

1/4" Superflexible, High-Temperature, Expanded PTFE Dielectric HELIAX® Coaxial Cables 50-ohm

ETS1-50 ETS1-50T

Types ETS1-50T and ETS1-50 are new 1/4" superflexible HELIAX coaxial cables for high power or plenum applications. ETS1-50T is jacketed; ETS1-50 is unjacketed. Compared with Type FSJ1-50A, the jacketed cable has over three times the power handling capability at frequencies above 10 MHz, with comparable attenuation. The unjacketed cable has even higher average power ratings. Both are ideal for equipment room jumpers that must interface with high power transmitters. The inner and outer conductor diameters of these cables are the same as FSJ1-50A thus allowing the use of existing connectors. Maximum operating frequency is 20.0 GHz.

High Average Power

Average power levels 50% greater than comparably-sized PTFE braided cables; similar to much larger PTFE braided cables. The low-loss expanded PTFE dielectric handles 3.5 to 4 times the average power of foam PE dielectric at 1 GHz.

Superior to Braided Cable

Attenuation levels only one third those of comparably-sized PTFE braided cables; 50% lower than much larger PTFE braided cables. Rugged, durable solid copper outer conductor provides continuous RFI/EMI shielding, minimizes interference and maximizes system security.

Connectors

Full-line of connectors available. Utilizes existing Type FSJ1-50A HELIAX cable connectors.

Flexibility

1" (25 mm) minimum bend radius for easy installation and routing in enclosed areas. Simplifies your system design. Capable of numerous reverse bends.

High Performance in Applications Such As:

- Antenna and equipment room jumpers for land mobile radio, cellular, paging and earth stations; inter-rack and combiner cabling; RF test equipment.
- Electronic warfare.
- Military phased array radar; airborne and shipboard radar systems; missile systems.



Operates up to 20 GHz

Ideal for electronic warfare, earth station and other high frequency applications requiring low loss and high power.

Characteristics

Nominal Size	1/4" Superflexible
Impedance, ohms	50

Cable Type Numbers

Standard Cable, unjacketed, fire retardant (plenum) high temperature, UL Type CATVP	ETS1-50
Standard Cable, Fire retardant (plenum), high temperature 150°C (303°F) jacket, UL Type CATVP	ETS1-50T

Electrical Characteristics

Maximum Frequency, GHz	20.0
Velocity, percent	82
Peak Power Rating, kW	6.4
dc Resistance, ohms/1000 ft (1000 m)	
Inner	1.9 (6.2)
Outer	2.0 (6.5)
dc Breakdown, volts	1600
Jacket Spark, volts RMS	4000
Capacitance, pF/ft (pF/m)	24.6 (80.6)
Inductance, µH/ft (µH/m)	0.063 (0.205)

Mechanical Characteristics

Outer Conductor	Copper
Inner Conductor	Silver plated copper
Diameter over Jacket, in (mm)	0.29 (7.4)
Diameter over Copper Outer Conductor, in (mm)	0.25 (6.4)
Minimum Bending Radius, in (mm)	1 (25)
Number of Bends, minimum (typical)	15 (20)
Bending Moment, ft-lb (N•m)	0.6 (0.8)
Cable Weight, lb/ft (kg/m)	0.066 (0.098)
Tensile Strength, lb (kg)	50 (23)
Flat Plate Crush Strength, lb/in (kg/mm)	100 (1.8)

Attenuation and Average Power Ratings

Freq. MHz	Atten. dB/100 ft	Atten. dB/100 m	ETS1-50T ¹ Avg. Power kW	ETS1-50 ² Avg. Power kW	Freq. MHz	Atten. dB/100 ft	Atten. dB/100 m	ETS1-50T ¹ Avg. Power kW	ETS1-50 ² Avg. Power kW
0.5	0.125	0.410	6.4	6.4	824	5.33	17.5	0.847	0.947
1	0.177	0.582	6.4	6.4	894	5.56	18.2	0.813	0.908
1.5	0.217	0.712	6.4	6.4	960	5.76	18.9	0.785	0.876
2	0.251	1.85	6.4	6.4	1000	5.90	19.4	0.765	0.856
20	0.798	2.62	5.66	6.33	1250	6.64	21.8	0.681	0.761
30	0.979	3.21	4.61	5.16	1500	7.31	24.0	0.618	0.691
50	1.27	4.16	3.56	3.99	1700	7.81	25.6	0.579	0.646
88	1.69	5.54	2.67	2.98	2000	8.52	28.0	0.530	0.593
100	1.80	5.91	2.51	2.81	2300	9.19	30.2	0.492	0.549
108	1.87	6.14	2.42	2.70	3000	10.6	34.8	0.426	0.476
150	2.21	7.26	2.04	2.28	4000	12.4	40.7	0.364	0.407
174	2.39	7.84	1.89	2.11	5000	14.0	46.0	0.322	0.360
200	2.56	8.41	1.76	1.97	6000	15.5	50.9	0.291	0.325
300	3.16	10.4	1.43	1.60	8000	18.2	59.9	0.247	0.277
400	3.66	12.0	1.23	1.38	10000	20.7	68.0	0.218	0.244
450	3.89	12.8	1.16	1.30	12000	23.0	75.5	0.196	0.219
500	4.11	13.5	1.10	1.23	14000	25.2	82.6	0.179	0.201
512	4.16	13.2	1.09	1.21	16000	27.2	89.3	0.166	0.186
600	4.52	14.8	1.00	1.12	18000	29.2	95.7	0.155	0.173
700	4.89	16.1	0.923	1.03	19000	30.1	98.9	0.150	0.168
800	5.25	17.2	0.860	0.962	20000	31.1	102.0	0.145	0.163

Standard Conditions:

For Attenuation: VSWR 1.0, ambient temperature 24°C (75°F).

- 1 For Average Power, Type ETS1-50T (jacketed): VSWR 1.0, ambient temperature 40°C (104°F), inner conductor temperature 200°C (392°F).
 2 For Average Power, Type ETS1-50 (unjacketed): VSWR 1.0, ambient temperature 40°C (104°F), inner conductor temperature 250°C (482°F).

Connectors

Connectors	Type No.	Length in (mm)	Body Dia. in (mm)	Shipping Weight lb (kg)
N Plug (male), mates with UG-23	41ASW	1.70 (43.3)	0.69 (17.5)†	0.3 (0.14)
N Plug (male), low VSWR, mates with UG-23	41PW*	1.60 (40.6)	0.56 (14.3)†	0.3 (0.14)
N Plug (male), low VSWR, stainless steel hex coupling nut	41PW-H*	1.60 (40.6)	0.56 (14.3)†	0.3 (0.14)
N Plug (male), hex coupling nut, mates with UG-23	41ASW-12*	1.70 (43.3)	0.69 (17.5)	0.3 (0.14)
N Plug (male), right angle, hex coupling nut, mates with UG-23	C41SW-RA*	1.40 (35.6)	0.44 (11.2)	0.4 (0.20)
N Jack (female), mates with UG-21	41N	1.02 (25.8)	0.69 (17.5)	0.3 (0.14)
N Jack (female) bulkhead, mates with UG-23	41BSPN-BH*	2.20 (55.9)	0.81 (20.6)	0.3 (0.14)
N Jack (female), low VSWR, mates with UG-21, bulkhead	41PN*	1.70 (43.2)	0.88 (22.4)	0.3 (0.14)
UHF Plug (male), mates with SO-239A	41SP	1.77 (44.9)	0.69 (17.5)†	0.3 (0.14)
UHF Jack (female), mates with PL-259A	41U	2.08 (52.8)	0.69 (17.5)	0.3 (0.14)
TNC Plug (male), mates with TNC female	41AEWT**	0.68 (17.3)	0.56 (14.3)†	0.3 (0.14)
TNC Jack (female bulkhead), low VSWR, mates with TNC male	41AENT**	1.54 (39.1)	0.56 (14.3)	0.3 (0.14)
SMA Plug (male), mates with SMA Jack	41ASWS	1.63 (41.4)	0.44 (11.2)	0.3 (0.14)
SMA Plug (male), right angle, mates with SMA jack	C41SWS-RA*	1.44 (36.6)	0.44 (11.2)	0.4 (0.20)
SMA Jack (female bulkhead), mates with SMA Plug	41ASNS	1.67 (42.4)	0.50 (12.7)	0.3 (0.14)
BNC Plug (male), mates with UG-89	41ASWB	1.00 (25.4)	0.56 (14.2)	0.3 (0.14)
Mini UHF plug (male), mates with mini UHF jack	41ASPM††	1.56 (39.6)	0.44 (11.1)	0.3 (0.14)
HN Plug (male), mates with UG-60	41ASJ	2.39 (60.7)	0.84 (21.3)	0.3 (0.14)

* Connector for low VSWR applications. Includes gold-plated inner connector and silver-plated body

† Across flats of hex.

†† Crimp tool type 208230 recommended for field attachments.

**Connector for low VSWR applications. Includes gold-plated inner connector and nickel-plated body.

Accessories

Description	Type No.	Description	Type No.
Insulated Hangers and Adapters		Other Accessories	
Insulated Hanger, single, for insulated towers. Recommended maximum spacing for outdoor installation is 1.5 ft (0.5 m).	11662-3	Grounding Kit, solid copper strap.	223158
Angle Adapter for insulated hanger	40430-1	Bulkhead Adapter for Type N or UHF jacks	26016-2
Stainless Steel Wraplock for round tower members	12395-1	End Terminal Adapter, use with N plug connector	13074A
		EASIAx® Cutting Tool	207865



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