

Fiber Optic Cable For Industrial and Harsh Environments



Product Selection Chart

	Airguard™ XP -Oil and Gas Utility Low-Temp High Crush	ezLINK™ Heavy Duty Industrial Riser LSZH (dry) High Crush	ezLINK™ Industrial Riser LSZH Dry Loose Tube	CampusLink LT™ Indoor/Outdoor Loose Tube	CampusLink LT™ Dry Indoor/Outdoor Loose Tube	ExpressLT™ All-Dielectric Armored (gel or dry) Loose Tube	ezDISTRIBUTION™ Riser Indoor/Outdoor Tight Buffered	ezDISTRIBUTION™ Plenum Indoor/Outdoor Tight Buffered	ezDISTRIBUTION™ Riser LSZH Indoor/Outdoor Tight Buffered	Mining Indoor/Outdoor Riser Loose Tube	Outdoor FAA All-Dielectric Loose Tube
Product Family -->	Airguard XP	IRZHF	IRZHx	DRLxx	DPLDB	EDHDA2JKT ETHDA2JKT	C1181	C1182	700	RLTM	FAA
Application	Low-Temp, High Crush	Low-Temp, LSZH, High Crush	LSZH	General Application Riser	General Application Plenum	OSP All-Dielectric Rodent Resistant	General Application Riser	General Application Plenum	General Application LSZH Riser	Mining	Airports
Cable Type	Indoor/ Outdoor Loose Tube	Indoor/ Outdoor Loose Tube	Indoor/ Outdoor Loose Tube	Indoor/ Outdoor Loose Tube	Indoor/ Outdoor Loose Tube	Outdoor Loose Tube	Indoor/ Outdoor Tight Buffer	Indoor/ Outdoor Tight Buffer	Indoor/ Outdoor Tight Buffer	Indoor/ Outdoor Loose Tube	Outdoor Loose Tube
Gel Filled Tube	yes	no	no	yes	no	no	n/a	n/a	n/a	yes	yes
Fiber Count	2 to 288	2 to 288	2 to 288	2 to 132	2 to 144	4 to 432	2 to 144	2 to 96	2 to 24	2 to 144	2 to 60
Qualified Fibers	ALL	No 50 µm	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
Corrugated Steel Tape Option	no	no	yes (PSP)	yes (PSP)	no	no	no	no	no	no	no
Interlock Armor	no	no	yes	yes	yes	yes	yes	yes	yes	no	no
Flame Rating	OFNG-LS FT4 ST1	OFR-LS FT4 ST1	OFR-LS FT4 ST1	OFNR FT4	OFNP FT6	none	OFNR FT4	OFNP FT6	OFNR FT4	OFNR FT4	none
MSHA Listing	no	no	no	no	no	no	no	no	no	yes	no
Low Smoke	yes	yes	yes	no	yes	no	no	yes	yes	no	no
Zero Halogen	no	yes	yes	no	no	no	no	no	yes	no	no
Recommended for Tray Usage	Yes	Yes	Yes	no	no	no	no	no	no	Yes	no
Installation Tensile Load (N)	4500	4500	2670 to 4500	2700	2700	4500	445 to 2670	445 to 2670	660 to 1320	4500	2700
High Compressive Resistant	yes	yes	no	no	no	yes	no	no	no	yes	no
Low Temperature Mechanicals	yes	yes	no	no	no	no	no	no	no	no	no
Operating Temperature	-50°C to 70°C	-50°C to 70°C	-50°C to 70°C	-50°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 80°C	-40°C to 80°C	-40°C to 80°C	-50°C to 70°C	-40°C to 70°C
Installation Temperature	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C	-10°C to 60°C	0°C to 60°C	-30°C to 60°C	-10°C to 60°C	0°C to 60°C	-10°C to 50°C	-10°C to 60°C	-30°C to 60°C
UV Resistant Jacket	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Chemical Resistance (Scale: 1 to 4) 4 being the best	3	2	2	1	4	1	1	3	2	1	4
Oil and Gas Resistance (Scale: 1 to 4) 4 being the best	4	3	2	1	4	1	1	4	2	2	4

*outer jacket type is fiber count specific

FLAME RATING TERMS:

OFN = Optical Fiber Non-conductive

OFNG = Optical Fiber Non-conductive General Purpose

OFNR FT4 = Optical Fiber Non-conductive riser - USA & Canada

OFNP FT6 = Optical Fiber Non-conductive Plenum - USA & Canada

LS ST1 = Low Smoke - USA & Canada

* Optical cables become conductive with metallic armoring wherein the "N" (non-conductive) term converts to a "C" (conductive) when metallic armor is applied. ie: OFNR vs OFCR

TUBE AND JACKET MATERIAL TERMS:

CPE = Chlorinated Polyethylene

LSZH = Low Smoke Zero Halogen

PBT = Polybutylene Terephthalate

PE = Polyethylene

PP = Polypropylene

PVC = Polyvinylchloride

PVDF = Polyvinylidene Fluoride

PSP = Armor between 2 jackets

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PRYSMIAN GROUP

VISION, MISSION, VALUES

Vision

The Prysmian Group believes in the effective, efficient and sustainable supply of Energy and Information as a primary driver in the development of communities



Mission

The Prysmian Group provides its customers worldwide with superior cable solutions based on pioneering technology and consistent excellence in execution, ultimately delivering sustainable growth and profit.



Values

Excellence

Every day we relentlessly pursue excellence in all we do

Understanding

We listen closely to our customers to really understand their needs

Integrity

We uphold the highest standards of integrity in our actions



Prysmian Group

Market, innovation and technology leader in the global cables industry.

Prysmian Group is world leader in the energy and telecom cables and systems industry. With more than 130 years of experience, sales in excess of 8 billion dollars in 2016, over 19,000 employees in 50 countries and 88 production sites, the Group offers the widest possible range of products, services, technology and know-how for every type of industry thanks to an extensive commercial presence and 17 R&D centers in Europe, the United States, South America and China, with more than 500 qualified R&D professionals.

Prysmian is a public company, listed on the Italian Stock Exchange in the FTSE MIB index.

PRODUCTS

TELECOM SOLUTIONS



CABLING SOLUTIONS
used for
telecommunication
networks

OPTICAL FIBER



**PRODUCTION AND
DEVELOPMENT**
of optical fiber

SPECIALTY SOLUTIONS



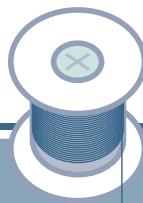
CABLING SOLUTIONS
for communication
needs in premise,
industrial, wireless
and transport
infrastructures

PRODUCT PORTFOLIO:



- Loose Tube
- Ribbon
- ADSS
- Drop
- OPGW
- Tight Buffer
- Interlock™ Armor
- Copper/Fiber Hybrid

PRODUCT PORTFOLIO:



- Single-Mode Fiber
- Multimode Fiber
- Specialty Fiber

PRODUCT PORTFOLIO:

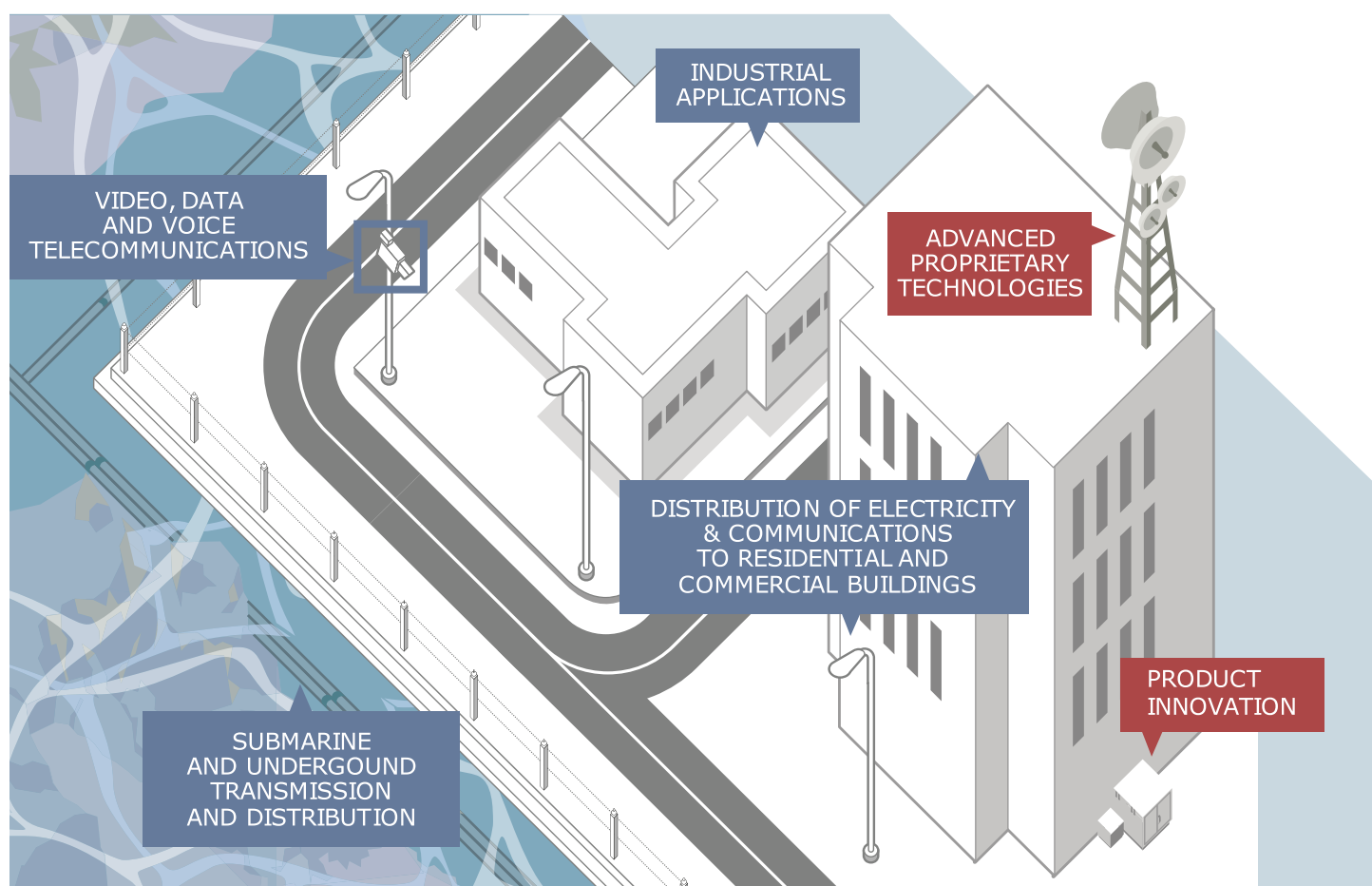


- Riser
- Plenum
- LSZH (Low Smoke Zero Halogen)
- Harsh Environment
- Outside Plant
- MSHA

PROVEN RELIABILITY

World leader in the energy & telecom cables and systems industry, partner of the world's key players

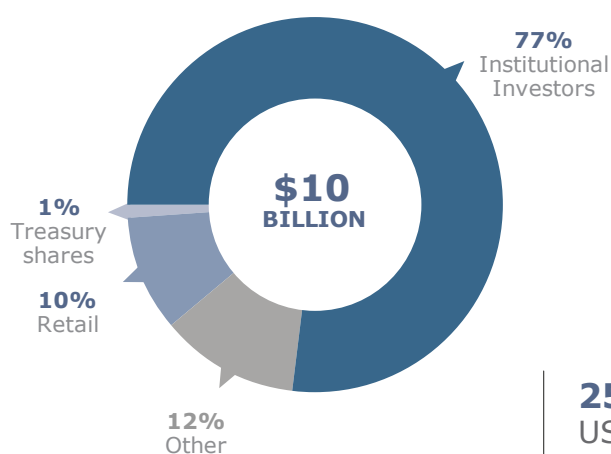
**STRONG POSITION
IN HIGH TECH SECTORS**



OWNERSHIP

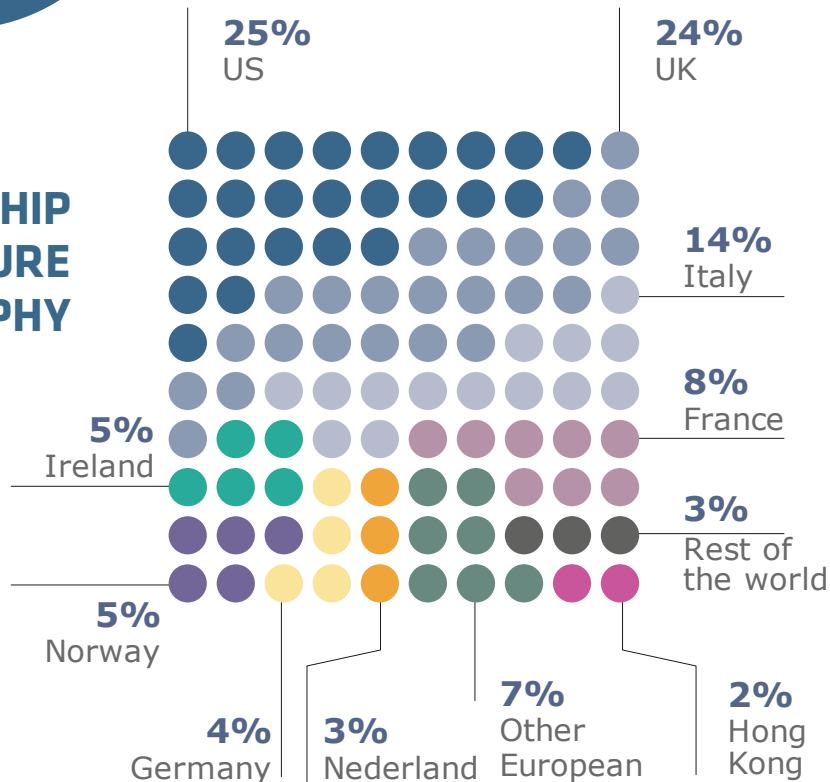
PRYSMIAN GROUP IS A PUBLIC COMPANY

A listed company without a controlling shareholder, managed on a transparent basis and leveraging its ability to gain and maintain the continued confidence of its investors



OWNERSHIP STRUCTURE BY MAIN INVESTORS

OWNERSHIP STRUCTURE BY GEOGRAPHY



Our company at a glance

Vision

We believe in the efficiency, effectiveness and sustainability of energy and information delivery as the prime driver for developing communities

Energy and information help communities develop. That's why it's so important that they're always available, and that they're supplied effectively, efficiently, sustainably. Whomever the client. Wherever they are. However harsh the environment they operate in. We're committed to keeping them connected. Every day, we all have the chance to bring our vision to life through our actions. No matter how big or small, the things we do on a daily basis build up over time and help us deliver on our mission.

Values

Excellence

Good isn't good enough. We combine rigor and entrepreneurship to deliver innovative all-round solutions.

Integrity

When it comes to ethics, no challenge is too big, or too small, if it means doing things right.

Understanding

We have strong respect for different opinions and ideas, and a keen focus on our customers' needs.

Mission

We provide our customers worldwide with superior cable solutions based on state-of-the-art technology

We provide consistent excellence in execution, ultimately delivering sustainable growth and profit, as well as strengthening our reputation for performance and innovation. But we don't just want to be good for business. We want to be good to do business with. That's why our values are so important to us. The things we do and the way we approach them are an opportunity to show pride in our work.



OVER 130 YEARS OF EXPERIENCE



50 COUNTRIES



91 PLANTS



17 R&D CENTERS



19,000 EMPLOYEES



\$ 10 BILLION SALES



100,000 VARIETIES OF FIBER CABLE



Claremont, NC Facility

1.2 Million Square Foot Campus

Fiber Manufacturing,
Cable Manufacturing,
Research & Development

TL9000, ISO 9001, ISO 14001
and ISO 17025 Certified



NORTH AMERICAN FACILITIES

- 10 plants in North America serving the telecom and energy markets.
- Offers over 100,000 designs of indoor, indoor-outdoor, outdoor and specialty fiber optic cable.
- Two fiber optic cable manufacturing facilities in the United States covering 1.5 million square feet, including the only co-located fiber and cable facility in North America.
- Built the only Vertical Continuous Vulcanization line in North America in the Abbeville, SC plant. This facility is used to produce insulated high voltage cables.
- Has a manufacturing facility in Prescott, Ontario to meet Canada's power cabling needs.





- Best in class rating for many of the TL 9000 categories.
- The highest level of certifications in the industry: ISO 9001, ISO 14001, ISO 17025:2005, ISO TS 16949, IRIS and TL9000 certified.
- Drives change and innovation while constantly connecting with our customers to help them respond to challenges more efficiently.
- 17 research and development centers and 5,000 patents granted or filed.
- As a combined company, our greater reach, range & service enables us to meet or exceed customer requirements.



Lexington, SC Facility

300,000 Square Foot Campus

TL9000, ISO 9001, ISO 14001
and ISO 17025 Certified

Fiber Cable Manufacturing

Research & Development

North American Headquarters for
Telecom & Energy Divisions



Heavy Duty Loose Tube

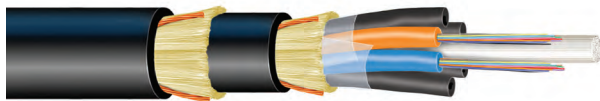
Oil and Gas | Waste Water | Chemical Processing
Harsh Environment Mills | Low Temperature | High Crush





AIRGUARD® XP Fiber Optic Cable

Oil & Gas | Chemical | Low Temp | High Crush | Harsh Environment | Tray



Prysmian's AIRGUARD® XP cable will assure long term reliability of up to 288 fibers in a variety of severe conditions.

Overview

AIRGUARD® XP combines world-class mechanical protection, chemical protection, and user friendliness into a family of robust industrial optical fiber cables. AIRGUARD® XP joins Prysmian's existing brands of AIRGUARD® low voltage and medium voltage cables.

In the industrial and harsh environment, the presence of aggressive chemicals such as hydrocarbons, solvents, acids, and bases can destroy a traditional fiber cable. AIRGUARD® XP resists those harsh elements. In fact, the AIRGUARD® XP family surpasses the rigorous UL 2556 requirements for Oil & Gas Resistance.

AIRGUARD® XP goes head to head with interlocking armor cables in the areas of impact and crush resistance. Because interlock armor contains metallic armoring, they are stiff, heavy, and require grounding. A severe impact or crush may cause permanent deformation to the metallic armor. The AIRGUARD® XP, all-dielectric versions, overcome these un-desirable factors and can be installed in trays/ladders along with copper communications or power conducting cables, thus providing greater flexibility & user friendliness.

AIRGUARD® XP cables meet or exceed key industry standards such as ANSI/ICEA 696, CSA 22.2, UL 1277, and Telcordia GR20.

The robust all-dielectric double jacket also carries listings for sunlight resistance (SUN RES) and direct burial (DIR BUR). This cable is extremely versatile and may be utilized in low temperature applications down to -50°C (-58°F) and in properly engineered self-supporting aerial applications. The dual jacket, single corrugated steel tape option provides optimal rodent protection in direct buried applications. The single jacket all-dielectric option is best suited for duct installations

Features and Benefits

- Suitable for tray installations
- Hydrocarbon (kerosene, gasoline, lubricating oil) resistant
- Resists chemical degradation in industrial environments
- Resistant to jet fuel & de-icing chemicals for airport applications
- Flame-retardant, black UV-resistant outer jacket
- Smaller & lighter than comparable metallic armored designs
- Available with bend-insensitive single-mode & multimode fibers
- Proven stranded loose tube cable design for long term reliability

Product Snapshot

Applications	AIRGUARD® XP cables are extremely rugged, indoor/outdoor loose tube cables providing unsurpassed performance in the most challenging applications where extreme exposures to chemicals, oils, temperature, or compressive and tensile loads are present.
Flame Rating	XPRLTM = OFNG- LS/FT4 ST1 flame and low smoke rating XPRLTMB = OFN flame rating XPRLTMD = OFC flame rating
Fiber Count	2 to 288
Fiber Types	Single-mode (SMF, bend-insensitive) Multimode (62.5/125-OM1, 50/125-OM2, OM3 & OM4)
Performance	ANSI/ICEA S-104-696, CSA C22.2 No 230/232, UL-1277 UL-2556 4.2.8.3 "Oil Resistance" PR11, UL-2556 4.2.8.4 "Gasoline Resistance" GR11, Direct Buried Rated: DIR BUR UV Resistance Rated: SUN RES Telcordia GR-20, CE RoHS Compliant
Registered Supplier	TL 9000, ISO 9001, ISO 14001, and OHSAS 18001



AIRGUARD® XP Fiber Optic Cable

Oil & Gas | Chemical | Low Temp | High Crush | Harsh Environment | Tray

Dielectric (Double Jacket) XPRLTM Series | OFNG-LS/FT4 ST1

Fiber Count	Number of Buffer Tubes	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius UNDER LOAD inches (cm)	Bend Radius NO LOAD inches (cm)
2 to 72	6	12	0.60 (15.3)	159 (237)	12.0 (30.5)	6.0 (15.3)
74 to 84	7	12	0.64 (16.2)	176 (262)	12.8 (32.6)	6.4 (16.3)
86 to 96	8	12	0.67 (17.1)	198 (294)	13.4 (34.1)	6.7 (17.1)
98 to 108	9	12	0.72 (18.2)	216 (322)	14.2 (36.1)	7.1 (18.1)
110 to 120	10	12	0.74 (18.8)	238 (354)	14.8 (37.6)	7.4 (18.4)
122 to 132	11	12	0.78 (19.7)	260 (387)	15.6 (39.7)	7.8 (19.9)
134 to 144	12	12	0.83 (21.0)	294 (438)	16.6 (42.2)	8.3 (21.1)
146 to 216	12 / 6	12	0.81 (20.5)	267 (398)	16.2 (41.2)	8.1 (20.6)
218 to 264	14 / 8	12	0.90 (22.8)	333 (496)	18.0 (45.8)	9.0 (22.9)
266 to 288	15 / 9	12	0.94 (24.0)	358 (532)	18.6 (47.3)	9.3 (23.7)

Temperature Range

Shipping and Storage: -58° F to +158° F (-50° C to +70° C)
 Installation: -22° F to +140° F (-30° C to +60° C)
 Operation: -58° F to +158° F (-50° C to +70° C)

Mechanical Specifications

Maximum installation load: 1000 lbf (4500 N)
 Maximum operation load: 300 lbf (1335 N)
 Crush resistance: 4500 N
 Impact force resistance: 11.8 N*M
 Cold impact load: 5.88 N*M at -22° F (-30° C)

Note:

Single layer, 12 position = OD 21 mm
 Dual layer, 12/6 position = OD 20.5 mm

Dielectric (Double Jacket) XPRLTM SAG and TENSION

Fiber Count	NESC Light 1.5% Initial Sag			CSA Medium A 1.5% Initial Sag			CSA Heavy A 1.5% Initial Sag			PLP Attachment Hardware Part Numbers	
	Span (m)	Weather Load MRCL (N)	Installation Tension (N)	Span (m)	Weather Load MRCL (N)	Installation Tension (N)	Span (m)	Weather Load MRCL (N)	Installation Tension (N)	Dead End	Aluminum Support
2 - 72	130	4026	2514	87	4026	1700	62	4026	1215	2872007C1E1	4450102
74 to 84	120	4026	2585	83	4026	1771	60	4026	1281	2872008C1E1	4450103
86 to 96	133	4827	3194	93	4827	2247	68	4827	1646	2872009C1E1	4450103
98 to 108	123	4827	3257	88	4827	2331	66	4827	1726	2872010C1E1	4450104
110 to 120	115	4827	3332	83	4827	2411	62	4827	1811	2872011C1E1	4450104
122 to 132	107	4827	3390	79	4827	2491	60	4827	1895	2872011C1E1	4450105
134 to 144	97	4827	3479	73	4827	2603	56	4827	2011	2872012C1E1	4450106
146 to 216	87	4026	2821	64	4026	2087	49	4026	1588	2872012C1E1	4450105
218 to 264	87	4827	3541	66	4827	2687	52	4827	2118	2872014C1E1	4450106
266 to 288	82	4827	3586	63	4827	2749	50	4827	2180	2872014C1E1	4450107

Note. Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

Chemical Resistance Performance

Compound

ASTM No. 2 Oil
 Kerosene
 MIL-T-5624N JP-4 (jet fuel)
 MIL-H-5606 Hydraulic Fluid
 Vegetation Killer
 De-Icing Fluid
 Hydrogen Sulfide (H2S)

Test Criteria

96 hours at 100°C
 168 hours at 50°C
 168 hours at 50°C
 168 hours at 50°C
 168 hours at 50°C
 24 hours at 50°C
 24 hours at 100°C

Airguard XP

AIRGUARD® XP Fiber Optic Cable

Oil & Gas | Chemical | Low Temp | High Crush | Harsh Environment | Tray

Dielectric (Single Jacket) XPRLTMB Series | OFN

Fiber Count	# of Buffer Tubes Outer/Inner	Fibers per unit or # of units	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.41 (10.3)	62 (93)	8.2 (20.9)	4.1 (10.5)
62 to 72	6	12	0.44 (11.2)	73 (109)	8.8 (22.4)	4.4 (11.2)
74 to 84	7	12	0.47 (11.9)	83 (123)	9.4 (23.9)	4.7 (12.0)
86 to 96	8	12	0.51 (12.9)	95 (142)	10.2 (25.9)	5.1 (13.0)
98 to 108	9	12	0.55 (13.9)	111 (165)	11.0 (28.0)	5.5 (14.0)
110 to 120	10	12	0.58 (14.8)	125 (186)	11.6 (29.5)	5.8 (14.8)
122 to 132	11	12	0.62 (15.7)	140 (209)	12.4 (31.5)	6.2 (15.8)
134 to 216	12 / 6	12	0.65 (16.5)	154 (229)	13.0 (33.0)	6.5 (16.6)

Temperature Range

Shipping and Storage: -40° F to +176° F (-40° C to +80° C)
 Installation: +14° F to +140° F (-10° C to +60° C)
 Operation: -40° F to +176° F (-40° C to +80° C)

Mechanical Specifications

Maximum installation load: 600 lbf (2670 N)
 Maximum operation load: 180 lbf (801 N)
 Cold impact load: 5.88 N*M at -22° F (-30° C)

Dielectric (Double Jacket and Steel Tape Armored) XPRLTMD Series | OFC

Fiber Count	# of Buffer Tubes Outer/Inner	Fibers per unit or # of units	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.60 (15.2)	169 (251)	12.0 (30.5)	6.0 (15.3)
62 to 72	6	12	0.64 (16.3)	184 (274)	12.8 (32.6)	6.4 (16.3)
74 to 84	7	12	0.66 (16.8)	192 (286)	13.2 (33.6)	6.6 (16.8)
86 to 96	8	12	0.70 (17.8)	210 (313)	14.0 (35.6)	7.0 (17.8)
98 to 108	9	12	0.74 (18.8)	230 (342)	14.8 (37.6)	7.4 (18.8)
110 to 120	10	12	0.78 (19.8)	251 (373)	15.6 (39.7)	7.8 (19.9)
122 to 132	11	12	0.81 (20.6)	268 (399)	16.2 (41.2)	8.1 (20.6)
134 to 216	12 / 6	12	0.86 (21.7)	286 (426)	17.2 (43.7)	8.6 (21.9)

Temperature Range

Shipping and Storage: -40° F to +176° F (-40° C to +80° C)
 Installation: +14° F to +140° F (-10° C to +60° C)
 Operation: -40° F to +176° F (-40° C to +80° C)

Mechanical Specifications

Maximum installation load: 600 lbf (2670 N)
 Maximum operation load: 180 lbf (801 N)
 Cold impact load: 5.88 N*M at -22° F (-30° C)

Note. Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions \geq 24 hours prior to placement.

Chemical Resistance Performance

Compound	Test Criteria
ASTM No. 2 Oil	96 hours at 100°C
Kerosene	168 hours at 50°C
MIL-T-5624N JP-4 (jet fuel)	168 hours at 50°C
MIL-H-5606 Hydraulic Fluid	168 hours at 50°C
Vegetation Killer	168 hours at 50°C
De-Icing Fluid	24 hours at 50°C
Hydrogen Sulfide (H ₂ S)	24 hours at 100°C

Airguard XP

AIRGUARD® XP Fiber Optic Cable

Oil & Gas | Chemical | Low Temp | High Crush | Harsh Environment | Tray

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

EXAMPLE: Indoor/Outdoor Loose Tube | AIRGUARD® Series, Dielectric (double Jacket) | General Purpose rated | 12 fibers per buffer tube
48 62.5/125 multimode fibers total (printed in feet)

1	LENGTH MARKINGS	2	PRODUCT FAMILY	3	CONSTRUCTION	4	FIBER GROUPING	5	FIBER TYPE	6	FIBER COUNT	7	FIBER GRADE
	F		XPRLTM		BLANK		12		G6		048		M2

CABLE INFORMATION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

XPRLTM = 2-288f AIRGUARD® XP (double jacket)

XPRLTMB = 2-216f AIRGUARD® XP (single jacket)

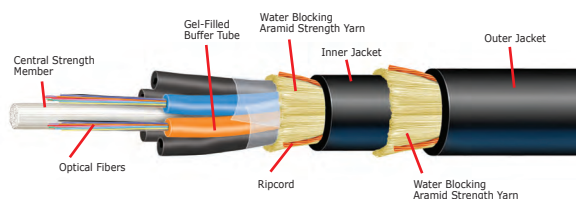
XPRLTMD = 2-216f AIRGUARD® XP (double jacket & steel tape armored)

3 CONSTRUCTION

(blank) = Not available with interlock armor

4 FIBER GROUPING

12 = 12f per unit or tube



FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Draka™ Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

MULTIMODE

	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ B1F (50µm)	850/1300	700/500	800	150/___
G3 = OM3 B1F (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 B1F (50µm)	850/1300	3500/500	1100	550/___

6 FIBER COUNT

002 to 288 fibers

7 FIBER GRADE

SINGLE-MODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
E1 = 0.40/0.40/0.30	1310/1383/1550	HB, ES, or CE
E3 = 0.35/0.35/0.25	1310/1383/1550	HB, ES, B1, B2 or CE

MULTIMODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
M2 = 3.5/1.0	850/1300	OM1 (62.5µm)
M3 = 3.0/1.0	850/1300	OM2+, OM3, OM4 (50µm)

Other cable constructions and fiber performance grades available on request.



ezLINK™ Heavy Duty Industrial | LSZH Riser | High Crush

Industrial | Chemical Resistant | Tray | Indoor/Outdoor Cables



Multiuse indoor/outdoor cables for heavy duty industrial applications involving cable trays and spaces where extreme mechanical durability is vital. Riser flame rating and low smoke without the use of halogenated materials provides life-safety benefits.

Overview

Prysmian's ezLINK™ indoor/outdoor gel free industrial heavy duty riser LSZH loose tube designs provide flame-rated network solutions for network applications in harsh mechanical/environmental locations. These cables combine a robust, flame retardant LSZH jacket material, flexible dry buffer tubes and swellable water blocking with Prysmian's extensive portfolio of single-mode optical fibers. Because of its application diversity, this advanced product eliminates the necessity/expense for traditional cable transition points once required in legacy systems. This design has been evaluated for tray cable applications using standards such as CSA 22.2 No 230, UL 1277 and NFPA 70.

Product Snapshot

Applications	Versatile heavy duty indoor/outdoor cable designed for industrial communication and control systems. Riser rating with complementary reduced smoke and hazardous emissions capability.
Constructions	Dielectric (dual jacket)
Flame Ratings	Riser - low smoke (OFNR-LS / FT4 ST1)
Fiber Count	2 to 288 fibers
Fiber Types	Single-mode (ESMF, bend-insensitive) Multimode (62.5/125-OM1)
Performance	TIA/EIA-568, ANSI/ICEA S-83-596, ANSI/ICEA S-104-696, UL 1666, UL 1277, CSA 22.2 No. 230 & 232; Telcordia GR-409, Telcordia GR-20, RoHS Compliant

RoHS
COMPLIANT

Features and Benefits

- 4500N compressive loading performance
- Ideal for applications with more severe hazards such as industrial complexes, transportation systems and tunnel networks
- Fiber identification using TIA standardized color coding
- Chemical resistant
- Dry buffer tubes simplifies access and reduces prep time
- Flame-retardant, black UV-resistant LSZH outer jacket
- Flexible kink-resistant buffer tubes for routing and storage
- Available with bend-insensitive single-mode optical fibers
- Meets CSA C22.2 No. 230 abnormal low temperature - impact test at -25°C

Temperature Range

Shipping and storage:	-58° F to +158° F	(-50° C to +70° C)
Installation:	-22° F to +140° F	(-30° C to +60° C)
Operation:	-58° F to +158° F	(-50° C to +70° C)

Mechanical Specifications

Maximum installation load:	1000 lbf (4450 N)
Maximum operation load:	300 lbf (1330 N)



ezLINK™

Heavy Duty Industrial | LSZH Riser | High Crush

Industrial | Chemical Resistant | Tray | Indoor/Outdoor Cables

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: ezLINK™ I/O Oil & GAS Heavy Duty Riser LSZH with Dry Buffer Tubes | 48 62.5/125 multimode fibers (printed in feet)

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	IRZHF	BLANK	12	G6	048	M2

CABLE INFORMATION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

Riser-Low Smoke Zero Halogen | FT4 ST1

ezLINK I/O Oil & Gas Heavy Duty Riser LSZH w/Dry Buffer Tubes

IRZHF = I/O Oil & Gas Riser LSZH Tray HD (double jacket)
OFNR-LS / FT4 ST1

3 CONSTRUCTION

(blank) = Not available with interlock armor

4 FIBER GROUPING

12 = 12f per unit or tube

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___

6 FIBER COUNT

002 to 288 fibers

7 FIBER GRADE

SINGLE-MODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
E1 = 0.40/0.40/0.30	1310/1383/1550	HB, ES, or CE
E3 = 0.35/0.35/0.25	1310/1383/1550	HB, ES, B1, B2, or CE

MULTIMODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
M2 = 3.5/1.0	850/1300	OM1 (62.5µm)

Other cable constructions and fiber performance grades available on request.

Nominal Design Parameters

ezLINK™ Oil & Gas Utility Heavy Duty Riser Dielectric (Double Jacket) | IRZHF Series | OFNR-LS / FT4 ST1

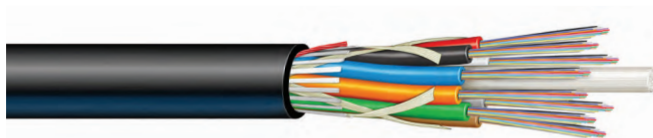
Fiber Count	# of Buffer Tubes Outer/Inner Layer	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 72	6	12	0.66 (16.7)	177 (263)	13.2 (33.4)	6.6 (16.7)
74 to 84	7	12	0.69 (17.5)	194 (288)	13.8 (35.0)	6.9 (17.5)
86 to 96	8	12	0.72 (18.3)	212 (315)	14.4 (36.6)	7.2 (18.3)
98 to 108	9	12	0.76 (19.4)	238 (354)	15.3 (38.9)	7.6 (19.4)
110 to 120	10	12	0.79 (20.0)	253 (376)	15.8 (40.0)	7.9 (20.0)
122 to 132	11	12	0.82 (20.9)	276 (410)	16.5 (41.8)	8.2 (20.9)
134 to 144	12	12	0.85 (21.7)	299 (445)	17.1 (43.4)	8.5 (21.7)
146 to 216	12 / 6	12	0.88 (22.3)	287 (427)	17.6 (44.6)	8.8 (22.3)
218 to 264	14 / 8	12	0.94 (23.9)	327 (486)	18.9 (47.8)	9.5 (23.9)
266 to 288	15 / 9	12	0.98 (25.0)	355 (529)	19.7 (50.0)	9.9 (25.0)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.



ezLINK™ Industrial Riser LSZH Loose Tube (dry)

Indoor/Outdoor | LSZH | Tray



Multi-use for industrial applications involving cable trays and spaces where robust mechanical durability are key attributes. Riser flame rating and low smoke without the use of halogenated materials provides life-safety benefits.

Overview

Prysmian's indoor/outdoor dry Industrial riser LSZH loose tube designs provide flame-rated network solutions for a diverse number of network applications. These cables combine a robust, flame retardant LSZH jacket material, flexible dry buffer tubes and swellable water blocking with Prysmian's extensive portfolio of single-mode and multimode optical fibers. Because of its application diversity, this advanced product eliminates the necessity/expense for traditional cable transition points once required in legacy systems. Available in several design options, both with and without metallic armor, to right-size the cable option to the inherent demands of specific applications.

Product Snapshot

Applications	Versatile indoor/outdoor cable designed for industrial communication and control systems. Riser rating with complementary reduced smoke and hazardous emissions. Suitable for installations in cable trays per NFPA-70.
Constructions	Dielectric (single & dual jacket), ezPREP® corrugated armor, interlocked armor
Flame Ratings	Riser - low smoke (OFNR-LS / OFCR-LS / FT4 ST1)
Fiber Count	2 to 288
Fiber Types	Single-mode (ESMF, bend-insensitive) multimode (62.5/125- OM1, 50/125- OM2+, OM3 & OM4)
Standards	TIA/EIA-568, ANSI/ICEA S-83-596, ANSI/ICEA S-104-696, UL-1666, CSA 22.2 No. 230 Telcordia GR-409, Telcordia GR-20, RoHS Compliant

LSZH Jacket

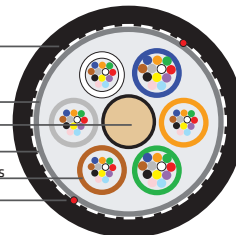
Aramid Strength Yarns

Central Strength Member

Water Blocking Tape

DryFilled Buffer Tube Containing up to 12 Fibers

Ripcord



Features and Benefits

- Fiber identification using TIA standardized color coding
- Dry buffer tubes simplifies access and reduces prep time
- Flame -retardant, black UV-resistant LSZH outer jacket
- Flexible kink-resistant buffer tubes for routing and storage
- Available with bend-insensitive single-mode and multimode optical fibers
- Ideal for applications with more severe hazards such as industrial complexes, transportation systems and tunnel networks
- Will support all high performance networks including OM4/10 gigabit ethernet systems

RoHS
COMPLIANT

Flame

Low
Smoke

Zero
Halogen

Chemical

Tray

Temp

ezLINK™

Industrial Riser LSZH Loose Tube (dry)

Indoor/Outdoor | LSZH | Tray

ezLINK™ Industrial Riser Dielectric (Single Jacket) IRZHB Series | OFNR-LS/FT4 ST1

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers Per Unit or # of Units	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.40 (10.1)	64 (95)	8.0 (20.4)	4.0 (10.2)
62 to 72	6	12	0.43 (10.8)	70 (104)	8.6 (21.9)	4.3 (11.0)
74 to 84	7	12	0.47 (11.9)	84 (125)	9.4 (23.9)	4.7 (12.0)
86 to 96	8	12	0.50 (12.7)	96 (143)	10.0 (25.4)	5.0 (12.7)
98 to 108	9	12	0.54 (13.8)	114 (169)	10.8 (27.5)	5.4 (13.8)
110 to 120	10	12	0.56 (14.4)	123 (183)	11.2 (28.5)	5.6 (14.3)
122 to 132	11	12	0.60 (15.2)	139 (207)	12.0 (30.5)	6.0 (15.3)
134 to 144	12	12	0.63 (16.1)	155 (231)	12.6 (32.0)	6.3 (16.0)
146 to 216	12 / 6	12	0.66 (16.8)	152 (226)	13.2 (33.6)	6.6 (16.8)
218 to 264	14 / 8	12	0.72 (18.4)	182 (271)	14.4 (36.6)	7.2 (18.3)
266 to 288	15 / 9	12	0.77 (19.5)	204 (304)	15.4 (39.2)	7.7 (19.6)

ezLINK™ Industrial Riser ezPREP® Armor (Corrugated Steel Armor - 1A2J) IRZHD Series | OFCR-LS/FT4 ST1

2 to 60	5	12	0.63 (16.0)	190 (283)	12.6 (32.0)	6.3 (16.0)
62 to 72	6	12	0.66 (16.8)	204 (304)	13.2 (33.6)	6.6 (16.8)
74 to 84	7	12	0.71 (18.0)	231 (344)	14.2 (36.1)	7.1 (18.1)
86 to 96	8	12	0.74 (18.8)	250 (372)	14.8 (37.6)	7.4 (18.8)
98 to 108	9	12	0.78 (19.8)	278 (413)	15.6 (40.0)	7.8 (19.9)
110 to 120	10	12	0.80 (20.3)	294 (438)	16.0 (40.7)	8.0 (20.4)
122 to 132	11	12	0.84 (21.3)	320 (476)	16.8 (42.7)	8.4 (21.4)
134 to 144	12	12	0.88 (22.4)	347 (517)	17.6 (44.7)	8.8 (22.4)
146 to 216	12 / 6	12	0.88 (22.4)	347 (517)	17.6 (44.7)	8.8 (22.4)
218 to 264	14 / 8	12	0.97 (24.6)	388 (578)	19.4 (49.3)	9.7 (24.7)
266 to 288	15 / 9	12	1.01 (25.7)	422 (628)	20.2 (51.3)	10.1 (25.7)

Interlock Armor (Aluminum)

ezINTERLOCK™ Industrial Riser (I/A) IRZHBAL Series | OFCR-LS/FT4 ST1

2 to 60	5	12	0.73 (18.4)	200 (297)	14.6 (36.9)	7.3 (18.5)
62 to 72	6	12	0.76 (19.2)	214 (319)	15.2 (38.4)	7.6 (19.2)
74 to 84	7	12	0.80 (20.4)	242 (360)	16.1 (40.8)	8.1 (20.4)
86 to 96	8	12	0.83 (21.2)	263 (391)	16.7 (42.4)	8.4 (21.2)
98 to 108	9	12	0.88 (22.3)	323 (481)	17.6 (44.6)	8.8 (22.3)
110 to 120	10	12	0.90 (22.8)	341 (507)	18.0 (45.8)	9.0 (22.9)
122 to 132	11	12	0.94 (23.7)	368 (547)	18.7 (47.5)	9.4 (23.8)
134 to 144	12	12	0.97 (24.7)	399 (594)	19.5 (49.5)	9.8 (24.8)
146 to 216	12 / 6	12	1.00 (25.4)	405 (602)	20.1 (50.9)	10.1 (25.5)
218 to 264	14 / 8	12	1.06 (27.0)	455 (677)	21.3 (54.1)	10.7 (27.1)
266 to 288	15 / 9	12	1.11 (28.1)	492 (732)	22.2 (56.3)	11.1 (28.2)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

Mechanical Specifications

Maximum installation load: 600 lbf (2670 N)
 (IRZHC Only) 1000 lbf (4450 N)
 Maximum operation load: 180 lbf (800 N)
 (IRZHC Only) 300 lbf (1330 N)

Temperature Range

Shipping and Storage: -58° F to +158° F (-50° C to +70° C)
 Installation: -22° F to +140° F (-30° C to +60° C)
 Operation: -58° F to +158° F (-50° C to +70° C)

ezLINK™ Industrial Riser LSZH Loose Tube (dry)

Indoor/Outdoor | LSZH | Tray

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: ezLink™ loose tube | I/O industrial riser | dry buffer tubes | LSZH single jacket | 12 single-mode fibers per buffer tube | 72 fibers total

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	IRZHB	BLANK	12	HB	072	E1

PART NUMBER CONSTRUCTION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

STRANDED LOOSE TUBE PRODUCTS :

I/O Industrial Riser LSZH Tray with Dry Buffer Tubes

Riser-Low Smoke | OFNR LS/FT4 ST1

IRZHB = I/O Industrial Riser LSZH Tray All-dielectric (single jacket)

IRZHD = I/O Industrial Riser LSZH Tray ezPREP® Armored (PSP)

RZHBA = ezINTERLOCK I/O LSZH Tray Interlock Armor

3 CONSTRUCTION

(blank) = None

AJ = Jacket Aluminum

4 FIBER GROUPING

12 = 12f per unit or tube

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ BIF (50µm)	850/1300	700/500	800	150/___
G3 = OM3 BIF (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 BIF (50µm)	850/1300	3500/500	1100	550/___

6 FIBER COUNT

002 to a88 fibers

7 FIBER GRADE

SINGLE-MODE

Attenuation (dB/km) Wavelength (nm) Fiber Type

E1 = 0.40/0.40/0.30 1310/1383/1550 HB, ES, or CE

E3 = 0.35/0.35/0.25 1310/1383/1550 HB, ES, B1, B2, or CE

MULTIMODE

Attenuation (dB/km) Wavelength (nm) Fiber Type

M2 = 3.5/1.0 850/1300 OM1 (62.5µm)

M3 = 3.0/1.0 850/1300 OM2+, OM3, OM4 (50µm)

Other cable constructions and fiber performance grades available on request.

Outer Jacket Color For Interlock Armor

Cable Type	Standard Jacket Color
Single-Mode Premises	Yellow
Standard Multimode Premises	Orange
Laser-Optimized 50 µm Premises	Aqua

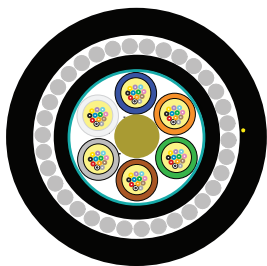
Heavy Duty Loose Tube

with Armor Wires



XM-LGWC Loose Tube with Armor Wires

Low Smoke Zero Halogen | Heat & Oil Resistant | High Crush | Rodent Resistant



Overview

Applicable in areas where mechanical impact on the installed cable is to be expected. The steel wire armor and the flame retardant, low smoke, zero halogen outer sheath make the cable suitable for installation under and above ground.

- Available in 4 to 72 fibers
- Loose Tube Designs

Construction

CENTRAL STRENGTH MEMBER: Glass fiber reinforced plastic rod (FRP)

LOOSE TUBE: Thermoplastic material, containing up to 12 fibers in gel-filled buffer tubes

FILLER ELEMENTS: Thermoplastic rods, where needed

STRANDING: Loose tubes (and fillers), SZ stranded around the central strength member

WATER BLOCKING: Swellable water blocking tapes and/or yarns

INNER SHEATH: Low Smoke Zero Halogen Flame Retardant compound

ARMOR: One layer of galvanized soft steel wires (SWA)

OUTER SHEATH: Consists of Low Smoke Zero Halogen flame retardant compound (Black), heat & oil resistant and UV-resistant. (One ripcord underneath)

Number of Fibers	Number of Tubes/ Fillers	Loose Tube Diameter (mm)	Central Strength Member (mm)	Inner Sheath Thickness (mm)	Dia Over Inner Sheath Thickness (mm)	Armor SWA Thickness (mm)	Dia Over SWA Armor (mm)	Outer Sheath Thickness (mm)	Cable Diameter (mm)	Cable Weight (kg/km)
4	1/5	2.1	2.3	1.0	8.9	1.0	11.1	2.0	15.1	390
8	2/4	2.1	2.3	1.0	8.9	1.0	11.1	2.0	15.1	390
12	2/4	2.1	2.3	1.0	8.9	1.0	11.1	2.0	15.1	390
24	4/2	2.1	2.3	1.0	8.9	1.0	11.1	2.0	15.1	390
48	4/2	2.4	2.6	1.0	9.8	1.0	12.0	2.0	16.0	425
72	6/-	2.4	2.6	1.0	9.8	1.0	12.0	2.0	16.0	425

XM-LGWG

XM-LGWG Loose Tube with Armor Wires

Low Smoke Zero Halogen | Heat & Oil Resistant | High Crush | Rodent Resistant

MAIN CHARACTERISTICS

Test	Standard	Specified Value		Acceptance Criteria*
Max. tension	IEC 60794-1-2-E1	6000 N		≤ reversible, no fiber strain
Crush	IEC 60794-1-2-E3	3000N / 100mm, short term		≤ 0.10 dB
Impact	IEC 60794-1-2-E4	30 Nm, R = 200mm, 3 impacts		≤ 0.10 dB
Repeated bending	IEC 60794-1-2-E6	R = 15 x cable Ø, 100 cycles		≤ 0.10 dB
Cable bend	IEC 60794-1-2-E11	R = 10 x cable Ø, 5 turns, 3 cycles		≤ 0.10 dB
Water penetration	IEC 60794-1-2-F5B	Sample = 3m, water = 1m		No water leakage after 24 hour up to inner sheath
Flame retardancy Single cable test Bundle cable test	IEC 60332-1 IEC 60332-3-22 (Cat A)	Reduced flame propagation		In IEC
UV resistancy	ISO 4892-2			In ISO
Halogen free	IEC 60754-1 IEC 60754-1	Amount of halogen acid pH value		In IEC
Heat & oil resistancy	IEC 60811	IRM902 ; 4 hrs, 70°C		
* values for single-mode fibers, all optical measurements performed at 1550 nm				
Min. Bending Radius (mm)		Without Tension 10 x Cable-Ø		Under Maximum Tension 25 x Cable-Ø
Temperature Range (°C)		Installation -10 to +50	Transport. & Storage -30 to +70	Operation -30 to +70

Packing

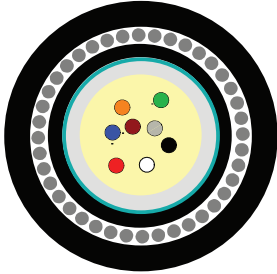
Wooden drums with protection

Delivery Lengths

Standard delivery length is 4 km or 6 km

URGW V Central Tube with Armor Wires

Flame Retardant | Heat & Oil Resistant | High Crush | Rodent Resistant



Overview

Used in areas where mechanical impact on the installed cable is to be expected. Rodent resistant with optimal mechanical protection. High crush resistant. Fully water tight construction under the armor.

- Available in 1 to 24 fibers.
- Small central tube design

Construction

LOOSE TUBE: The secondary coating consists of a central loose tube made of special thermoplastic plastic. Each fiber in the central tube is uniquely identified by a different color, for fiber counts above 12 fibers a colored bundle yarn is used

GEL COMPOUND: Tube filled with dermatological safe gel

CABLE CORE: The cable core is covered with water blocking swellable tape

STRENGTH MEMBERS: Non-metallic strength members are applied over the core

INNER SHEATH: Consists of a Low Smoke Zero Halogen flame retardant compound

ARMOR: The armor consists of one layer of galvanized steel wire (SWA)

OUTER SHEATH: The cable sheath consists of flame retardant PVC compound, resistant to UV, heat & oil (Black)

TECHNICAL DATA

Number of Fibers	Central Tube Diameter (mm)	Inner Sheath Thickness (mm)	Armour SWA Thickness (mm)	Sheath Thickness (mm)	Cable Diameter (mm)	Cable Weight (kg/km)
1-24	3.3	1.4	1.0	1.6	12.4	270

URGWV

URGW V Central Tube with Armor Wires

Flame Retardant | Heat & Oil Resistant | High Crush | Rodent Resistant

MAIN CHARACTERISTICS

URGW V Tube with Armor Wires

Test	Standard	Specified Value		Acceptance Criteria*
Max. tension (Installation)	IEC 60794-1-2-E1	4800 N		≤ reversible, no fiber strain
Crush	IEC 60794-1-2-E3	4000N / 100mm, short term		≤ 0.10 dB
Impact	IEC 60794-1-2-E4	20 Nm, R = 200mm, 3 impacts		≤ 0.10 dB
Repeated bending	IEC 60794-1-2-E6	R = 15 x cable Ø, 100 cycles		≤ 0.10 dB
Cable bend	IEC 60794-1-2-E11	R = 10 x cable Ø, 5 turns, 3 cycles		≤ 0.10 dB
Water penetration	IEC 60794-1-2-F5B	Sample = 3m, water = 1m		No water leakage after 24 hour up to inner sheath
Flame retardancy	IEC 60332-1 IEC60332-3-24 Cat C	Reduced flame propagation, IEC		In IEC
* values for single-mode fibers, all optical measurements performed at 1550 nm				
Min. Bending Radius (mm)		Without Tension 15 x Cable-Ø		Under Maximum Tension 25 x Cable-Ø
Temperature Range (°C)		Installation -10 to +50	Transport. & Storage -30 to +70	Operation -30 to +70

Packing

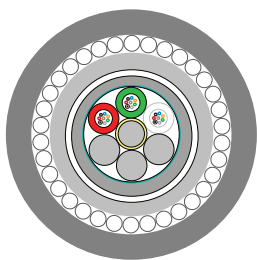
Wooden drums with protection

Delivery Lengths

Standard delivery length is 4 km or 6 km

Petroblock™ QLQP Loose Tube with Armor Wires

Chemical Resistant | Flame Retardant | High Crush | Rodent



Overview

This cable design is an outdoor, chemical resistant, flame retardant loose tube cable. The PetroBlock™ optical cable for direct burial or duct installation in areas with chemicals and oils. The outer sheath is made of flame retardant and oil resistant PVC. The cable has a strong steel wire armoring which also acts as rodent protection. PetroBlock™ protection sheath is tested and certified by DNV.

- Available in 4 to 96 fibers
- Loose Tube Designs

Construction

CENTRAL STRENGTH MEMBER: Glass fiber reinforced plastic rod (FRP)

LOOSE TUBE: Gel-filled buffer tubes containing up to 12 fibers

FILLER ELEMENTS: Thermoplastic rods, where needed

STRANDING: Loose tubes (and fillers), SZ stranded around the central strength member

WATER BLOCKING: Swellable water blocking tape or yarns to prevent longitudinal moisture penetration

INNER POLYAMIDE SHEATH: PetroBlock™ protects the cable core against chemicals, oils and insects

ARMOR: One layer of galvanized soft steel wires (SWA)

OUTER SHEATH: Flame retardant and oil resistant PVC

Number of Fibers	Number of Tubes / Fillers (pcs)	Number of Fibers per Tube (pcs)	Buffer Tube Diameter (mm)	Cable Diameter (mm)	Cable Weight (kg/km)
4	1/5	4	2.3	17.4	474
8	2/4	4	2.3	17.4	474
12	1/5	12	2.3	17.4	474
24	2/4	12	2.3	17.4	474
48	4/2	12	2.3	17.4	474
60	5/1	12	2.3	17.4	474
72	6/-	12	2.3	17.4	474
96	8/-	12	2.3	19.2	580



Petroblock™ QLQP Loose Tube with Armor Wires

Chemical Resistant | Flame Retardant | High Crush | Rodent

MAIN CHARACTERISTICS

Test	Standard	Specified Value		Acceptance Criteria*
Tensile strength Max during installation Max during operation	IEC 60794-1-2-E1	10.000N 8.000N		≤ 0.05 dB, no fiber strain
Crush	IEC 60794-1-2-E3	3000N / 100mm, short term		≤ reversible
Impact	IEC 60794-1-2-E4	25 Nm, R=200mm, 3 impacts		≤ 0.10 dB, No damage
Torsion	IEC 60794-1-2-E7	± 1 turn/1m		≤ 0.10 dB, No damage
Cable bend	IEC 60794-1-2-E11	R= 20 x cable Ø, 5 turns		≤ 0.10 dB, No damage
Water penetration	IEC 60794-1-2-F5B	sample = 3m, water=1m		No water leakage after 24 hour up to inner sheath
Oil and Chemical Protection	DIN57207 Part 3A1, ASTM Oil NO.3 Diesel fuel	90°C, 74 weeks 90°C, 74 weeks		No sign of gasses or liquid inside the aluminium foil after tests
Peel strength Aluminium overlap	ASTM D1876	> 40N/25mm		
* values for single-mode fibers, all optical measurements performed at 1550 nm				
Min. bending radius (mm)		Without Tension 20 x Cable-Ø		Under Maximum Tension 25 x Cable-Ø
Temperature range (°C)		Installation -10 to +60	Transport. & Storage -40 to +70	Operation -40 to +70

Packing

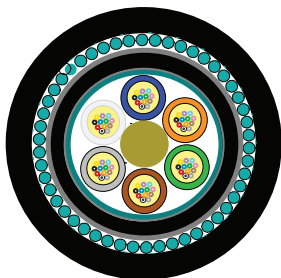
Wooden drums with protection

Delivery Lengths

Standard delivery length is 4 km or 6 km

LMNWX Loose Tube with Armor Wires

Outdoor | Chemical Resistant | High Crush | Rodent Resistant



Overview

The cable is especially designed for harsh environments. The multi-layer inner sheath system ALPA: Aluminium/HDPE/PA (nylon) withstands aggressive constituents and fluids that might occur on (petro) chemical plants. The steel wire armor & FR LSZH sheath make the cable suitable for installation under and above ground.

- The ALPA design provides anti-termite protection
- The steel wire armor provides rodent protection

Flame retardant acc. IEC 60332-1
(Depending on sheath material)

Flame retardant acc. IEC 60332-3-22 (= Cat A)
(Depending on sheath material)

Construction

CENTRAL STRENGTH MEMBER (CSM): Glass fiber reinforced plastic rod (FRP), with plastic over sheathing when needed

LOOSE TUBE: The secondary coating consists of a loose tube made of thermoplastic polyester. Each fiber in a tube is uniquely identified by a different color

FILLER ELEMENTS: Thermoplastic rods, where needed

STRANDING: Loose tubes (and fillers), SZ stranded around the CSM

CABLE CORE: The cable core is covered with water blocking swellable tape

ARAMID YARNS: Applied to give extra tensile performance

MOISTURE BARRIER: The cable is completely covered with an aluminium foil applied longitudinally with an overlap. The aluminium foil is bonded to the inner sheath

1ST INNER SHEATH: The 1st inner sheath consists of HDPE (high density polyethylene) (Black) compound. (Two ripcords underneath)

2ND INNER SHEATH: The 2nd inner sheath consists of PA (Black)

ARMOR: The armor consists of one layer of galvanized steel wire (SWA) with a counter spiral binder

OUTER SHEATH: The following sheath materials are available: FR PVC, HDPE, FR LSZH. All UV, heat & oil resistant

Number of Fibers	Number of Tubes / Fillers	Number of Fibers per Tube	Loose Tube- Ø (mm)	Central Strength Member (mm)	1st Inner Sheath Thickness (mm)	2nd Inner Sheath Thickness (mm)	Dia over 2nd inner Sheath (mm)	Steel Wire Thickness (mm)	Sheath Thickness (mm)	Cable Diameter (mm)	Cable Weight (kg/km)
4	1/5	4	2.1	2.3	1.0	0.5	10.5	1.0	2.0	16.7	450
6	1/5	6	2.1	2.3	1.0	0.5	10.5	1.0	2.0	16.7	450
12	2/4	6	2.1	2.3	1.0	0.5	10.5	1.0	2.0	16.7	450
24	4/2	6	2.1	2.3	1.0	0.5	10.5	1.0	2.0	16.7	450
36	6/-	6	2.1	2.3	1.0	0.5	10.5	1.0	2.0	16.7	450
48	4/2	12	2.4	2.6	1.0	0.5	11.6	1.0	2.0	17.8	500
96	8/0	12	2.4	2.3/4.2	1.0	0.5	13.2	1.0	2.0	19.4	545



LMNWX Loose Tube with Armor Wires

Outdoor | Chemical Resistant | High Crush | Rodent Resistant

MAIN CHARACTERISTICS

Test	Standard	Specified value	Acceptance Criteria*
Max. tension	IEC 60794-1-2-E1	7000 N	≤ 0.05 dB, no fiber strain
Crush	IEC 60794-1-2-E3	5000N / 100mm, short term	reversible
Impact	IEC 60794-1-2-E4	40 Nm, R=200mm, 3 impacts	≤ 0.10 dB, No damage
Repeated bending	IEC 60794-1-2-E6	R= 15 x cable Ø, 100 cycles	≤ 0.10 dB, No damage
Cable bend	IEC 60794-1-2-E11	R= 10 x cable Ø, 5 turns, 3 cycles	≤ 0.10 dB, No damage
Torsion	IEC 60794-1-2-E7	±180°, L=1m, 10 cycles	No damage
Water penetration	IEC 60794-1-2-F5B	sample=3m, water=1m	No water leakage after 24 hour
UV resistancy	ISO 4892-2		In ISO
Halogen free	IEC 60754-1	Amount of halogen acid pH value	In IEC (depending on sheath material)
Heat & oil resistancy	IEC 60811	IRM902 ; 4 hrs, 70°C	
Flame retardancy	IEC 60332-1 IEC 60332-3-22 (Cat A)	Reduced flame propagation	In IEC (depending on sheath material)
Single cable test			
Bundle cable test			
Resistance to nitric acid	Draka - Kema	7 mol/l, 6 weeks	No damage to optical fibers
Resistance to hydrocarbon mixture	Draka - Kema	Metyl-etyl-keton, trichloro-ethene, cyclo-hexane, heptane, toluene	No damage to optical fibers
* values for single-mode fibers, all optical measurements performed at 1550 nm			
Min. bending radius (mm)		Without Tension 15 x Cable-Ø	Under Maximum Tension 25 x Cable-Ø
Temperature range (°C)		292 Installation -10 to +70	Transport. & Storage -40 to +70
			Operation -40 to +70

Packing

Wooden drums with protection

Delivery Lengths

Standard delivery length is 4 km or 6 km

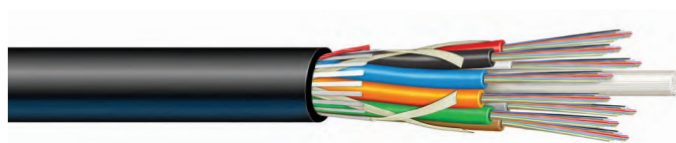
General Applications

Industrial Loose Tube Fiber Cable | Including Interlock™ Armor



CampusLink LT™ Loose Tube | Indoor/Outdoor

Riser rated cable with gel-filled buffer tubes



Flame Retardant Jacket

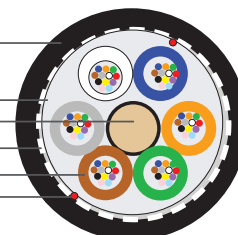
Flame Retardant Tape

Central Strength Member

Water Blocking Tape

Gel Filled Buffer Tube - up to 12 Fibers

Ripcord



Versatile indoor/outdoor flame-rated fiber cables - ideal for interbuilding and building transition applications.

Overview

Prysmian's indoor/outdoor loose tube riser designs provide flame-rated network solutions for a diverse number of network applications. These cables combine traditional gel-filled buffer tubes and swellable water blocking materials with Prysmian's extensive portfolio of single-mode and multimode optical fibers. Incorporating proven outside plant design elements, this cable may be employed in outdoor aerial lashed, duct, and direct buried environments. Because of its application diversity, this advanced product eliminates the necessity/expense for traditional cable transition points once required in legacy systems. Cost savings and system long term reliability are achieved by enabling cable placement virtually anywhere in the network.

Product Snapshot

Applications	Multi-purpose indoor/outdoor - aerial lashed, duct, direct buried
Constructions	Dielectric (single & dual jacket), ezPREP® corrugated armored, interlock armored
Flame Ratings	Riser (OFNR / OFCR / FT4)
Fiber Count	2 to 144 fibers
Fiber Types	Single-mode (ESMF, bend-insensitive) multimode (62.5/125- OM1, 50/125-OM2+, OM3 and OM4)
Standards	TIA/EIA-568, ANSI/ICEA S-83-596, ANSI/ICEA S-104-696, UL-1666, CSA 22.2, Telcordia GR-409, Telcordia GR-20, RoHS compliant



Features and Benefits

- Fiber identification using TIA standardized color coding
- Flame retardant, black UV-resistant outer jacket
- Flexible kink-resistant buffer tubes for routing and storage
- Available with bend-insensitive single-mode and multimode optical fibers
- ezINTERLOCK™ armor designs available for added durability
- Supports all high performance networks including OM4/10 gigabit ethernet systems

CampusLink

CampusLink LT™ Loose Tube | Indoor/Outdoor

Riser rated cable with gel-filled buffer tubes

CampusLink LT™ Riser I/O Dielectric (Single Jacket) DRLTB Series | OFNR/FT4

Fiber Count	# of Buffer Tubes	Fibers Per Tube or # of Tubes	Diameter inches (mm)	Approximate Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 - 60	5	12	0.40 (10.1)	67 (99)	8.0 (20.2)	4.0 (10.1)
62 - 72	6	12	0.43 (10.8)	74 (110)	8.6 (21.7)	4.3 (10.9)
74 - 84	7	12	0.47 (12.0)	90 (134)	9.5 (24.0)	4.8 (12.0)
86 - 96	8	12	0.50 (12.8)	103 (153)	10.1 (25.6)	5.1 (12.8)
98 - 108	9	12	0.55 (13.9)	121 (180)	11.0 (27.8)	5.5 (13.9)
110 - 120	10	12	0.57 (14.5)	132 (196)	11.4 (29.0)	5.7 (14.5)
122 - 132	11	12	0.60 (15.4)	149 (221)	12.1 (30.8)	6.1 (15.4)
134 - 144	12	12	0.64 (16.3)	168 (250)	12.9 (33.0)	6.5 (16.5)

CampusLink LT™ Riser I/O Dielectric (Double Jacket) DRLTC Series | OFNR/FT4

Fiber Count	# of Buffer Tubes	Fibers Per Tube or # of Tubes	Diameter inches (mm)	Approximate Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 - 60	5	12	0.52 (13.2)	118 (176)	10.4 (26.4)	5.2 (13.2)
62 - 72	6	12	0.55 (13.9)	128 (191)	11.0 (27.9)	5.5 (14.0)
74 - 84	7	12	0.59 (15.1)	150 (223)	11.9 (30.2)	6.0 (15.1)
86 - 96	8	12	0.63 (15.9)	166 (247)	12.6 (31.8)	6.3 (15.9)
98 - 108	9	12	0.67 (17.0)	190 (282)	13.4 (34.0)	6.7 (17.0)
110 - 120	10	12	0.69 (17.6)	202 (301)	13.9 (35.2)	7.0 (17.6)
122 - 132	11	12	0.73 (18.5)	223 (332)	14.6 (37.0)	7.3 (18.5)
134 - 144	12	12	0.76 (19.4)	247 (367)	15.3 (38.9)	7.7 (19.5)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

Mechanical Specifications

Maximum installation load: 600 lbf (2670 N)
Maximum operation load: 180 lbf (800 N)

Temperature Range

Shipping and storage: -58° F to +158° F (-50° C to +70° C)
Installation: +14° F to +140° F (-10° C to +60° C)
Operation: -58° F to +158° F (-50° C to +70° C)

CampusLink

CampusLink LT™ Loose Tube | Indoor/Outdoor

Riser rated cable with gel-filled buffer tubes

CampusLink LT™ Riser I/O Corrugated Armor (1A2)) DRLTD Series | OFCR/FT4

Fiber Count	# of Buffer Tubes	Fibers Per Tube or # of Tubes	Diameter inches (mm)	Approximate Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 - 60	5	12	0.63 (16.0)	194 (289)	12.6 (32.0)	6.3 (16.0)
62 - 72	6	12	0.66 (16.8)	209 (311)	13.2 (33.6)	6.6 (16.8)
74 - 84	7	12	0.71 (18.0)	237 (353)	14.2 (36.1)	7.1 (18.1)
86 - 96	8	12	0.74 (18.8)	257 (383)	14.8 (37.6)	7.4 (18.8)
98 - 108	9	12	0.78 (19.8)	285 (424)	15.6 (40.0)	7.8 (19.9)
110 - 120	10	12	0.80 (20.3)	303 (451)	16.0 (40.7)	8.0 (20.4)
122 - 132	11	12	0.84 (21.3)	329 (490)	16.8 (42.7)	8.4 (21.4)
134 - 144	12	12	0.88 (22.4)	358 (533)	17.6 (44.7)	8.8 (22.4)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

Mechanical Specifications

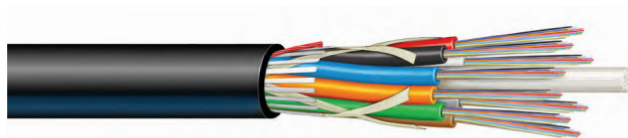
Maximum installation load: 600 lbf (2670 N)
Maximum operation load: 180 lbf (800 N)

Temperature Range

Shipping and storage: -58° F to +158° F (-50° C to +70° C)
Installation: +14° F to +140° F (-10° C to +60° C)
Operation: -58° F to +158° F (-50° C to +70° C)

CampusLink LT™ Dry Loose Tube | Indoor/Outdoor

Riser and Plenum Cables



Flame Retardant Jacket

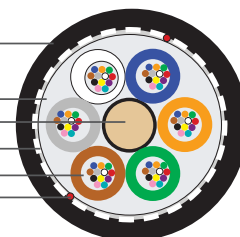
Flame Retardant Tape

Central Strength Member

Water Blocking Tape

Dry Buffer Tube Containing up to 12 Fibers

Ripcord



Versatile indoor/outdoor flame rated fiber cables - ideal for interbuilding and building transition applications

Overview

Prysmian's indoor/outdoor dry loose tube riser or plenum designs provide flame-rated network solutions for a diverse number of network applications. These cables combine flexible dry buffer tubes and swellable water blocking materials with Prysmian's extensive portfolio of single-mode and multimode optical fibers. Incorporating proven outside plant design elements, this cable may be employed in outdoor aerial lashed, duct, and direct buried environments.

Because of its application diversity, this advanced product eliminates the necessity and expense for traditional cable transition points once required in legacy systems. Cost savings and system long term reliability are achieved by enabling cable placement virtually anywhere in the network.

Product Snapshot

Applications	Multi-purpose indoor/outdoor aerial, lashed, duct, and direct buried
Constructions	Dielectric (single & dual jacket), ezPREP® corrugated armor, interlock armor
Flame Ratings	Riser (OFNR / OFCR / FT4) / plenum (OFNP/OFCP/FT6)
Fiber Count	2 to 288 (riser) / 2-144 (plenum)
Fiber Types	Single-mode (ESMF, bend-insensitive) multimode (62.5/125-OM1, 50/125-OM2+, OM3 & OM4)
Standards	TIA/EIA-568, ANSI/ICEA S-83-596, ANSI/ICEA S-104-696, UL-1666, NFPA 262, CSA 22.2 No 230, Telcordia GR-409, Telcordia GR-20, RoHS compliant



Features and Benefits

- Fiber identification using TIA standardized color color coding
- Dry buffer tubes simplifies access and reduces prep time
- Flame-retardant, black UV-resistant outer jacket
- Flexible kink-resistant buffer tubes for routing and storage
- Available with bend-insensitive single-mode and multimode optical fibers
- Interlock armor designs available for added durability
- Will support all high performance networks including OM4/10 gigabit ethernet systems

CampusLink

CampusLink LT™ Dry Loose Tube | Indoor/Outdoor

Riser and Plenum Cables

CampusLink LT™ I/O Riser Dielectric (Single Jacket - Dry) DRLDB Series | OFNR / FT4

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers per Unit or # of Units	Diameter Inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load Inches (cm)	Bend Radius No Load Inches (cm)
2 to 60	5	12	0.40 (10.1)	63 (93)	8.0 (20.2)	4.0 (10.1)
62 to 72	6	12	0.43 (10.8)	69 (102)	8.6 (21.7)	4.3 (10.9)
74 to 84	7	12	0.47 (12.0)	85 (126)	9.5 (24.0)	4.8 (12.0)
86 to 96	8	12	0.50 (12.8)	96 (143)	10.1 (25.6)	5.1 (12.8)
98 to 108	9	12	0.55 (13.9)	114 (169)	11.0 (27.8)	5.5 (13.9)
110 to 120	10	12	0.57 (14.5)	123 (183)	11.4 (29.0)	5.7 (14.5)
122 to 132	11	12	0.60 (15.4)	139 (207)	12.1 (30.8)	6.1 (15.4)
134 to 144	12	12	0.64 (16.3)	158 (234)	12.9 (32.7)	6.5 (16.4)
146 to 216	12 / 6	12	0.67 (17.0)	153 (228)	13.5 (34.1)	6.8 (17.1)
218 to 264	14 / 8	12	0.73 (18.6)	184 (273)	14.7 (37.3)	7.4 (18.7)
266 to 288	15 / 9	12	0.78 (19.7)	205 (305)	15.6 (39.5)	7.8 (19.8)

CampusLink LT™ I/O Riser Dielectric (Double Jacket - Dry) DRLDC Series | OFNR / FT4

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers per Unit or # of Units	Diameter Inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load Inches (cm)	Bend Radius No Load Inches (cm)
2 to 60	5	12	0.52 (13.2)	114 (169)	10.4 (26.4)	5.2 (13.2)
62 to 72	6	12	0.55 (13.9)	123 (183)	11.0 (27.9)	5.5 (14.0)
74 to 84	7	12	0.59 (15.1)	144 (214)	11.9 (30.2)	6.0 (15.1)
86 to 96	8	12	0.63 (15.9)	159 (237)	12.6 (31.8)	6.3 (15.9)
98 to 108	9	12	0.67 (17.0)	181 (270)	13.4 (34.0)	6.7 (17.0)
110 to 120	10	12	0.69 (17.6)	194 (288)	13.9 (35.2)	7.0 (17.6)
122 to 132	11	12	0.73 (18.5)	214 (318)	14.6 (37.0)	7.3 (18.5)
134 to 144	12	12	0.76 (19.4)	237 (352)	15.3 (38.9)	7.7 (19.5)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

Temperature Range

Shipping and storage: **(Riser)** -58° F to +158° F (-50° C to +70° C)
(Plenum) -40° F to +158° F (-40° C to +70° C)

Installation: **(Riser)** +14° F to +140° F (-10° C to +60° C)
(Plenum) +32° F to +140° F (0° C to +60° C)

Operation: **(Riser)** -58° F to +158° F (-50° C to +70° C)
(Plenum) -40° F to +158° F (-40° C to +70° C)

Riser & Plenum Mechanical Specifications

Maximum installation load: 600 lbf (2670 N)
Maximum operation load: 180 lbf (801 N)

CampusLink

CampusLink LT™ Dry Loose Tube | Indoor/Outdoor

Riser and Plenum Cables

CampusLink LT™ I/O Riser with Corrugated Armor (1A 2) - Dry) DRLDD Series | OFCR / FT4

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers per Unit or # of Units	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.63 (16.0)	190 (283)	12.6 (32.0)	6.3 (16.0)
62 to 72	6	12	0.66 (16.8)	204 (304)	13.2 (33.6)	6.6 (16.8)
74 to 84	7	12	0.71 (18.0)	231 (344)	14.2 (36.1)	7.1 (18.1)
86 to 96	8	12	0.74 (18.8)	250 (372)	14.8 (37.6)	7.4 (18.8)
98 to 108	9	12	0.78 (19.8)	278 (413)	15.6 (40.0)	7.8 (19.9)
110 to 120	10	12	0.80 (20.3)	294 (438)	16.0 (40.7)	8.0 (20.4)
122 to 132	11	12	0.84 (21.3)	320 (476)	16.8 (42.7)	8.4 (21.4)
134 to 144	12	12	0.88 (22.4)	347 (517)	17.6 (44.7)	8.8 (22.4)

CampusLink LT™ I/O Plenum Dielectric (Single Jacket) DPLDB Series | OFNP/FT6

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers per Unit or # of Units	Diameter Inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load Inches (cm)	Bend Radius No Load Inches (cm)
2 to 60	5	12	0.37 (9.3)	55 (82)	7.4 (18.8)	3.7 (9.4)
62 to 72	6	12	0.40 (10.2)	67 (99)	8.0 (20.4)	4.0 (10.2)
74 to 84	7	12	0.44 (11.1)	80 (119)	8.8 (22.4)	4.4 (11.2)
86 to 96	8	12	0.48 (12.2)	97 (145)	9.6 (24.4)	4.8 (12.2)
98 to 144	12 / 6	12	0.61 (15.6)	138 (206)	12.2 (31.0)	6.1 (15.5)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

Riser & Plenum Mechanical Specifications

Maximum installation load: 600 lbf (2670 N)

Maximum operation load: 180 lbf (801 N)

Temperature Range

Shipping and storage: **(Riser)** -58° F to +158° F (-50° C to +70° C)
(Plenum) -40° F to +158° F (-40° C to +70° C)

Installation: **(Riser)** +14° F to +140° F (-10° C to +60° C)
(Plenum) +32° F to +140° F (0° C to +60° C)

Operation: **(Riser)** -58° F to +158° F (-50° C to +70° C)
(Plenum) -40° F to +158° F (-40° C to +70° C)

CampusLink

CampusLink LT™ Dry Loose Tube | Indoor/Outdoor

Riser and Plenum Cables

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: CampusLink LT™ loose tube | indoor/outdoor riser | dry buffer tubes | dielectric (single jacket) with aluminum interlock armor
12 -62.5/125 multimode fibers per buffer tube | 48 fibers total (printed in feet)

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	DRLDB	AJ	12	G6	048	M2

PART NUMBER CONSTRUCTION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

Riser / FT4 | Dry Tubes | OFNR / FT4

DRLDB = Indoor/Outdoor Riser All-Dielectric (single jacket) 2 to 288

DRLDC = Indoor/Outdoor Riser, All-Dielectric (double jacket) 2 to 144

Riser / FT4 | Dry Tubes | OFCR / FT4

DRLDD = Indoor/Outdoor Riser, Armored (double jacket) 2 to 144

Plenum / FT6 | Dry Tubes | OFNP / FT6

DPLDB = Indoor/Outdoor Plenum, All-Dielectric (single jacket) 2 to 144

3 CONSTRUCTION

(blank) = none

AJ = Jacketed aluminum (use with DRLDB and DPLDB)

SJ = Jacketed steel (use with DRLDB and DPLDB)

4 FIBER GROUPING

12 = 12f per unit or tube

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ BIF (50µm)	850/1300	700/500	800	150/___
G3 = OM3 BIF (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 BIF (50µm)	850/1300	3500/500	1100	550/___

6 FIBER COUNT

002 to 288 fibers

7 FIBER GRADE

SINGLE-MODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
E1 = 0.40/0.40/0.30	1310/1383/1550	HB, ES, or CE
E3 = 0.35/0.35/0.25	1310/1383/1550	HB, ES, B1, B2 or CE

MULTIMODE

Attenuation (dB/km)	Wavelength (nm)
M2 = 3.5/1.0	850/1300
M3 = 3.0/1.0	850/1300

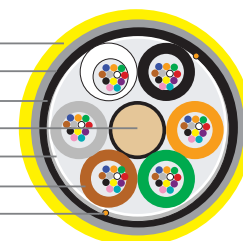
Other cable constructions and fiber performance grades available on request.

ezINTERLOCK™ Armor | Indoor/Outdoor Loose Tube

Riser and Plenum Cables



Outer Jacket
Interlock Armor
Inner Jacket
Central Strength Member
Water Blocking Strands
Gel-Filled Buffer Tube Containing up to 12 Fibers
Ripcord



Incorporation of a formed, metallic armor outer layer enhances Prysmian's popular indoor/outdoor loose tube cables to enable superior crush resistance while ensuring maximum flexibility.

Overview

Prysmian's ezINTERLOCK™ armor loose tube cable family packages up to 288 color coded optical fibers into a single flame retardant cable. This cable design is available in both riser rated and plenum rated versions to fulfill fire code requirements. The loose tube cable design provides excellent mechanical and environmental protection for deployment in a variety of applications.

Product Snapshot

Applications	Flame-rated and crush-resistant loose tube cable designs provide unsurpassed performance for applications requiring premium mechanical protection to cross floors in multi-level buildings or for placement in air handling spaces.
Constructions	Standard LT cable designs with jacketed interlock armor
Flame Ratings	Riser (OF CR / FT4); plenum (OF CP / FT6)
Fiber Count	2 to 288 (riser) / 2 to 144 (plenum)
Fiber Types	Single-mode (ESMF, bend-insensitive) multimode (62.5/125-OM1, 50/125-OM2+, OM3 & OM4)
Standards	ANSI/ICEA S-83-596, UL-1666, NFPA-262, CSA C22.2 No 230, Telcordia GR-409, RoHS Compliant

Features and Benefits

- ezINTERLOCK™ eliminates the need for conduit and supports one-step installation
- 7x improvement in crush resistance over unarmored products
- Dry buffer tubes simplifies access and reduces prep time
- Industry standard color coding for quick, error-free fiber identification
- Flexible kink-resistant buffer tubes for routing and storage
- Available with bend-insensitive single-mode and multimode optical fibers
- Flexible, flame-retardant & color coded outer jacket
- Supports all high performance networks including OM4/10 gigabit ethernet systems



ezINTERLOCK

ezINTERLOCK™ Armor | Indoor/Outdoor Loose Tube

Riser and Plenum Cables

Gel-Filled Buffer Tubes**ezINTERLOCK Indoor/Outdoor Riser | DRLTBAJ Series | OFCR/FT4**

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.73 (18.4)	204 (303)	14.6 (36.9)	7.3 (18.5)
62 to 72	6	12	0.76 (19.2)	219 (326)	15.2 (38.4)	7.6 (19.2)
74 to 84	7	12	0.80 (20.4)	248 (369)	16.1 (40.8)	8.1 (20.4)
86 to 96	8	12	0.83 (21.2)	269 (401)	16.7 (42.4)	8.4 (21.2)
98 to 108	9	12	0.88 (22.3)	331 (493)	17.6 (44.6)	8.8 (22.3)
110 to 120	10	12	0.90 (22.8)	349 (519)	18.0 (45.8)	9.0 (22.9)
122 to 132	11	12	0.94 (23.7)	378 (562)	18.7 (47.5)	9.4 (23.8)
134 to 144	12	12	0.97 (24.7)	410 (610)	19.5 (49.5)	9.8 (24.8)

Dry Buffer Tubes**ezINTERLOCK Indoor/Outdoor Riser | DRLDBAJ Series | OFCR/FT4**

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.73 (18.4)	200 (297)	14.6 (36.9)	7.3 (18.5)
62 to 72	6	12	0.76 (19.2)	214 (319)	15.2 (38.4)	7.6 (19.2)
74 to 84	7	12	0.80 (20.4)	242 (360)	16.1 (40.8)	8.1 (20.4)
86 to 96	8	12	0.83 (21.2)	263 (391)	16.7 (42.4)	8.4 (21.2)
98 to 108	9	12	0.88 (22.3)	323 (481)	17.6 (44.6)	8.8 (22.3)
110 to 120	10	12	0.90 (22.8)	341 (507)	18.0 (45.8)	9.0 (22.9)
122 to 132	11	12	0.94 (23.7)	368 (547)	18.7 (47.5)	9.4 (23.8)
134 to 144	12	12	0.97 (24.7)	399 (594)	19.5 (49.5)	9.8 (24.8)
146 to 216	12 / 6	12	1.00 (25.4)	405 (602)	20.1 (50.9)	10.1 (25.5)
218 to 264	14 / 8	12	1.06 (27.0)	455 (677)	21.3 (54.1)	10.7 (27.1)
266 to 288	15 / 9	12	1.11 (28.1)	492 (732)	22.2 (56.3)	11.1 (28.2)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

Outer Jacket Colors

Orange: Multimode OM1 and OM2+
 Aqua: Multimode OM3 and OM4
 Yellow: Single-mode
 Black: Hybrid

Riser & Plenum Mechanical Specifications

Maximum installation load: 600 lbf (2670 N)

Maximum operation load: 180 lbf (801 N)

Temperature Range

Shipping and storage: (Riser) -58° F to +158° F (-50° C to +70° C)
 (Plenum) -40° F to +158° F (-40° C to +70° C)

Installation: (Riser) +14° F to +140° F (-10° C to +60° C)
 (Plenum) +32° F to +140° F (0° C to +60° C)

Operation: (Riser) -58° F to +158° F (-50° C to +70° C)
 (Plenum) -40° F to +158° F (-40° C to +70° C)

ezINTERLOCK

ezINTERLOCK™ Armor | Indoor/Outdoor Loose Tube

Riser and Plenum Cables

ezINTERLOCK Indoor/Outdoor Plenum (Single Jacket - Loose Tube - Dry) | DPLDBA Series | OFCP/FT6

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.65 (16.4)	147 (219)	12.9 (32.8)	6.5 (16.4)
62 to 72	6	12	0.68 (17.3)	166 (247)	13.6 (34.6)	6.8 (17.3)
74 to 84	7	12	0.72 (18.2)	188 (279)	14.4 (36.4)	7.2 (18.2)
86 to 96	8	12	0.76 (19.3)	214 (319)	15.2 (38.6)	7.6 (19.3)
98 to 144	12/6	12	0.89 (22.7)	320 (476)	17.9 (45.4)	8.9 (22.7)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

Outer Jacket Colors

Orange: Multimode OM1 and OM2+
Aqua: Multimode OM3 and OM4
Yellow: Single-mode
Black: Hybrid

Riser & Plenum Mechanical Specifications

Maximum installation load: 600 lbf (2670 N)

Maximum operation load: 180 lbf (801 N)

Temperature Range

Shipping and storage: (Riser) -58° F to +158° F (-50° C to +70° C)
(Plenum) -40° F to +158° F (-40° C to +70° C)

Installation: (Riser) +14° F to +140° F (-10° C to +60° C)
(Plenum) +32° F to +140° F (0° C to +60° C)

Operation: (Riser) -58° F to +158° F (-50° C to +70° C)
(Plenum) -40° F to +158° F (-40° C to +70° C)

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

ezINTERLOCK™

Armor | Indoor/Outdoor Loose Tube

Riser and Plenum Cables

Example: ezINTERLOCK™ loose tube | indoor/outdoor riser with gel-filled buffer tubes | standard single jacket cable with aluminum interlock armor and jacket over armor | 12 62.5/125 multimode fibers per buffer tube | 48 fiber total (printed in feet)

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	DRLTB	AJ	12	G6	048	M2

PART NUMBER CONSTRUCTION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

ezINTERLOCK Gel-Tube | Riser | OFCR/FT4 (2 to 144 fibers)

DRLTBAJ = ezINTERLOCK I/O Riser with Aluminum Interlock Armor

ezINTERLOCK Dry Tube | Riser | OFCR/FT4 (2 to 288 fibers)

DRLDBAJ = ezINTERLOCK I/O Riser with Aluminum Interlock Armor

ezINTERLOCK Dry Tube | Plenum | OFCP/FT6 (2 to 144 fibers)

DPLDBAJ = ezINTERLOCK I/O Plenum with Aluminum Interlock Armor

3 CONSTRUCTION

AJ = Jacketed Aluminum

SJ = Jacketed Steel

4 FIBER GROUPING

12 = 12f per unit or tube

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 CbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ (50µm)	850/1300	700/500	800	150/___
G3 = OM3 (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 (50µm)	850/1300	3500/500	1100	550/___

6 FIBER COUNT

002 to 288 fibers (gel-filled designs only up to 144f)

7 FIBER GRADE

SINGLE-MODE	Attenuation (dB/km)	Wavelength (nm)	Fiber Type
-------------	---------------------	-----------------	------------

E1 = 0.40/0.40/0.30 1310/1383/1550 HB, ES, or CE

E3 = 0.35/0.35/0.25 1310/1383/1550 HB, ES, CE, B1, or B2

MULTIMODE	Attenuation (dB/km)	Wavelength (nm)	Fiber Type
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M2 = 850/1300 3.5/1.0 OM1 (62.5µm)

M3 = 850/1300 3.0/1.0 50µm

Other cable constructions and fiber performance grades available on request.

Outer Jacket Color For Interlock Armor

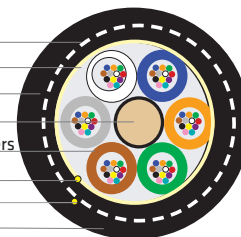
Cable Type	Standard Jacket Color
Single-Mode Premises	Yellow
Standard Multimode Premises	Orange
Laser-Optimized 50 µm Premises	Aqua

ExpressLT™

All-Dielectric Armor (gel or dry)



_Fiberglass Yarn
 _Water Blocking Elements
 _MDPE Inner Jacket
 _Central Strength Member
 _Buffer Tube Containing up to 12 Fibers
 _Ripcords
 _HDPE Outer Jacket



Versatile all-dielectric cable for added robustness and protection from small rodents

Overview

Prysmian's all-dielectric armor loose tube cable provides all the benefits of Prysmian's loose tube cable along with enhanced mechanical protection. Multiple layers of fiberglass provide dielectric armoring, superior tensile strength, and protection from small rodents.

Product Snapshot

Applications	Multi-purpose outdoor aerial lashed, duct, direct buried
Constructions	Gel or gel-free
Fiber Count	4 to 432 fibers in color-coded buffer tubes
Fiber Types	Single-mode / bend-insensitive / NZDSF / multimode / hybrid
Options	Steel central member / 22 or 24 AWG copper pair(s) / 16 AWG tonewire
Other Versions	Standard loose tube all-dielectric non-armor or metallic armor cable, gel or dry
Performance	ANSI / ICEA 640, RUS 7 CFR 1755 (RUS Compliant), Telcordia GR-20

Features and Benefits

Enhanced Mechanical Protection

- All-dielectric armor provides enhanced mechanical and protection from small rodents
- 1000 lbf tensile strength – 66% higher strength compared to standard loose tube cable
- Multiple layers of fiberglass armoring between 2 polyethylene jackets maintain cable flexibility and easy cable handling, especially during cable terminations
- Thicker outer jacket of high density polyethylene (HDPE) provide enhanced durability
- Suitable for aerial lashed, duct and direct buried applications

Easy Cable Entry & Termination

- Up to 20 foot mid-span buffer tube storage capability, allowing for easy mid-cable access
- 2.5 mm flexible polypropylene buffer tubes provide flexibility for easy routing in closures up to 288 fibers
- Available with G657.A2 fiber which has a bending loss 100 times lower than single-mode fiber

Reliable Lifetime Performance

- Tested for resistance against small rodents. For optimum protection against larger gophers, metallic armor design is recommended
- Guaranteed standards-based performance
- Available with gel or dry buffer tubes
- Proven water-blocking with swellable core elements and gel-filled buffer tubes

RoHS
COMPLIANT

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

ExpressLT™

All-Dielectric Armor (gel or dry)

Example: ExpressLT™ dry loose tube | all-dielectric armor dual jacket, 72 fiber single-mode fibers (printed in feet)

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	EDH	DA2J	12	HB	072	E3

PART NUMBER CONSTRUCTION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

ETH = ExpressLT™ | Gel-filled tube

EDH = ExpressLT™ | Dry

3 CONSTRUCTION

DA2J = All-Dielectric Armor, Dual Jacket

4 FIBER GROUPING

12 = 12f per unit or tube

24 = 24f per tube with two 12 fiber groups

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

TU = TeraLight Ultra Single-Mode (ITU G.655 & G.656)

LA = NZDSF-LA Single-Mode (ITU G.655)

LE = LEAF NZDSF (ITU G.655)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 CbE Dist (m)	10 CbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ BIF (50µm)	850/1300	700/500	800	150/___
G3 = OM3 BIF (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 BIF (50µm)	850/1300	3500/500	1100	550/___

7 FIBER GRADE

SINGLE-MODE			MULTIMODE		
Attenuation (dB/km)	Wavelength (nm)	Fiber Type	Attenuation (dB/km)	Wavelength (nm)	Fiber Type
E1 = 0.40/0.40/0.30	1310/1383/1550	HB, ES, or CE	M2 = 3.5/1.0	850/1300	OM1 (62.5µm)
E3 = 0.35/0.35/0.25	1310/1383/1550	HB, ES, CE, B1, or B2	M3 = 3.0/1.0	850/1300	OM2+, OM3, OM4 (50µm)
NA = 0.40/0.25	1310/1550	TeraLight Ultra SM			
N1 = 0.25	1550	NZDSF-LA or LEAF SM			

Nominal Design Parameters

All-Dielectric Armor Loose Tube | Gel-Filled Buffer Tubes

(EDHDA2J)

(ETHDA2J)

Fiber Count	Number of Buffer Tubes	Buffer Tube Diameter (mm)	Buffer Tube Material	Number Fibers Per Tube	Mid-Span Tube Storage Length ft (m)	Diameter Inches (mm)	Approximate Cable Weight lb/kft (kg/km)	Approximate Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	2.5	PP	12	20 (6.1)	0.50 (12.6)	77 (114)	80 (119)	10 (25)	5 (13)
2 to 72	6	2.5	PP	12	20 (6.1)	0.53 (13.4)	86 (128)	90 (134)	11 (27)	5 (13)
74 to 96	8	2.5	PP	12	20 (6.1)	0.58 (14.7)	110 (163)	115 (171)	12 (29)	6 (15)
98 to 120	10	2.5	PP	12	20 (6.1)	0.64 (16.3)	134 (200)	141 (210)	13 (32)	6 (17)
122 to 144	12	2.5	PP	12	20 (6.1)	0.71 (18.1)	155 (230)	169 (252)	14 (36)	7 (18)
146 to 216	18	2.5	PP	12	20 (6.1)	0.72 (18.4)	162 (241)	172 (256)	14 (37)	7 (18)
218 to 288	24	2.5	PP	12	20 (6.1)	0.83 (21.0)	198 (264)	214 (318)	17 (42)	8 (21)
290 to 432	18	3.0	PBT	24	16 (4.9)	0.81 (20.7)	n/a	200 (298)	16 (41)	8 (21)

* PP = polypropylene 24 fiber tube contains two 12 fiber binder groups (blue & orange)

Temperature Range

Shipping and storage: -40° F to +167° F (-40° C to +75° C)
Installation: -22° F to +140° F (-30° C to +60° C)
Operation: -40° F to +158° F (-40° C to +70° C)

Installation

Maximum installation load: 1000 lbf (4500 N)
Maximum operation load: 300 lbf (1333 N)

General Applications

Tight Buffer Fiber Cable | Including Interlock™ Armor
Factory Automation | Process & Machine Control | Plant Communications





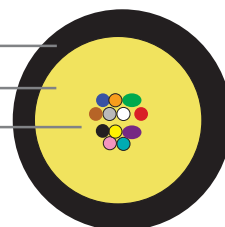
ezDISTRIBUTION™ Indoor/Outdoor Tight Buffered Riser and Plenum



Jacket

Water Blocking Strength Members

Optical Fibers



This versatile indoor/outdoor flame-rated cable design combines standards compliant performance with the direct connectorization simplicity afforded by tight buffered fibers. These cables provide an effective solution for interbuilding and building transition applications utilizing field installable connectors.

Overview

Prysmian's ezDISTRIBUTION cable family packages up to 144 color-coded 900 µm tight buffered fibers into a single flame retardant cable. This cable design is available in both riser rated and plenum rated versions for deployment in any inside plant fire-code application. The UV-resistant outer jacket, coupled with dry water blocking technology, address environmental concerns for outdoor use. The tight buffered distribution cable supports standard installation practices and may be easily terminated using established field connectorization methods.

Product Snapshot

Applications	Versatile indoor/outdoor tight buffered cable for use with field installable connectors.
Constructions	Single-unit ($\leq 24f$); subunits ($\geq 18f$); interlock armor optional
Flame Ratings	Riser (OFNR / OFCR / FT4); Plenum (OFNP / OFCP / FT6)
Fiber Count	2 to 144 fibers (Riser)/2 to 96 (Plenum)
Fiber Types	Single-mode (ESMF, bend-insensitive) multimode (62.5/125-OM1, 50/125- OM2+, OM3 & OM4)
Standards	TIA/EIA-568, ANSI/ICEA S-83-596, ANSI/ICEA S-104-696, UL-1666, NFPA 262, CSA 22.2 Telcordia GR-409, Telcordia GR-20, RoHS Compliant



Feature and Benefits

- 900 µm tight buffered fibers designed to support rapid field termination
- Industry standard color coding for quick, error-free fiber identification
- Single-unit designs provide space savings and cost advantages
- Subunit construction improves organization and termination practices
- Available with bend-insensitive single-mode and multimode optical fibers
- Flexible, flame-retardant and UV-stable outer jacket
- Optional Interlock armor provides robust protection and supports one-step installation
- Supports all high performance networks including OM4/10 gigabit ethernet systems

ezDISTRIBUTION

ezDISTRIBUTION™ Indoor/Outdoor Tight Buffered

Riser and Plenum

ezDISTRIBUTION | Indoor/Outdoor Riser | C1181 Series | OFNR/FT4

Fiber Count	Fibers Per Subunit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)	Max Installation Load (Pull Strength) lbs (newtons)	Max Operation Load lbs (newtons)
2	single-unit	0.19 (4.8)	15 (22)	3.8 (9.7)	1.9 (4.9)	100 (445)	30 (133)
4	single-unit	0.22 (5.6)	19 (28)	4.4 (11.2)	2.2 (5.6)	100 (445)	30 (133)
6	single-unit	0.24 (6.0)	21 (31)	4.8 (12.2)	2.4 (6.1)	100 (445)	30 (133)
8	single-unit	0.25 (6.2)	23 (34)	5.0 (12.7)	2.5 (6.4)	100 (445)	30 (133)
12	single-unit	0.28 (7.0)	30 (45)	5.6 (14.3)	2.8 (7.2)	150 (666)	45 (200)
18	single-unit	0.31 (7.7)	36 (53)	6.1 (15.5)	3.0 (7.6)	300 (1335)	90 (400)
24	single-unit	0.32 (8.1)	43 (64)	6.4 (16.3)	3.2 (8.2)	300 (1335)	90 (400)
18	6	0.53 (13.5)	103 (153)	11.2 (28.5)	5.6 (14.3)	600 (2670)	180 (801)
24	6	0.53 (13.5)	103 (153)	11.2 (28.5)	5.6 (14.3)	600 (2670)	180 (801)
36	6	0.66 (16.8)	160 (238)	13.2 (33.6)	6.6 (16.8)	600 (2670)	180 (801)
48	12	0.66 (16.8)	140 (209)	13.2 (33.6)	6.6 (16.8)	600 (2670)	180 (801)
60	12	0.74 (18.8)	171 (254)	14.8 (37.6)	7.4 (18.8)	600 (2670)	180 (801)
72	12	0.80 (20.3)	208 (309)	16.0 (40.7)	8.0 (20.4)	600 (2670)	180 (801)
96	12	0.95 (24.2)	296 (441)	19.0 (48.3)	9.5 (24.2)	600 (2670)	180 (801)
144	12	1.02 (25.9)	347 (516)	20.4 (51.9)	10.2 (25.9)	600 (2670)	180 (801)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

ezDISTRIBUTION

ezDISTRIBUTION™ Indoor/Outdoor Tight Buffered Riser and Plenum Cables

ezDISTRIBUTION | Indoor-/Outdoor Plenum | C1182 Series | OFNP/FT6

Fiber Count	Fibers Per Subunit	Diameter Inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load Inches (cm)	Bend Radius No Load Inches (cm)	Max Installation Load (Pull Strength) lbs (newtons)	Max Operation Load lbs (newtons)
2	single-unit	0.18 (4.5)	9 (13)	3.6 (9.2)	1.8 (4.6)	100 (445)	30 (133)
4	single-unit	0.18 (4.6)	14 (21)	3.6 (9.2)	1.8 (4.6)	100 (445)	30 (133)
6	single-unit	0.20 (5.0)	15 (22)	4.0 (10.2)	2.0 (5.1)	100 (445)	30 (133)
8	single-unit	0.20 (5.2)	18 (27)	4.0 (10.2)	2.0 (5.1)	100 (445)	30 (133)
12	single-unit	0.24 (6.1)	22 (33)	4.8 (12.2)	2.4 (6.1)	150 (666)	45 (199.8)
18	single-unit	0.26 (6.5)	32 (48)	5.1 (13.0)	2.6 (6.5)	150 (666)	45 (199.8)
24	single-unit	0.30 (7.6)	42 (62)	6.0 (15.3)	3.0 (7.7)	150 (666)	45 (199.8)
18	6	0.46 (11.6)	85 (126)	9.1 (23.2)	4.6 (11.6)	400 (1800)	120 (540)
24	6	0.46 (11.6)	85 (126)	9.1 (23.2)	4.6 (11.6)	400 (1800)	120 (540)
36	12	0.59 (15.1)	130 (194)	11.8 (29.9)	6.0 (15.1)	400 (1800)	120 (540)
48	12	0.59 (15.1)	130 (194)	11.8 (29.9)	6.0 (15.1)	400 (1800)	120 (540)
60	12	0.65 (16.6)	192 (285)	13.0 (33.0)	6.5 (16.5)	400 (1800)	120 (540)
72	12	0.73 (18.7)	233 (347)	14.6 (37.0)	7.3 (18.5)	600 (2670)	180 (801)
96	12	0.89 (22.6)	330 (491)	17.8 (45.2)	8.9 (22.6)	600 (2670)	180 (801)

Temperature Range

Shipping and storage:	(Riser)	-40° F to +176° F	(-40° C to +80° C)
	(Plenum)	-40° F to +176° F	(-40° C to +80° C)
Installation:	(Riser)	+14° F to +140° F	(-10° C to +60° C)
	(Plenum)	+32° F to +140° F	(0° C to +60° C)
Operation:	(Riser)	-40° F to +176° F	(-40° C to +80° C)
	(Plenum)	-40° F to +176° F	(-40° C to +80° C)

ezDISTRIBUTION™

Indoor/Outdoor Tight Buffered

Riser and Plenum Cables

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: ezDISTRIBUTION tight buffered | I/O riser (OFNR/FT4), 12 fiber subunits | 48 62.5/125 multimode fibers total (printed in feet)

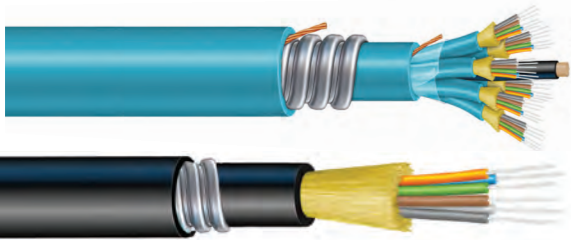
1	LENGTH MARKINGS	2	PRODUCT FAMILY	3	CONSTRUCTION	4	FIBER GROUPING	5	FIBER TYPE	6	FIBER COUNT	7	FIBER GRADE
	F		C1181		BLANK		12		G6		048		M2

PART NUMBER CONSTRUCTION	
1	LENGTH MARKINGS
	F = Feet or M = Meters
2	PRODUCT FAMILY
	ezDISTRIBUTION INDOOR/OUTDOOR
	Riser-FT4 C1181 = ezDISTRIBUTION Indoor/Outdoor Riser Tight Buffer Flame Rating: OFNR/FT4 Fiber Count 2 to 144
	Plenum-FT6 C1182 = ezDISTRIBUTION Indoor/Outdoor Plenum Tight Buffer Flame Rating: OFNP/FT6 Fiber Count 2 to 96
3	CONSTRUCTION
	(blank) = none
	AJ = Jacketed Aluminum
	SJ = Jacketed Steel
4	FIBER GROUPING
	00 = single-unit
	06 = 6f per subunit
	12 = 12f per subunit

FIBER INFORMATION				
5	FIBER TYPE			
	SINGLE-MODE			
	ES = Enhanced Single-Mode (ITU G.652 C & D)			
	BB = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)			
	BX = Bend-Insensitive Single-Mode (ITU G.657.A2 & B2 & G.652.D)			
	MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)
	G6 = OM1 (62.5µm)	850/1300	200/500	300/550
	G5 = OM2+ (50µm)	850/1300	700/500	800/550
	G3 = OM3 (50µm)	850/1300	1500/500	1000/550
	G4 = OM4 (50µm)	850/1300	3500/500	1100/550
6	FIBER COUNT			
	002 to 144 fibers -Riser			
	002 to 096 fibers -Plenum			
7	FIBER GRADE			
	SINGLE-MODE	Attenuation (dB/km)	Wavelength (nm)	Fiber Type
	EB = 0.7/0.7/0.7		1310/1383/1550	Enhanced Single-Mode
	EA = 0.5/0.5/0.5		1310/1383/1550	Bend-Insensitive Single-Mode
	E7 = 0.4/0.4/0.3		1310/1383/1550	Bend-Insensitive Single-Mode
	MULTIMODE	Attenuation (dB/km)	Wavelength (nm)	Fiber Type
	M2 = 3.5/1.0		850/1300	OM1 (62.5µm)
	M3 = 3.0/1.0		850/1300	OM2+, OM3, OM4 (50µm)
	Other cable constructions and fiber performance grades available on request.			



ezINTERLOCK™ Armor | Indoor /Outdoor Tight Buffered Riser and Plenum Cables



Incorporation of a formed, metallic armor outer layer enhances Prysmian's popular indoor and indoor-outdoor tight buffered cables to enable superior crush resistance while ensuring maximum flexibility.

Overview

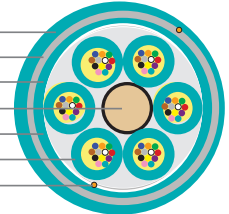
Prysmian's ezINTERLOCK™ armor cable family packages up to 144 color-coded 900µm tight buffered fibers into a single flame-retardant cable. This cable design is available in both riser rated and plenum rated versions to fulfill fire code requirements. The tight buffered cable design supports standard installation practices and may be easily terminated using established field connectorization methods.

Product Snapshot

Applications	Flame-rated and crush-resistant cable designs providing unsurpassed performance for intrabuilding applications requiring premium mechanical protection to cross floors in multi-level buildings or for placement in air handling spaces.
Constructions	Standard tight buffered cable designs with jacketed interlock armor
Fiber Count	2 to 144 (Riser) / 2 to 96 (Plenum)
Fiber Types	Single-mode (ESMF), multimode (62.5/125-OM1, 50/125-OM2+, OM3 & OM4)
Standards	ANSI/ICEA S-83-596, UL 1666, NFPA-262, CSA C22.2 No 230, Telcordia GR-409, RoHS Compliant



Outer Jacket
Interlock Armor
Inner Jacket
Central Strength Member
Water Blocking Material
Buffer Tube Containing up to 12 Fibers
Ripcords



Features and Benefits

- Interlock armor eliminates need for conduit and supports one-step installation
- 7x improvement in crush resistance over unarmored products
- 900µm tight buffered fibers designed to support rapid field termination
- Single-unit designs provide space savings and cost advantages
- Industry standard color coding for quick, error-free fiber identification
- Sub-unit construction improves organization and termination practices
- Available with bend-insensitive single-mode and multimode optical fibers
- Flexible, flame-retardant, and color coded outer jacket
- Supports all high performance networks including OM4/10 gigabit ethernet systems

ezINTERLOCK

ezINTERLOCK™ Armor | Indoor/Outdoor Tight Buffered

Riser and Plenum Cables

Interlock Armor (aluminum)

ezINTERLOCK | Indoor/Outdoor Riser | C1181A Series | OFCR/FT4

Fiber Count	Fibers Per Subunit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)	Maximum Installation Load lbf (N)	Maximum Operational Load lbf (N)
2	single-unit	0.52 (13.1)	121 (179)	10.4 (26.5)	5.2 (13.2)	300 (1335)	90 (400)
4	single-unit	0.56 (14.2)	128 (190)	11.2 (28.5)	5.6 (14.3)	300 (1335)	90 (400)
6	single-unit	0.56 (14.2)	132 (196)	11.2 (28.5)	5.6 (14.3)	300 (1335)	90 (400)
8	single-unit	0.57 (14.5)	135 (201)	11.4 (29.0)	5.7 (14.5)	300 (1335)	90 (400)
12	single-unit	0.61 (15.4)	146 (217)	12.2 (31.0)	6.1 (15.5)	300 (1335)	90 (400)
18	single-unit	0.62 (15.8)	149 (222)	12.4 (31.5)	6.2 (15.7)	300 (1335)	90 (400)
24	single-unit	0.63 (16.0)	161 (240)	12.6 (32.0)	6.3 (16.0)	300 (1335)	90 (400)
18	6	0.89 (22.6)	306 (455)	17.8 (45.3)	8.9 (22.6)	600 (2670)	180 (801)
24	6	0.89 (22.6)	296 (440)	17.8 (45.3)	8.9 (22.6)	600 (2670)	180 (801)
36	6	0.99 (25.2)	406 (603)	19.8 (50.3)	9.9 (25.2)	600 (2670)	180 (801)
48	12	1.00 (25.2)	396 (589)	20.0 (50.8)	10.0 (25.4)	600 (2670)	180 (801)
60	12	1.07 (27.2)	444 (660)	21.4 (54.4)	10.7 (27.2)	600 (2670)	180 (801)
72	12	1.15 (29.2)	504 (750)	23.0 (58.5)	11.5 (29.3)	600 (2670)	180 (801)
96	12	1.29 (32.6)	603 (897)	25.8 (65.6)	12.9 (32.8)	600 (2670)	180 (801)
144	12	1.41 (35.8)	713 (1060)	28.2 (71.7)	14.1 (35.9)	600 (2670)	180 (801)

Temperature Range

Shipping and storage:	(Riser)	-40° F to +176° F	(-40° C to +80° C)
	(Plenum)	-40° F to +176° F	(-40° C to +80° C)
Installation:	(Riser)	+14° F to +140° F	(-10° C to +60° C)
	(Plenum)	+32° F to +140° F	(0° C to +60° C)
Operation:	(Riser)	-40° F to +176° F	(-20° C to +80° C)
	(Plenum)	+32° F to +176° F	(0° C to +80° C)

ezINTERLOCK

ezINTERLOCK™ Armor | Indoor/Outdoor Tight Buffered Riser and Plenum Cables

Interlock Armor (aluminum)

ezINTERLOCK | Indoor/Outdoor Plenum | C1182AJ Series | OFCP/FT6

Fiber Count	Fibers Per Subunit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)	Maximum Installation Load lbf (N)	Maximum Operational Load lbf (N)
2	single-unit	0.47 (11.9)	85 (131)	9.4 (23.9)	4.7 (11.9)	150 (666)	45 (199.8)
4	single-unit	0.47 (11.9)	89 (134)	9.4 (23.9)	4.7 (11.9)	150 (666)	45 (199.8)
6	single-unit	0.48 (12.1)	91 (136)	9.6 (24.4)	4.8 (12.2)	150 (666)	45 (199.8)
8	single-unit	0.49 (12.3)	95 (141)	9.8 (24.9)	4.9 (12.5)	150 (666)	45 (199.8)
12	single-unit	0.52 (13.2)	100 (148)	10.4 (26.5)	5.2 (13.2)	150 (666)	45 (199.8)
18	single-unit	0.54 (13.6)	114 (170)	10.7 (27.2)	5.4 (13.6)	150 (666)	45 (199.8)
24	single-unit	0.58 (14.7)	131 (195)	11.6 (29.5)	5.8 (14.8)	150 (666)	45 (199.8)
18	6	0.73 (18.5)	186 (276)	14.6 (37.1)	7.3 (18.6)	400 (1800)	120 (540)
24	6	0.73 (18.5)	188 (279)	14.6 (37.1)	7.3 (18.6)	400 (1800)	120 (540)
36	6	0.88 (22.3)	323 (481)	17.4 (44.2)	8.7 (22.1)	400 (1800)	120 (540)
48	12	0.88 (22.3)	315 (468)	17.4 (44.2)	8.7 (22.1)	400 (1800)	120 (540)
60	12	0.94 (23.2)	402 (598)	19.0 (48.3)	9.5 (24.2)	400 (1800)	120 (540)
72	12	1.02 (25.5)	463 (689)	20.3 (51.6)	10.2 (25.8)	600 (2670)	180 (801)
96	12	1.14 (28.9)	600 (893)	23.2 (59.0)	11.6 (29.5)	600 (2670)	180 (801)

ezINTERLOCK™

Indoor/Outdoor Tight Buffered

Riser and Plenum Cables

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: ezDISTRIBUTION tight buffered indoor riser | with aluminum interlock armor & jacket | 12 fibers per unit | 48 62.5/125 multimode fibers

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	C1181	AJ	12	G6	048	M2

CABLE INFORMATION	
1 LENGTH MARKINGS	F = Feet or M = Meters
2 PRODUCT FAMILY	<p>ezINTERLOCK INDOOR</p> <p>Riser - FT4 400AJ = ezDISTRIBUTION™ Riser with Aluminum Interlock Armor Tight Buffer Flame Rating: OFNR/FT4 Fiber Count 2 to 144</p> <p>Plenum - FT6 800AJ = ezDISTRIBUTION™ Riser with Aluminum interlock Armor Tight Buffer Flame Rating: OFNR/FT6 Fiber Count 2 to 96</p> <p>ezINTERLOCK INDOOR / OUTDOOR</p> <p>Riser - FT4 C1181AJ = ezDISTRIBUTION™ Riser with Aluminum Interlock Armor Tight Buffer Flame Rating: OFNR/FT4 Fiber Count 2 to 144</p> <p>Plenum - FT6 C1182AJ = ezDISTRIBUTION™ Riser with Aluminum Interlock Armor Tight Buffer Flame Rating: OFNR/FT6 Fiber Count 2 to 96</p>
3 CONSTRUCTION	<p>(blank) = none</p> <p>AJ = Jacketed aluminum</p> <p>SJ = Jacketed steel</p>
4 FIBER GROUPING	12 = 12f per unit or tube

FIBER INFORMATION

5

FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & B2 & G.652.D)

MULTIMODE

Wavelength (nm)

Bandwidth (MHz)

1 GbE Dist (m)

10 GbE Dist (m)

G6 = OM1 (62.5µm)

850/1300

200/500

300/550

33/___

G5 = OM2+ BIF (50µm)

850/1300

700/500

800

150/___

G3 = OM3 BIF (50µm)

850/1300

1500/500

1000

300/___

G4 = OM4 BIF (50µm)

850/1300

3500/500

1100

550/___

6

FIBER COUNT

002 to 144 fibers

7

FIBER GRADE

SINGLE-MODE

Attenuation (dB/km)

Wavelength (nm)

Fiber Type

EB = 0.7/0.7/0.7

1310/1383/1550

Enhanced Single-Mode

EA = 0.5/0.5/0.5

1310/1383/1550

Bend-Insensitive Single-Mode

E7 = 0.4/0.4/0.4

1310/1383/1550

Bend-Insensitive Single-Mode

MULTIMODE

Attenuation (dB/km)

Wavelength (nm)

Fiber Type

M2 = 3.5/1.0

850/1300

OM1 (62.5µm)

M3 = 3.0/1.0

850/1300

OM2+, OM3, OM4 (50µm)

Other cable constructions and fiber performance grades available on request.

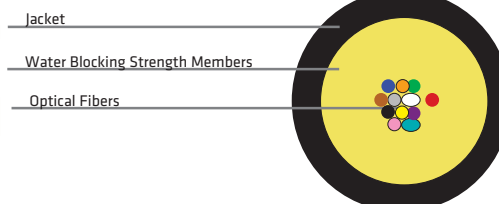
Outer Jacket Color For Interlock Armor

Cable Type	Standard Jacket Color
Single-Mode Premises	Yellow
Standard Multimode Premises	Orange
Laser-Optimized 50 µm Premises	Aqua



ezDISTRIBUTION™ LSZH | TB | Low Emission

Low-Smoke Zero-Halogen, IEC verified for flame and smoke – OFNR Rated



Popular indoor/outdoor cables for spaces demanding the additional safety of low smoke and emission characteristics without the presence of halogen. Suitable for indoor/outdoor applications in conduit.

Overview

Prysmian's Low Smoke Zero Halogen (LSZH) cables are intended for use in demanding environments that require cables to meet high fire safety standards. May be deployed in a variety of applications which may include riser, ducts or cable trays.

Product Snapshot

Applications	Versatile indoor and outdoor cable, low emission fire protection in crowded spaces, Some versions combine LSZH with riser rating for indoor performance.
Construction	Distribution (900µm)/Breakout (2.5mm)
Fiber Count	2 to 24 (Distribution)
Fiber Types	Multimode fibers (62.5/125-OM2, 50/125-OM2, OM3 and OM4)
Options	Indoor/outdoor versions (loose tube) / interlock armor / preconnectorized
Standards	TIA / EIA-568C.3, ANSI / ICEA S-83-596, Telecordia GR-409, RoHS Compliant Meets the following IEC specifications - IEC 60332-3-24 Category C - IEC 60332-1-2 - IEC 60332-2-2 - IEC 61034-2 - IEC 60754-1 - IEC 60754-2

Features and Benefits

Easy Cable Installation & Termination

- 900µm tight buffered fibers can be directly terminated
- Color-coded fibers & numbered sub-units simplify identification
- Colored rip cords for ease of identification and jacket removal
- Interlock armor option available

Safety Ratings

- Riser rated per NEC ARTICLE 770 - UL 1666/FT4 per CSA 22.2/No. 232

Reliable Performance

- Guaranteed 10 Gigabit & 1 Gigabit Ethernet transmission lengths
- Guaranteed standards-based performance
- Available in 62.5µm, 50µm, single-mode and hybrid version

Temperature Range

Shipping and storage	-40° F to +176° F	(-40° C to +80° C)
Installation	14° F to +122° F	(-10° C to +50° C)
Operation	-40° F to +176° F	(-20° C to +80° C)



ezDISTRIBUTION™ LSZH | TB | Low Emission

Low-Smoke Zero-Halogen, IEC verified for flame and smoke – OFNR Rated

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

EXAMPLE: ezDISTRIBUTION | LSZH 700 series, indoor/outdoor riser (OFNR / FT-4), 24 62.5/125 multimode fibers (printed in feet)

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	700	BLANK	00	G6	024	M2

CABLE INFORMATION			FIBER INFORMATION							
1 LENGTH MARKINGS			5 FIBER TYPE							
F = Feet or M = Meters			SINGLE-MODE							
			ES = Enhanced Single-Mode (ITU G.652 C & D)							
			B1 = Bend-Insensitive Single-Mode (ITU G.657.A2 & B2 & G.652.D)							
			B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & B2 & G.652.D)							
2 PRODUCT FAMILY			MULTIMODE							
700 = ezDISTRIBUTION Riser LSZH Tight Buffer Indoor/outdoor Flame Rating: OFNR/FT4			Wavelength (nm)		Bandwidth (MHz)		1 GbE Dist (m)		10 GbE Dist (m)	
			G6 = OM1 (62.5µm)		850/1300		200/500		300/550	
			G5 = OM2+ BIF (50µm)		850/1300		700/500		800	
			G3 = OM3 BIF (50µm)		850/1300		1500/500		1000	
			G4 = OM4 BIF (50µm)		850/1300		3500/500		1100	
3 CONSTRUCTION			6 FIBER COUNT							
(blank) = none			02 to 72 fibers							
AJ = Jacketed aluminum										
SJ = Jacketed steel										
4 FIBER GROUPING										
12 = 12f per unit or tube										
7 FIBER GRADE										
SINGLE-MODE			MULTIMODE							
Attenuation (dB/km)		Wavelength (nm)	Fiber Type		Attenuation (dB/km)		Wavelength (nm)		Fiber Type	
EB = 0.7/0.7/0.7		1310/1383/1550	Enhanced Single-Mode		M2 = 3.5/1.0		850/1300		OM1 (62.5µm)	
EA = 0.5/0.5/0.5		1310/1383/1550	Bend-Insensitive Single-Mode		M3 = 3.0/1.0		850/1300		OM2+, OM3, OM4 (50µm)	
E7 = 0.4/0.4/0.3		1310/1383/1550	Bend-Insensitive Single-Mode		Other cable constructions and fiber performance grades available on request.					

Nominal Design Parameters

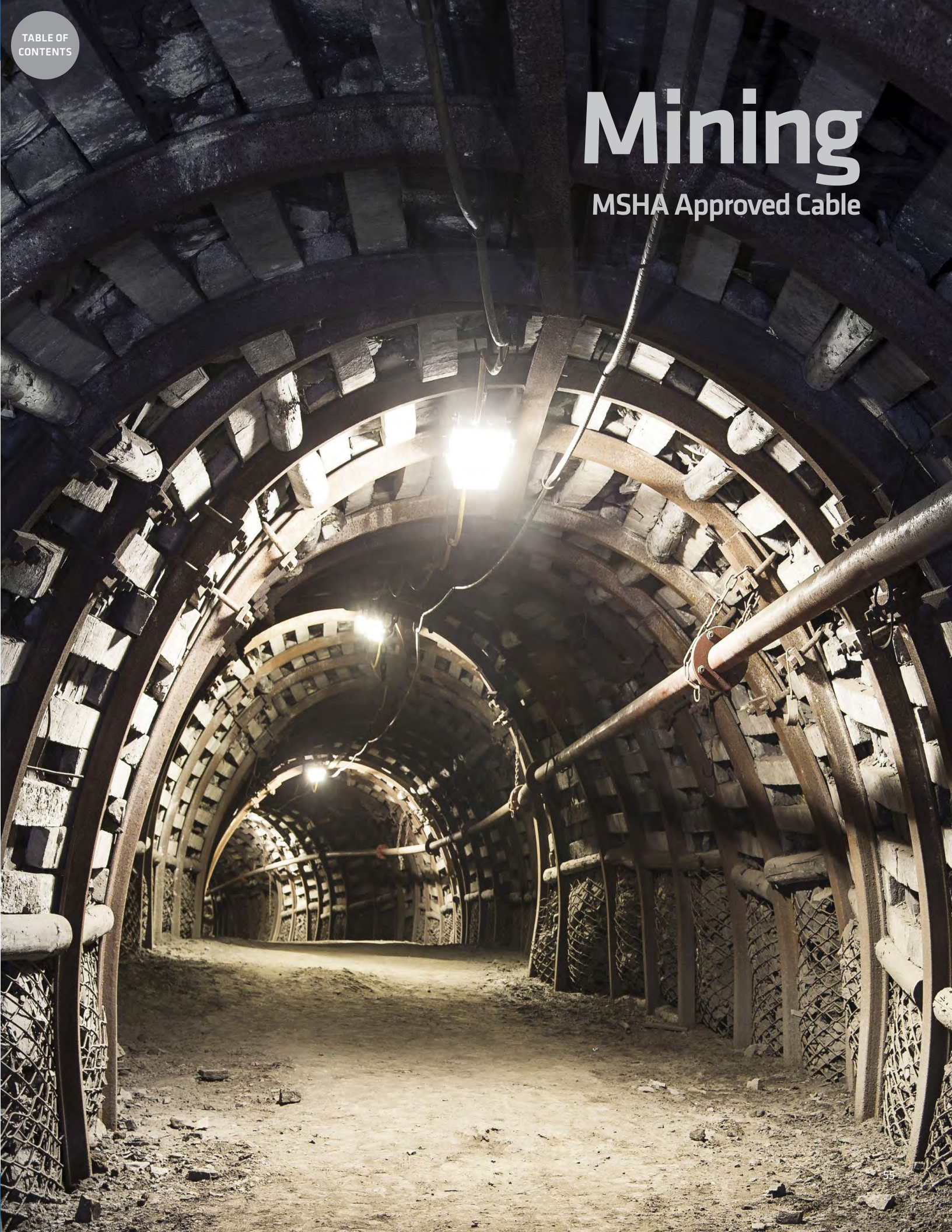
ezDISTRIBUTION™ | LSZH Indoor/Outdoor | 700 Series | OFNR, FT-4, LSZH Rated

Fiber Count	Number of Buffer Tubes	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius UNDER LOAD inches (cm)	Bend Radius NO LOAD inches (cm)	Max Installation LOAD (pull strength) lbs (newtons)	Max Operation LOAD lbs (newtons)
2	single-unit	0.20 (5.0)	15 (26)	3.9 (10.0)	3 (8)	150 (660)	45 (200)
4	single-unit	0.21 (5.2)	21 (29)	4.1 (10.4)	3 (8)	150 (660)	45 (200)
6	single-unit	0.21 (5.2)	22 (29)	4.1 (10.4)	3 (8)	150 (660)	45 (200)
8	single-unit	0.23 (5.9)	24 (31)	4.7 (12.0)	3.5 (8.9)	150 (660)	45 (200)
10	single-unit	0.24 (6.1)	24 (33)	4.8 (12.2)	3.6 (9.2)	150 (660)	45 (200)
12	single-unit	0.24 (6.2)	31 (34)	4.9 (12.4)	3.7 (9.3)	150 (660)	45 (200)
18	single-unit	0.32 (8.1)	97 (61)	6.4 (16.3)	4.8 (12.2)	300 (1320)	90 (396)
24	single-unit	0.32 (8.1)	97 (67)	6.4 (16.3)	4.8 (12.2)	300 (1320)	90 (396)

Note: Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

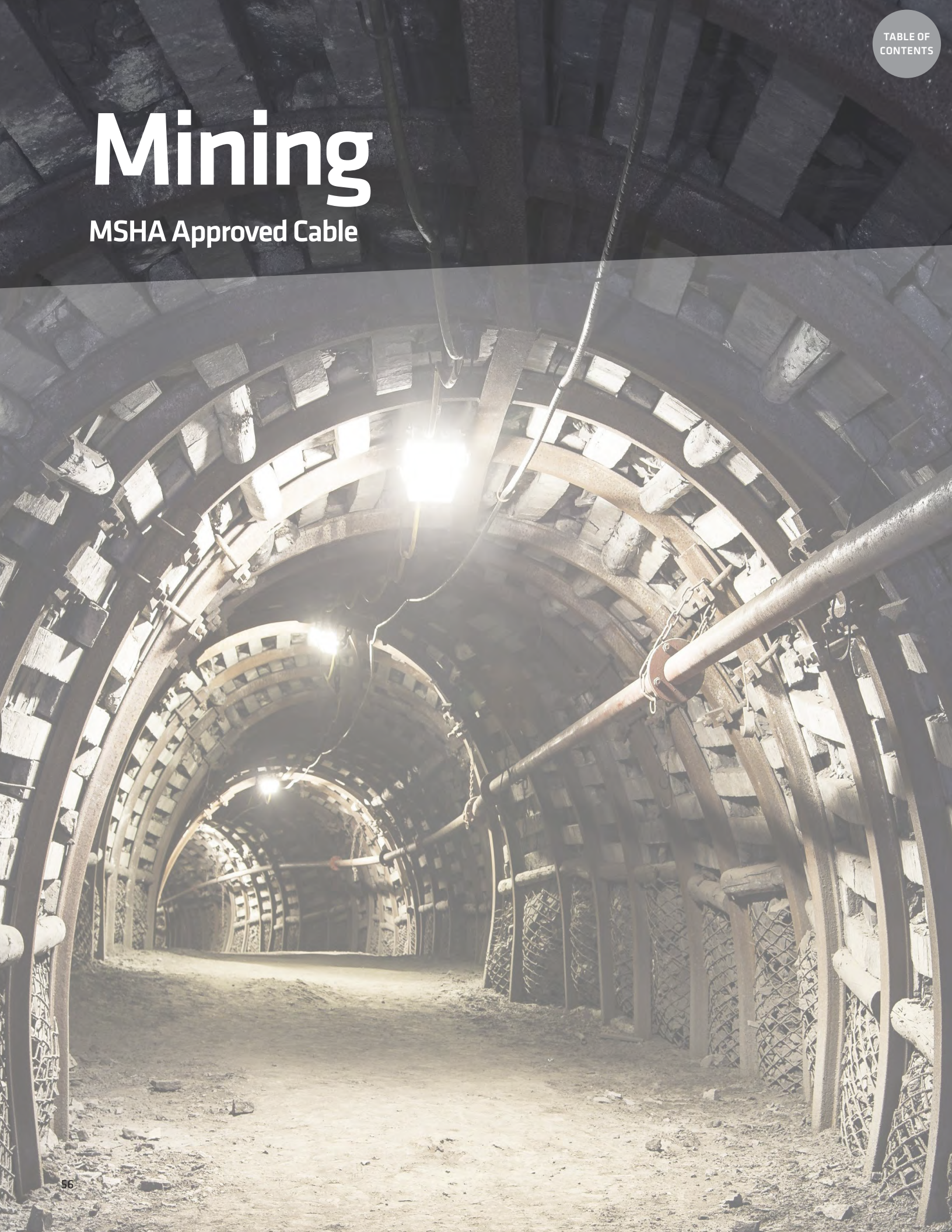
Mining

MSHA Approved Cable



Mining

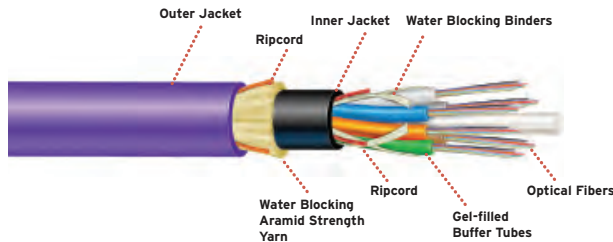
MSHA Approved Cable



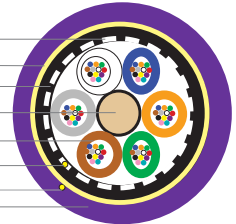


ezLINK™ Indoor/Outdoor Loose Tube Mining

MSHA and Tray



Water Blocking Binders
Aramid Yarns
Inner Jacket
Central Strength Member
Gel-Filled Buffer Tube (up to 12 Fibers)
Ripcords
Outer Jacket



Versatile indoor/outdoor flame-rated fiber cables designed for the rigors of mining operations

Overview

Prysmian's ezLINK™ indoor/outdoor loose tube mining Cable designs provide flame-rated network solutions for mines, mine shafts and other applications requiring elevated tensile and crush performance. This cable design marries Prysmian's proven loose tube construction with upgraded design elements to create a rugged cable for specialty applications. These cables utilize flexible gel-filled buffer tubes with Prysmian's extensive portfolio of single-mode and multimode optical fibers to meet the performance needs for non-traditional installations.

Product Snapshot

Applications	Rugged indoor/outdoor cable providing unsurpassed performance for applications involving placement in mines, mine shafts, or cable trays
Constructions	Dielectric (dual jacket)
Flame Rating	Riser (OFNR / FT4) / MSHA
Fiber Count	2 to 144
Fiber Types	Single-mode (ESMF, bend-insensitive) multimode (62.5/125-OM1, 50/125-OM2+, OM3 and OM4)
Performance	TIA/EIA-568, ANSI/ICEA S-104-696, UL-1666, CSA 22.2, Telcordia GR-409, Telcordia GR-20, US Dept of Labor MSHA, RoHS Compliant

Features and Benefits

- Accepted by MSHA and Pennsylvania Bureau of Deep Mine Safety
- 4500 N tensile strength to support placement in vertical rise
- 4500 N crush rating for added reliability
- Flexible kink-resistant buffer tubes for routing and storage
- Available with bend-insensitive single-mode and multimode optical fibers
- Fiber identification using TIA standardized color coding
- Flame-retardant, violet outer jacket for easy identification



ezLINK™

Indoor/Outdoor Loose Tube Mining

MSHA and Tray

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: ezLINK™ loose tube mining cable | indoor/outdoor riser | gel-filled buffer tubes | dielectric (double jacket) 12 62.5/125 multimode fibers per buffer tube | 48 fibers total (printed in feet)

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	RLTM	BLANK	12	G6	048	M2

CABLE INFORMATION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

RLTM = Mining indoor/outdoor riser dielectric (double jacket) 2 to 144 fibers
Flame Rating: OFNR/FT4

3 CONSTRUCTION

(blank) = Not available with interlock armor

4 FIBER GROUPING

12 = 12f per unit or tube

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak
ES = Enhanced Single-Mode (ITU G.652 C & D)
CE = Corning™ SMF28e+ Single-Mode
B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)
B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

MULTIMODE

	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ BIF (50µm)	850/1300	700/500	800	150/___
G3 = OM3 BIF (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 BIF (50µm)	850/1300	3500/500	1100	550/___

6 FIBER COUNT

002 to 144 fibers

7 FIBER GRADE

SINGLE-MODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
E1 = 0.40/0.40/0.30	1310/1383/1550	HB, ES, or CE
E3 = 0.35/0.35/0.25	1310/1383/1550	HB, ES, CE, B1, or B2

MULTIMODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
M2 = 3.5/1.0	850/1300	OM1 (62.5µm)
M3 = 3.0/1.0	850/1300	OM2+, OM3, OM4 (50µm)

Other cable constructions and fiber performance grades available on request.

Nominal Design Parameters

ezLINK™ Indoor/Outdoor Riser Loose Tube Mining Cable | RLTM Series | OFNR/FT4

Fiber Count	Number of Buffer Tubes	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius UNDER LOAD inches (cm)	Bend Radius NO LOAD inches (cm)	Vertical Rise Between Supports feet (m)
2 - 60	5	12	0.52 (13.2)	118 (176)	10.4 (26.4)	5.2 (13.2)	2568 (783)
62 - 72	6	12	0.55 (13.9)	128 (191)	11.0 (27.9)	5.5 (14.0)	2366 (721)
74 - 84	7	12	0.59 (15.1)	150 (223)	11.9 (30.2)	6.0 (15.1)	2027 (618)
86 - 96	8	12	0.63 (15.9)	166 (247)	12.6 (31.8)	6.3 (15.9)	1830 (558)
98 - 108	9	12	0.67 (17.0)	190 (282)	13.4 (34.0)	6.7 (17.0)	1603 (488)
110 - 120	10	12	0.69 (17.6)	202 (301)	13.9 (35.2)	7.0 (17.6)	1502 (458)
122 - 132	11	12	0.73 (18.5)	223 (332)	14.6 (37.0)	7.3 (18.5)	1361 (415)
134 - 144	12	12	0.76 (19.4)	247 (367)	15.3 (38.9)	7.7 (19.5)	1232 (375)

Public Transit

LSZH Loose Tube | Including Interlock Armor Cables



Public Transit

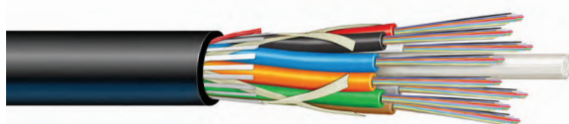
LSZH Loose Tube | Including Interlock™ Armor Cables



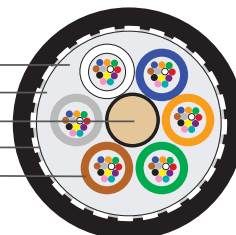


ezLINK™ Transit/LSZH Loose Tube (dry)

Low-Smoke Zero-Halogen Cables (gel-free buffer tubes)



LSZH Jacket
Flame Retardant Tape
Central Strength Member
Water Blocking Tape
Dry Buffer Tube Containing up to 12 Fibers



Popular indoor/outdoor cables for confined spaces demanding the additional safety of low smoke and flame retardants without the use of halogenated materials

Overview

Prysmian's ezLINK™ Transit /LSZH dry loose tube designs provide flame-rated network solutions for a diverse number of network applications. These cables combine a robust, flame retardant LSZH jacket material, flexible dry (gel-free) buffer tubes and swellable water blocking with Prysmian's extensive portfolio of single-mode and multimode optical fibers.

Incorporating proven outside plant design elements, this cable may be employed in outdoor aerial lashed, duct, cable tray and direct buried environments. Because of its application diversity, this advanced product eliminates the necessity/expense for traditional cable transition points once required in legacy systems. Cost savings and system long term reliability are achieved by enabling cable placement virtually anywhere in the network.

Product Snapshot

Applications	Versatile indoor/outdoor cable designed to reduce smoke and hazardous emissions in confined spaces
Constructions	Dielectric (single & dual jacket), corrugated armor, interlock armor
Flame Ratings	General purpose - low smoke (OFNG-LS / OFCG-LS / FT4)
Fiber Count	2 to 288
Fiber Types	Single-mode (ESMF, bend-insensitive) multimode (62.5/125-OM1, 50/125-OM2+, OM3 & OM4)
Standards	TIA/EIA-568, ANSI/ICEA S-83-596, ANSI/ICEA S-104-696, UL-1685, CSA 22.2 Telcordia GR-409, Telcordia GR-20, RoHS Compliant

RoHS
COMPLIANT

Features and Benefits

- Fiber identification using TIA standardized color coding
- Gel-free buffer tubes simplifies access and reduces prep time
- Flame-retardant, black UV-resistant LSZH outer jacket
- Flexible kink-resistant buffer tubes for routing and storage
- Available with bend-insensitive single-mode and multimode optical fibers
- Ideal for transit applications in confined areas such as tunnels
- Will support all high performance networks including OM4/10 gigabit ethernet systems

ezLINK™

Transit/LSZH Loose Tube (dry)

Low-Smoke Zero-Halogen (gel-free buffer tubes)

LSZH Dielectric (Single Jacket) | DDLSZHB Series | OFNG-LS / FT4

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.40 (10.1)	64 (95)	8.0 (20.4)	4.0 (10.2)
62 to 72	6	12	0.43 (10.8)	70 (104)	8.6 (21.9)	4.3 (11.0)
74 to 84	7	12	0.47 (11.9)	84 (125)	9.4 (23.9)	4.7 (12.0)
86 to 96	8	12	0.50 (12.7)	96 (143)	10.0 (25.4)	5.0 (12.7)
98 to 108	9	12	0.54 (13.8)	114 (169)	10.8 (27.5)	5.4 (13.8)
110 to 120	10	12	0.56 (14.4)	123 (183)	11.2 (28.5)	5.6 (14.3)
122 to 132	11	12	0.60 (15.2)	139 (207)	12.0 (30.5)	6.0 (15.3)
134 to 144	12	12	0.63 (16.1)	155 (231)	12.6 (32.0)	6.3 (16.0)
146 to 216	12 / 6	12	0.66 (16.8)	152 (226)	13.2 (33.6)	6.6 (16.8)
218 to 264	14 / 8	12	0.72 (18.4)	182 (271)	14.4 (36.6)	7.2 (18.3)
266 to 288	15 / 9	12	0.77 (19.5)	204 (304)	15.4 (39.2)	7.7 (19.6)

LSZH Dielectric (Double Jacket) | DDLSZHC Series | OFNG-LS / FT4

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.52 (13.2)	117 (174)	10.4 (26.5)	5.2 (13.2)
62 to 72	6	12	0.55 (13.9)	126 (188)	11.0 (28.0)	5.5 (14.0)
74 to 84	7	12	0.59 (15.0)	145 (216)	11.8 (30.0)	5.9 (15.0)
86 to 96	8	12	0.62 (15.8)	161 (239)	12.4 (31.5)	6.2 (15.8)
98 to 108	9	12	0.66 (16.9)	183 (273)	13.2 (33.6)	6.6 (16.8)
110 to 120	10	12	0.69 (17.4)	196 (291)	13.8 (35.1)	6.9 (17.6)
122 to 132	11	12	0.72 (18.3)	215 (320)	14.4 (36.6)	7.2 (18.3)
134 to 144	12	12	0.76 (19.2)	235 (350)	15.2 (38.6)	7.6 (19.3)
146 to 216	12 / 6	12	0.82 (20.9)	240 (357)	16.4 (41.7)	8.2 (20.9)
218 to 264	14 / 8	12	0.89 (22.5)	277 (412)	17.8 (45.2)	8.9 (22.6)
266 to 288	15 / 9	12	0.93 (23.6)	304 (452)	18.6 (47.3)	9.3 (23.7)

Note. Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

ezLINK™

Transit/LSZH Loose Tube (dry)

Low-Smoke Zero-Halogen (gel-free buffer tubes)

LSZH Armor (1A1) | DDLSZHE Series | OFCG-LS / FT4

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.49 (12.4)	120 (178)	9.8 (24.9)	4.9 (12.5)
62 to 72	6	12	0.52 (13.2)	130 (194)	10.4 (26.5)	5.2 (13.2)
74 to 84	7	12	0.55 (14.0)	142 (212)	11.0 (28.0)	5.5 (14.0)
86 to 96	8	12	0.58 (14.7)	158 (235)	11.6 (29.5)	5.8 (14.8)
98 to 108	9	12	0.62 (15.7)	179 (266)	12.4 (31.5)	6.2 (15.8)
110 to 120	10	12	0.65 (16.5)	192 (286)	13.0 (33.0)	6.5 (16.6)
122 to 132	11	12	0.68 (17.3)	211 (314)	13.6 (34.6)	6.8 (17.3)
134 to 144	12	12	0.72 (18.3)	233 (346)	14.4 (36.6)	7.2 (18.3)
146 to 216	12 / 6	12	0.72 (18.3)	233 (346)	14.4 (36.6)	7.2 (18.3)
218 to 264	14 / 8	12	0.78 (19.8)	241 (358)	15.6 (39.7)	7.8 (19.9)
266 to 288	15 / 9	12	0.82 (20.8)	263 (391)	16.4 (41.7)	8.2 (20.9)

Interlock Armor (Aluminum)

ezINTERLOCK Industrial Riser (I/A) | DDLSZHBAJ Series | OFCG-LS / FT4

Fiber Count	# Buffer Tubes Outer/Inner Layer	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.73 (18.4)	200 (297)	14.6 (36.9)	7.3 (18.5)
62 to 72	6	12	0.76 (19.2)	214 (319)	15.2 (38.4)	7.6 (19.2)
74 to 84	7	12	0.80 (20.4)	242 (360)	16.1 (40.8)	8.1 (20.4)
86 to 96	8	12	0.83 (21.2)	263 (391)	16.7 (42.4)	8.4 (21.2)
98 to 108	9	12	0.88 (22.3)	323 (481)	17.6 (44.6)	8.8 (22.3)
110 to 120	10	12	0.90 (22.8)	341 (507)	18.0 (45.8)	9.0 (22.9)
122 to 132	11	12	0.94 (23.7)	368 (547)	18.7 (47.5)	9.4 (23.8)
134 to 144	12	12	0.97 (24.7)	399 (594)	19.5 (49.5)	9.8 (24.8)
146 to 216	12 / 6	12	1.00 (25.4)	405 (602)	20.1 (50.9)	10.1 (25.5)
218 to 264	14 / 8	12	1.06 (27.0)	455 (677)	21.3 (54.1)	10.7 (27.1)
266 to 288	15 / 9	12	1.11 (28.1)	492 (732)	22.2 (56.3)	11.1 (28.2)

Mechanical Specifications

Maximum installation load: 600 lbf (2670 N)
1000 lbf (4450 N) (DDLSZHC only)

Maximum operation load: 180 lbf (800 N)
300 lbf (1330 N) (DDLSZHC only)

Temperature Range

Shipping and storage: -58° F to +158° F (-50° C to +70° C)

Installation: -22° F to +140° F (-30° C to +60° C)

Operation: -58° F to +158° F (-50° C to +70° C)

ezLINK™

Transit/LSZH Loose Tube (dry)

Low-Smoke Zero-Halogen (gel-free buffer tubes)

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: Loose tube | indoor/outdoor | general purpose | gel-free buffer tubes | LSZH single jacket | 12 62.5/125 multimode fibers per buffer tube
48 fibers Total (printed in feet)

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	DDLSZHB	BLANK	12	G6	048	M2

CABLE INFORMATION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

Indoor /Outdoor LSZH With Gel-Free Buffer Tubes

General Purpose- Low Smoke | FT4

DDLSZHB = Indoor/Outdoor LSZH All-Dielectric (Single Jacket) | LT
Flame Rating: OFNG-LS/FT4 | Fiber Count 2 to 288

DDLSZHC = Indoor/Outdoor LSZH All-Dielectric (Double Jacket) | LT
Flame Rating: OFNG-LS/FT4 | Fiber Count 2 to 288

DDLSZHE = Indoor/Outdoor LSZH Single armor (single jacket) | LT
Flame Rating: OFNG-LS/FT4 | Fiber Count 2 to 288

DDLSZHB = ezINTERLOCK Indoor/Outdoor LSZH Interlock Armor
Flame Rating: OFNG-LS/FT4 | Fiber Count 2 to 288

3 INTERLOCK CONSTRUCTION

(blank) = none

AJ = Jacketed aluminum

SJ = Jacketed steel

4 FIBER GROUPING

12 = 12f per tube or unit

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ BIF (50µm)	850/1300	700/500	800	150/___
G3 = OM3 BIF (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 BIF (50µm)	850/1300	3500/500	1100	550/___

6 FIBER COUNT

002 to 288 fibers

7 FIBER GRADE

SINGLE-MODE

Attenuation (dB/km) Wavelength (nm) Fiber Type

E1 = 0.40/0.40/0.30 1310/1383/1550 HB, ES, or CE

E3 = 0.35/0.35/0.25 1310/1383/1550 HB, ES, CE, B1, or B2

MULTIMODE

Attenuation (dB/km) Wavelength (nm) Fiber Type

M2 = 3.5/1.0 850/1300 OM1 (62.5µm)

M3 = 3.0/1.0 850/1300 OM2+, OM3, OM4 (50µm)

Other cable constructions and fiber performance grades available on request.

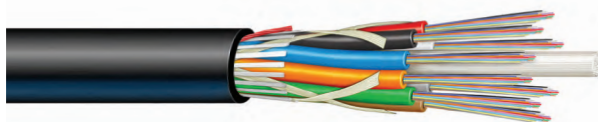
Outer Jacket Color For Interlock Armor

Cable Type	Standard Jacket Color
Single-Mode Premises	Yellow
Standard Multimode Premises	Orange
Laser-Optimized 50 µm Premises	Aqua



ezLINK™ Transit/LSZH Loose Tube (gel)

Low-Smoke Zero-Halogen (with gel-filled buffer tubes)



Popular indoor/outdoor cables for confined spaces demanding the additional safety of low smoke and flame retardants without the use of halogenated materials

Overview

Prysmian's ezLINK™ indoor/outdoor LSZH loose tube designs provide flame-rated network solutions for a diverse number of network applications. These cables combine traditional gel-filled buffer tubes with swellable water blocking materials, a robust, flame retardant LSZH jacket material, Prysmian's extensive portfolio of single-mode and multimode optical fibers.

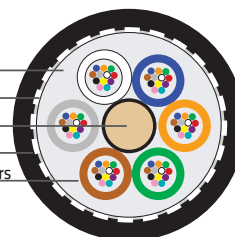
Incorporating proven outside plant design elements, this cable may be employed in outdoor aerial lashed, duct, cable tray and direct buried environments. Because of its application diversity, this advanced product eliminates the necessity/expense for traditional cable transition points once required in legacy systems. Cost savings and system long term reliability are achieved by enabling more cable placement options in the network.

Product Snapshot

Applications	Versatile indoor/outdoor cable designed to reduce smoke & hazardous emissions in confined spaces
Constructions	Dielectric (single & dual jacket), corrugated armor, interlock armor
Flame Ratings	General purpose - low smoke (OFN-LS/ OFC-LS)
Fiber Count	2 to 216 fibers
Fiber Types	Single-mode (ESMF, bend-insensitive) multimode (62.5/125-OM1, 50/125 OM2+, OM3 & OM4)
Standards	TIA/EIA-568, ANSI/ICEA S-83-596, ANSI/ICEA S-104-696, UL 1685, CSA 22.2, Telcordia GR-409, Telcordia GR-20, RoHS Compliant



- LSZH Jacket
- Flame Retardant Tape
- Central Strength Member
- Water Blocking Tape
- Gel-Filled Buffer Tube Containing up to 12 Fibers



Features and Benefits

- Fiber identification using TIA standardized color coding
- Gel-filled buffer tubes for use in coastal regions that involve salt water
- Flame-retardant, black UV-resistant LSZH outer jacket
- Flexible kink-resistant buffer tubes for routing and storage
- Available with bend-insensitive single-mode and multimode optical fibers
- Ideal for applications where smoke generation and corrosivity are concerns
- Will support all high performance networks including OM4/10 gigabit ethernet systems

ezLINK™

Transit/LSZH Loose Tube (gel)

Low-smoke Zero-Halogen (gel-filled buffer tubes)

LSZH I/O (Single Jacket) DLSZHB Series | OFN-LS

Fiber Count	# of Buffer Tubes Outer/Inner	Fibers Per Tube	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.41 (10.3)	62 (93)	8.2 (20.9)	4.1 (10.5)
62 to 72	6	12	0.44 (11.2)	73 (109)	8.8 (22.4)	4.4 (11.2)
74 to 84	7	12	0.47 (11.9)	82 (123)	9.4 (23.9)	4.7 (12.0)
86 to 96	8	12	0.51 (12.9)	95 (142)	10.2 (25.9)	5.1 (13.0)
98 to 108	9	12	0.55 (13.9)	110 (165)	11.0 (28.0)	5.5 (14.0)
110 to 120	10	12	0.58 (14.8)	125 (186)	11.6 (29.5)	5.8 (14.8)
122 to 132	11	12	0.62 (15.7)	140 (209)	12.4 (31.5)	6.2 (15.8)
134 to 216	12 / 6	12	0.65 (16.5)	153 (229)	13.0 (33.0)	6.5 (16.6)

LSZH I/O (Double Jacket) DLSZHC Series | OFN-LS

Fiber Count	# of Buffer Tubes Outer/Inner	Fibers Per Tube	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.53 (13.4)	118 (175)	10.6 (27.0)	5.3 (13.5)
62 to 72	6	12	0.56 (14.3)	136 (202)	11.2 (28.5)	5.6 (14.3)
74 to 84	7	12	0.59 (15.0)	151 (225)	11.8 (30.0)	5.9 (15.0)
86 to 96	8	12	0.62 (15.8)	169 (252)	12.4 (31.5)	6.2 (15.8)
98 to 108	9	12	0.66 (16.8)	195 (290)	13.2 (33.6)	6.6 (16.8)
110 to 120	10	12	0.70 (17.7)	218 (325)	14.0 (35.6)	7.0 (17.8)
122 to 132	11	12	0.73 (18.6)	243 (362)	14.6 (37.1)	7.3 (18.6)
134 to 216	12 / 6	12	0.76 (19.4)	265 (394)	15.2 (38.6)	7.6 (19.3)

Note. Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

ezLINK™

Transit/LSZH Loose Tube (gel)

Low-smoke Zero-Halogen (gel-filled buffer tubes)

LSZH I/O (Double Jacket w/Corrugated Steel Tape Armor) DLSZHD Series | OFC-LS

Fiber Count	# of Buffer Tubes Outer/Inner	Fibers Per Tube	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.60 (15.2)	168 (251)	12.0 (30.5)	6.0 (15.3)
62 to 72	6	12	0.64 (16.3)	1181 (274)	12.8 (32.6)	6.4 (16.3)
74 to 84	7	12	0.66 (16.8)	192 (286)	13.2 (33.6)	6.6 (16.8)
86 to 96	8	12	0.70 (17.8)	210 (313)	14.0 (35.6)	7.0 (17.8)
98 to 108	9	12	0.74 (18.8)	229 (342)	14.8 (37.6)	7.4 (18.8)
110 to 120	10	12	0.78 (19.8)	250 (373)	15.6 (39.7)	7.8 (19.9)
122 to 132	11	12	0.81 (20.6)	267 (399)	16.2 (41.2)	8.1 (20.6)
134 to 216	12 / 6	12	0.86 (21.7)	285 (426)	17.2 (43.7)	8.6 (21.9)

ezINTERLOCK | LSZH I/O (Al Interlocked Armor) DLSZHBAJ Series | OFC-LS

Fiber Count	# of Buffer Tubes Outer/Inner	Fibers Per Tube	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)
2 to 60	5	12	0.74 (18.7)	204 (305)	14.8 (37.6)	7.4 (18.8)
62 to 72	6	12	0.77 (19.6)	220 (337)	15.4 (39.2)	7.7 (19.6)
74 to 84	7	12	0.80 (20.3)	241 (363)	16.0 (40.7)	8.0 (20.4)
86 to 96	8	12	0.84 (21.2)	295 (441)	16.8 (42.7)	8.4 (21.4)
98 to 108	9	12	0.88 (22.3)	328 (488)	17.6 (44.7)	8.8 (22.4)
110 to 120	10	12	0.91 (23.2)	356 (531)	18.2 (46.3)	9.1 (23.2)
122 to 132	11	12	0.95 (24.1)	385 (575)	19.0 (48.3)	9.5 (24.2)
134 to 216	12 / 6	12	0.98 (24.8)	411 (613)	19.6 (49.8)	9.8 (24.9)

Mechanical Specifications

Maximum installation load:	600 lbf	(2670 N)
	1000 lbf	(4450 N)-DLSZHC only
Maximum operation load:	180 lbf	(800 N)
	300 lbf	(1330 N)-DLSZHC only

Temperature Range

Shipping and storage:	-40° F to +176° F	(-40° C to +80° C)
Installation:	-14 F to +140° F	(-10° C to +60° C)
Operation:	-40° F to +176° F	(-40° C to +80° C)

ezLINK™

Transit/LSZH Loose Tube (gel)

Low-smoke Zero-Halogen (gel-filled buffer tubes)

Ordering Guide The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: Loose tube | indoor-outdoor LSZH gel-filled buffer tubes | single jacket | 12f per buffer tube | single-mode fibers | 48 fibers total (print in feet)

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	DLSZHB	BLANK	12	HB	048	E1

PART NUMBER CONSTRUCTION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

Stranded Loose Tube Products: LSZH with Gel-Filled Buffer Tubes

DLSZHB = I/O LSZH Tray All-Dielectric (Single Jacket) | OFN LS

DLSZHC = I/O LSZH Tray All-Dielectric (Double Jacket) | OFN LS

DLSZHD = I/O LSZH Tray exPrep Armored (PSP) | OFC LS

DLSZHBAJ = ezInterlock I/O LSZH Tray Interlock Armored | OFC LS

3 CONSTRUCTION

(blank) = none

AJ = Jacketed Aluminum

SJ = Jacketed Steel

4 FIBER GROUPING

12 = 12f per unit or tube

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ BIF (50µm)	850/1300	700/500	800	150/___
G3 = OM3 BIF (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 BIF (50µm)	850/1300	3500/500	1100	550/___

6 FIBER COUNT

002 to 216 fibers

7 FIBER GRADE

SINGLE-MODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
E1 = 0.40/0.40/0.30	1310/1383/1550	HB, ES, or CE
E3 = 0.35/0.35/0.25	1310/1383/1550	HB, ES, CE, B1, or B2

MULTIMODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
M2 = 3.5/1.0	850/1300	OM1 (62.5µm)
M3 = 3.0/1.0	850/1300	OM2+, OM3, OM4 (50µm)

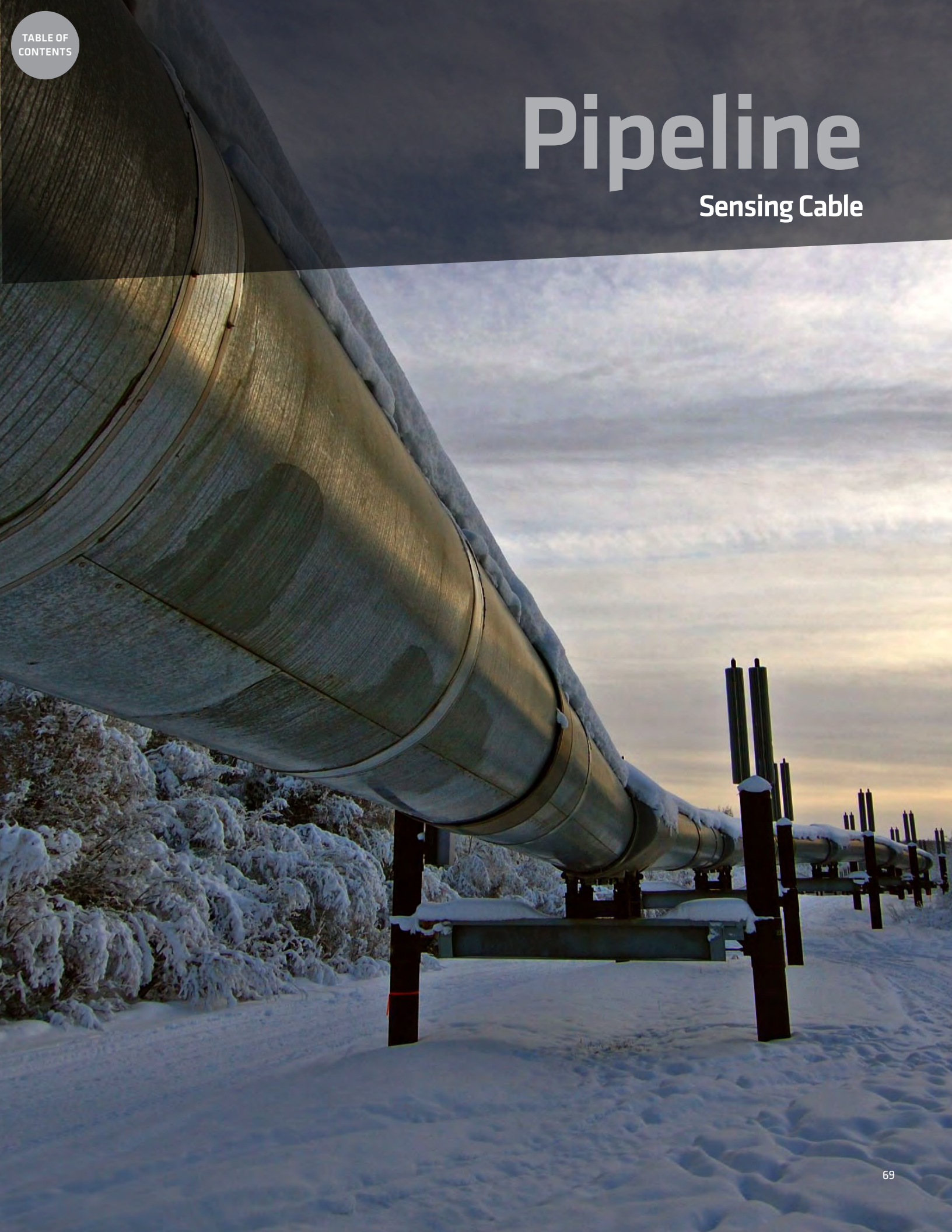
Other cable constructions and fiber performance grades available on request.

Outer Jacket Color For Interlock Armor

Cable Type	Standard Jacket Color
Single-Mode Premises	Yellow
Standard Multimode Premises	Orange
Laser-Optimized 50 µm Premises	Aqua

Pipeline

Sensing Cable



Pipeline

Sensing Cable





Pipeline Sensing

Temperature & Strain

A versatile, multi-purpose fiber cable designed for temperature and strain sensing in one unique cable.

Overview

Prysmian's pipeline sensing cable is buried alongside pipelines to provide both leak detection through temperature sensing and detect ground movement through strain sensing. Optical fibers can also be used for telecommunications and data applications. 2.5mm simplex tight buffered (TB) fiber units are used for strain sensing and loose tube units are available for temperature sensing or data/communications. Gel-free tubes are recommended for natural gas pipelines.

Product Snapshot

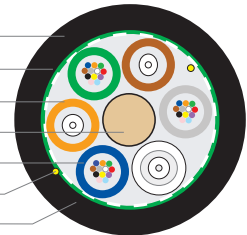
Applications	Direct buried pipeline leak and/or ground movement strain detection
Constructions	Single armor/single jacket, all-dielectric
Count	2 to 4 strain sensing fibers, up to 60 leak detection for data/telecommunications fibers
Fiber Types	ITU G652.D single-mode fiber
Options	Gel-filled or dry buffer tubes & simplex units, armored or all-dielectric
Performance	Loose tube units per GR20 & ICEA 640, simplex units per GR-409 & ICEA 596

RoHS
COMPLIANT

Dimensions

		6 Core Elements			7 Core Elements		
Number of Loose Tube Fibers		≤ 48	≤ 36	≤ 24	60	48	≤ 36
Number of Strain Sensing Fibers		2	3	4	2	3	4
Armored	Outer Diameter	0.48 inches (12.3 mm)			0.52 inches (13.3 mm)		
	Weight	101 lb/kft (151 kg/km)			120 lb/kft (180 kg/km)		
All-Dielectric	Outer Diameter	0.41 inches (10.3 mm)			0.44 inches (11.1 mm)		
	Weight	55 lb/kft (81 kg/km)			61 lb/kft (91 kg/km)		

- MDPE Outer Jacket
- Water Blocking (tape or yarn)
- 1 Fiber 2.5mm Simplex Tight Buffer Unit
- Central Strength Member
- Buffer Tube Containing up to 12 Fibers
- Ripcords
- ezPREP® Corrugated Steel Armor (optional)



Features and Benefits

Pipeline Sensing Cable

- Temperature sensing provides fast leak detection in pipelines
- Strain sensing can be used to detect ground/pipe line movement
- Fibers can also be used for data or telecommunications

Flexible Polypropylene Buffer Tube

- Buffer tubes contain temperature sensing and data/telecommunications fibers
- Available with gel or dry buffer tubes
- Gel tubes have a faster leak detection response time
- Zero fiber strain up to the residual load provides optimum SBS sensing
- Increased flexibility and superior kink resistance
- Facilitates easy route management in closures, eliminates needs for closure transportation tubes

Simplex Units for Strain Sensing

- Allows monitoring of ground or pipeline movement

Dry Water Blocking Technology

- Dry buffer tubes recommended for natural gas pipeline leak detection
- Drycore design permits rapid cable preparation and termination
- Dry water blocking materials are easily removed

ezPrep Corrugated Armor

- Provides additional mechanical protection needed for buried environments
- Special coating reduces time and effort to remove jacket

Pipeline

Pipeline Sensing

Temperature & Strain

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: Gel-Free, Armored: F-EDS1A1J-MX-##XXYYLT/#XXYYBO or Gel-Filled, Armored: F-ETS1A1J-MX-##XXYYLT/#XXYYBO

	1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 CONSTRUCTION	4 FIBER GROUPING	5 LOOSE TUBE & BREAKOUT
Gel Free Draka ESM fiber	F	EDS	1A1J	MX	##EPE3LT/#EPEABO
Gel Free SMF28e fiber	F	EDS	1A1J	MX	##CEE3LT/#CEEABO
Gel-Filled Buffer Tube Draka ESM fiber	F	ETS	1A1J	MX	##EPE3LT/#EPEABO
Gel-Filled Buffer Tube SMF28e fiber	F	ETS	1A1J	MX	##CEE3LT/#CEEABO

PART NUMBER CONSTRUCTION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

EDS = Sensing Cable (Gel Free)

ETS = Sensing Cable (Gel-Filled)

3 CONSTRUCTION

1A1J = Single Armor, Single Jacket

1JKT = Single Jacket

4 FIBER GROUPING

MX = 12f fiber LT

FIBER INFORMATION

5 LOOSE TUBE AND BREAKOUT

or # = Number of Fibers

2 - 1f simplex units, ≤ 60f LT

3 - 1f simplex units, ≤ 48f LT

4 - 1f simplex units, ≤ 36f LT

XX/YY = Fiber type/maximum attenuation

Temperature Sensing/Data/Telecom Applications
(loose tube units): ##XXYYLT

EP/E3: Draka ESM with 0.35/0.35/0.25 dB/km @ 1310/1383/1550nm

CE/E3: SMF28e+ with 0.35/0.35/0.25 dB/km @ 1310/1383/1550nm

Strain Sensing Applications (Breakout Simplex Units): #XXZZBO

EP/EA: Draka ESM with 0.5/0.5/0.5 dB/km @ 1310/1383/1550nm

CE/EA: SMF28e+ with 0.5/0.5/0.5 dB/km @ 1310/1383/1550nm

Other cable constructions and fiber performance grades available on request.

Test	Standard	Specified Value	Acceptance Criteria
Temperature Cycling			
Loose tube units	Telcordia GR-20	-40°C to +70°C	GR-20: R6-69
Simplex units	Telcordia GR409	-40°C to +70°C	GR-409: R6-78
Mechanical Tests			
Loose tube units	Telcordia GR-20	Cable tested to GR20 test methods	GR-20
Simplex units	Telcordia GR409		GR-409
Water Penetration			
	Telcordia GR-20	Sample=1m, water =1m, 24h	GR-20 : R6-75

Temperature Range

Transportation, Storage: -40° F to +167° F (-40° C to +75° C)

Installation: +14° F to +140° F (-10° C to +60° C)

Operation: -40° F to +158° F (-40° C to +70° C)

Mechanical Properties

Minimum Bending Radius: under tension 20 x cable diameter

no tension 10 x cable diameter

Installation Tensile Load: 600 lbf (2700 N)

Long Term Tensile Load: 180 lbf (800 N)

Airport/FAA

Federal Aviation Administration Cable



Airport/FAA

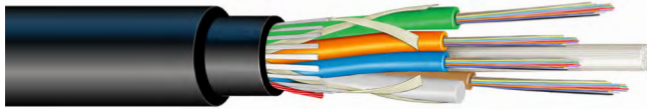
Federal Aviation Administration Cable



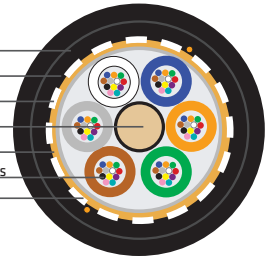


ezLINK™ Loose Tube Federal Aviation Administration (FAA) Cable

All-Dielectric Double Jacket and Chemical Resistant



Flame Retardant Jackets
Outer Strength Members
Flame Retardant Tape
Central Strength Member
Water Blocking Tape
Gel-Filled Buffer Tube Containing up to 12 Fibers
Ripcord



**Versatile outdoor chemical resistant fiber cables
designed for the rigors of aviation operations**

Overview

Prysmian's ezLINK™ Outdoor Loose Tube FAA Cable designs provide a robust network solution for on-airfield applications. These FAA cables address longevity in environments which expose components to chemicals such as jet fuel and de-icing fluids; and, marries Prysmian's proven loose tube construction with upgraded design elements to create a rugged cable for Specialty applications. These cables utilize flexible gel-filled buffer tubes with Prysmian's extensive portfolio of single-mode and multimode optical fibers to meet the performance needs for non-traditional installations.

Product Snapshot

Applications	Rugged outdoor cable providing unsurpassed performance for applications involving placement in airports, FAA applications and cable trays
Constructions	Dielectric (dual jacket)
Fiber Count	2 to 60
Fiber Types	Single-mode (ESMF, bend-insensitive) multimode (62.5/125-OM1, 50/125-OM2+, OM3 and OM4)
Performance	US Dept of Transportation FAA specification, ICEA S-87-640 RoHS Compliant

Features and Benefits

- Compliant "Type B" as defined by FAA specification, FAA-E-2761c
- Chemically resistant to hydrocarbons and jet fuels
- Chemically resistant to de-icing solutions
- Flexible kink-resistant buffer tubes for routing and storage
- Available with bend-insensitive single-mode and multimode optical fibers
- Fiber identification using TIA standardized color coding
- Chemical resistant outer jacket for long term reliability



ezLINK™ Loose Tube

Federal Aviation Administration (FAA) Cable

All-Dielectric Double Jacket and Chemical Resistant

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: EZLINK™ loose tube | outdoor FAA cable | dielectric (double jacket) | 12 single-mode fibers per buffer tube | 24 fibers total

1	LENGTH MARKINGS	2	PRODUCT FAMILY	3	CONSTRUCTION	4	FIBER GROUPING	5	FIBER TYPE	6	FIBER COUNT	7	FIBER GRADE
	F	-	FAACF		BLANK	-	12	-	ES	-	024	-	E1

CABLE INFORMATION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

FAACF = Outdoor FAA Gel-Filled Dielectric Cable

*FAACD = Outdoor FAA Gel-Free (dry) Dielectric Cable

3 CONSTRUCTION

(blank) = Non Applicable with Interlock Armor

4 FIBER GROUPING

12 = 12f per unit or tube

* Dry tubes are not family specified in FAA-E-2761C

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

CE = Corning™ SMF28e+ Single-Mode

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & B2, & G.652.D)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ BIF (50µm)	850/1300	700/500	800	150/___
G3 = OM3 BIF (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 BIF (50µm)	850/1300	3500/500	1100	550/___

6 FIBER COUNT

002 to 060 fibers

7 FIBER GRADE

SINGLE-MODE

Attenuation (dB/km) Wavelength (nm) Fiber Type

E1 = 0.40/0.40/0.30 1310/1383/1550 HB, ES, or CE

E3 = 0.35/0.35/0.25 1310/1383/1550 HB, ES, CE, B1, or BE

MULTIMODE

Attenuation (dB/km) Wavelength (nm) Fiber Type

M2 = 3.5/1.0 850/1300 OM1 (62.5µm)

M3 = 3.0/1.0 850/1300 OM2+, OM3, OM4 (50µm)

Other cable constructions and fiber performance grades available on request.

ezLINK™ Outdoor Loose Tube FAA Cable | FAACF Series

Fiber Count	Number of Buffer Tubes	Fibers Per Unit	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius UNDER LOAD inches (cm)	Bend Radius NO LOAD inches (cm)
2 to 60	5	12	0.42 (10.7)	76 (113)	8.5 (21.5)	4.3 (10.8)

Mechanical Specifications

Maximum installation load: 600 lbs (2670 N)

Maximum operation load: 180 lbs (800 N)

Temperature Range

Shipping and Storage -40° F to +158° F (-40° C to +70° C)

Installation -22° F to +140° F (-30° C to +60° C)

Operation -40° F to +158° F (-40° C to +70° C)

Security



Security





Security

Fiber-Copper Hybrid Cable

Security and DAS Applications



Reliable indoor-use cables for data transmission and remote powering of fiber distribution remote units in security network.

Overview

Prysmian Group's Indoor Gel-Free Loose Tube Plenum composite cable designs facilitate in-building security networks. These cables incorporate either 12, 14, or 16 AWG copper conductors for remote powering with color coded loose tube optical fibers for data transmission. The overall installation burden is reduced by integrating these two vital network functions into a common cable sheath.

These cables combine a robust, flame retardant jacket material with Prysmian Group's extensive portfolio of single-mode and multimode optical fibers. Because of its application diversity, this advanced product eliminates the necessity/expense for traditional cable transition points once required in legacy systems. This design has been evaluated to the applicable sections of UL 13 (UL Standard for Safety for Power-Limited Circuit Cables).

Product Snapshot

Application	Versatile indoor plenum rated cable designed for security network power and data feed requirements. Available with different wire gauge sizes (12, 14, or 16 AWG) to accommodate variety of placement options. Plenum rating with complementary reduced flame and smoke capability.
Construction	Composite
Flame Rating	Plenum (CL2P)
Fiber Count	12
Fiber Types	Single-Mode (Bend-Insensitive)- ITU G.657.A2 & B2, Multimode (50/125-OM3)
Standards	TIA/EIA-568, ANSI/ICEA S-83-596, UL-13, RoHS Compliant



Features and Benefits

- Integrates copper power conductors with bend-insensitive optical fibers under a common sheath
- Plenum flame listing enables unrestricted routing within available pathways
- Facilitates placement of security remote units within buildings
- Fiber identification using TIA standardized color coding
- Gel-free buffer tube simplifies access and reduces prep time
- Flame-retardant and plenum compliant meeting NFPA-262
- Available with bend-insensitive single-mode and multimode optical fibers
- Will support all high performance networks including OM4/10 gigabit ethernet systems

Security

Fiber/Copper Hybrid Cable

Security and DAS Applications

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

EXAMPLE: Indoor plenum | 12 singlemode fibers per buffer tube | 16 AWG copper conductor (printed in feet)

1	LENGTH MARKINGS	2	PRODUCT FAMILY	3	CONSTRUCTION	4	FIBER GROUPING	5	FIBER TYPE	6	FIBER COUNT	7	FIBER GRADE
	F		DCL		C2P		12		B2		012		E1

PART NUMBER CONSTRUCTION	
1	LENGTH MARKINGS
	F = Feet or M = Meters
2	PRODUCT FAMILY
	DCL = Security Hybrid Cable Loose Tube
3a	COPPER CONSTRUCTION SIZE
	A = 12 AWG
	B = 14 AWG
	C = 16 AWG
3b	NUMBER OF COPPER CONDUCTORS
	2 = Two conductors
	4 = Four conductors
	6 = Six conductors
3c	JACKET CONSTRUCTION
	P = Single jacket, plenum
4	6 FIBERS PER SUBUNIT
	12 = 12f per subunit

FIBER INFORMATION	
5	FIBER TYPE
SINGLE-MODE	
B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & B2 & G.652.D)	
MULTIMODE	Wavelength (nm) Bandwidth (MHz) 1 GbE Dist (m) 10 GbE Dist (m)
G5 = OM2+ (50µm)	850/1300 700/500 800/550 150/___
6	FIBER COUNT
002 to 012 fibers	
7	FIBER GRADE
SINGLE-MODE	
Attenuation (dB/km)	Wavelength (nm) Fiber Type
E1 = 0.4/0.4/0.3	1310/1383/1550 Bend-Insensitive Single-Mode
MULTIMODE	
Attenuation (dB/km)	Wavelength (nm) Fiber Type
M3 = 3.0/1.0	850/1300 OM2+ (50µm)
Other cable constructions and fiber performance grades available on request.	

Composite Plenum Loose Tube (12 AWG) DCLA Series | CLP2

Fiber Count	Number of Conductors	Fillers	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius LOAD inches (cm)	Bend Radius NO LOAD inches (cm)
up to 12	2	2	0.39 (9.9)	99 (147)	7.8 (19.9)	3.9 (9.9)
up to 12	4	0	0.39 (9.9)	147 (218)	7.8 (19.9)	3.9 (9.9)
up to 12	6	0	0.46 (11.7)	214 (319)	9.2 (23.4)	4.6 (11.7)

Composite Plenum Loose Tube (14 AWG) DCLB Series | CLP2

Fiber Count	Number of Conductors	Fillers	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius LOAD inches (cm)	Bend Radius NO LOAD inches (cm)
up to 12	2	2	0.33 (8.4)	67 (99)	6.6 (16.8)	3.3 (8.4)
up to 12	4	0	0.33 (8.4)	96 (143)	6.6 (16.8)	3.3 (8.4)
up to 12	6	0	0.39 (9.9)	140 (209)	7.8 (19.9)	3.9 (9.9)

Composite Plenum Loose Tube (16 AWG) DCLC Series | CLP2

Fiber Count	Number of Conductors	Fillers	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius LOAD inches (cm)	Bend Radius NO LOAD inches (cm)
up to 12	2	2	0.29 (7.4)	47 (70)	5.8 (14.8)	2.9 (7.4)
up to 12	4	0	0.29 (7.4)	66 (98)	5.8 (14.8)	2.9 (7.4)
up to 12	6	0	0.33 (8.4)	93 (139)	6.6 (16.8)	3.3 (8.4)



ezINTERCONNECT™ | Security Optical Cable

Indoor & Indoor-Outdoor



Ruggedized, bend-insensitive drop cable for a variety of Security Applications

Overview

Prysmian's security optical cable contains a 900µm tight-buffered fiber for use in indoor or indoor-outdoor applications.

Product Snapshot

Applications	Routing and patching in locations requiring tight bends
Constructions	Dielectric / 900µm (Micron) tight buffered fiber
Flame Ratings	Riser (OFNR/FT4), Indoor-Outdoor (OFNR/FT4)
Fiber Count	1 fiber
Fiber Types	Single-mode, bend-insensitive / Multimode fibers (62.5/125-OM2, 50/125-OM2+, OM3 & OM4)
Min Bend Radius	7.5mm minimum bend radius
Size	4.8mm outside diameter
Jacket Color	Indoor (ivory, white, and yellow) outdoor (Black)
Standards	ICEA 596, Telcordia GR-409
Connectors	Available with standard angled connectors, or angled SC connectors with Hardened Lens Connector (*HLC®) *Scratchguard™ technology.



Features and Benefits

Easy of Installation

- Can be attached to surfaces using "off-the-shelf" cable staples
- Capable of handling 90 degree tight bends, similar to copper cables
- Color options that allow the cable to be hidden along interior surfaces
- Tolerates small diameter slack loops

Labor Savings

- Saves time during installation by allowing for quick & easy routes
- Easily routed around obstacles such as pipes, studs, conduit
- Simplifies pre-planned or pre-engineered routes
- A forgiving cable that minimizes rework and retracing after installation

Rugged and Forgiving

- An indoor-outdoor version capable of extreme weather conditions
- A jacket sheath resistant to abrasion
- Compatible with G.652.D single-mode fiber

Security

ezINTERCONNECT™ | Security Optical Cable

Indoor & Indoor-Outdoor

Ordering Guide The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

EXAMPLE: ezINTERCONNECT tight buffered security | 4.8mm drop | indoor ivory jacket | 1 bend-insensitive single-mode fiber (printed in feet)

1 LENGTH MARKINGS	2 PRODUCT FAMILY	3 INTERLOCK ARMOR (optional)	4 FIBER GROUPING	5 FIBER TYPE	6 FIBER COUNT	7 FIBER GRADE
F	ISOCIV	BLANK	00	BX	001	EB

CABLE INFORMATION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

ezINTERCONNECT Specialty Applications - Security (1 fiber)

Indoor Riser / OFNR / FT4 | Tight Buffered

ISOCIV = ezINTERCONNECT Riser HD Security Drop (Ivory Jacket)

ISOCWH = ezINTERCONNECT Riser HD Security Drop (White Jacket)

ISOCYH = ezINTERCONNECT Riser HD Security Drop (Yellow Jacket)

Indoor-Outdoor Riser / OFNR / FT4 | Tight Buffered

ISOCBK = ezINTERCONNECT Riser HD Security Drop (Black Jacket)

3 INTERLOCK ARMOR

(blank) = none

4 FIBER GROUPING

00 = no grouping

4.8 mm Heavy Duty Product Family

Jacket Color

ISOCBK	Black (Indoor/Outdoor)
ISOCIV	Ivory (Indoor)
ISOCWH	White (Indoor)
ISOCYL	Yellow (Indoor)

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak

ES = Enhanced Single-Mode (ITU G.652 C & D)

B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)

B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & .B2, & G.652.D)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/550	33/___
G5 = OM2+ BIF (50µm)	850/1300	700/500	800	150/___
G3 = OM3 BIF (50µm)	850/1300	1500/500	1000	300/___
G4 = OM4 BIF (50µm)	850/1300	3500/500	1100	550/___

6 FIBER COUNT

001 fiber

SINGLE-MODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
EB = 0.7/0.7/0.7	1310/1383/1550	Enhanced Single-Mode
EA = 0.5/0.5/0.5	1310/1383/1550	Bend-Insensitive Single-Mode
E7 = 0.4/0.4/0.3	1310/1383/1550	Bend-Insensitive Single-Mode

MULTIMODE

Attenuation (dB/km)	Wavelength (nm)	Fiber Type
M2 = 3.5/1.0	850/1300	OM1 (62.5µm)
M3 = 3.0/1.0	850/1300	OM2+, OM3, OM4 (50µm)

Other cable constructions and fiber performance grades available on request.

ezINTERCONNECT | Security | ISOC Series | OFNR/FT4

Fiber Count	Diameter inches (mm)	Cable Weight lb/kft (kg/km)	Bend Radius Load inches (cm)	Bend Radius No Load inches (cm)	Max Installation Load (Pull Strength) lbs (newtons)	Max Operation Load lbs (newtons)
1	0.189 (4.8)	14 (22)	0.3 (7.5)	0.3 (7.5)	80 (352)	20 (88)

Temperature Range

Shipping and Storage:	-40° F to +158° F	(-40° C to +70° C)
Installation:	32° F to +122° F	(0° C to +50° C)
Operation:	-40° F to +158° F	(-40° C to +70° C)

Hybrid

Fiber and Copper



Hybrid

Fiber and Copper

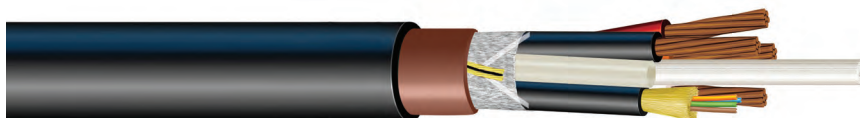




Hybrid

Fiber-Copper Hybrid Cable

Industrial Applications



Versatile multi-purpose hybrid fiber copper cable

Applications

For deployment in industrial application requiring remote power and data transmission in a single cable. Our specially formulated compounds provide a full range of performance characteristics. The insulation and jacket compounds provide long term reliable service in the harshest environments, superior durability in heavy use applications and in extreme cold temperatures. This cable can be customized to suit your exact requirements including various fiber optic cable designs, power limited data, signal and communications conductors.

Feature and Benefits

Insulation

- Heat and moisture resistant color coded polyvinyl chloride (PVC) in accordance with UL 83 for THW-2 or polyvinyl chloride (PVC) covered with a clear nylon jacket in accordance with UL 83 for THWN-2.
- Both insulation systems are suitable for continuous use at 90°C wet or dry.
- Insulation color coded in accordance with NEMA WC-57 (E1 or E2)
- Optional insulation materials: crosslinked polyethylene (XLPE), ethylene propylene rubber (EPR)

Fillers

- Individual conductors are cabled with flame resistant non-hygroscopic fillers where necessary to form a round core

Fiber Optic Component Options

- Bend-insensitive for added reliability
- Subunit construction loose tube or tight buffered
- Compliant with ITU G.657.A & B2 / G.652.D
- PVC or LSZH subunit jacket options are available

Shield Options

- Corrugated longitudinally - applied .005 or .010 copper
- Flat helically-applied .003, .005 or .010 copper tape
- Aluminum/mylar tape (with or without a drain wire)
- Copper/mylar tape (with or without a drain wire)
- Tinned copper braid

Jacket

- Sunlight, abrasion, oil and chemical resistant polyvinyl chloride (PVC) in accordance with ICEA S-73-532, UL 1277 and CSA 22.2 No. 230/239
- Optional jacketing materials: Low Smoke Zero Halogen (LSOH), chlorinated polyethylene (CPE), chlorosulfonated polyethylene (CSPE), polychloroprene (PCP), Polymeric Armor

Available Ratings and Options

- UL Type TC-ER (Type TC-OF-ER for fiber optic hybrid constructions)
- UL/CSA Sunlight Resistant
- 1,000 hour weatherometer (temperature, UV and moisture cycling)
- cUL CIC/TC
- CSA AWM I/II A/B
- CSA RW90 Type TC
- Flame Rating: IEEE1202 / FT4
- Voltage Rating: 600 to 2000 volts
- Temperature Rating: 90°C wet/dry
- Cold Temperature: -25°C or -40°C
- RoHS Compliant



Hybrid

Fiber-Copper Hybrid Cable

Industrial Applications

Copper Subunits

Number of Conductors	Conductor Size AWG	Number of Strands	Class	THW Thickness (mils)	Jacket Thickness (mils)	Approximate OD (in)	Approximate Weight (lb/ft)
2	12	19	C	30	45	0.42	0.10
2	10	19	C	30	45	0.47	0.13
2	8	19	C	45	60	0.62	0.21
6	10	19	C	30	60	0.69	0.34
8	10	19	C	30	60	0.75	0.44
10	10	19	C	30	60	0.92	0.58
12	10	19	C	30	60	0.95	0.68
18	10	19	C	30	80	1.11	0.95
6	8	19	C	45	80	0.93	0.57
8	8	19	C	45	80	1.00	0.73
10	8	19	C	45	80	1.18	0.91
12	8	19	C	45	80	1.21	1.06
18	8	19	C	45	80	1.43	1.52
6	6	19	C	60	80	1.13	0.88
8	6	19	C	60	80	1.23	1.13
10	6	19	C	60	80	1.45	1.41
12	6	19	C	60	80	1.50	1.66
18	6	19	C	60	110	1.84	2.52

Optical Fiber Subunits

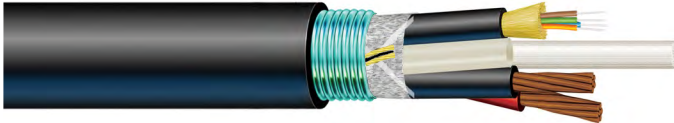
Fiber Count	Fiber Type	LT or TB	Jacket Type	OD (nominal) in (mm)	Weight (nominal) lb/ft (kg/m)
2	Bend-Insensitive	Tight Buffered	PVC	0.19 (4.8)	0.01 (0.02)
6	Bend-Insensitive	Tight Buffered	PVC	0.24 (6.0)	0.02 (0.03)
12	Bend-Insensitive	Tight Buffered	PVC	0.28 (7.0)	0.03 (0.05)
4	Bend-Insensitive	Tight Buffered	LSZH	0.24 (6.1)	0.03 (0.04)
6	Bend-Insensitive	Tight Buffered	LSZH	0.24 (6.1)	0.03 (0.04)
8	Bend-Insensitive	Tight Buffered	LSZH	0.24 (6.1)	0.02 (0.04)
12	Bend-Insensitive	Loose Tube	PVC	0.20 (5.0)	0.02 (0.03)
16	Bend-Insensitive	Loose Tube	PVC	0.20 (5.0)	0.03 (0.04)
up to 36	Bend-Insensitive	Loose Tube	LSZH	0.32 (8.1)	0.03 (0.05)

Note: other constructions and performance grades available on request.



Fiber-Copper Hybrid Cable

Industrial Applications (6 or 8 AWG conductors)



Product Snapshot

Application	Deployment in Remote Radio Head (RRH) cell tower applications	Attenuation	≤ 0.5 dB/Km @ 1310 nm ≤ 0.5 dB/Km @ 1383 nm ≤ 0.5 dB/Km @ 1550 nm
Construction	Two to five 8 AWG or 6 AWG insulated conductors, one optical cable subunit with 4, 6, or 8 tight buffer 900 μ m optical fibers, and filler rods as needed are stranded around a central strength member. Dry water blocking technology is utilized and corrugated steel tape armor is formed around the cable core with UV stabilized outer jacket extruded over the steel tape armor.	Outside Diameter	18.5 mm (0.73 in) Nominal
Optical Fibers	Fiber Type: Dispersion- unshifted single-mode (bend-insensitive) Applicable Specifications: ITU-T G.652.D ITU-T G.657.A2 & B2	Environmental	Storage Temperature: -40° C to +80° C Installation Temperature: -30° C to +70° C Operating Temperature: -40° C to +80° C
		Part Number	HF281A1J-04-BX-004

Note. Cable damage may occur if installation temperature limits are exceeded; therefore, Prysmian Group recommends storing I/O cables in appropriate temperature conditions ≥ 24 hours prior to placement.

Hybrid

Fiber-Copper Hybrid Cable

Industrial Applications (6 or 8 AWG conductors)

Ordering Guide The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: Outdoor single armor | four bend-insensitive (G.657A2) tight buffer optical fibers | two 8 AWG copper conductor

1	LENGTH MARKINGS	2	PRODUCT FAMILY	3	CONSTRUCTION	4	FIBER GROUPING	5	FIBER TYPE	6	FIBER COUNT	7	FIBER GRADE
	F		HF28		1A1J		04		B2		004		EA

CABLE INFORMATION	
1	LENGTH MARKINGS
	F = Feet or M = Meters
2	PRODUCT FAMILY
	ezMOBILITY
	a) Product Family HF = Fiber-Copper Hybrid Cables
	b) Number of Conductors 2 = Two conductors 3 = Three conductors 4 = Four conductors 5 = Five conductors
	c) Copper construction size 6 = 6 AWG 8 = 8 AWG
3	CONSTRUCTION
	1A1J = Outside single armor with single PE jacket
4	FIBER GROUPING
	Fibers per subunit (one subunit per cable)
	04 = four 900 µm tight buffer fibers in a subunit
	06 = six 900 µm tight buffer fibers in a subunit (6 AWG only)
	08 = eight 900 µm tight buffer fibers in a subunit (6 AWG only)

FIBER INFORMATION	
5	FIBER TYPE
	SINGLE-MODE
	B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & B2 & G.652.D)
6	FIBER COUNT
	002 to 008 fibers
7	FIBER GRADE
	SINGLE-MODE
	Attenuation (dB/km) Wavelength (nm) Fiber Type
	EA = 0.5/0.5/0.5 1310/1383/1550 Bend-Insensitive Single-Mode

Other cable constructions and fiber performance grades available on request

Marine & Subaqua



Marine & Subaqua



Marine

S611T Dielectric Marine Fiber Optic Cable

Tight Buffer Construction | 2 to 48 fibers / single-mode or multimode / LSZH



Applications

The Draka S611T series of marine shipboard unarmored fiber optic cables are designed especially for the harsh environments of commercial marine vessels, offshore oil platforms, drilling rigs, and other similar applications.

Draka S611T low smoke/ zero halogen, flame retardant cables offer versatility and ease of installation in a construction suited for marine applications. They are compliant with the latest IEC requirements.

S611T cables meet the requirements of IEC 60793-1 and IEC 60792-2 specifications, are encapsulated in all dielectric, tight buffered construction, individually reinforced with aramid yarns and jacketed (breakout style). The breakout components are cabled around a central member providing additional tensile strength to the entire construction. The thermoplastic low smoke/ zero halogen jacketing system offers excellent resistance to chemicals, fluids, fungus, and abrasion.

Features/Ratings

- Low smoke/ zero halogen construction meets appropriate IEEE and IEC standards for fire, smoke, and toxicity
- Superior resistance to oil, abrasion, moisture, sunlight, mud, crush and impact
- Gigabit Ethernet 802.3Z compliant

Approvals

Meets IEC60794-1-1, 60794-1-2 and 60794-2

Meets IEEE 45 and IEEE 1580

Det Norske Veritas (DNV)

American Bureau of Shipping (ABS)

Lloyd's Register of Shipping (LRS)

Flame retardant per IEC 60332-3 CAT. A/F and IEEE 1202

Smoke density requirements of IEC 61034-1 and 61034-2

Acid gas generation requirements of IEC 60754-1 & 60754-2

Toxicity requirements of NES 713

Meets the performance requirements of IEEE 802.3z (Gigabit Ethernet)

Construction

CENTRAL STRENGTH MEMBER: Dielectric material (epoxy fiberglass rod).

FIBER: Multimode or singlemode fibers with an easily-strippable 900µm tight buffering colored per TIA/EIA 598.

SUBUNIT STRENGTH MEMBER: Aramid yarn

SUBUNIT JACKET: 2.0 mm ChromaTek-L™ Halex low smoke zero halogen polyolefin.

SHEATH: ChromaTek-L™ Halex low smoke zero halogen polyolefin.



Marine

S611T Dielectric Marine Fiber Optic Cable

Tight Buffer Construction | 2 to 48 fibers / single-mode or multimode / LSZH

Draka USA Part Number	Number of Fibers	INSTALLATION		OPERATING		Cable Outside Diameter	Approximate Cable Weight
		Pull Strength newtons (lbs)	Bend Radius cm (in)	Tension newtons (lbs)	Bend Radius cm (in)	mm (in)	Kg/Km (Lbs/Mft)
S611T-02R-xyy	2	600 (135)	13.6 (5.3)	200 (45)	6.8 (2.7)	6.78 (0.267)	49 (33)
S611T-04-xyy	4	600 (135)	15.3 (6.0)	200 (45)	7.7 (3.0)	7.67 (0.302)	60 (40)
S611T-06-xyy	6	600 (135)	17.3 (6.8)	200 (45)	8.6 (3.4)	8.64 (0.340)	85 (57)
S611T-08-xyy	8	600 (135)	20.0 (7.8)	200 (45)	10.0 (3.9)	10.01 (0.394)	100 (67)
S611T-10-xyy	10	600 (135)	22.4 (8.8)	200 (45)	11.2 (4.4)	11.23 (0.442)	127 (85)
S611T-12-xyy	12	600 (135)	25.0 (9.8)	200 (45)	12.5 (4.9)	12.47 (0.491)	158 (106)
S611T-16-xyy	16	2700 (600)	25.2 (10.0)	600 (135)	12.6 (5.0)	12.62 (0.497)	161 (108)
S611T-18-xyy	18	2700 (600)	25.2 (10.0)	600 (135)	12.6 (5.0)	12.62 (0.497)	159 (107)
S611T-24-xyy	24	2700 (600)	29.3 (11.6)	600 (135)	14.7 (5.8)	14.66 (0.577)	204 (137)
S611T-36-xyy	36	2700 (600)	34.0 (13.4)	600 (135)	17.0 (6.7)	17.02 (0.670)	260 (175)
S611T-48-xyy	48	2700 (600)	42.7 (16.8)	600 (135)	21.4 (8.4)	21.36 (0.841)	350 (235)

Replace the xyy with the Fiber Designation in the fiber performance table below. NOTE: Fibers are not suitable for F07 crimp and cleave connector. Information is subject to change without notice. Consult factory for a variety of alternate constructions for specific applications

FIBER PERFORMANCE

	62.5µm MULTIMODE	50µm MULTIMODE	200µm MULTIMODE	8.3µm SINGLE-MODE
Fiber Designation	62X	50H	200S	010X
Applicable Specification	IEC 60793-10 Type A1b	ITU G.651 & IEC 60793-10 Type A1a.1	ITU G.651 & IEC 60793-10 Type A1a	
Fiber Type	Graded Index	Graded Index	Step Index	Matched Clad
Core Diameter	62.5µm ±2.5µm	50µm ±2.5µm	200µm ±5µm	8.3µm Nominal
Cladding Diameter	125µm ±1µm	125µm ±1µm	230µm ±10µm	125µm ±7µm
Coating Diameter	242µm ±7µm	242µm ±5µm	500µm ±30µm	242µm ±1µm
Buffer Diameter	900µm ±50µm	900µm ±50µm	900µm ±50µm	900µm ±50µm
Numerical Aperture	0.275 ±0.015	0.200 ±0.015	.037 Nominal (2m 5% intensity)	n/a
Mode Field Diameter	n/a	n/a	n/a	9.0µm ±0.4µm
Attenuation	≤ 3.5 dB/Km @ 850nm ≤ 1.5 dB/Km @ 1300nm	≤ 3.5 dB/Km @ 850nm ≤ 1.5 dB/Km @ 1300nm	≤ 12.0 dB/Km @ 820nm	≤ 0.70 dB/Km @ 1310nm ≤ 0.70 dB/Km @ 1550nm
Bandwidth	≥ 200 MHz/Km @ 850nm ≥ 500 MHz/Km @ 1300nm	≥ 500 MHz/Km @ 850nm ≥ 500 MHz/Km @ 1300nm	≥ 20 MHz/Km @ 820nm	n/a n/a
Dispersion	n/a n/a	n/a n/a	n/a n/a	≤ 3.0 ps/nm-Km @ 1285-1330nm ≤ 18 ps/nm-Km @ 1550nm
Proof Test	100,000 psi	100,000 psi	100,000 psi	100,000 psi

CABLE PROPERTIES

Crush (IEC 60794-1-E3) 3000 N/ 10 cm
Impact (IEC 60794-1-E4) 20 impacts, 5J
Torsion (IEC 60794-1-E7) + 1 turn / 2 m, 100 cycles
Cable Bend (IEC 60794-1-E11) <0.1 dB/ + 6 turns

TEMPERATURE RANGE

Operation: -20°C to +80°C
Installation: -10°C to +60°C
Storage: -40°C to +80°C

FIRE, SMOKE, AND TOXICITY CLASSIFICATIONS

Flame retardant: IEC 60332-3, CAT.A CAT A/F and IEEE 1202
Smoke density: IEC 61034-1 and IEC 61034-2
Acid gas penetration: IEC 60754-1 and IEC 60754-2
Toxicity: NES 713

S670T Armored and Sheathed Marine Fiber Optic Cable

2 to 48 fibers / single-mode or multimode / LSZH / armored and sheathed



Applications

The Draka S670T series of marine shipboard armored fiber optic cables are designed especially for the harsh environments of commercial marine vessels, offshore oil platforms, drilling rigs, and other similar applications.

Draka S670T low smoke/zero halogen, flame retardant cables offer versatility and ease of installation in a construction suited for marine applications. They are compliant with the latest IEC requirements.

S670T cables meet the requirements of IEC 60793-1 and IEC 60792-2 specifications, are encapsulated in all dielectric, tight buffered construction, individually reinforced with aramid yarns and jacketed (breakout style). The breakout components are cabled around a central member providing additional tensile strength to the entire construction. The thermoplastic low smoke/zero halogen double jacketing system under and over the marine grade bronze braided armor offers excellent resistance to chemicals, fluids, fungus, and abrasion.

Features/Ratings

- Low smoke/zero halogen construction meets appropriate IEEE and IEC standards for fire, smoke, and toxicity
- Superior resistance to oil, abrasion, moisture, sunlight, mud, crush and impact
- Gigabit Ethernet 802.3Z compliant
- Armored and sheathed construction offers additional mechanical & environmental protection

Approvals

Meets IEC60794-1-1, 60794-1-2 and 60794-2

Meets IEEE 45 and IEEE 1580

Det Norske Veritas (DNV)

American Bureau of Shipping (ABS)

Lloyd's Register of Shipping (LRS)

Flame retardant per IEC 60332-3 CAT. A/F and IEEE 1202

Smoke density requirements of IEC 61034-1 and 61034-2

Acid gas generation requirements of IEC 60754-1 & 60754-2

Toxicity requirements of NES 713

Meets the performance requirements of IEEE 802.3z (Gigabit Ethernet)

Construction

CENTRAL STRENGTH MEMBER: Dielectric material (epoxy fiberglass rod).

FIBER: Multimode or singlemode fibers with an easily-strippable 900µm tight buffering colored per TIA/EIA 598.

SUBUNIT STRENGTH MEMBER: Aramid yarn

SUBUNIT JACKET: 2.0mm ChromaTek-L™ Halex low smoke zero halogen polyolefin.

JACKET: ChromaTek-L™ Halex low smoke zero halogen polyolefin.

ARMOR: Braided bronze in accordance with IEEE 1580 (2010)

SHEATH: ChromaTek-L™ Halex low smoke zero halogen polyolefin.



Marine

S670T Armored and Sheathed Marine Fiber Optic Cable

2 to 48 fibers / single-mode or multimode / LSZH / armored and sheathed

Draka usa Part Number	Number of Fibers	INSTALLATION		OPERATING		Cable Outside Diameter	Approximate Cable Weight
		Pull Strength Newtons (lbs)	Bend Radius cm (in)	Tension Newtons (lbs)	Bend Radius cm (in)	mm (in)	Kg/Km (Lbs/Mft)
S670T-02R-xyy	2	600 (135)	22.4 (8.8)	200 (45)	11.2 (4.4)	11.23 (.442)	204 (137)
S670T-04-xyy	4	600 (135)	25.0 (9.8)	200 (45)	12.5 (4.9)	12.45 (.490)	210 (141)
S670T-06-xyy	6	600 (135)	25.6 (10.2)	200 (45)	12.8 (5.1)	12.83 (.505)	238 (160)
S670T-08-xyy	8	600 (135)	28.5 (11.2)	200 (45)	14.3 (5.6)	14.32 (.564)	287 (193)
S670T-10-xyy	10	600 (135)	31.4 (12.4)	200 (45)	15.7 (6.2)	15.65 (.616)	345 (232)
S670T-12-xyy	12	600 (135)	33.8 (13.4)	200 (45)	16.9 (6.7)	16.92 (.666)	400 (268)
S670T-16-xyy	16	2700 (600)	33.8 (13.4)	600 (135)	16.9 (6.7)	16.92 (.666)	393 (264)
S670T-18-xyy	18	2700 (600)	33.8 (13.4)	600 (135)	16.9 (6.7)	16.92 (.666)	391 (263)
S670T-24-xyy	24	2700 (600)	39.0 (15.4)	600 (135)	19.5 (7.7)	19.51 (.768)	472 (317)
S670T-36-xyy	36	2700 (600)	44.7 (17.6)	600 (135)	22.4 (8.8)	22.35 (.880)	595 (400)
S670T-48-xyy	48	2700 (600)	57.8 (22.8)	600 (135)	28.9 (11.4)	28.91 (1.138)	954 (641)

Replace the xyy with the Fiber Designation in the fiber performance table below. NOTE: Fibers are not suitable for F07 crimp and cleave connector. Information is subject to change without notice. Consult factory for a variety of alternate constructions for specific applications.

FIBER PERFORMANCE

	62.5µm MULTIMODE	50µm MULTIMODE	200µm MULTIMODE	8.3µm SINGLE-MODE
Fiber Designation	62X	50H	200S	010X
Applicable Specification	IEC 60793-10 Type A1b	ITU G.651.1 & IEC 60793-10 Type A1a.1	ITU G.651 & IEC 60793-2 Type A1a	
Fiber Type	Graded Index	Graded Index	Step Index	Matched Clad
Core Diameter	62.5µm ±2.5µm	50µm ±2.5µm	200µm ±5µm	8.3µm Nominal
Cladding Diameter	125µm ±1µm	125µm ±1µm	230µm ±10µm	125µm ±1µm
Coating Diameter	242µm ±7µm	242µm ±7µm	500µm ±30µm	242µm ±7µm
Buffer Diameter	900µm ±50µm	50µm ±2.5µm	900µm ±50µm	900µm ±50µm
Numerical Aperture	0.275 ±0.015	0.200 ±0.015	.037 Nominal (2m 5% intensity)	n/a
Mode Field Diameter	n/a	n/a	n/a	9.1µm ±0.4µm
Attenuation	≤ 3.5 dB/Km @ 850nm ≤ 1.0 dB/Km @ 1300nm	≤ 3.5 dB/Km @ 850nm ≤ 1.0 dB/Km @ 1300nm	≤ 12.0 dB/Km @ 820nm	≤ 0.70 dB/Km @ 1310nm ≤ 0.70 dB/Km @ 1550nm
Bandwidth	≥ 200 MHz/Km @ 850nm ≥ 500 MHz/Km @ 1300nm	≥ 500 MHz/Km @ 850nm ≥ 500 MHz/Km @ 1300nm	≥ 20 MHz/Km @ 820nm	n/a n/a
Dispersion	n/a n/a	n/a n/a	n/a n/a	≤ 3.0 ps/nm-Km @ 1285-1330nm ≤ 18 ps/nm-Km @ 1550nm
Proof Test	100,000 psi	100,000 psi	100,000 psi	100,000 psi

CABLE PROPERTIES

Crush (IEC 60794-1-E3) 3000 N/ 10 cm
Impact (IEC 60794-1-E4) 20 impacts, 5J
Torsion (IEC 60794-1-E7) + 1 turn / 2 m, 100 cycles
Cable Bend (IEC 60794-1-E11) <0.1 dB/ + 6 turns

TEMPERATURE RANGE

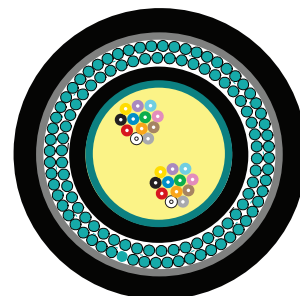
Operation: -20°C to +80°C
Installation: -10°C to +60°C
Storage: -40°C to +80°C

FIRE, SMOKE, AND TOXICITY CLASSIFICATIONS

Flame retardant: IEC 60332-3, CAT. A CAT A/F and IEEE 1202
Smoke density: IEC 61034-1 and IEC 61034-2
Acid gas penetration: IEC 60754-1 and IEC 60754-2
Toxicity: NES 713

Subaqua Optical Cable (MEWYE) 12/13 kN

1500m Depth | 12-13 kN Tensile Strength



Overview

Subaqua – shallow water up to 1500m depth - cable with - unrepeated - cable sections.

The cable construction (fibers hermetically sealed in welded steel tube) provides for installations in fresh & salt water environment like:

- River & lake crossings, canal & river bedding routes
- Coastal routes.

Construction

FIBER IDENTIFICATION: Every fiber in a tube is uniquely identified by a different color. For fiber counts above 12 fibers, a colored bundle yarn is used.

STEEL TUBE: Consists of laser welded hermetically sealed stainless steel. The tube is filled with water repellent filling compound.

INNER SHEATH: HDPE (Black).

ARMOR: Two layers of galvanized soft steel wires. Under, between and over the wires a layer of bitumen is applied.

OUTER SHEATH: HDPE (Black).

Number of Fibers (pcs)	Number of Fibers Per Group (pcs)	Steel Tube Size (mm)	Inner Sheath Thickness (mm)	Armor Steel Wire Thickness (mm)	Outer Sheath Thickness (mm)	Diameter Over Inner Sheath (mm)	Diameter Over Armor (mm)	Cable Diameter (mm)	Cable Weight (kg/km)
12	1 x 12	3.4 / 3.8	1.5	1.0	2.0	6.8	11.2	15.2	500
24	2 x 12	3.4 / 3.8	1.5	1.0	2.0	6.8	11.2	15.2	500
36	3 x 12	3.4 / 3.8	1.5	1.0	2.0	6.8	11.2	15.2	500
48	4 x 12	3.4 / 3.8	1.5	1.0	2.0	6.8	11.2	15.2	500
60	5 x 12	4.6 / 5.1	1.5	1.0	2.0	8.1	12.5	16.5	595
72	6 x 12	4.6 / 5.1	1.5	1.0	2.0	8.1	12.5	16.5	595
96	8 x 12	4.6 / 5.1	1.5	1.0	2.0	8.1	12.5	16.5	595
Tensile Performance									
Nominal Permanent Tensile Strength (kN)				12-48 Fiber		7.5	60-96 Fiber		8.5
Nominal Operating Tensile Strength (kN)				12-48 Fiber		12	60-96 Fiber		13
Nominal Transient Tensile Strength (kN)				12-48 Fiber		16	60-96 Fiber		17
Ultimate Tensile Strength (kN) (Cable and Fiber Breaking Load)				12-48 Fiber		21	60-96 Fiber		24

Subaqua

Subaqua Optical Cable (MEWYE) 12/13 kN

1500m Depth | 12-13 kN Tensile Strength

MAIN CHARACTERISTICS

Test	Standard	Specified Value	Acceptance Criteria*
Tensile performance	IEC 60794-1-2-E1	See table above	≤ reversible, no fiber strain
Crush	IEC 60794-1-2-E3	10 kN / 100 mm	≤ 0.05 dB
Impact	IEC 60794-1-2-E4	100 Nm, R= 250 mm, 3 spots	≤ 0.05 dB
Torsion	IEC 60794-1-2-E7	L= 100 x D, ±180°	≤ 0.05 dB
Repeated bending	IEC 60794-1-2-E6	R=25x D	≤ 0.05 dB
Cable bend	IEC 60794-1-2-E11	R=20x D	≤ 0.05 dB
Water penetration	IEC 60794-1-2-F5B	sample = 3m, water column = 1m	no water leakage in 24h
Hydrostatic pressure	IEC 60794-1-2-F10	150 bar (calculated value)	≤ 0.05 dB
Heat & oil resistancy	IEC 60811	IRM902 ; 4 hrs, 70°C	
* values for single-mode fibers, all optical measurements performed at 1550 nm			
Min. Bending Radius (mm)		Without Tension 20 x Cable-Ø	Under Maximum Tension 25 x Cable-Ø
Temperature Range (°C)		Installation -10 to +50	Transport. & Storage -40 to +70
			Operation -30 to +70

Packing

Wooden drums with protection

Delivery Lengths

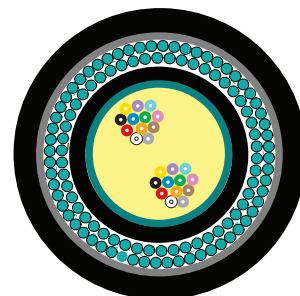
Standard delivery lengths are 4 km. with a tolerance of - 1% / + 3%
Max. delivery length is 12 km on a drum with 2.8m flanges

ORDER INFORMATION / PART NUMBERS

Fiber count	12	24	36	48	60	72	96
Fiber type	SM (G.652.D)						
Fiber datasheet	C03e						
Draka local nr.	18602770	18602771	18602772	18602773	18604885	18602774	18602775
Draka SAP nr.	18602770	18602771	18602772	18602773	18604885	18602774	18602775

Subaqua Optical Cable (MEWYE) 16/18 kN

1500m Depth | 16-18 kN Tensile Strength



Overview

Subaqua – shallow water up to 1500m depth - cable with - unrepeated - cable sections.

The cable construction (fibers hermetically sealed in welded steel tube) provides for installations in fresh & salt water environment like:

- River & lake crossings, canal & river bedding routes
- Coastal routes.

Construction

FIBER IDENTIFICATION: Every fiber in a tube is uniquely identified by a different color. For fiber counts above 12 fibers, a colored bundle yarn is used.

STEEL TUBE: Consists of laser welded hermetically sealed stainless steel. The tube is filled with water repellent filling compound.

INNER SHEATH: HDPE (Black).

ARMOR: Two layers of galvanized soft steel wires. Under, between and over the wires a layer of bitumen is applied.

OUTER SHEATH: HDPE (Black).

Number of Fibers (pcs)	Number of Fibers Per Group (pcs)	Steel Tube Size (mm)	Inner Sheath Thickness (mm)	Armor Steel Wire Thickness (mm)	Outer Sheath Thickness (mm)	Diameter Over Inner Sheath (mm)	Diameter Over Armor (mm)	Cable Diameter (mm)	Cable Weight (kg/km)
12	1 x 12	3.4 / 3.8	1.5	1.4	2.0	6.8	12.8	16.8	685
24	2 x 12	3.4 / 3.8	1.5	1.4	2.0	6.8	12.8	16.8	685
36	3 x 12	3.4 / 3.8	1.5	1.4	2.0	6.8	12.8	16.8	685
48	4 x 12	3.4 / 3.8	1.5	1.4	2.0	6.8	12.8	16.8	685
60	5 x 12	4.6 / 5.1	1.5	1.4	2.0	8.1	14.1	18.1	800
72	6 x 12	4.6 / 5.1	1.5	1.4	2.0	8.1	14.1	18.1	800
96	8 x 12	4.6 / 5.1	1.5	1.4	2.0	8.1	14.1	18.1	800

Tensile Performance

Nominal Permanent Tensile Strength (kN)	12-48 Fiber	11	60-96 Fiber	13
Nominal Operating Tensile Strength (kN)	12-48 Fiber	16	60-96 Fiber	18
Nominal Transient Tensile Strength (kN)	12-48 Fiber	21	60-96 Fiber	23
Ultimate Tensile Strength (kN) (Cable and Fiber Breaking Load)	12-48 Fiber	31	60-96 Fiber	36

Subaqua

Subaqua Optical Cable (MEWYE) 16/18 kN

1500m Depth | 16-18 kN Tensile Strength

MAIN CHARACTERISTICS

Test	Standard	Specified Value	Acceptance Criteria*
Tensile performance	IEC 60794-1-2-E1	See table above	
Crush	IEC 60794-1-2-E3	10 kN / 100 mm	≤ 0.05 dB
Impact	IEC 60794-1-2-E4	100 Nm, R= 250 mm, 3 spots	≤ 0.05 dB
Torsion	IEC 60794-1-2-E7	L= 100 x D, ±180°	≤ 0.05 dB
Repeated bending	IEC 60794-1-2-E6	R=25x D	≤ 0.05 dB
Cable bend	IEC 60794-1-2-E11	R=20x D	≤ 0.05 dB
Water penetration	IEC 60794-1-2-F5B	sample = 3m, water column = 1m	no water leakage in 24h
Hydrostatic pressure	IEC 60794-1-2-F10	150 bar (calculated value)	≤ 0.05 dB
* values for single-mode fibers, all optical measurements performed at 1550 nm			
Min. Bending Radius (mm)		Without Tension 20 x Cable-Ø	Under Maximum Tension 25 x Cable-Ø
Temperature Range (°C)		Installation -10 to +50	Transport. & Storage -40 to +70
			Operation -30 to +70

Packing

Wooden drums with protection

Delivery Lengths

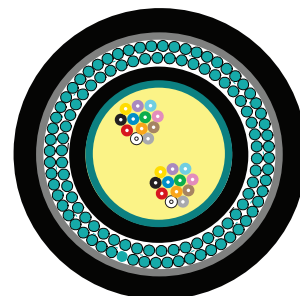
Standard delivery lengths are 4 km. with a tolerance of - 1% / + 3%
Max. delivery length is 12 km on a drum with 2.8m flanges

ORDER INFORMATION / PART NUMBERS

Fiber count	12	24	36	48	60	72	96
Fiber type	SM (G.652.D)						
Fiber datasheet	C03e						
Draka local nr.	18602776	18602777	18602778	18602779	18604886	18602780	18602781
Draka SAP nr.	60032169	60032170	60023171	60032172	60032181	60032173	60032174

Subaqua Optical Cable (MEWYE) 21/24 kN

1500m Depth | 21-24 kN Tensile Strength



Overview

Subaqua – shallow water up to 1500m depth - cable with - unrepeated - cable sections.

The cable construction (fibers hermetically sealed in welded steel tube) provides for installations in fresh & salt water environment like:

- River & lake crossings, canal & river bedding routes
- Coastal routes.

Construction

FIBER IDENTIFICATION: Every fiber in a tube is uniquely identified by a different color. For fiber counts above 12 fibers grouping with bundle yarns.

STEEL TUBE: Consists of laser welded hermetically sealed stainless steel. The tube is filled with water repellent filling compound.

INNER SHEATH: HDPE (Black).

ARMOR: Two layers of galvanized soft steel wires. Under, between and over the wires a layer of bitumen is applied.

OUTER SHEATH: HDPE (Black).

Number of Fibers (pcs)	Number of Fibers Per Group (pcs)	Steel Tube Size (mm)	Inner Sheath Thickness (mm)	Armor Steel Wire Thickness (mm)	Outer Sheath Thickness (mm)	Diameter Over Inner Sheath (mm)	Diameter Over Armor (mm)	Cable Diameter (mm)	Cable Weight (kg/km)
12	1 x 12	3.4 / 3.8	1.5	1.8	2.0	6.8	14.4	18.4	900
24	2 x 12	3.4 / 3.8	1.5	1.8	2.0	6.8	14.4	18.4	900
36	3 x 12	3.4 / 3.8	1.5	1.8	2.0	6.8	14.4	18.4	900
48	4 x 12	3.4 / 3.8	1.5	1.8	2.0	6.8	14.4	18.4	900
60	5 x 12	4.6 / 5.1	1.5	1.8	2.0	8.1	15.7	19.7	1020
72	6 x 12	4.6 / 5.1	1.5	1.8	2.0	8.1	15.7	19.7	1020
96	8 x 12	4.6 / 5.1	1.5	1.8	2.0	8.1	15.7	19.7	1020

Tensile Performance				
Nominal Permanent Tensile Strength (kN)	12-48 Fiber	15	60-96 Fiber	17
Nominal Operating Tensile Strength (kN)	12-48 Fiber	21	60-96 Fiber	24
Nominal Transient Tensile Strength (kN)	12-48 Fiber	27	60-96 Fiber	30
Ultimate Tensile Strength (kN) (Cable and Fiber Breaking Load)	12-48 Fiber	44	60-96 Fiber	49

Subaqua

Subaqua Optical Cable (MEWYE) 21/24 kN

1500m Depth | 21-24 kN Tensile Strength

MAIN CHARACTERISTICS

Test	Standard	Specified Value	Acceptance Criteria*
Tensile performance	IEC 60794-1-2-E1	See table above	
Crush	IEC 60794-1-2-E3	10 kN / 100 mm	≤ 0.05 dB
Impact	IEC 60794-1-2-E4	100 Nm, R = 250 mm, 3 spots	≤ 0.05 dB
Torsion	IEC 60794-1-2-E7	L = 100 x D, $\pm 180^\circ$	≤ 0.05 dB
Repeated bending	IEC 60794-1-2-E6	R = 25x D	≤ 0.05 dB
Cable bend	IEC 60794-1-2-E11	R = 20x D	≤ 0.05 dB
Water penetration	IEC 60794-1-2-F5B	sample = 3m, water column = 1m	no water leakage in 24h
Hydrostatic pressure	IEC 60794-1-2-F10	150 bar (calculated value)	≤ 0.05 dB
* values for single-mode fibers, all optical measurements performed at 1550 nm			
Min. Bending Radius (mm)		Without Tension 20 x Cable-Ø	Under Maximum Tension 25 x Cable-Ø
Temperature Range (°C)		Installation -10 to +50	Transport. & Storage -40 to +70
			Operation -30 to +70

Packing

Wooden drums with protection

Delivery Lengths

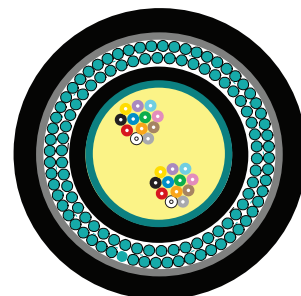
Standard delivery lengths are 4 km. with a tolerance of - 1% / + 3%
Max. delivery length is 12 km on a drum with 2.8m flanges

ORDER INFORMATION / PART NUMBERS

Fiber count	12	24	36	48	60	72	96
Fiber type	SM (G.652.D)						
Fiber datasheet	C03e						
Draka local nr.	18602782	18602783	18602784	18602785	18604887	18602786	18602787
Draka SAP nr.	60023644	60023645	60023646	60024403	60032182	60023647	60023648

Subaqua Optical Cable (MEWYE) 32/36 kN

1500m deth | 32-36 kN Tensile Strength



Overview

Subaqua – shallow water up to 1500m depth - cable with - unrepeated - cable sections.

The cable construction (fibers hermetically sealed in welded steel tube) provides for installations in fresh & salt water environment like:

- River & lake crossings, canal & river bedding routes
- Coastal routes.

Construction

FIBER IDENTIFICATION: Every fiber in a tube is uniquely identified by a different color. For fiber counts above 12 fibers, a colored bundle yarn is used.

STEEL TUBE: Consists of laser welded hermetically sealed stainless steel. The tube is filled with water repellent filling compound.

INNER SHEATH: HDPE (Black).

ARMOR: Two layers of galvanized soft steel wires. Under, between and over the wires a layer of bitumen is applied.

OUTER SHEATH: HDPE (Black).

Number of Fibers (pcs)	Number of Fibers Per Group (pcs)	Steel Tube Size (mm)	Inner Sheath Thickness (mm)	Armor Steel Wire Thickness (mm)	Outer Sheath Thickness (mm)	Diameter Over Inner Sheath (mm)	Diameter Over Armor (mm)	Cable Diameter (mm)	Cable Weight (kg/km)
12	1 x 12	3.4 / 3.8	1.5	2.2	2.0	6.8	16.0	20.0	1135
24	2 x 12	3.4 / 3.8	1.5	2.2	2.0	6.8	16.0	20.0	1135
36	3 x 12	3.4 / 3.8	1.5	2.2	2.0	6.8	16.0	20.0	1135
48	4 x 12	3.4 / 3.8	1.5	2.2	2.0	6.8	16.0	20.0	1135
60	5 x 12	4.6 / 5.1	1.5	2.2	2.0	8.1	17.3	21.3	1290
72	6 x 12	4.6 / 5.1	1.5	2.2	2.0	8.1	17.3	21.3	1290
96	8 x 12	4.6 / 5.1	1.5	2.2	2.0	8.1	17.3	21.3	1290
Tensile Performance									
Nominal Permanent Tensile Strength (kN)				12-48 Fiber		20	60-96 Fiber		23
Nominal Operating Tensile Strength (kN)				12-48 Fiber		32	60-96 Fiber		36
Nominal Transient Tensile Strength (kN)				12-48 Fiber		39	60-96 Fiber		44
Ultimate Tensile Strength (kN) (Cable and Fiber Breaking Load)				12-48 Fiber		58	60-96 Fiber		66

Subaqua

Subaqua Optical Cable (MEWYE) 32/36 kN

1500m Depth | 32-36 kN Tensile Strength

MAIN CHARACTERISTICS

Test	Standard	Specified Value	Acceptance Criteria*
Tensile performance	IEC 60794-1-2-E1	See table above	
Crush	IEC 60794-1-2-E3	10 kN / 100 mm	≤ 0.05 dB
Impact	IEC 60794-1-2-E4	100 Nm, R= 250 mm, 3 spots	≤ 0.05 dB
Torsion	IEC 60794-1-2-E7	L= 100 x D, $\pm 180^\circ$	≤ 0.05 dB
Repeated bending	IEC 60794-1-2-E6	R=25x D	≤ 0.05 dB
Cable bend	IEC 60794-1-2-E11	R=20x D	≤ 0.05 dB
Water penetration	IEC 60794-1-2-F5B	sample = 3m, water column = 1m	no water leakage in 24h
Hydrostatic pressure	IEC 60794-1-2-F10	150 bar (calculated value)	≤ 0.05 dB
* values for single-mode fibers, all optical measurements performed at 1550 nm			
Min. Bending Radius (mm)		Without Tension 20 x Cable-Ø	Under Maximum Tension 25 x Cable-Ø
Temperature Range (°C)		Installation -10 to +50	Transport. & Storage -40 to +70
			Operation -30 to +70

Packing

Wooden drums with protection

Delivery Lengths

Standard delivery lengths are 4 km. with a tolerance of - 1% / + 3%
Max. delivery length is 12 km on a drum with 2.8m flanges

ORDER INFORMATION / PART NUMBERS

Fiber count	12	24	36	48	60	72	96
Fiber type	SM (G.652.D)						
Fiber datasheet	C03e						
Draka local nr.	18602788	18602789	18602790	18602791	18604888	18602792	18602793
Draka SAP nr.	60032175	60032176	60032177	60024404	60032183	60032178	60032179

Fire Resistant

Fiber Optic Cables



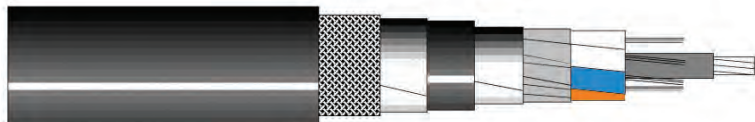
Fire Resistant

Fiber Optic Cables



Fire Resistant QFCI/O/RM-JM/-F1 EIA/TIA 598

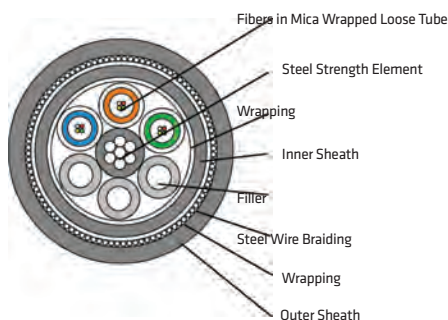
Indoor and outdoor, fire resistant, flame retardant halogen-free loose tube | QFCI/O/RM-JM/- NEK 606 Code F1



Applications

Optical cable for indoor and outdoor use in vital communication and emergency systems that need to be operational during fire. The cable has a patented design that ensures operation for more than 3 hours in fires up to 1000°C. The cable is halogen free and flame retardant to protect against secondary damage to electronic equipment during and after fire. Outer sheath is made from black UV-stabilized and weather resistant material and may be exposed for shorter periods to fluids such as diesel, petrol, glycol, ethanol, white spirit and ASTM oil 2.

The resistance to these fluids is according to DOD-STD-1678, method 8030. The cable is reinforced with a steel wire braiding. The fibers are protected in gel-filled loose tubes stranded around a central strength member to ensure optimum performance and long life. Each fiber and loose tube is color coded for easy identification during splicing and termination. The outer sheath is marked to show fiber type and cable type.



Cable Properties

- **Tensile strength** (IEC 60794-1-2E1)

Max tensile load during installation	1500 N
Max tensile load during operation	500 N
- **Color Coding** (TIA/EIA-455-598C)
- **Crush** (IEC 60794-1-2E3) 3000 N/10cm
- **Impact** (IEC 60794-1-2E4) 20 impacts, 5J
- **Torsion** (IEC 60794-1-2E7) ± 1 turn/1m
- **Cable bending**

Minimum bending diameter	250 mm
Cable bend (IEC 60794-1-2E11)	< 0.1dB/ ±5 turn
- **Temperature window**

Operation	-30°C to +60°C
Installation	-10°C to +60°C
Storage	-40°C to +70°C
- **Chemical resistance**

Mineral oils IRM 902 (IEC60811-2-1)	- 7 days/23°C - 4 hours/70°C
Diesel - IRM 903 (IEC60811-2-1)	- 7 days/23°C - 4 hours/70°C
- **Fire and smoke classifications**

IEC 60331-25 (750°C, 3 hours)	<1 dB excess loss
Upgraded IEC 60331-25 (1000°C, 3 hours)	<1.5 dB excess loss
BP-236	
IEC 61034	
IEC 60332-3 cat. A and C	
IEC 60754-1	
IEC 60754-2	

Fire Resistant

Fire Resistant QFCI/O/RM-JM/-F1 EIA/TIA 598

Indoor and Outdoor, fire resistant, flame retardant halogen-free loose tube | QFCI/O/RM-JM/- NEK 606 Code F1

Fiber Type	9/125 ITU-T G652.D	50/125 OM2	62.5/125 OM1
Core Diameter	8.3 μm (typical)	50 \pm 2.5 μm	62.5 \pm 2.5 μm
Mode Field Diameter	1310 nm 9.0 \pm 0.4 μm 1550 nm 10.1 \pm 0.5 μm	n/a	n/a
Cladding Diameter	125 \pm 0.7 μm	125 \pm 1.0 μm	125 \pm 1.0 μm
Primary Coating Diameter	242 \pm 7 μm	242 \pm 5 μm	242 \pm 5 μm
Attenuation of Finished Cable			
850 nm	n/a	\leq 3.5 dB/km	\leq 3.0 dB/km
1300 nm	n/a	\leq 1.5 dB/km	\leq 1.0 dB/km
1310 nm	\leq 0.40 dB/km	n/a	n/a
1550 nm	\leq 0.30 dB/km	n/a	n/a
Bandwidth			
850 nm	n/a	> 500 MHz \cdot km	>200 MHz \cdot km
1300 nm	n/a	> 500 MHz \cdot km	>500 MHz \cdot km
Dispersion			
1285-1330 nm	< 3.0 ps/nm \cdot km	n/a	n/a
1550 nm	< 18 ps/nm \cdot km	n/a	n/a
Numerical Aperture	0.13 (typical)	0.200 \pm 0.015	0.275 \pm 0.015
Minimum Permanent			
Bending Diameter	25 mm	75 mm	75 mm

Other fiber types and qualities are available on request.

Ordering Information

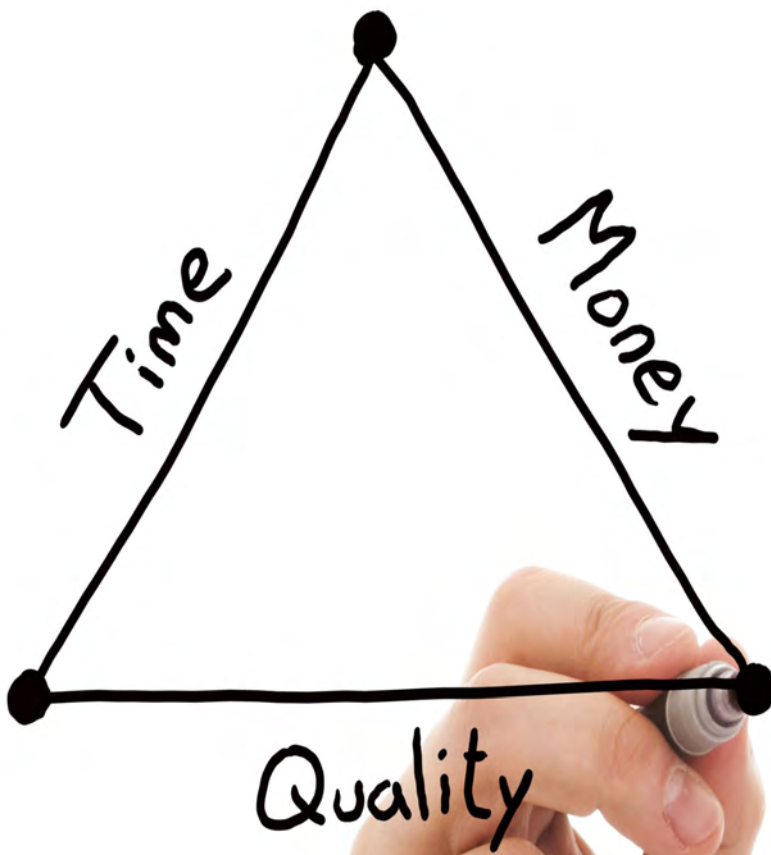
Fiber Count	Single Mode Fiber	50/125 Fiber	62.5/125 Fiber
	Part Number	Part Number	Part Number
2	QFCI2-02R-010X	QFCI2-02R-50H	QFCI2-02R-62X
4	QFCI4-04-010X	QFCI4-04-50H	QFCI4-04-62X
6	QFCI6-06-010X	QFCI6-06-50H	QFCI6-06-62X
8	QFCI4-08-010X	QFCI4-08-50H	QFCI4-08-62X
10	QFCI2-10-010X	QFCI2-10-50H	QFCI2-10-62X
12	QFCI6-12-010X	QFCI6-12-50H	QFCI6-12-62X
16	QFCI4-16-010X	QFCI4-16-50H	QFCI4-16-62X
20	QFCI4-20-010X	QFCI4-20-50H	QFCI4-20-62X
24	QFCI6-24-010X	QFCI6-24-50H	QFCI6-24-62X
32	QFCI8-32-010X	QFCI8-32-50H	QFCI8-32-62X
40	QFCI8-40-010X	QFCI8-40-50H	QFCI8-40-62X
48	QFCI8-48-010X	QFCI8-48-50H	QFCI8-48-62X

Number of Fibers	Number of Fibers in Each Tube	Number of Tubes + Fillers	Loose Tube Diameter (mm)	Outer Diameter (mm)	Weight (kg/km)	Heat Release (MJ/km)
2	2	1+5	2.2	14.3	307	1390
4	4	1+5	2.2	14.3	307	1390
6	6	1+5	2.2	14.3	307	1325
8	4	2+4	2.2	14.3	307	1381
10	2	5+1	2.2	14.3	307	1201
12	6	2+4	2.2	14.3	307	1324
16	4	4+2	2.2	14.3	307	1264
20	4	5+1	2.2	14.3	307	1201
24	6	4+2	2.2	14.3	307	1138
32	8	4+2	2.2	14.3	307	1264
40	8	5+1	2.2	14.3	307	1201
48	8	6+0	2.2	14.3	307	1138

Optional features include jacketed constructions: 1) Crosslinked polyethylene (XLPE) insulation with a PVC jacket, and 2) Ethylene propylene rubber (EPR) insulation with a CPE jacket.

The data herein is approximate and subject to normal manufacturing tolerances. Other fiber counts are available on request.

Additional Resources



Fiber Codes

Fiber Code Addendum

ADDITIONAL FIBER CODES FOR USE WHEN ORDERING PRYSMIAN CABLES

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described below

FIBER INFORMATION

5 FIBER TYPE

SINGLE-MODE

HB = Single-Mode (ITU G.652 C & D) Low Water Peak
ES = Enhanced Single-Mode (ITU G.652 C & D)
CE = Single-Mode Corning™ SMF28e+
SC = Single-Mode (ITU G.652 C & D)
B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D)
B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & G.652.D)
B3 = Bend-Insensitive Single-Mode (ITU G.657.B3 & G.652.D)
BB = BendBright™ Single-Mode (ITU G.657.A1 & G.652.D)
CU = Corning™ Ultra Single-Mode (ITU G.657.A1 & G.652.D)
BX = BendBrightXS™ Single-Mode (ITU G.657.A2 & .B2 & G.652.D)
BE = BendBright™ Elite Single-Mode (ITU G.657.B3 & G.652.D)
CY = ClearCurve® LBL (ITU G.657.A2 & G.652.D)
CZ = ClearCurve® ZBL (ITU G.657.B3 & G.652.D)
TU = TeraLight™ Ultra Single-Mode (ITU G.655 & G.656)
LE = LEAF NZDSF (ITU.G655)

MULTIMODE	Wavelength (nm)	Bandwidth (MHz)	1 GbE Dist (m)	10 GbE Dist (m)
G6 = OM1 (62.5µm)	850/1300	200/500	300/500	--/--
C1 = OM1 Infincore (62.5µm)	850/1300	200/500	300/500	--/--
6S = OM1 Draka (62.5µm)	850/1300	200/500	300/550	33/--
G5 = OM2 (50µm) BIF	850/1300	700/500	750/---	150/---
G3 = OM3 (50µm) BIF	850/1300	1500/500	1000/---	300/---
G4 = OM4 (50µm) BIF	850/1300	3500/500	1100/---	550/---
C2 = OM2 ClearCurve™ (50µm)	850/1300	700/500	750/---	150/---
C3 = OM3 ClearCurve™ (50µm)	850/1300	1500/500	1000/---	300/---
C4 = OM4 ClearCurve™ (50µm)	850/1300	3500/500	1100/---	550/---
5E = MaxCap-BB-OM2+ (50µm)	850/1300	700/500	800/550	150/---
5F = MaxCap-BB-OM3 (50µm)	850/1300	1500/500	1000/550	300/---
5G = MaxCap-BB-OM4 (50µm)	850/1300	3500/500	1100/550	550/---

7 FIBER GRADE

SINGLE-MODE Attenuation (dB/km)	Wavelength (nm)*	Fiber Type
E1 = 0.40/0.40/0.30	1310/1383/1550	All but TU & LE
E3 = 0.35/0.35/0.25	1310/1383/1550	All but TU & LE
NA = 0.40/0.25	1310/1550	TU
N1 = 0.25	1550	TU or LE
EB = 0.7/0.7/0.7 for tight buffer products	1310/1383/1550	All but TU & LE
EA = 0.5/0.5/0.5 for tight buffer products or IC ribbon	1310/1383/1550	All but TU & LE
E7 = 0.4/0.4/0.3 for tight buffer products	1310/1383/1550	B2, BX, CY, B3, BE, or CZ
MULTIMODE Attenuation (dB/km)	Wavelength (nm)	Fiber Type
M2 = 3.5/1.0	850/1300	62.5µm
M3 = 3.0/1.0	850/1300	62.5µm or all 50µm

* 1383 nm attenuation specified as un-cabled fiber post hydrogen aging.

Flame Rated

Flame Rated (FR) Cables

Prysmian offers a wide variety of indoor and indoor/outdoor cables

Optical fiber networks usually begin and end inside buildings or other environmentally controlled structures that house the network transmission equipment. As a result, outside plant optical cables typically transition to indoor or indoor-outdoor optical cables as the cables enter the building.

PRYSMIAN'S INDOOR AND INDOOR/OUTDOOR CABLES

In addition to the typical optical and mechanical performance requirements, in-building cables are subject to fire and safety requirements as defined within the American National Electric Code (NEC), Canadian Standards Association's (CSA), Canadian Electric Code (CEC), or local codes.

Such standards define cable performance requirements for flame propagation and smoke generation characteristics according to environmental conditions of a cable's installed location. In-building cables are tested to these standards in qualified laboratories and "listed" according to their flame and smoke performance characteristics. Indoor and indoor/outdoor cables must be labeled (printed) with the appropriate listing information. Prysmian flame retardant cables are typically printed with both NEC and CSA designations.

FLAME/SMOKE RATINGS

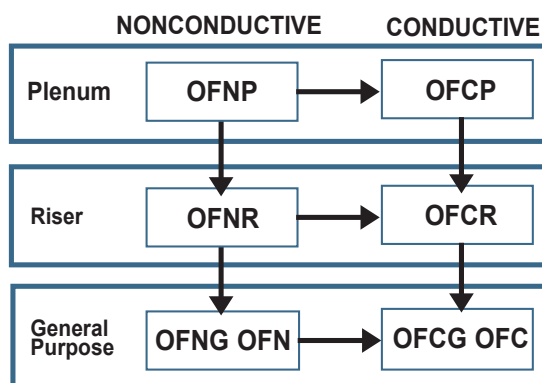
The NEC flame requirements are divided into three separate rating categories: Plenum, Riser, and General Purpose. These categories are defined as follows:

1. Plenum: These cables are used within buildings in ducts, plenums, or other spaces used for environmental (HVAC) air distribution. Cables located in the air handling spaces should either meet the plenum standard or they must be installed in metal conduits. The required plenum performance test – NFPA 262 (formerly UL 910) – measures both flame propagation and smoke generation in a high intensity flame and constant air flow environment. FT-6 is the equivalent Canadian test procedure. A plenum rating is the most stringent of all flame retardant listings.

2. Riser: These cables transition between floors and are typically installed in vertical building shafts. Cables installed between floors must either have plenum or riser listings or be placed in metal conduits. The riser rated cables must meet the UL 1666 performance test requirements. An equivalent Canadian test to the UL 1666 riser test does not exist. Riser Rating is less stringent than the Plenum Rating.

3. General Purpose (Vertical Tray): General purpose cables are installed in non-plenum or non-riser applications and are intended for general use within buildings. These cables are typically used in non-plenum horizontal applications. UL 1581-1160 is the requisite NEC flame performance standard and FT-4 is the requisite Canadian standard. Due to their superior flame characteristics, riser and plenum cables can also be used for general purpose deployments.

NEC Cable **Fire Test** Hierarchy

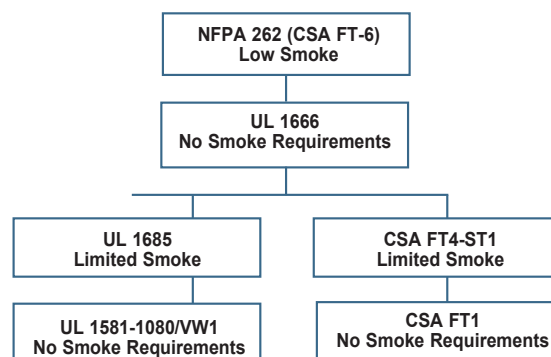


A → B Cable A may be used in place of cable B

Due to concerns with smoke generation during cable combustion, North American cable standards have evolved to include reduced smoke generation requirements. Cables that achieve the smoke density requirements of UL 1685 obtain an OFN-LS (optical fiber non-conductive with low smoke) or OFC-LS listing. Cables that pass the smoke generation specifications from UL 1685 along with the flame spread requirements of UL 1666 receive an OFNR-LS listing.

Also, due to the harmful effects of halogenated smoke on humans and electronic equipment, interest in cables made with non-halogen materials continues to grow. Most low smoke rated cables are also manufactured using zero halogen materials giving rise to the term LSZH (Low Smoke Zero Halogen).

NEC Cable **Smoke Test** Hierarchy



The NEC label terminology for various cable listings designations is shown in Table 1. These designations are often used as “shorthand” for identifying the cable types according to their flame and smoke listings.

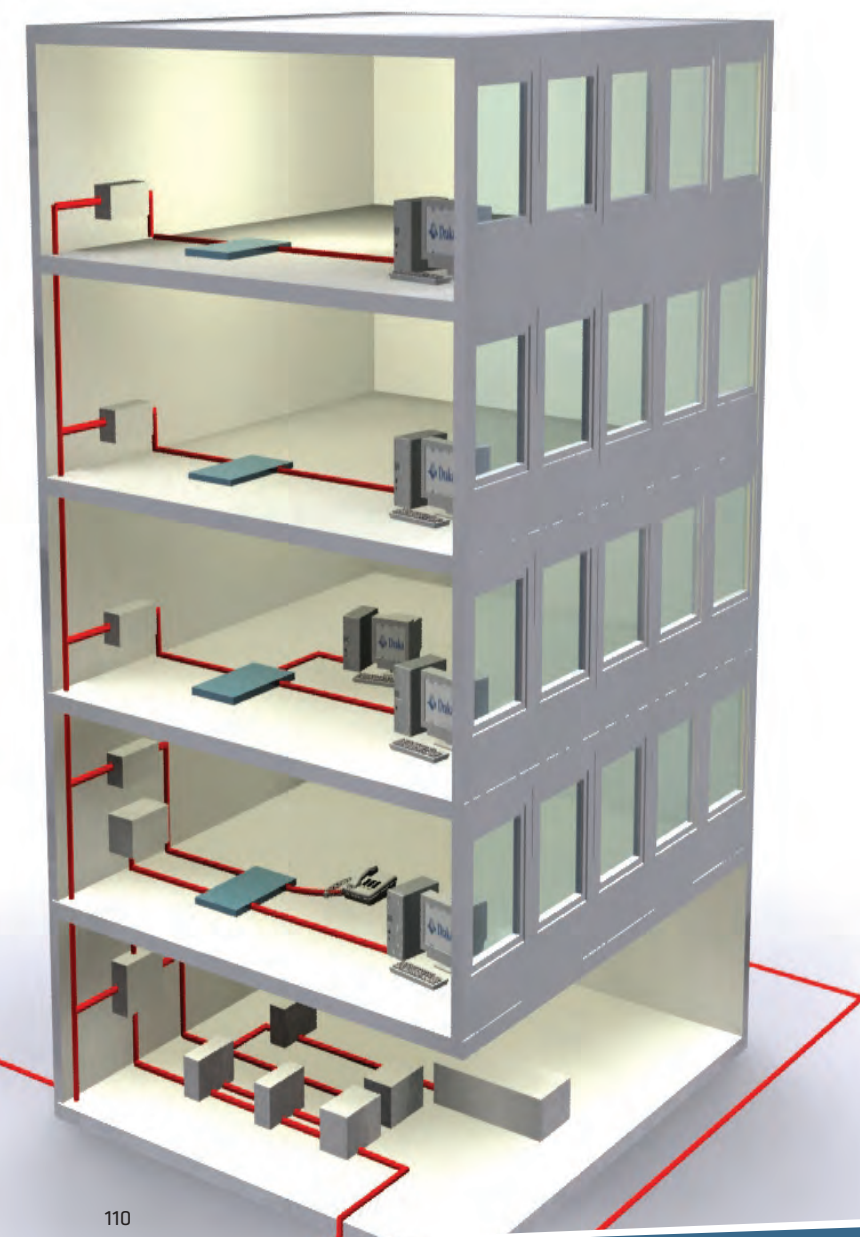
Table 1

NEC Rating	Description
OFNP (CSA FT-6)	Non-conductive optical fiber plenum cable
OFCP (CSA FT-6)	Conductive optical fiber plenum cable
OFNR	Non-conductive optical fiber riser cable
OFCR	Conductive optical fiber riser cable
OFNG (CSA FT-4)	Non-conductive optical fiber general purpose cable
OF CG (CSA FT-4)	Conductive optical fiber general purpose cable
OFN	Non-conductive optical fiber general purpose cable
OFC	Conductive optical fiber general purpose cable

INDUSTRY STANDARDS













In addition to adhering to the flame & smoke standards, Prysmian's indoor and indoor/outdoor flame retardant cables also comply with the various national and international standards that define optical cable performance. These standards are as follows:

- TIA/EIA-568: Commercial Building Telecommunications Cabling Standard
- TIA/EIA-598: Optical Fiber Cable Color Coding
- ANSI/ICEA S-83-596: Standard for Indoor Optical Fiber Cable
- ANSI/ICEA S-87-640: Standard for Optical Fiber Outside Plant Communications Cable
- ANSI/ICEA S-104-696: Standard for Optical Fiber Indoor/Outdoor Fiber Cable
- Telcordia GR-409-CORE: Generic Requirements for Indoor Fiber Optic Cable
- Telcordia GR-20-CORE: Generic Requirements for Optical Fiber and Optical Fiber Cable











































Color Codes

1	2	3	4	5	6	7	8	9	10	11	12
											
Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Rose	Aqua

General Information

Prysmian uses the US industry standard repeating 12-color sequence. When cables go beyond 12 units, the colors repeat but use a stripe to distinguish units. Individual tubes containing 24 fibers have a blue and orange colored binder thread separating the two 12 fiber groups.

Unit Position Color Code for Loose Tube (TIA-598)

Position	Buffer Tube Color	Position	Buffer Tube Color	Position	Buffer Tube Color
1	 Blue	13	 Blue w/Black Stripe	25	 Blue w/Red Stripe
2	 Orange	14	 Orange w/Black Stripe	26	 Orange w/Red Stripe
3	 Green	15	 Green w/Black Stripe	27	 Green w/Red Stripe
4	 Brown	16	 Brown w/Black Stripe	28	 Brown w/Red Stripe
5	 Slate (Gray)	17	 Slate w/Black Stripe	29	 Slate w/Red Stripe
6	 White	18	 White w/Black Stripe	30	 White w/Red Stripe
7	 Red	19	 Red w/Black Stripe	31	 Red w/Yellow Stripe
8	 Black	20	 Black w/Yellow Stripe	32	 Black w/Red Stripe
9	 Yellow	21	 Yellow w/Black Stripe	33	 Yellow w/Red Stripe
10	 Violet	22	 Violet w/Black Stripe	34	 Violet w/Red Stripe
11	 Rose (Pink)	23	 Rose w/Black Stripe	35	 Rose w/Red Stripe
12	 Aqua	24	 Aqua w/Black Stripe	36	 Aqua w/Red Stripe
				37	 Blue w/Green Stripe
				38	 Orange w/Green Stripe

NOTES

This image shows a full page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, typical of notebook paper. There are no margins, text, or other markings on the page.



Linking communications to communities

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