

FX18 SERIES

High Performance Flexible Phase Stable RF Cable

DC to 18 GHz



Product Description

The FX18 Series is a premium ultra-flexible phase-stable cable designed for demanding test and measurement, aerospace, and defence applications. Featuring excellent amplitude and phase stability under flexure, vibration, and temperature variation, RadianWorks FX18 delivers reliable, repeatable performance in dynamic environments where both signal integrity and cable durability are critical.

Constructed with a stranded silver-plated copper centre conductor, low-density PTFE dielectric, and an additional PTFE stabilisation layer, the FX18 combines outstanding flexibility with extended flex life while maintaining excellent electrical performance from DC to 18 GHz, low insertion loss, and high shielding effectiveness.

Key Features

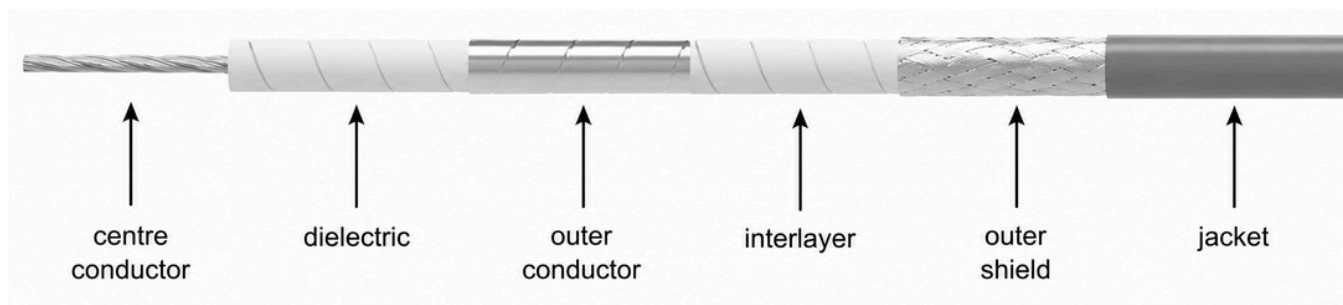
- Phase stable over temperature and flexure
- DC to 18 GHz frequency range
- Long flex life for dynamic applications
- High shielding effectiveness (>90 dB)
- Excellent VSWR performance
- High power handling

Typical Applications

- Test & Measurement
- Aerospace & Defence
- Satellite Communications
- Remote antenna systems
- Electronic Warfare
- Field test applications

Frequency	Impedance	VSWR (Connector dependent)	Attenuation
DC - 18 GHz	50 Ω	1.3 - 1.4 Max	0.82 dB/m @ 18 GHz

Construction & Specifications



Construction Materials

Component	Material	Size (mm)
Centre Conductor	Stranded silver-plated copper	2.30
Dielectric	Low density PTFE	6.00
Outer Conductor	Silver-plated copper foil	6.33
Interlayer	PTFE tape	6.60
Outer Shield	Silver-plated copper braid	7.05
Jacket	Grey FEP	7.70

Electrical Specifications

Parameter	Value	Conditions
Frequency Range	DC to 18 GHz	
Impedance	50 Ω	
Attenuation	0.82 dB/m	@ 18 GHz, 25 °C
VSWR	1.3 max	With SMA - See available connectors
Shielding Effectiveness	>90 dB	@ 18 GHz
Phase Stability (Flexure)	$\pm 5^\circ$	360° at 80 mm radius
Phase Stability (Temp)	<500ppm	-40 °C to +85 °C
Amplitude stability with vibration	+/-0.15dB	
Capacitance	80 pF/m	Calculated
Velocity of Propagation	83%	
Power Handling	1.811 kW	@ 1 GHz, sea level, 40 °C

Mechanical Specifications

Parameter	Value
Cable Outer Diameter	7.70 mm (0.303 in)
Minimum Bend Radius (single)	40 mm (1.575 in)
Minimum Bend Radius (repeated)	80 mm (3.14 in)
Cable Weight	124 g/m (0.083 lbs/ft)
Operating Temperature	-55 °C to +125 °C
Storage Temperature	-65 °C to +125 °C

Performance Highlight

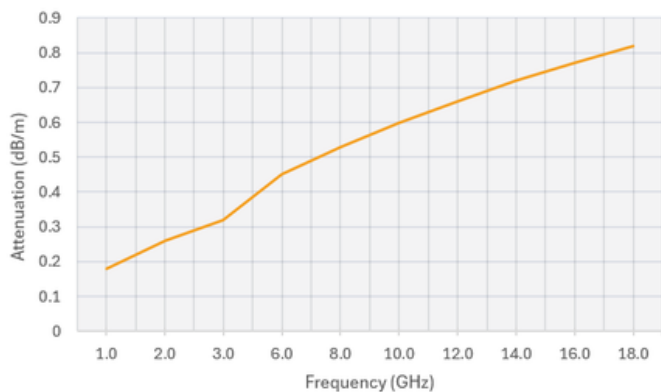
FX18 delivers industry-leading phase stability of $\pm 5^\circ$ over a 360° bend, making it ideal for applications where measurement repeatability is paramount.

Performance Data

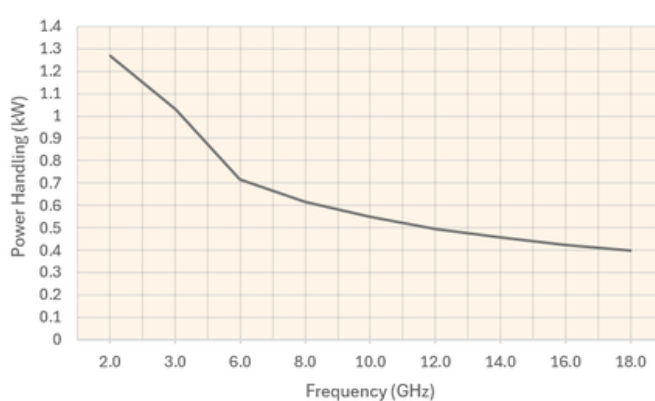
Attenuation vs Frequency

Freq (GHz)	1	2	3	6	8	10	12	14	16	18
dB/m	0.18	0.26	0.32	0.46	0.53	0.60	0.66	0.72	0.77	0.82

Attenuation vs Frequency



Power Handling vs Frequency



Performance Equations

$$\text{Attenuation (dB/m)} = K1 * \sqrt{f} + K2 * f$$

Where: K1 = 0.561347 (conductor loss), K2 = 0.000393 (dielectric loss), f = frequency in MHz

$$\text{Power Handling (W) @ 40 °C} = P_{\text{max}} / (\text{Attenuation Factor} * \sqrt{f})$$

Phase Stability

Phase change vs flexure: ±5° max over 360° bend at 18 GHz.

Phase change vs temperature: 500ppm max over -40 °C to +85 °C range.

Phase-matched sets available upon request.

Available Connectors

Connector	Orientation	Gender	Max Freq (GHz)	VSWR Max
N Type	Straight	Male / Female	18	1.3
N Type	90 degree	Male only	18	1.35
TNC	Straight	Male / Female	18	1.35
TNC	90 degree	Male only	18	1.4
SMA	Straight	Male / Female	18	1.3
SMA	90 degree	Male only	18	1.35

Notes & Test Conditions

1. All measurements performed at 25 °C unless otherwise stated.
2. Attenuation values are typical and measured on 1m assembly with SMA connectors.
3. Mechanical phase stability measured wrapped 360° on 80 mm radius mandrel
4. Power handling is CW (continuous wave) at sea level with no derating.
5. Custom connector configurations available on request.

Ordering Information

Ordering Guide

Use the part number structure below to specify your cable assembly configuration.

Part Number Builder

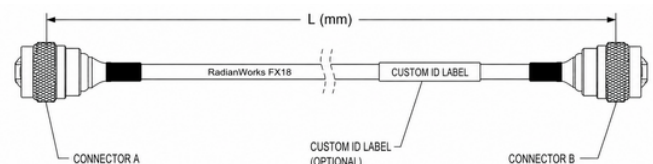
FX18 - CON A - CON B - LLLL

Example: FX18-NF-NM-0500 = 500mm 18GHz assembly with straight N Female and N male ends

Code	Position	Description
FX18	Product	FX18 Series flexible Cable
SM / SF / S90	Connector	SMA Male / SMA Female / SMA Male 90
NM / NF / N90	Connector	N Male / N Female / N Male 90
TM / TF / T90	Connector	TNC Male / TNC Female / TNC Male 90
0500	Length	Length in mm (e.g. 0500 = 500mm)

Custom Requirements

Assemblies can be manufactured directly from customer drawings or developed from a performance specification, with our engineering team creating detailed assembly documentation where required. Options include custom lengths, connector configurations, ruggedised constructions, and customer-specific identification labels. For phase-critical applications, precision phase-matched cable sets can also be supplied to defined electrical matching tolerances.



Standard Lengths

300mm | 500mm | 610mm | 900mm | 1000mm | 1200mm | 1500mm | 1800mm | 2000mm

Custom lengths available. Contact sales for non-standard requirements.

Cable Options

- Armoured jacket (-A suffix)
- End unterminated (-UT suffix)
- Matched phase pairs (-MP suffix)
- Custom labelling and marking
- Ruggedised strain relief boots

Custom Solutions

RadianWorks specialises in custom cable assembly solutions for demanding applications. Our engineering team can design bespoke assemblies to meet your exact specifications including non-standard lengths, connector combinations, and environmental requirements.

Request a Quote

sales@radianworks.com | www.radianworks.com/quote

Precision. Reliability. Performance.