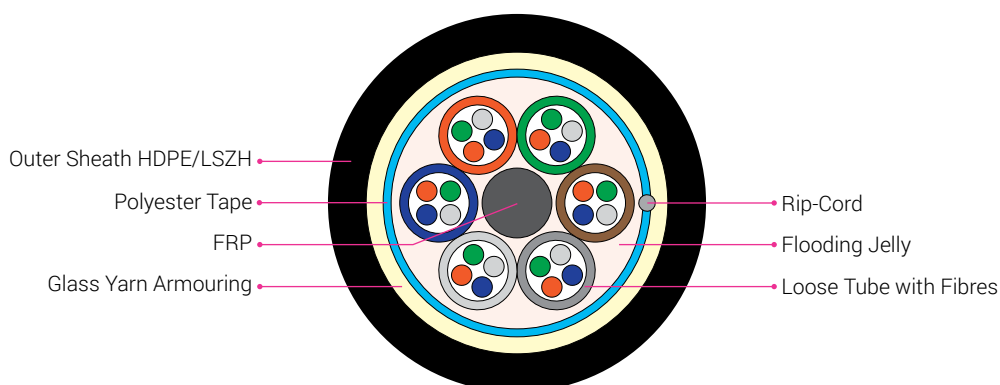


HUBNETIX

Multi-Tube Indoor-Outdoor Fibre Optic Cable



Description

LANLINE Multi-tube Indoor/Outdoor Fibre cables from HUBNETIX have been designed to support reliable transmission performance over a broad temperature range for underground Duct, Aerial, Metro and Long-haul applications. This low smoke zero halogen Fibres are placed inside filled buffer tubes containing gel. The core is constructed by stranding buffer tubes around a central strength member. The core is wrapped with flexible strength members covered with a water-blocking tape, Glass Yarn and LSZH/HDPE outer jacket. Rip cords are included under outer jacket for ease of entry. LANLINE Multi-tube Indoor/Outdoor Fibres are available in fibre counts from 12 to 144 fibres. These OM1, OM2, OM3, OM4 multimode, and OS2 singlemode Indoor/Outdoor FO cables are compliant with IEC 60794 international standards.

Standard Compliance

- Telecordia GR-20, IEC 60794
- EIA/TIA, ITU-T, EN187000, RUS1755.900

Environmental Specifications (Temperature)

- Operation / Storage : -40°C to +70°C
- Installation : -30°C to +75°C

Features

- Available Fibre counts upto 144-Fibres
- Fibre type
- Multiple Fibre includes – Multimode-OM1, OM2, OM3, OM4; OS2 Singlemode and Hybrid
- Dry core standard (optional)
- Uni-Tube designs are also available from 2-24 Fibres

Application

- Underground duct, Aerial and Direct Burial
- Trunk, Distribution and feeder cable
- Local loop, metro, long-haul and broadband network

Advantages

- High fibre density
- Multiple network applications
- Dielectric design eliminates grounding issues
- Reduces cable preparation and installation time
- Reduces the number of tools required
- Speeds fibre access and cleanup

Physical Characteristics

Fibre Count	Cable Outer Diameter (mm) Nominal	Weight (kg/km) (Nominal)	Tensile Strength (Nominal)		Crush Resistance (N/10cm)	Bending Radius (mm)	
			Installation	Operation		Temporary	Permanent
12-24	10.5	90	2000	1000	2000	105	210
26-48	10.8	92	2000	1000	2000	108	216
50-72	11.5	110	2000	1000	2000	115	230
74-96	14.5	175	4000	2000	2000	145	290
98-120	15.5	205	4000	2000	3000	155	310
122-144	17.0	255	4000	2000	3000	170	340

Multi-Tube Indoor-Outdoor Fibre Optic Cable



Fibre Technical Specifications

Optical Characteristics		Multi-Mode - Fibre Type & Grade		
Characteristics	Conditions	Specified Values		Units
		62.5/125µm – OM1	50/125µm – OM2/OM3/OM4	
Attenuation	850nm	≤ 3.5	≤ 3.0	dB/km
	1300 nm	≤ 1.5	≤ 1.0	dB/km
Bandwidth	850 nm	≥ 200	≥ 500 / ≥ 1500 / ≥ 3500	MHz.km
	1300 nm	≥ 600	≥ 500 / ≥ 500 / ≥ 500	MHz.km
Ethernet Performance 10GBE	850nm	33	150 /300/ 550	m
Ethernet Performance 1000GBE	850nm	220	750 /1000/ 1100	m
Numerical Aperture		0.275 ± 0.015	0.200 ± 0.015	

Geometrical Characteristics

Core Diameter		62.5 ± 2.5	50.0 ± 2.5	µm
Core Non – Circularity		≤ 5.0	≤ 5.0	%
Core/Cladding Concentricity Error		≤ 1.5	≤ 1.5	µm
Cladding Diameter		125.0 ± 1.0	125.0 ± 1.0	µm
Cladding Non – Circularity		≤ 1.0	≤ 1.0	%
Primary Coating Diameter		245 ± 10	245 ± 10	µm
Coating/Cladding Concentricity Error		≤ 12	≤ 12	µm
Primary Coating Material (Colored)		UV Cured Acrylate	UV Cured Acrylate	

Mechanical Characteristics

Bending Induced Attenuation				
10 Turns @60mm Radius	850nm	≤ 0.5		dB
	1300 nm	≤ 0.5		dB
100 Turns @ 37.5mm Radius	850nm		≤ 0.50	dB
	1300 nm		≤ 0.50	dB
2 Turns @ 15mm Radius	850nm		≤ 1.0	dB
	1300 nm		≤ 1.0	dB
Proof Stress Level		≤ 1.0	≤ 1.0	%
		≤ 100	≤ 100	kpsi

Optical Characteristics

Single-Mode - Fibre Type & Grade

Characteristics	Conditions	Specified Values			Units
		ITU-T G.652.D	ITU-T G.657.A1	ITU-T G.657.A2	
Attenuation	1310 nm	≤ 0.36	≤ 0.36	≤ 0.38	dB/km
	1550 nm	≤ 0.23	≤ 0.23	≤ 0.23	dB/km
Chromatic Dispersion	1285 - 1330 nm		≤ 3.5		ps/(nm.km)
	1550 nm		≤ 18.0		ps/(nm.km)
Cable cutoff wavelength λ _{cc}			≤ 1260		nm
Zero Dispersion wavelength			1300 - 1324		nm
Zero Dispersion slope			≤ 0.092		ps/nm ² .km
Polarization mode Dispersion (PMD)	Fibre		≤ 0.2		ps/km
	Link Design Value		≤ 0.08		ps/km

Geometrical Characteristics

Mode Field Diameter (MFD)	1310 nm	9.2 ± 0.4	8.6 ± 0.4	6.3 ± 9.5	µm
	1550 nm	10.4 ± 0.5	9.8 ± 0.5		µm
Cladding Diameter			125.0 ± 1.0		µm
Cladding Non – Circularity			≤ 1.0		%
Core/Cladding Concentricity Error			≤ 0.5		µm
Coating/Cladding Concentricity Error			≤ 12.0		µm
Primary Coating Diameter			245 ± 10		µm
Primary Coating Material (Colored)			UV Curved Acrylate		
Fibre Curl (Radius)			≥ 4		m

Note- The optical attenuation/PMD given values may change due to fibre cabling.

Mechanical Characteristics - SM

Single-Mode - Fibre Type & Grade

	Conditions	Specified Values			Units
		ITU-T G.652.D	ITU-T G.657.A1	ITU-T G.657.A2	
Bending Induced Attenuation					
1 Turn @32mm Diameter	1550 nm		≤ 0.05		dB
100 Turns @ 50mm Diameter	1310 nm		≤ 0.05		dB
	1550 nm		≤ 0.05		dB
100 Turns @ 60mm Diameter	1625 nm		≤ 0.05		dB
Proof Stress Level			≥ 1.00		%
			≥ 100		kpsi

Environmental Characteristics

Environmental Tests				
Temperature Dependence	-60 to +85°C		≤ 0.05	dB/km
Temperature-Humidity Cycling	-10 to +85°C		≤ 0.05	dB/km
Water Immersion	23		≤ 0.05	dB/km
Dry Heat Aging	85		≤ 0.05	dB/km
Damp Heat	85°C @ 85% RH		≤ 0.05	dB/km

Multi-Tube Indoor-Outdoor Fibre Optic Cable



Ordering Info & Part Numbers

Part Number Example	Description
HLH-FUMS2L12-XX	LANLINE 12-Fibre, OS2 SM, Multi-tube, Indoor/Outdoor, LSZH, Fibre Cable

HUBNETIX Prefix			1	2	3	4	5	6
H	L	H	F	UM	S2	L	12	XX

1=F - Fibre Optic	2=Cable construction	3=Fibre type	4=Flame Rating	5=XX - Fibre Count	6=XX - Fibre Color code
	UM – Indoor/Outdoor Multi-tube	S1 – Singlemode OS1 9/125µm	L – Low Smoke Zero Halogen	02 – 02-fibre	OR – ORANGE (OM1/OM2)
	UU – Indoor/Outdoor Uni-tube	S2 – Singlemode OS2 9/125µm (ITU G.652.D)	H – HDPE	04 – 04-fibre	AQ – AQUA (OM3/OM4)
		M1 – Multimode OM1 62.5/125µm	P – PVC	06 – 06-fibre	YL – YELLOW (OS1/OS2)
		M2 – Multimode OM2 50/125µm		08 – 08-fibre	BK – BLACK
		M3 – Multimode OM3 50/125µm		12 – 12-fibre	
		M4 – Multimode OM4 50/125µm		24 – 24-fibre	
				36 – 36-fibre	
				48 – 48-fibre	
				72 – 72-fibre	
				96 – 96-fibre	

Note: All packaging is 2,000 mtr drum reel. The above shown cable designs are HUBNETIX standard designs. Other lengths and customised designs are available upon specific request.

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The dimensions and specifications in this document are for reference purposes only and are subject to change without notice. Consult HUBNETIX Corp. for the latest dimensions and design specifications.

