our team has over 30 years of experience in RF cable applications. Contact us today to see how T-Axel can help with your interconnect application.



General Specifications:

Operating Temperature: -271°C to 1000°C*

Bending Performance: ~6x OD (Stainless Steel Jacket)

~3x OD (Bare Copper Jacket)

Operating Pressure: 20,000 PSI

Radiation Resistance: 10^{13} rads

Acceleration: 45g (ground) 110 g (space)

Dielectric Material: High-purity SiO2

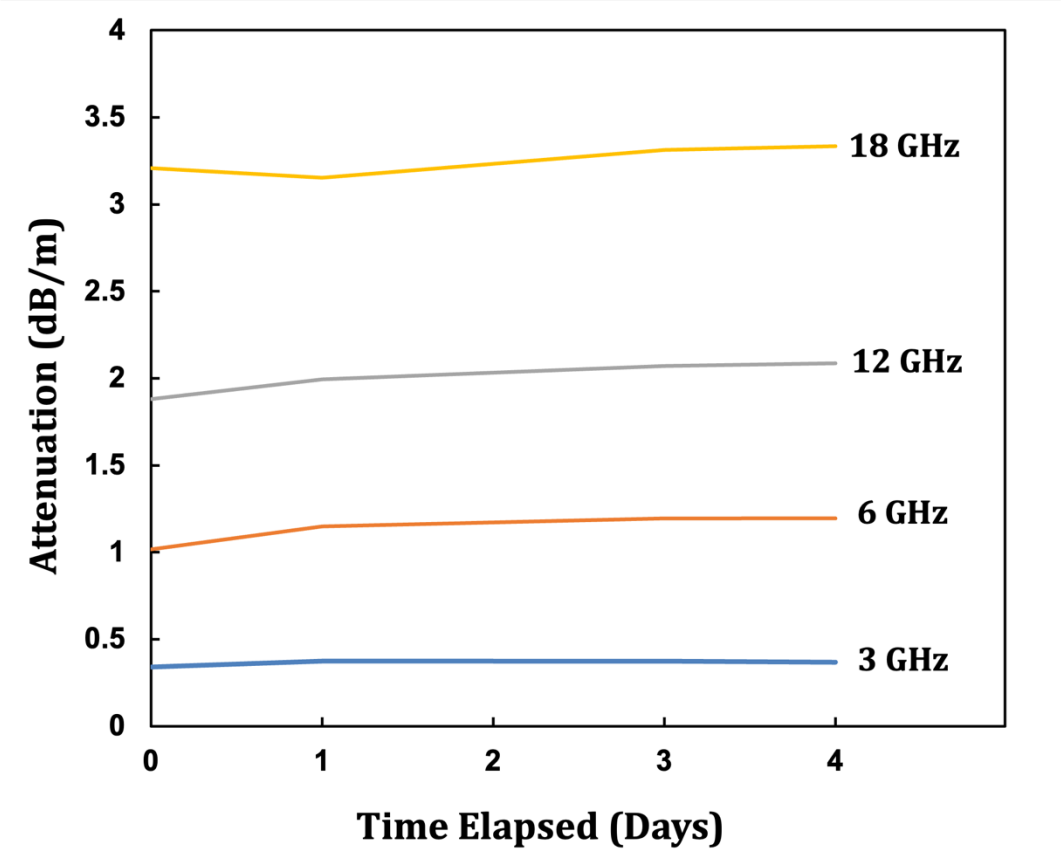
Outer Jacket Material: OFHC Copper, 304L Stainless Steel

Inner Conductor Material: OFHC Copper

T-Axel Moisture Resistance

T-Axel's SiO_2 cable is very resistant to moisture and attenuation will experience very little change when exposed to moisture/open air. The attenuation of SiO_2 cables manufactured by other companies are exceptionally sensitive to moisture. Change in attenuation will increase signal transmission loss, potentially compromising a sensitive system.

Because SiO_2 cables manufactured by other companies are very susceptible to moisture ingression, it must be encapsulated within a completely hermetic cable assembly. Due to our unique resistance to moisture, our cable can accommodate non-hermetically sealed connectors or even no connector*.



Typical 0.142" SiO2 Coaxial Cable Moisture Resistance Data: Open cable/ no connectors exposed to ~90% atmospheric moisture over 4 days

T-Axel SiO2 P/N Configurations

Please find documentation on P/N configuration based on cable construction at the end of sheet (A,B,X are substitutes for outer conductor, inner conductor, and frequency)

Left End Right End	No Connector No Connector	Non-hermetic SMA M (200 C) Non-hermetic High-temp SMA M (500 C)	Non-hermetic SMA M (200 C) Non-hermetic SMA M (200 C)
0.090”	SIO2090-A-B-FXB0	SIO2090-A-B-FXA1	SIO2090-A-B-FXA2
0.120”	SIO2120-A-B-FXB0	SIO2120-A-B-FXA1	SIO2120-A-B-FXA2
0.142”	SIO2142-A-B-FXB0	SIO2124-A-B-FXA1	SIO2142-A-B-FXA2
0.200”	SIO2200-A-B-FXB0	SIO2200-A-B-FXA1	SIO2200-A-B-FXA2
0.270”	SIO2270-A-B-FXB0	SIO2270-A-B-FXA1	SIO2270-A-B-FXA2

Left End Right End	Non-hermetic SMA M (200 C) No Connector/Open Cable	Non-hermetic High-temp SMA M (500 C) No Connector/Open Cable	Non-hermetic High-temp SMA M (500 C) Non-hermetic High-temp SMA M (500 C)
0.090”	SIO2090-A-B-FXA3	SIO2090-A-B-FXA4	SIO2090-A-B-FXA5
0.120”	SIO2120-A-B-FXA3	SIO2120-A-B-FXA4	SIO2120-A-B-FXA5
0.142”	SIO2142-A-B-FXA3	SIO2142-A-B-FXA4	SIO2142-A-B-FXA5
0.200”	SIO2200-A-B-FXA3	SIO2200-A-B-FXA4	SIO2200-A-B-FXA5
0.270”	SIO2270-A-B-FXA3	SIO2270-A-B-FXA4	SIO2270-A-B-FXA5

Left End Right End	Hermetic High-temp SMA M (500 C) Hermetic High-temp SMA M (500 C)	Hermetic High-temp SMA M (500 C) No Connector/Open Cable	Non-hermetic SMA F (200 C) Non-hermetic High-temp SMA M (500 C)
0.090”	SIO2090-A-B-FXA6	SIO2090-A-B-FXA7	SIO2090-A-B-FXA8
0.120”	SIO2120-A-B-FXA6	SIO2120-A-B-FXA7	SIO2120-A-B-FXA8
0.142”	SIO2142-A-B-FXA6	SIO2124-A-B-FXA7	SIO2142-A-B-FXA8
0.200”	SIO2200-A-B-FXA6	SIO2200-A-B-FXA7	SIO2200-A-B-FXA8
0.270”	SIO2270-A-B-FXA6	SIO2270-A-B-FXA7	SIO2270-A-B-FXA8

Left End Right End	Non-hermetic SMA M (200 C) Non-hermetic High-temp SMA F (500 C)	Non-hermetic SMA F (200 C) Non-hermetic SMA M (200 C)	Non-hermetic High-temp SMA F (500 C) Non-hermetic High-temp SMA M (500 C)
0.090”	SIO2090-A-B-FXA9	SIO2090-A-B-FXA10	SIO2090-A-B-FXA11
0.120”	SIO2120-A-B-FXA9	SIO2120-A-B-FXA10	SIO2120-A-B-FXA11
0.142”	SIO2142-A-B-FXA9	SIO2142-A-B-FXA10	SIO2142-A-B-FXA11
0.200”	SIO2200-A-B-FXA9	SIO2200-A-B-FXA10	SIO2200-A-B-FXA11
0.270”	SIO2270-A-B-FXA9	SIO2270-A-B-FXA10	SIO2270-A-B-FXA11

Left End Right End	Hermetic High-temp SMA F (500 C) Hermetic High-temp SMA M (500 C)	Non-hermetic High-temp SMA F (500 C) No Connector/Open Cable	Non-hermetic SMA F (200 C) No Connector/Open Cable
0.090”	SIO2090-A-B-FXA12	SIO2090-A-B-FXA13	SIO2090-A-B-FXA14
0.120”	SIO2120-A-B-FXA12	SIO2120-A-B-FXA13	SIO2120-A-B-FXA14
0.142”	SIO2142-A-B-FXA12	SIO2124-A-B-FXA13	SIO2142-A-B-FXA14
0.200”	SIO2200-A-B-FXA12	SIO2200-A-B-FXA13	SIO2200-A-B-FXA14
0.270”	SIO2270-A-B-FXA12	SIO2270-A-B-FXA13	SIO2270-A-B-FXA14

Left End Right End	Non-hermetic SMA F (200 C) Non-hermetic SMA F (200 C)	Non-hermetic SMA F (200 C) Non-hermetic High-temp SMA F (500 C)	Hermetic High-temp SMA F (500 C) Hermetic High-temp SMA F (500 C)
0.090”	SIO2090-A-B-FXA15	SIO2090-A-B-FXA16	SIO2090-A-B-FXA17
0.120”	SIO2120-A-B-FXA15	SIO2120-A-B-FXA16	SIO2120-A-B-FXA17
0.142”	SIO2142-A-B-FXA15	SIO2142-A-B-FXA16	SIO2142-A-B-FXA17
0.200”	SIO2200-A-B-FXA15	SIO2200-A-B-FXA16	SIO2200-A-B-FXA17
0.270”	SIO2270-A-B-FXA15	SIO2270-A-B-FXA16	SIO2270-A-B-FXA17

Left End Right End	Non-Magnetic, Non-hermetic SMA M (200 C/Cryo) Non-Magnetic, Non-hermetic SMA M (200 C/Cryo)	Non-Magnetic, Hermetic SMA M (200 C/Cryo) Non-Magnetic, Hermetic SMA M (200 C/Cryo)	Note: the two configurations to the left are for cryogenic applications; only the OFHC pure copper inner conductor and Dual-layered copper tube outer conductor options are available (Total OD 2.50 mm)
0.090”	SIO2090-CG-C-FXA18	SIO2090-CG-C-FXA19	
0.120”	SIO2120-CG-C-FXA18	SIO2120-CG-C-FXA19	
0.142”	SIO2142-CG-C-FXA18	SIO2142-CG-C-FXA19	
0.200”	SIO2200-CG-C-FXA18	SIO2200-CG-C-FXA19	
0.270”	SIO2270-CG-C-FXA18	SIO2270-CG-C-FXA19	

A: Outer Jacketing Material	
SS	304L Stainless Steel Jacket
C	OFHC Copper
SSM*	Thin-walled 304L Stainless Steel Jacket
AL**	Lightweight Aluminum
CG**	Cryogenic; dual-layered copper tube

B: Inner Conductor Material	
C	OFHC Copper
CCS	Copper-Clad Steel
SC**	Silver-Plated Copper
SCCS**	Silver-Plated Copper Clad Steel

X: Frequency Range	
1	Up to 3 GHz
2	Up to 6 GHz
3	Up to 12 GHz
4	Up to 18 GHz

*Reduced outer diameter; ** Special order'

REVISION SUMMARY:

Date	Rev	Section/Page	Details	Initials
Nov 14, 2024	A	All	Initial release	Z. Wang
Jan 16, 2024	B	6	Addition of P/N	Z. Wang