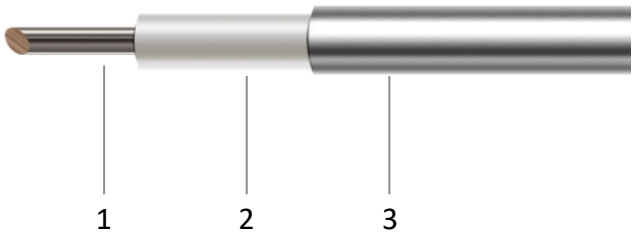
Copper Nickel Cryogenic Coaxial Cable

G12E-CN

1.20 mm OD CuNi cryogenic RF coaxial cable for lower-attenuation cryogenic routing up to 18 GHz.

Product definition: G12E-CN is a CuNi cryogenic RF coaxial cable for balanced cryogenic routing where RF attenuation and thermal conduction must be evaluated together.



OUTER DIAMETER	OPERATING FREQUENCY	CABLE-LEVEL CUTOFF	MATERIAL FAMILY
1.20 mm	**18 GHz**	**117 GHz**	**CuNi**

CORE FEATURES

- 1.20 mm OD CuNi cryogenic coaxial construction
- Silver-plated CuNi inner conductor, PTFE dielectric, CuNi tube outer conductor
- CuNi conductor system supports lower attenuation in cryogenic RF routing
- DC–18 GHz operating frequency with 117 GHz cable-level cutoff

TARGET APPLICATIONS

- General cryogenic RF routing in quantum systems
- Dilution refrigerator coaxial interconnects
- Low-temperature microwave measurement and test setups
- Balanced RF / thermal paths where attenuation and heat load both matter

CONSTRUCTION SPECIFICATION

NO.	COMPONENT	MATERIAL & PROCESS	DIAMETER MM [IN]
1	Inner Conductor	Silver-plated CuNi wire	**0.300 [0.012]**
2	Dielectric	PTFE	**0.950 [0.037]**
3	Outer Conductor	CuNi tube	**1.200 [0.047]**

ELECTRICAL PROPERTIES

Parameter	Value
Operating Frequency	**18 GHz**
Cable-Level Cutoff Frequency	**117 GHz**
Characteristic Impedance	**50 ± 2.5 Ω**
Shielding Effectiveness	**>165 dB**
Dielectric Withstand Voltage	**100 V DC**
Velocity of Propagation	**70%**

MECHANICAL & ENVIRONMENTAL

Parameter	Value
Min. Bending Radius, Static	**4.20 mm**
Weight	**0.0062 kg/m**
Temperature Range	**-268°C to 150°C**

CABLE ATTENUATION

CONDITION	500 MHZ	1000 MHZ	5000 MHZ	10000 MHZ	18000 MHZ
Attenuation @300K (dB/m)	1.8	2.5	5.7	8.0	10.8
Attenuation @4K (dB/m)	0.7	1.0	2.3	3.2	4.4

Interpolation reference: A = K1 × √F(MHz) + K2 × F(MHz). Tabulated attenuation values are shown in dB/m. K1 = 0.080010, K2 = 0.000002.

CRYOGENIC DESIGN NOTE

Thermal conductivity is used for preliminary heat-load estimation only. Final cable assembly performance depends on cable length, connector interfaces, thermal anchoring, routing geometry, and operating temperature stages.

4K THERMAL CONDUCTIVITY

104 $\times 10^{-6}$ W·cm/K

Typical design data for preliminary thermal-load estimation; not a final assembly guarantee.

DESIGN NOTES AND DATA BOUNDARY

Operating frequency	18 GHz is the operating frequency rating for preliminary cable selection.
Cable-level cutoff	117 GHz is a cable-level construction parameter; final assembly operating frequency may be limited by connector interface and configuration.
Thermal data	4K thermal conductivity is typical design data for preliminary heat-load estimation.
Final assembly	Connector interface, cable length, routing form, and thermal anchoring may affect final performance.

CONFIGURATION INFORMATION REQUIRED FOR CABLE ASSEMBLY QUOTE

CABLE MODEL	**ASSEMBLY LENGTH**	**CONNECTOR INTERFACE**	**QUANTITY**
ROUTING FORM	**TEMPERATURE STAGE**	**MAGNETIC / NON-MAGNETIC REQUIREMENT**	**SPECIAL NOTES**