Fiber Optic Cables
product portfolio

HELLENIC CABLES

Member of CENERGY HOLDINGS

www.hellenic-cables.com

HELLENIC CABLES

Member of CENERGY HOLDINGS

600 EUR million investments (since 2012)

Sales in more than 50 countries

Established 1950

5 manufacturing plants in 3 countries

State of the art facilities

Power & Telecommunications Cables

Thiva, Eleonas, Greece

Submarine & Power Cables

Corinth, Greece

Rubber & Plastic Compounds

Oinofyta, Greece

With a wide portfolio of reliable and sustainable cable international customers, **Hellenic Cables is one of the largest cable producers.**

Committed to a sustainable future, Hellenic Cables is one of the leading cable manufacturers for energy transmission and distribution, renewable onshore and offshore energy infrastructure, and data and telecommunications networks. Hellenic Cables comprises Hellenic Cables S.A., its subsidiary Fulgor S.A., with a manufacturing plant located in Soussaki, Corinth, Greece, and its affiliate company Icme Ecab S.A. located in Bucharest, Romania, constituting the cables segment of Cenergy Holdings S.A., a holding company listed on both Euronext Brussels and the Athens Stock Exchange.

With five manufacturing plants across three countries, Hellenic Cables produces power, telecommunication, and submarine cables and compounds, serving major sectors such as energy transmission and distribution, the hydrocarbon industry, renewables, and telecommunications. The manufacturing plant in Corinth is recognized as one of the largest and most advanced submarine cable plants globally. Hellenic Cables is the largest cable producer in Greece and Southeastern Europe, exporting to over 50 countries.

The company's wide product range includes PVC, EPR, and XLPE insulated power cables, marine and low smoke halogen-free cables, fire-resistant cables, telecommunication, signal, and data cables with copper conductors or optical fibers, as well as fire-retardant halogen-free plastic and elastomer compounds. Cables are manufactured according to a variety of international standards, such as VDE, DIN, CEI, NF, CENELEC, IEC ,CIGRE, ISO, SI, SANS, SEN, BS, U.L., ICEA ,NEMA, ASTM, AEIC, ANSI IEEE, ITU and ELOT. Many of the company's products are certified by MIRTEC EBETAM, BASEC, VDE, IMQ, SII, SABS, CI.

Hellenic Cables aspires to provide customers with high-quality products and innovative solutions to pave the way for a low-carbon, sustainable, and circular future. Ensuring product quality is a top priority, with systematic and stringent quality controls conducted at each production stage.

To meet customer requirements and project specifications, Hellenic Cables continuously improves product quality through the expertise of well-trained staff and the use of advanced production technologies. The company's unwavering commitment to strict quality standards and certified systems ensures high-quality products and services, which contribute to the ongoing enhancement of the overall production process. The company holds ISO certifications for several key areas, such as ISO 9001:2015 for Quality Management, ISO 14001:2015 for Environmental Management, and ISO 45001:2018 for Occupational Health and Safety. Hellenic Cables has the necessary expertise to develop and offer turnkey solutions that meet the specific demands of its customers, demonstrating its dedication to meeting your needs.

Hellenic Cables' technical and managerial teams are unwavering in their dedication to innovation, technological excellence, and outstanding quality, ensuring that customers make a reliable and sustainable choice. The company's commitment to continually improving its offerings and swiftly responding to global customer requirements with reliable and safe products based on sustainable technologies instills confidence. Additionally, Hellenic Cables emphasizes the development of its people and the creation of value for its shareholders, partners, and the communities it serves, further reinforcing its commitment to excellence.

Power Cables

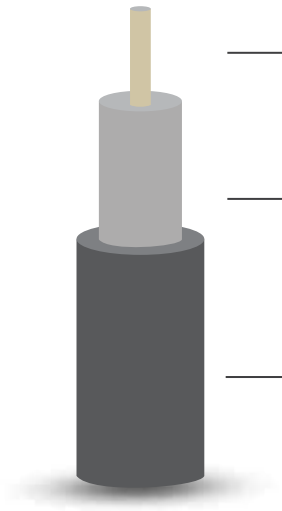
Thiva, Greece

Telecommunication & Data Cables

Bucharest, Romania

Fiber optic cables

Fiber optic cable is an assembly of one or more optical fibers that are used to carry light.
Fiber optic telecommunication cables are the most advanced wired telecommunication transmission media used in all modern telecommunication systems since they offer a very wide bandwidth, high transmission rate and immunity against electromagnetic interference offering safe and fast transmission without distance or interference constraints.



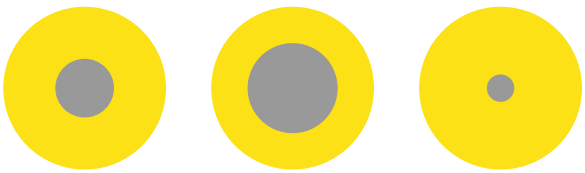
Core
The center of the fiber where the light is transmitted

Cladding
The outside optical layer of the fiber that traps the light in the core and guides it along

Coating
is added to protect the core from damage and moisture

Optical fibers are broadly categorized in Multimode (MM) and Singlemode (SM) fibers, with below typical dimensions and basic characteristics:

	SM	MM
Coating Diameter	180 / 200 / 250 μm	250 μm
Cladding Diameter	125 μm	125 μm
Core Diameter	9 μm	62.5 μm 50 μm



Multimode
50/125 μm

Multimode
62.5/125 μm

Singlemode
9/125 μm

SINGLE MODE				
Standards	**ITU-T G.652.D IEC 60793-2-50 Type B1.3 IEC 11801 / EN50173 OS2**	**ITU-T G.657.A1 (Bend improved) IEC 60793-2-50 Type B6_a1 IEC 11801 / EN50173 OS2**	**ITU-T G.657.A2 (Bend improved) IEC 60793-2-50 Type B6_a1 IEC 11801 / EN50173 OS2**	**ITU-T G.655.D Non-Zero Dispersion-Shifted (NZDS) IEC 60793-2-50 Type B4**
Attenuation Coefficient [dB/km], max.				
at 1310nm	0.36	0.36	0.36	
at 1550nm	0.23	0.23	0.23	0.23
at 1625nm	0.25	0.25	0.25	0.25
Dispersion [ps/(nmxkm)], max.				
at 1285-1310nm	3.5	3.5	3.5	-
at 1550nm	18	18	18	2 - 6

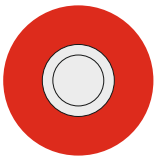
MULTIMODE					
	G62.5/125 OM1	**G50/125 OM2**	**G50/125 OM3**	**G50/125 OM4**	**G50/125 OM5**
Standards	**IEC 11801 / EN 50173 OM1 ITU-T G.651.1 IEC 60793-2-10 Type A1b**	**IEC 11801 / EN 50173 OM2 ITU-T G.651.1 IEC 60793-2 Type A1a.1b**	**IEC 11801 / EN 50173 OM3 ITU-T G.651.1 IEC 60793-2 Type A1a.2b**	**IEC 11801 / EN 50173 OM4 ITU-T G.651.1 IEC 60793-2 Type A1a.3b**	**IEC 11801 / EN 50173 OM5 ITU-T G.651.1 IEC 60793-2 Type A1a.4**
Attenuation Coefficient [dB/km], max.					
at 850nm	3.0	2.8	2.5	2.5	2.5
at 953nm					1.8
at 1300nm	1.0	0.7	0.6	0.6	0.6
Bandwidth [MHz x km]					
at 850nm	200	500	1500	3500	3500
at 953nm					1850
at 1300nm	500	500	500	500	500
Core Diameter [μm]	62.5 ± 2.5	50 ± 2.5	50 ± 2.5	50 ± 2.5	50 ± 2.5

Fiber Secondary Coating

1. Loose tube:
   - coloured PBT tube
   - filled with jelly compound
   - consists of up to 24 fibers
   - easy strippable
   - dimensions ø2-3mm
2. Tight Buffer:
   - natural PA coating
   - consists of 1 fiber (coloured)
   - non-easy strippable
   - dimensions: ø 900 μm
3. Semi-tight:
   - coloured PBT tube
   - filled with jelly compound
   - consists of 1 fiber
   - easy strippable
   - dimensions: ø 900 μm


Loose Tube


Tight Buffer


Semi-tight Buffer

VDE designation codes for cables

Cable **type**

A-	Outdoor
I-	Indoor
A/I-	Universal
ADSS	All-dielectric self-supporting

Cable **design**

V	Tight buffer or semi-tight
D	Filled loose tube with several fibers
Q	Water resistive Dry Core
S	Metal element in cable core
(ZN)	Non – metallic Yarn reinforcement
(ZN)B	Non – metallic armouring with rodent protection
(L)	Shielding with aluminium tape
(SR)	Armouring with corrugated steel tape
2Y	Polyehtylene sheath (PE)
4Y	Polyamide sheath (PA)
H	Halogen free, fire retardant sheath

Cables properties symbols


Outdoor cables


Indoor cables


Universal (Indoor / Outdoor) cables


Aerial cables


Direct buried cables


Laying in ducts


Blowing


Water resistant cables


Dielectric cables


Flame retardant cables


Rodent protected cables

UV resistant cables

CPR certified (Fca, Eca, Dca, Cca, B2ca)

Fire properties

Fiber optic cables form the backbone of modern communications networks, seamlessly transmitting data across various indoor environments such as offices, data centers, and residential buildings. These cables are designed to meet the specific requirements of indoor applications. The fire properties of these cables are crucial for ensuring safety and mitigating potential hazards. These cables typically comply with the following standards:

Description	IEC / ISO standard
Halogen content of smoke gases	IEC 60754-1
pH-value & conductivity of smoke gases	IEC 60754-2
Smoke density	IEC 61034
Flame retardance (Single cable test)	IEC 60332-1-2
Fire retardance (Bunched cable test)	IEC 60332-3

The single cable test, according to IEC 60332-1-2, is lighter compared to the bunched cable test, specified by IEC 60332-3-24. The exact test descriptions follow below:

IEC 60332-1	IEC 60332-3
Tests on electric and optical fibre cables under fire conditions: test for vertical flame propagation for single insulated wire or cable. The flame propagation is tested according to IEC 60332-1 on a single cable. A vertical sample of cable about 600 mm in length is exposed to a flame for 60 s and/or 120 s in an area 100 mm above the lower end with a 1 kW Bunsen burner. After removing the burner, the flame must self-extinguish. The zones of the cable damaged by the flame should not reach to the upper end of the cable. The flaming time is dependant on the diameter of the cable.	*Tests on electric and optical fibre cables under fire conditions: test for vertical flame spread of vertically mounted bunched wires or cables.* The test for the spread of the flame with an array of several cables is normally carried out according to IEC 60332-3 (test method A, B, C or D, which differ on the volume of non-metallic materials). The test specimens, mounted in a vertical frame, are exposed to a flame over a length of 3600 mm starting in the lower section using a special burner with a high output. During and/or after exposure to the intensive flame for 20 and/or 40 minutes, the cables may not continue to burn to their upper end.

CPR - Construction Products Regulation

Since July 2017, the "Construction Product Regulation" (CPR) applies to any cable incorporated in construction works (permanent installation on buildings). Cable for use in the EU have to fulfil certain requirements in terms of behaviour in the case of fire and also carry the CE mark in relation to their fire performance. The definition of these safety requirements remains the responsibility of the national authorities.

The cable's fire characteristics shall be marked with a combination of different classes as below:

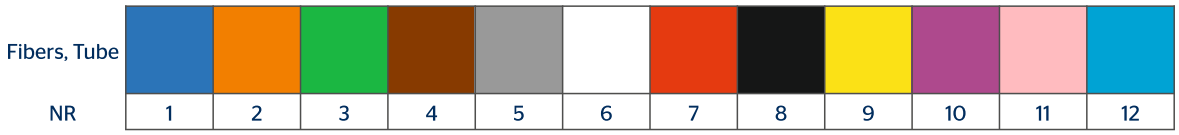
Table 1 - Classes of reaction to fire performance for electric cables

Class	Test method(s)	Classification criteria	Additional classification
A_{ca}	EN ISO 1716	PCS ≤ 2,0 MJ/kg (1)	
$B1_{ca}$	EN 50399 (30kW flame source)	FS ≤ 1,75 m; and THR_{1200s} ≤ 10 MJ; and Peak HRR ≤ 30 kW; and FIGRA ≤ 150 Ws^{-1}	Smoke production (2,5) and Flaming droplets/particles (3) and Acidity (4)
	EN 60332-1-2	H ≤ 425 mm	
$B2_{ca}$	EN 50399 (20,5kW flame source)	FS ≤ 1,5 m; and THR_{1200s} ≤ 15 MJ; and Peak HRR ≤ 30 kW; and FIGRA ≤ 150 Ws^{-1}	Smoke production (2,6) and Flaming droplets/particles (3) and Acidity (4)
	EN 60332-1-2	H ≤ 425 mm	
C_{ca}	EN 50399 (20,5kW flame source)	FS ≤ 12,0 m; and THR_{1200s} ≤ 30 MJ; and Peak HRR ≤ 60 kW; and FIGRA ≤ 300 Ws^{-1}	Smoke production (2,6) and Flaming droplets/particles (3) and Acidity (4)
	EN 60332-1-2	H ≤ 425 mm	
D_{ca}	EN 50399 (20,5kW flame source)	THR_{1200s} ≤ 70 MJ; and Peak HRR ≤ 400 kW; and FIGRA ≤ 1 300 Ws^{-1}	Smoke production (2,6) and Flaming droplets/particles (3) and Acidity (4)
	EN 60332-1-2	H ≤ 425 mm	
E_{ca}	EN 60332-1-2	H ≤ 425 mm	
F_{ca}	No performance determined		

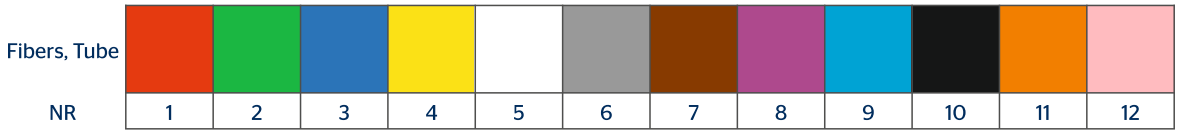
Smoke classes: s1, s1a, s1b, s2, s3 (EN 50399/EN 61034-2)
Acidity classes: a1, a2, a3 (EN 60754-2)
Flaming droplets classes: d0, d1, d2 (EN 50399)

Identification Colour code

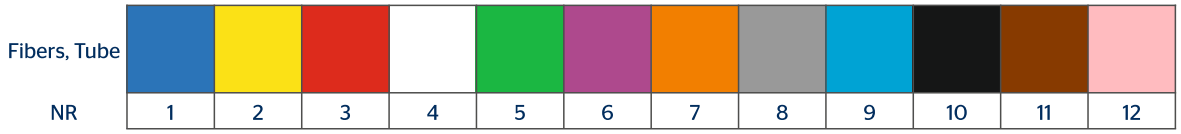
According to TIA/EIA-508



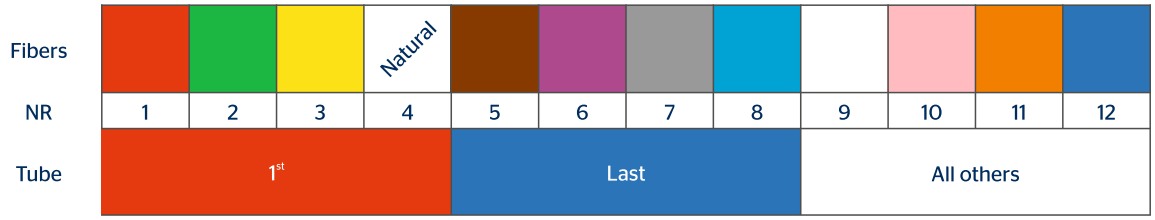
According to DIN VDE0888



According to IEC 60794-2



According to OTE



Notes: When loose tubes are applied in two layers, their colours are repeated in each layer. For tubes with more than 12 fibers, the colours are repeated with black ring on fibers 13-24. Other fiber and / or tube colour coding can be provided if requested.

Sheath Marking

The following information is printed (ink injection, hotfoil or sintering method) in contrasting colour, on outer jacket, every one (1) meter:

"HELLENIC CABLES – YEAR – "CABLE TYPE" "NR OF FIBERS" "TYPE OF FIBERS" – length marking m"

Other or additional data can be printed on outer jacket if requested.

Packing

The cables are delivered in non-returnable wooden drums, plywood or plastic reels, suitable for safe transportation, storage and installation. Both cable ends are accessible for testing and are tightly covered with shrink-dawn end caps to prevent ingress of moisture. Cable type, customer, drum no, cable length, net and gross weight are tagged on drum flanges.

Standard Cable length per drum: 2000m, 4000m, 6000m ± 5%

Any particular requirements about packing, drum marking, cable length per drum etc. can be provided if requested.

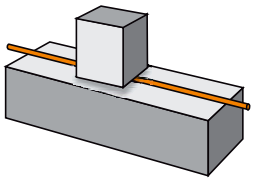
Quality Control

HELLENIC CABLES S.A. follows a quality control plan based on implemented procedures of its quality management system according to ISO 9001: 2008. The attenuation of all the fibers inside the cables, from all the drums that are produced, is measured using an optical time-domain reflectometer (OTDR) in all production stages in order to ensure top quality of the final product (routine test).

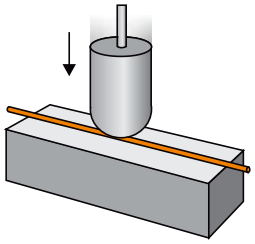
Except OTDR routine test, FOC are regularly tested for many other mechanical and environmental characteristics (type tests). The most important of them are briefly presented here below:

Tensile performance
(IEC 60794-1-21 E1)
The cable is loaded with the maximum allowable tensile force. Its tensile performance (fiber attenuation, fiber and / or cable strain) is recorded.

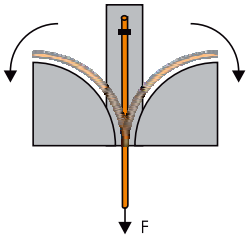
Crush resistance
(IEC 60794-1-21 E3)
The ability of the cable to withstand transverse pressure is tested. Permanent damage of any cable elements, fiber integrity and / or fiber attenuation are recorded.



Impact (IEC 60794-1-21 E4)
The ability of the cable to withstand impacts (dropping heavy objects such as tools or stones) is tested. Permanent damage of any cable elements, fiber integrity and / or fiber attenuation are recorded.

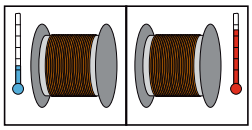


Repeated bending
(IEC 60794-1-21 E6)
The ability of the cable to withstand repeated bending under tension is tested. Permanent damage of any cable elements, fiber integrity and / or fiber attenuation are recorded.

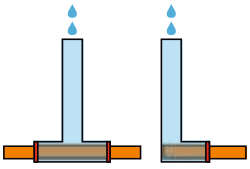


Torsion (IEC 60794-1-21 E7)
The ability of the cable to withstand torsion forces under tension is tested. Permanent damage of any cable elements, fiber integrity and / or fiber attenuation are recorded.

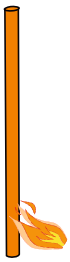
Temperature cycling
(IEC 60794-1-22 F1)
The ability of the cable to withstand extreme temperature changes is tested. Any visible sheath damage and fiber attenuation are recorded.



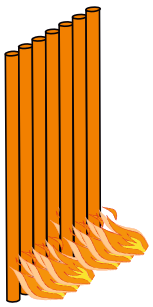
Water penetration
(IEC 60794-1-22 F5)
The ability of the cable to prevent water or moisture from entering and penetrate in the cable and is tested. A cable is successfully tested when no water is detected at the free end after the specified time period. Unless otherwise is required, method B is used.



Fire propagation on a vertical single cable
(IEC 60332-1)
The performance of the cable under fire conditions is tested.
A piece of cable is mounted vertically and a flame is applied on the lower end of it for certain time. The flame must extinguish itself and the fire damage must not reach the upper end of sample.



Fire propagation on a vertical cable bundle
(IEC 60332-1)
The performance of the cable under fire conditions is tested.
A number of cable bundles (they depend on the volume of flammable material of the cable) are fixed on a 3.5 m long ladder and a test flame is applied at the lower end for 20 minutes.
The height of fire damage must not exceed 2.5 m.



Quality control test reports and certificates can be delivered together with the cables if requested.

Quality Control Routing Testing

Fiber quality after cabling process is the most critical issue, therefore a strict quality procedure is followed in order to ensure that all fibers of all delivered cable lots fully comply with the agreed specifications.

Fiber attenuation (loss) expressed in dB/km is the critical parameter* that is measured in a routine testing basis (100% of all cabled fibers).

OTDR (optical time domain reflectometer) is the testing equipment that based on the backscattering method (details in ITU-T G.650-1) measures the attenuation coefficient of an optical fiber. This technique can also be applied to check the attenuation uniformity, optical continuity, physical discontinuities, splice losses and the length of the fiber.

QUALITY CONTROL
ATTENUATION OF OPTICAL FIBERS

Cable Type :	ADSS	Drum No :	1054493001	Order No :	499304	Test equipment :	*OTDR* : JDSU MTS-6000				
Cable Size :	48(6x8)G652D	Cable Length (m) :	2350	Customer Order No:	60146433	Refractive Index :	1550 nm : 1.4670 1310 nm : 1.4665				
Customer :		Fiber Length (m) :	2394	Specification :	ITU-T G652D	DATE :					

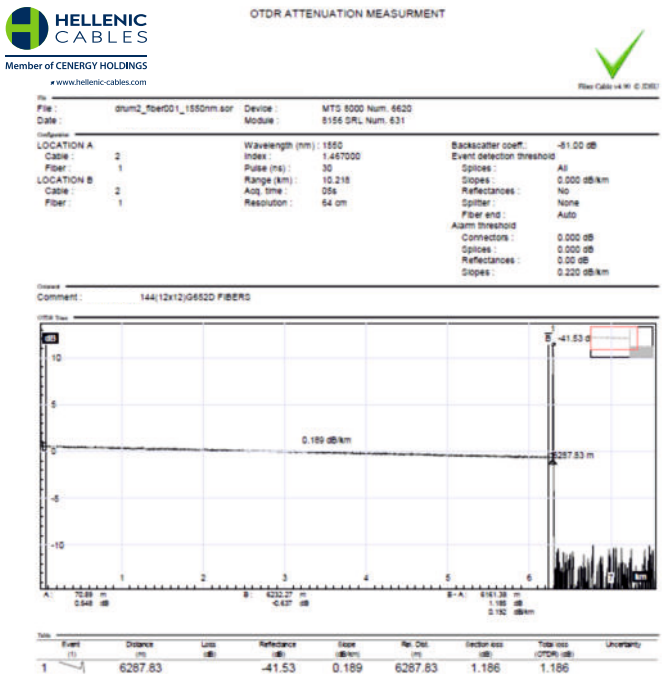
SPECIFIED MAXIMUM VALUE (dB/Km)
1310 nm : 0.35 1550 nm : 0.22

FIBER No.	FIBER COLOUR	TUBE No.	TUBE COLOUR	ATTENUATION (dB/km) 1310 nm	ATTENUATION (dB/km) 1550 nm	FIBER No.	FIBER COLOUR	TUBE No.	TUBE COLOUR	ATTENUATION (dB/km) 1310 nm	ATTENUATION (dB/km) 1550 nm	FIBER No.	FIBER COLOUR	TUBE No.	TUBE COLOUR	ATTENUATION (dB/km) 1310 nm	ATTENUATION (dB/km) 1550 nm
1	BLUE	1	RED	0.30	0.18	17	BLUE	3	YELLOW	0.31	0.18	33	BLUE	5	YELLOW	0.30	0.18
2	ORANGE			0.32	0.18	18	ORANGE			0.32	0.18	34	ORANGE			0.31	0.18
3	GREEN			0.31	0.18	19	GREEN			0.31	0.18	35	GREEN			0.32	0.18
4	BROWN			0.32	0.19	20	BROWN			0.30	0.19	36	BROWN			0.31	0.18
5	GREY			0.30	0.18	21	GREY			0.32	0.18	37	GREY			0.31	0.18
6	WHITE			0.30	0.18	22	WHITE			0.32	0.18	38	WHITE			0.31	0.18
7	RED			0.32	0.18	23	RED			0.30	0.18	39	RED			0.31	0.18
8	BLACK			0.30	0.18	24	BLACK			0.31	0.18	40	BLACK			0.30	0.18
9	BLUE	2	YELLOW	0.31	0.18	25	BLUE	4	YELLOW	0.30	0.19	41	BLUE	6	YELLOW	0.31	0.18
10	ORANGE			0.31	0.18	26	ORANGE			0.32	0.18	42	ORANGE			0.31	0.18
11	GREEN			0.31	0.18	27	GREEN			0.31	0.18	43	GREEN			0.32	0.18
12	BROWN			0.31	0.18	28	BROWN			0.31	0.18	44	BROWN			0.30	0.18
13	GREY			0.32	0.18	29	GREY			0.31	0.18	45	GREY			0.31	0.18
14	WHITE			0.31	0.18	30	WHITE			0.31	0.18	46	WHITE			0.31	0.18
15	RED			0.32	0.19	31	RED			0.32	0.18	47	RED			0.32	0.18
16	BLACK			0.32	0.18	32	BLACK			0.31	0.18	48	BLACK			0.31	0.18

Depending on the fiber type and the agreed specifications, the optical fibers are OTDR tested at different wavelengths (and / or 850nm, 1300nm, 1310nm, 1383nm, 1550nm, 1625nm).

Attenuation test reports of the measured values in tabular format are prepared and submitted to the customer upon request.

However, graphical OTDR attenuation results are recorded for all measured fibers, are kept in electronic files and can be submitted to the customer upon request.



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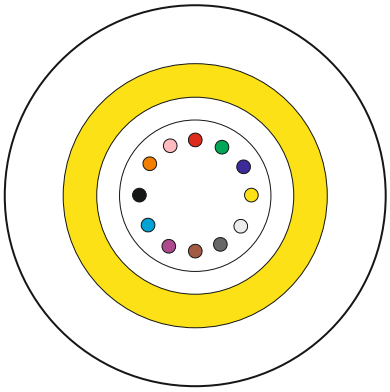
INDOOR MICRO

I-DQ(ZN)H central [2-12F]

Central loose tube, indoor, fully dielectric, reduced outer diameter, suitable for air-blown installation in cable conduits or laying on open or protected cable trays.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	Polymer tube, filled with jelly compound
Reinforcing elements	Aramid yarns
Outer jacket	White, FR LSZH compound

Standards

Gen. to IEC 60794-2, VDE 0888

Cables physical characteristics					
Fibers	Tubes	Fibers/ Tube	Ø Diameter Nominal (mm)	Sheath thickness Nominal (mm)	Cable Weight (kg)
2 - 4	1	2 - 4	2.6	0.4	5
6 - 8	1	6 - 8	2.6	0.4	5
12	1	12	2.7	0.4	5

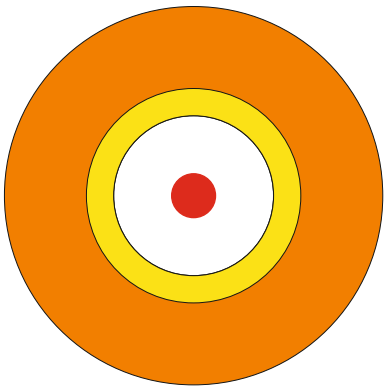
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 150 N [Fiber Strain < 0.5 %] Crush resistance: 500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 1 N. m, 3 impacts spaced, R= 12.5 mm Torsion: 180°, 3 cycles, 20 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Fire behavior: Eca (EN 13501-6)

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR SIMPLEX TIGHT BUFFERED

I-V(ZN)H

Tight buffered, indoor, fully dielectric, reduced outer diameter, suitable for air-blown installation in cable conduits or laying on open or protected cable trays.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Secondary coating	Polymer compound with natural color
Reinforcing elements	Aramid yarns
Outer jacket	Orange, FR LSZH compound

Standards
Gen. to IEC 60794-2, VDE 0888

Cables physical characteristics			
Fibers	Ø Diameter Nominal (mm)	Sheath thickness Nominal (mm)	Cable Weight (kg)
1	2.8	0.4	7

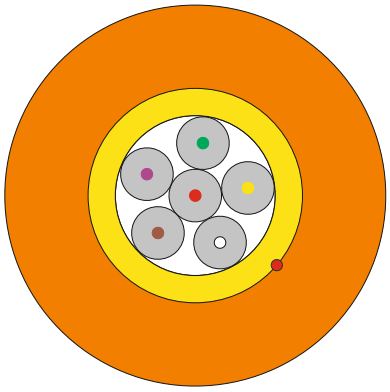
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 100 N [Fiber Strain < 0.5 %] Crush resistance: 500 N/10cm Bending: 50mm, 6 turns, 10cycles Impact resistance: 1 N. m, 3 impacts spaced, R= 12.5 mm Torsion: 180°, 3 cycles, 20 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +60°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +60°C Operation Δα < 0.10 dB/km Fire behavior: IEC 60332-1, Fire propagation on a vertical single cable: 1m cable, 60 seconds

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR TIGHT BUFFERED MINI BREAKOUT

I-V(ZN)H

Tight buffered, indoor, fully dielectric, reduced outer diameter, suitable for air-blown installation in cable conduits or laying on open or protected cable trays.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Secondary coating	Polymer compound with natural color
Reinforcing elements	Aramid yarns
Outer jacket	Orange, FR LSZH compound

Standards

Gen. to IEC 60794-2, VDE 0888

Cables physical characteristics				
Fibers	Diameter of tight buffered fiber (mm)	Sheath thickness Nominal (mm)	Ø Diameter Nominal (mm)	Cable Weight (kg)
4	0.9	1.2	5.5	30
6	0.9	1.2	6.0	35
8	0.9	1.2	6.5	40
12	0.9	1.2	7.0	45

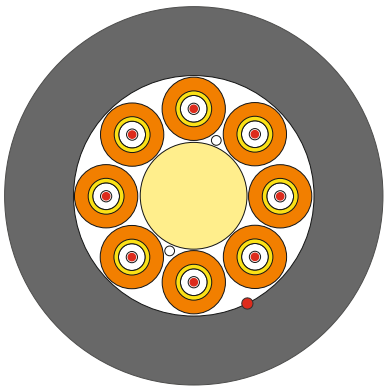
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 800 N [Fiber Strain < 0.5 %] Crush resistance: 500 N/10cm Bending: 20xD, 6 turns, 10cycles Impact resistance: 1 N. m, 3 impacts spaced, R= 12.5 mm Torsion: 180°, 3 cycles, 20 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +60°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +60°C Operation Δα < 0.10 dB/km Fire behavior: Eca (EN 13501-6)

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR TIGHT BUFFERED BREAKOUT

I-V(ZN)HH [4-12F]

Breakout, semi-tight buffered, indoor, fully dielectric, suitable for air-blown installation in cable conduits or laying on open or protected cable trays.



Drawing is not to scale

Construction

Optical fiber	Semi-tight (easy strippable) buffered glass fiber Ø 0.9 mm
Central Strength Member (CSM)	Glass fiber reinforced plastic (FRP)
Reinforcing elements	Aramid yarns
Sub-unit	FR LSZH tube containing 1 tight buffered optical fiber
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, FR LSZH compound

Standards

Gen. to IEC 60794-2, VDE 0888

Cables physical characteristics

Fibers	Diameter of semi tight buffered fiber (mm)	Diameter of sub cable (mm)	Sheath thickness Nominal (mm)	Ø Diameter Nominal (mm)	Cable Weight (kg)
4	0.9	2.0	1.4	8.5	70
6	0.9	2.0	1.4	9.0	80
8	0.9	2.0	1.4	10.0	110
12	0.9	2.0	1.4	12.7	160

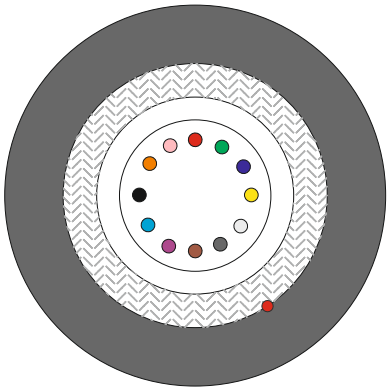
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 1000 N [Fiber Strain < 0.5 %] Crush resistance: 500 N/10cm Bending: 20xD, 6 turns, 10cycles Impact resistance: 1 N. m, 3 impacts spaced, R= 12.5 mm Torsion: 180°, 3 cycles, 20 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +60°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +60°C Operation Δα < 0.10 dB/km Fire behavior: IEC 60332-1, Fire propagation on a vertical single cable: 1m cable, 60 seconds

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR / OUTDOOR CABLES

A/I-DQ(ZN)BH CENTRAL [2-24F]Dca

Central loose tube, indoor / outdoor, fully dielectric, suitable for air-blown installation in plastic cable ducts, laying on open or protected trenches or cable trays. Directly buried Installation in the ground is not recommended.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black FR LSZH compound

Standards

Gen. to IEC 60794-6, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Ø Cable Diameter Nominal (mm)	Sheath Thickness Nominal (mm)	Cable Weight (kg)
2 - 6	1	2 - 6	7.5	1.5	70
8 - 12	1	8 - 12	7.5	1.5	70
16 - 24	1	16 - 24	7.5	1.5	70

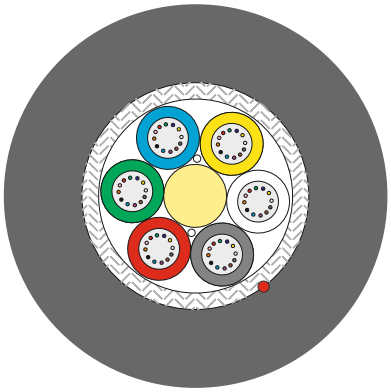
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 2000N [Fiber Strain < 0.5 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light Fire behavior: Euroclass Dca (EN 13501-6)

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR / OUTDOOR CABLES

A/I-DQ(ZN)BH MLT [12-144F] Eca

Loose tube, indoor/outdoor, fully dielectric, suitable for drawing or air-blown installation in plastic cable ducts or laying on open or protected trenches.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	Fiber PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Layer of glass yarns with water blocking coating
Ripcord	Polyester thread of sufficient strength
Outer jacket	Black FR LSZH compound

Standards

Gen. to IEC 60794-6, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Fillers	Sheath thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	1	12	4	1.8	10.0	110
24	2	12	3	1.8	10.0	110
36	3	12	2	1.8	10.0	110
48	4	12	1	1.8	10.0	110
60	5	12	0	1.8	10.0	110
72	6	12	0	1.8	10.5	120
96	8	12	0	1.8	11.5	145
144	12	12	0	1.8	14.5	215

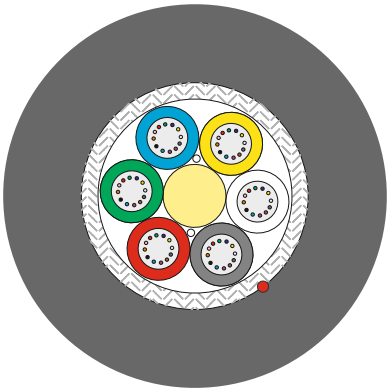
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: [12-72f] 2500 N /[96-144f] 4000 N [Fiber Strain < 0.33 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light Fire behavior: Euroclass Eca (EN 13501-6)

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR / OUTDOOR CABLES

A/I-DQ(ZN)BH MLT [12-144F] Dca

Loose tube, indoor/outdoor, fully dielectric, suitable for drawing or air-blown installation in plastic cable ducts or laying on open or protected trenches.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	Fiber PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Layer of glass yarns with water blocking coating
Ripcord	Polyester thread of sufficient strength
Outer jacket	Black FR LSZH compound

Standards

Gen. to IEC 60794-6, VDE 0888

Cables physical characteristics						
Fibers	Tubes	Fibers / Tube	Fillers	Sheath thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	1	12	4	2.0	10.5	125
24	2	12	3	2.0	10.5	125
36	3	12	2	2.0	10.5	125
48	4	12	1	2.0	10.5	125
60	5	12	0	2.0	10.5	125
72	6	12	0	2.0	11	130
96	8	12	0	2.2	12.0	165
144	12	12	0	2.2	15.0	240

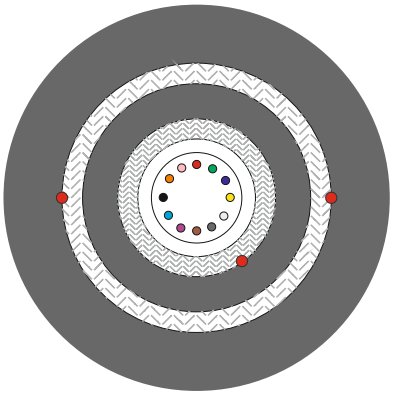
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: [12-72f] 2700 N /[96-144f] 4000 N [Fiber Strain < 0.33 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light Fire behavior: Euroclass Dca (EN 13501-6)

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR / OUTDOOR CABLES

A/I-DQH(ZN)BH central [2-24F]

Central loose tube, fully dielectric, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Reinforcing elements	Glass yarns with water blocking coating
Inner sheath	Black FR LSZH
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black FR LSZH compound

Standards

Gen. to IEC 60794-6, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Sheath thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
			Inner	Outer		
2 - 6	1	2 - 6	1.0	1.5	10.5	125
8 - 12	1	8 - 12	1.0	1.5	10.5	125
16 - 24	1	16 - 24	1.0	1.5	10.5	125

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 2000N [Fiber Strain < 0.5 %] Crush resistance: 2500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

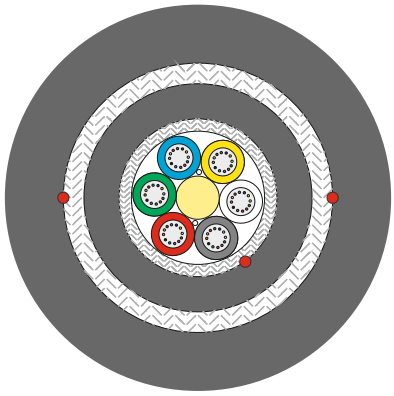
Fire behavior
Fire propagation on a vertical single cable: 1m cable, 60 seconds [IEC 60332-1]
Fire propagation on vertical cable bundle [IEC 60332-3]
Acidity of combustion gases: 0.5 g sheath, 20 minutes, 800°C [IEC 60754-1]
Acidity of combustion gases: 1.0 g sheath, 30 minutes, 935°C [IEC 60754-2]
Smoke density: 1 L alcohol - Light transmittance > 60 % [IEC 61034-2]

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR / OUTDOOR CABLES

A/I-DQH(ZN)BH MLT [12-144F]

Loose tube, fully dielectric, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.



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Standards

Gen. to IEC 60794-6, VDE 0888

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Wrapping	Water blocking tape longitudinally applied with overlap
Inner sheath	Black, FR LSZH compound
Ripcord	Polyester or aramide thread of sufficient strength
Reinforcing elements	Layer of glass yarns with water blocking coating
Outer jacket	Black, FR LSZH compound

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Fillers	Sheath thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
				Inner	Outer		
12	1	12	4	1.0	1.5	12	160
24	2	12	3	1.0	1.5	12	160
36	3	12	2	1.0	1.5	12	160
48	4	12	1	1.0	1.5	12	160
60	5	12	0	1.0	1.5	12	160
72	6	12	0	1.0	1.5	12.5	170
96	8	12	0	1.0	1.5	13.5	200
144	12	12	0	1.0	1.5	16	220

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: [12-72f] 3000 N /[96-144f] 4000 N [Fiber Strain < 0.33 %] Crush resistance: 4000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

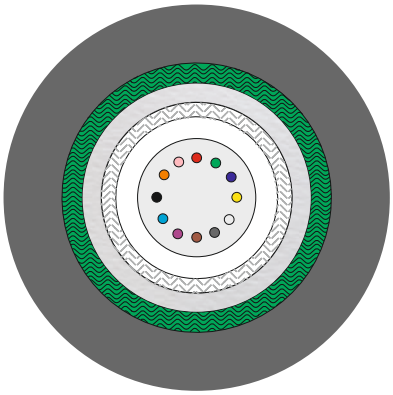
Fire behavior
Fire propagation on a vertical single cable: 1m cable, 60 seconds [IEC 60332-1]
Fire propagation on vertical cable bundle [IEC 60332-3]
Acidity of combustion gases: 0.5 g sheath, 20 minutes, 800°C [IEC 60754-1]
Acidity of combustion gases: 1.0 g sheath, 30 minutes, 935°C [IEC 60754-2]
Smoke density: 1 L alcohol - Light transmittance > 60 % [IEC 61034-2]

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR / OUTDOOR CABLES

A/I-DQ(ZN)(SR)H central [2-24F] Dca

Central loose tube, indoor/outdoor, corrugated steel tape armoured, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Reinforcing elements	Glass yarns with water blocking coating
Wrapping	Water blocking tape, longitudinally applied with overlap
Armouring	Corrugated steel tape, longitudinally applied with overlap
Outer jacket	Black, FR LSZH compound

Standards

Gen. to IEC 60794-6, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Steel tape thickness Nominal (PE-Steel-PE) (mm)	Sheath thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
2 - 6	1	2 - 6	0.05 – 0.155 – 0.05	1.5	10.0	120
8 - 12	1	8 - 12	0.05 – 0.155 – 0.05	1.5	10.0	120
16 - 24	1	16 - 24	0.05 – 0.155 – 0.05	1.5	10.0	120

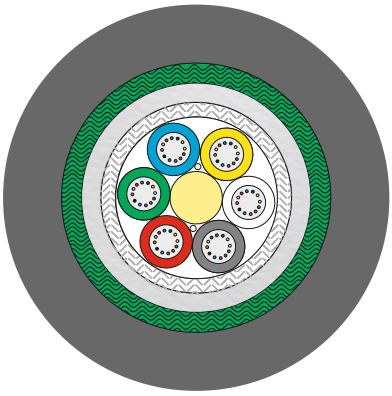
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 2000N [Fiber Strain < 0.5 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light Fire behavior: Euroclass Dca (EN 13501-6)

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR / OUTDOOR CABLES

A/I-DQ(ZN)(SR)H MLT [12-144F] Dca

Loose tube, indoor/outdoor, corrugated steel tape armoured, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compoundlongitudinally applied
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Wrapping	Water blocking tape longitudinally applied with overlap
Armouring	Corrugated steel tape, longitudinally applied with overlap
Outer jacket	Black, FR LSZH compound

Standards

Gen. to IEC 60794-6, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Fillers	Steel tape thickness Nominal (PE-Steel-PE) (mm)	Sheath thickness nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	1	12	4	0.05 - 0.155 - 0.05	1.8	10.0	110
24	2	12	3		1.8	10.0	110
36	3	12	2		1.8	10.0	110
48	4	12	1		1.8	10.0	110
60	5	12	0		1.8	10.0	110
72	6	12	0		1.8	10.0	120
96	8	12	0		1.8	10.0	145
144	12	12	0		1.8	10.0	215

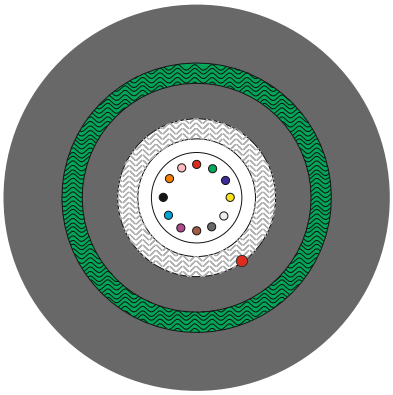
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: [12-72f] 2500 N /[96-144f] 4000 N [Fiber Strain < 0.33 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light Fire behavior: Euroclass Dca (EN 13501-6)

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR / OUTDOOR CABLES

A/I-DQ(ZN)H(SR)H central [2-24F]

Central, loose tube, outdoor, corrugated steel tape armoured, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Reinforcing elements	Glass yarns with water blocking coating
Inner sheath	Black, LSZH compound
Ripcord	Polyester or aramide thread of sufficient strength
Armouring	Corrugated steel tape, longitudinally applied with overlap
Outer jacket	Black, FR LSZH compound

Standards

Gen. to IEC 60794-6, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Steel tape thickness Nominal (PE-Steel-PE) (mm)	Sheath thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
				Inner	Outer		
2 - 6	1	2 - 6	0.05 – 0.155 – 0.05	1.0	1.5	11.5	165
8 - 12	1	8 - 12	0.05 – 0.155 – 0.05	1.0	1.5	11.5	165
16 - 24	1	16 - 24	0.05 – 0.155 – 0.05	1.0	1.5	11.5	165

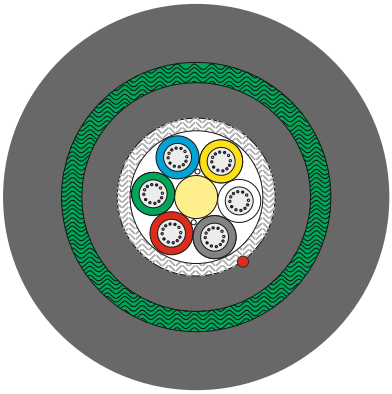
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 2500 N [Fiber Strain < 0.5 %] Crush resistance: 2500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light Fire behavior: Euroclass Dca (EN 13501-6)

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

INDOOR / OUTDOOR CABLES

A/I-DQ(ZN)H(SR)H MLT [12-144F] B2ca

Loose tube, outdoor, corrugated steel tape armoured, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Inner sheath	Black, FR LSZH compound
Armouring	Corrugated steel tape, PE coated on both sides, longitudinally applied with overlap
Outer jacket	Black FR LSZH compound

Standards

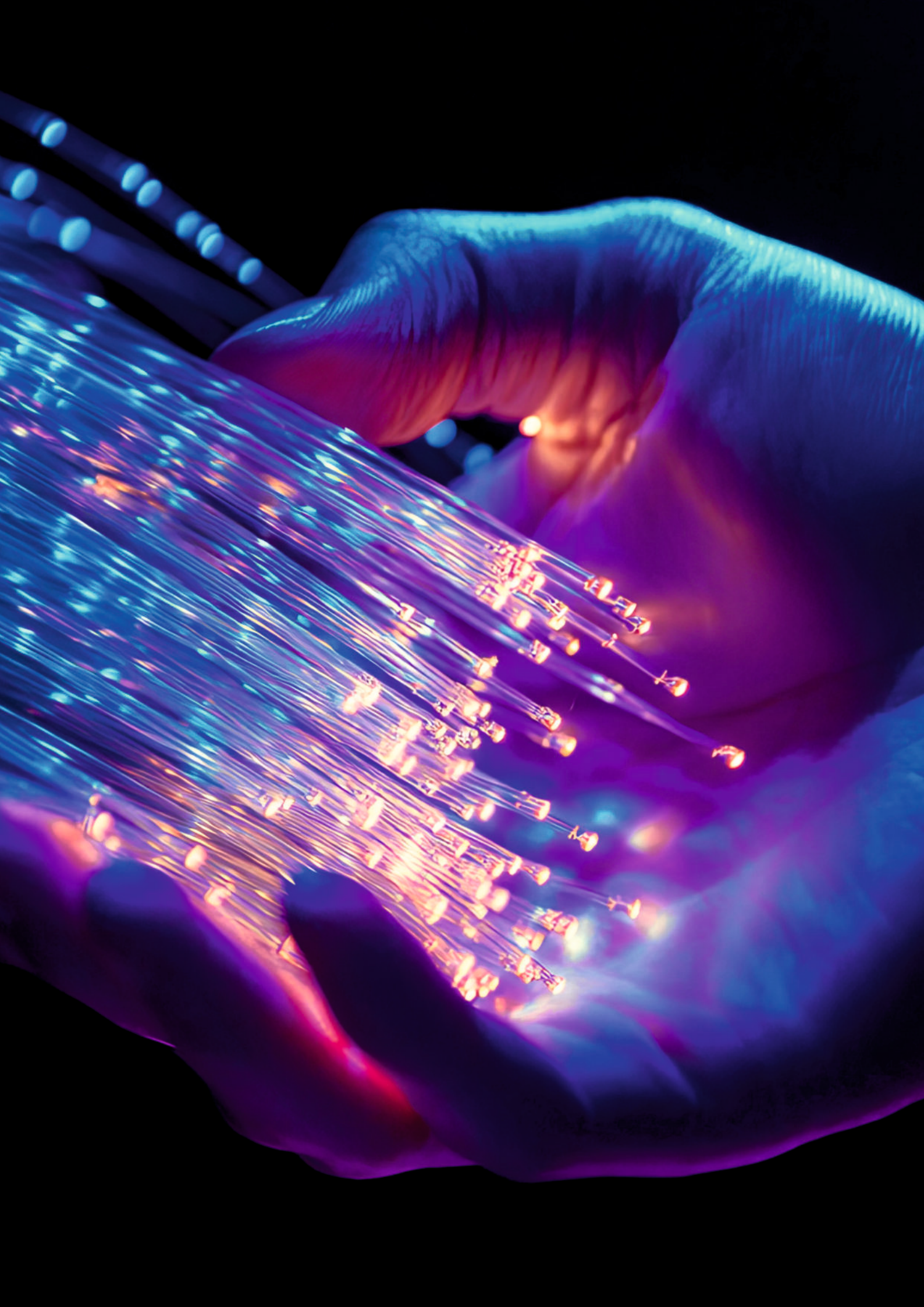
Gen. to IEC 60794-6, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Fillers	Steel tape thickness Nominal (PE-Steel-PE) (mm)	Sheath thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
					Inner	Outer		
12	1	12	4	0.05 - 0.155 - 0.05	1.0	1.5	13.0	210
24	2	12	3		1.0	1.5	13.0	210
36	3	12	2		1.0	1.5	13.0	210
48	4	12	1		1.0	1.5	13.0	210
60	5	12	0		1.0	1.5	13.0	210
72	6	12	0		1.0	1.5	13.5	220
96	8	12	0		1.0	1.5	14.5	250
144	12	12	0		1.0	1.5	17	270

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: [12-72f] 2500 N /[96-144f] 4000 N [Fiber Strain < 0.33 %] Crush resistance: 4000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light Fire behavior: Euroclass B2ca- s1, d0, a1 (EN 13501-6)

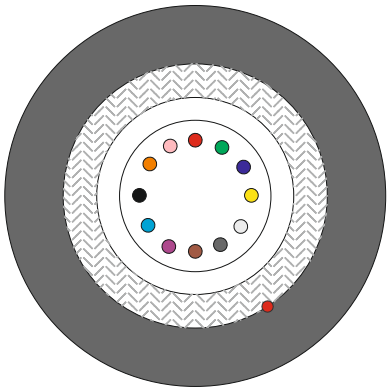
Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.



OUTDOOR CABLES

A-DQ(ZN)B2Y CENTRAL [2-24f]

Central loose tube, outdoor, fully dielectric, suitable for drawing or air-blown installation in plastic cable ducts, for laying on open or protected trenches or cable trays.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant PE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics				
Fibers	Tubes	Fibers / Tube	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
2 - 6	1	2 - 6	6.8	40
8 - 12	1	8 - 12	6.8	40
16 - 24	1	16 - 24	6.8	40

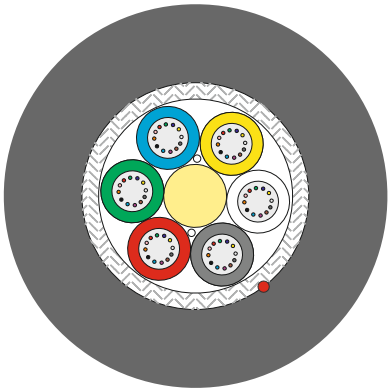
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 2000N [Fiber Strain < 0.5 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)B2Y MLT [12-288F] [12F/TUBE]

Loose tube, outdoor, fully dielectric, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Fillers	Sheath thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	1	12	4	1.5	9.5	75
24	2	12	3	1.5	9.5	75
36	3	12	2	1.5	9.5	75
48	4	12	1	1.5	9.5	75
60	5	12	0	1.5	9.5	80
72	6	12	0	1.5	11.0	110
96	8	12	0	1.5	12.5	130
144	12	12	0	1.5	13.5	160
192	16[1]	12	0	1.5	13.5	150
216	18[1]	12	0	1.5	14.0	170
288	24[1]	12	0	1.5	16.0	180

[1]: Applied in two layers

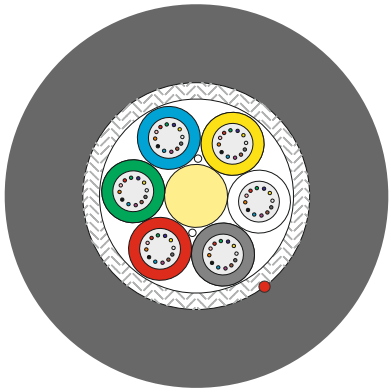
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 12-72F 2500N / 96-288F 4000N [Fiber Strain < 0.33 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -40°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -40°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)B2Y MLT [144-624F] [24F/TUBE]

Loose tube, outdoor, fully dielectric, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics						
Fibers	Tubes	Fibers/ Tubes	Fillers	Sheath thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
144	6	24	0	1.5	12.0	125
192	8	24	0	1.5	13.5	160
216	9	24	0	1.5	14.3	168
288	12	24	0	1.5	17.0	180
384	16	24	0	1.5	16.6	190
432	18[1]	24	0	1.5	17.7	250
576	24[1]	24	0	1.5	20.0	300
624	26[1]	24	0	1.5	21.0	320

[1]: Applied in two layers

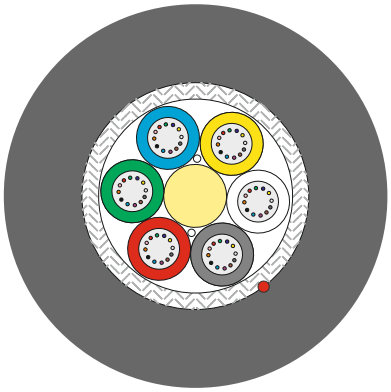
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 4000N [Fiber Strain < 0.33 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -40°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -40°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)2Y MLT [12-144F]

Loose tube, outdoor, fully dielectric, reduced outer diameter, suitable for air-blown installation in mini multi-duct systems.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Reinforcing elements (when required)	Glass yarns with water blocking coating
Ripcord	Polyester or Aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tubes	Fillers	Sheath thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	3	4	2	1.4	8.5	50
24	4	6	1	1.4	8.5	50
48	4	12	1	1.4	8.5	50
60	5	12	0	1.4	8.5	50
72	6	12	0	1.4	9.0	60
96	8	12	0	1.4	10.5	85
144	12	12	0	1.4	11.5	110

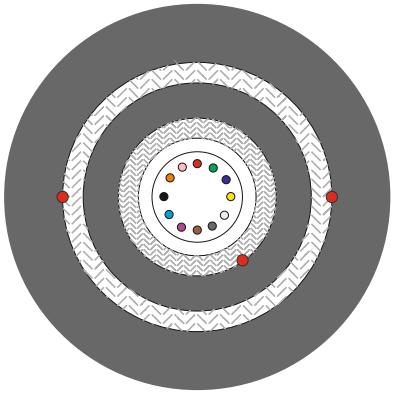
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 12-24F 1800N / 48-72F 2000N / 96-144F 3000N [Fiber Strain < 0.33 %] Crush resistance: 1000 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ2Y(ZN)B2Y CENTRAL [4-24F]

Loose tube, outdoor, fully dielectric, suitable for air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.The double PE sheath provides increased resistance against lateral forces.



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Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Inner	Black PE
Reinforcing elements	Layer of glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, PE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tube	Sheath thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
			Inner	Outer		
2 - 6	1	2 - 6	1.0	1.5	10.5	95
8 - 12	1	8 - 12	1.0	1.5	10.5	95
16 - 24	1	16 - 24	1.0	1.5	10.5	95

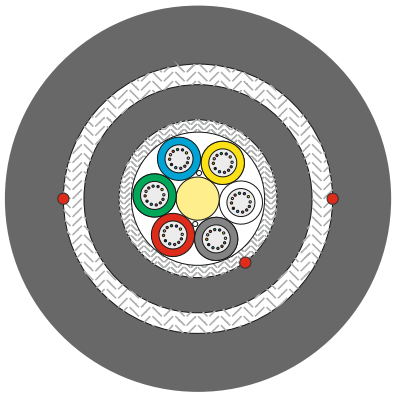
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 2500N [Fiber Strain < 0.33 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ2Y(ZN)B2Y MLT [12-288F] [12F/TUBE]

Loose tube, outdoor, fully dielectric, suitable for air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.The double PE sheath provides increased resistance against lateral forces.



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Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Filler elements (when required):	Natural polymer compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Wrapping	Water blocking tape longitudinally applied with overlap
Inner Sheath	Black PE
Reinforcing elements	Double layer of glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tube	Sheath thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
			Inner	Outer		
12	1	12	1.0	1.5	12.5	135
24	2	12	1.0	1.5	12.5	135
36	3	12	1.0	1.5	12.5	135
48	4	12	1.0	1.5	12.5	135
60	5	12	1.0	1.5	12.5	135
72	6	12	1.0	1.5	12.5	135
96	8	12	1.0	1.5	13.5	155
144	12	12	1.0	1.5	16.5	220
192	16[1]	12	1.0	1.5	16.0	200
216	18[1]	12	1.0	1.5	16.5	220
288	24[1]	12	1.0	1.5	18.5	250

[1]: Applied in two layers

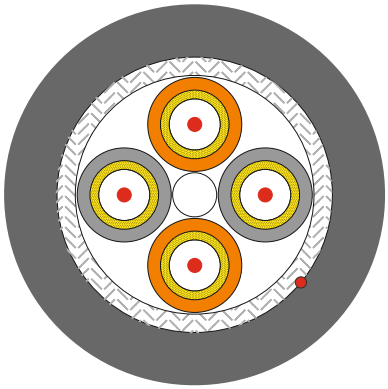
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 12-72F 4000N /96-144F 5000N / 192-288F 4000N [Fiber Strain < 0.33 %] Crush resistance: 4000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR TIGHT BUFFERED BREAKOUT

AT-VQ(ZN)H(ZN)B2Y [2-24F]

Breakout tight buffered, indoor/outdoor, fully dielectric, suitable for lying on cable trays or in protected trenches.



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Construction

Optical fiber	Tight buffered glass fiber Ø 0.9 mm
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Reinforcing elements	Aramide yarns
Sub-unit	FR LSZH tube containing 1 tight buffered optical fiber Ø 2.1 mm
Filler elements (when required)	Natural polymer compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics								
Fibers	No. of Sub units	No. of Fibers / Subunit	Fillers	Ø Diameter of Tight buffered Fiber (mm)	Ø Diameter of sub cable (mm)	Sheath thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
2	2	1	2	0.9	2.1	1.5	9.0	80
4	4	1	0	0.9	2.1	1.5	9.0	85
6	6	1	0	0.9	2.1	1.5	10.0	100
8	8	1	0	0.9	2.1	1.5	11.0	150
12	12	1	0	0.9	2.1	1.5	14.0	200
24	6	4	0	0.9	3.3	1.5	14.0	190

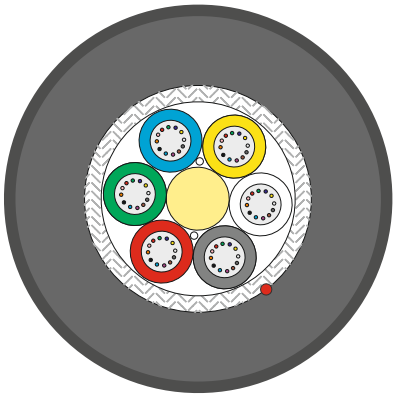
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 1000N [Fiber Strain < 0.5 %] Crush resistance: 4000 N/10cm Bending: 20xD, 6 turns, 10cycles Impact resistance: 3 N. m, 3 impacts spaced, R= 12.5 mm Torsion: 180°, 3 cycles, 20 N (Δα reversible, no damage)	Temperature Range TL= -20°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -20°C, TH= +70°C Operation Δα < 0.10 dB/km

This product group is also available on request with LSZH in outer jacket
Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)2Y4Y MLT [12-288F] [12F/TUBE]

Loose tube, outdoor, fully dielectric, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.



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Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Sheath	Black, UV resistant HDPE
Outer jacket	Black Polyamide (nylon 12)

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tubes	Fillers	Sheath thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
				Inner	Outer		
12	1	12	4	1.0	0.5	9.5	75
24	2	12	3	1.0	0.5	9.5	75
36	3	12	2	1.0	0.5	9.5	75
48	4	12	1	1.0	0.5	9.5	75
60	5	12	0	1.0	0.5	9.5	75
72	6	12	0	1.0	0.5	9.5	80
96	8	12	0	1.0	0.5	11.0	110
144	12	12	0	1.0	0.5	13.5	160
144	6	24	0	1.0	0.5	12.0	120
288	12	24	0	1.0	0.5	17.0	170

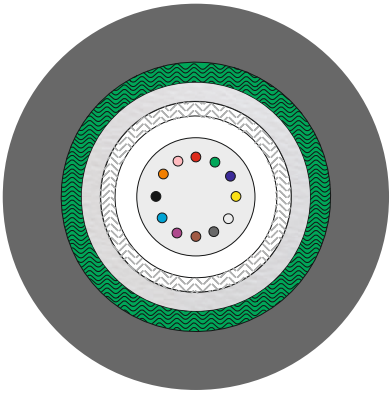
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 12-72F 2500N / 96-288F 4000N [Fiber Strain < 0.33 %] Crush resistance: 2000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR

A-DQ(ZN)(SR)2Y CENTRAL [4-24F]

Central loose tube, outdoor, corrugated steel tape armoured, suitable for drawing or air-blown installation in plastic cable ducts, lying on open or protected trenches or even for direct buried installation in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Reinforcing elements	Glass yarns with water blocking coating
Wrapping	Water blocking tape, longitudinally applied with overlap
Armouring	Corrugated steel tape, longitudinally applied with overlap
Outer jacket	Black, UV resistant PE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tube	Sheath thickness Nominal (mm)	Steel tape thickness (PE-Steel-PE) Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
2 - 6	1	2 - 6	1.5	0.05 - 0.155 - 0.05	9.5	95
8 - 12	1	8 - 12	1.5	0.05 - 0.155 - 0.05	9.5	95
16 - 24	1	16 - 24	1.5	0.05 - 0.155 - 0.05	9.5	95

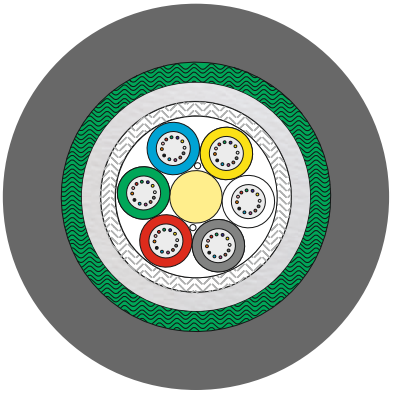
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 1500N [Fiber Strain < 0.33 %] Crush resistance: 3000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -25°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -25°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)(SR)2Y MLT [12-288F]

Loose tube, outdoor, corrugated steel tape armoured, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches or even for direct buried installation in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required):	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Wrapping	Water blocking tape, longitudinally applied with overlap
Armouring	Corrugated steel tape, PE coated on both sides, longitudinally applied with overlap
Outer jacket	Black, UV resistant PE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tubes	Fillers	Sheath thickness Nominal (mm)	Steel tape Thickness (PE-Steel-PE) Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	1	12	4	1.5	0.05 - 0.155 - 0.05	11.5	120
24	2	12	3	1.5		11.5	120
36	3	12	2	1.5		12.0	130
48	4	12	1	1.5		12.0	130
60	5	12	0	1.5		12.0	130
72	6	12	0	1.5		11.5	130
96	8	12	0	1.5		13.0	165
144	12	12	0	1.5		16.0	225
144	6	24	0	1.5		12.5	145
288	12	24	0	1.5		17.5	230

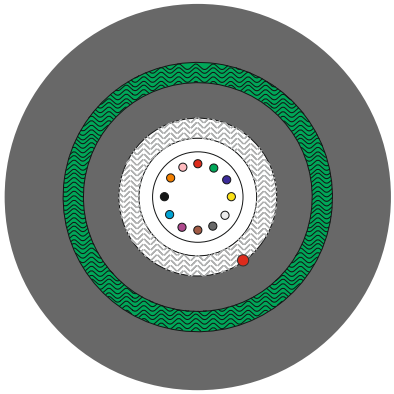
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 12-72F 2700N / 96-288F 4000N [Fiber Strain < 0.33 %] Crush resistance: 2500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)2Y(SR)2Y CENTRAL [4-24F]

Loose tube, outdoor, steel tape armoured, suitable for drawing or air-blown installation in plastic cable ducts or laying on cable trays, in protected trenches or even for direct burial in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Reinforcing elements	Glass yarns with water blocking coating
Wrapping	Water blocking tape, longitudinally applied with overlap
Ripcord	Polyester or aramide thread of sufficient strength
Inner sheath	Black PE
Armouring	Corrugated steel tape, longitudinally applied with overlap
Outer jacket	Black, UV resistant PE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tube	Sheath thickness Nominal (mm)		Steel tape thickness (PE-Steel-PE) Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
			Inner	Outer			
2 - 6	1	2 - 6	1.0	1.5	0.05 - 0.155 - 0.05	11.2	125
8 - 12	1	8 - 12	1.0	1.5	0.05 - 0.155 - 0.05	11.2	125
16 - 24	1	16 - 24	1.0	1.5	0.05 - 0.155 - 0.05	11.2	125

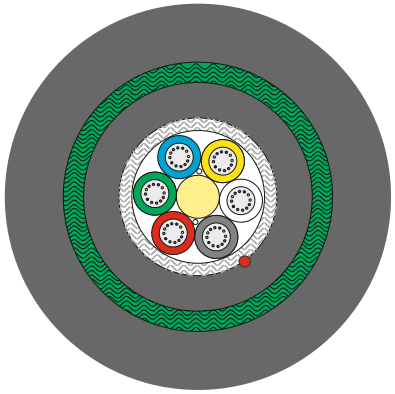
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 2000N [Fiber Strain < 0.33 %] Crush resistance: 3000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -25°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -25°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)2Y(SR)2Y MLT[12-144F]

Loose tube, outdoor, steel tape armoured, suitable for drawing or air-blown installation in plastic cable ducts or laying on cable trays, in protected trenches or even for direct burial in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required):	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Inner sheath	Black PE
Armouring	Corrugated steel tape, PE coated on both sides, longitudinally applied with overlap
Outer jacket	Black, UV resistant PE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tube	Fillers	Sheath thickness Nominal (mm)		Steel tape Thickness (PE-Steel-PE) Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
				Inner	Outer			
12	1	12	4	1.0	1.5	0.05 - 0.155 - 0.05	13.0	165
24	2	12	3	1.0	1.5		13.0	165
36	3	12	2	1.0	1.5		13.0	165
48	4	12	1	1.0	1.5		13.0	165
60	5	12	0	1.0	1.5		13.0	165
72	6	12	0	1.0	1.5		13.5	165
96	8	12	0	1.0	1.5		14.5	195
144	12	12	0	1.0	1.5		17.0	275
144	6	24	0	1.0	1.5		15.2	220
288	12	24	0	1.0	1.5		20.5	290

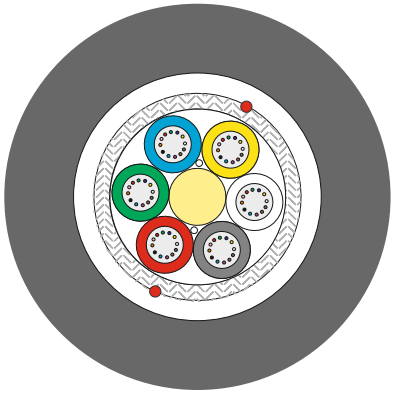
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 3000N [Fiber Strain < 0.33 %] Crush resistance: 4000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 15 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)(L)2Y MLT [12-144F]

Loose tube, outdoor, aluminum tape shielded, suitable for drawing or air-blown installation in plastic cable ducts or laying on open or protected trenches.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating.
Ripcord	Polyester or aramide thread of sufficient strength
Shield	Aluminium tape, PE coated on both sides, longitudinally applied with overlap
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tube	Fillers	Sheath thickness Nominal (mm)	Steel tape thickness (PE-Steel-PE) Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	1	12	4	1.5	0.04 - 0.15 - 0.04	10.0	90
24	2	12	3	1.5		10.0	90
36	3	12	2	1.5		10.0	90
48	4	12	1	1.5		10.0	90
60	5	12	0	1.5		10.0	90
72	6	12	0	1.5		10.5	95
96	8	12	0	1.5		11.5	125
144	12	12	0	1.5		14.5	150
288	24	12	0	1.5		17.0	170

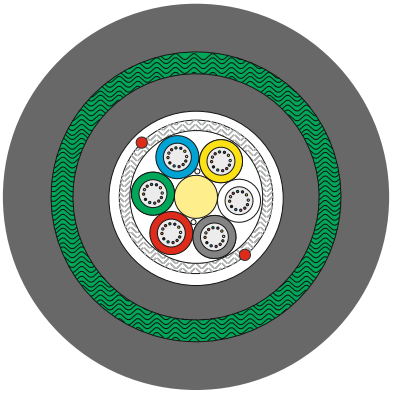
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 12-72F 2700N / 96-288F 4000N [Fiber Strain < 0.33 %] Crush resistance: 2000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)(L)2Y(SR)2Y MLT [12-144F]

Loose tube, outdoor, aluminium shielded and corrugated steel tape armoured, suitable for laying on cable trays and in open trenches or for direct buried installation in the ground.



Drawing is not to scale

Standards

Gen. to IEC 60794-3, VDE 0888

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required):	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Moisture barrier	Aluminium tape, PE coated on both sides, longitudinally applied with overlap
Inner sheath	Black PE
Armouring	Corrugated steel tape, PE coated on both sides, longitudinally applied with overlap
Outer jacket	Black, UV resistant PE

Cables physical characteristics

Fibers	Tubes	Fibers/ Tube	Fillers	Sheath thickness Nominal (mm)		Steel tape Thickness (PE-Steel-PE) Nominal (mm)	Aluminium tape Thickness (PE-AL-PE) Nominal (mm)	Ø Cable Diameter nominal (mm)	Cable Weight (kg)
				Inner	Outer				
12	1	12	4	1.0	1.5	0.05 - 0.155 - 0.05	0.04 - 0.15 - 0.04	14.0	180
24	2	12	3	1.0	1.5			14.0	180
36	3	12	2	1.0	1.5			14.0	180
48	4	12	1	1.0	1.5			14.0	180
60	5	12	0	1.0	1.5			14.0	180
72	6	12	0	1.0	1.5			14.5	190
96	8	12	0	1.0	1.5			15.5	220
144	12	12	0	1.0	1.5			19.5	300

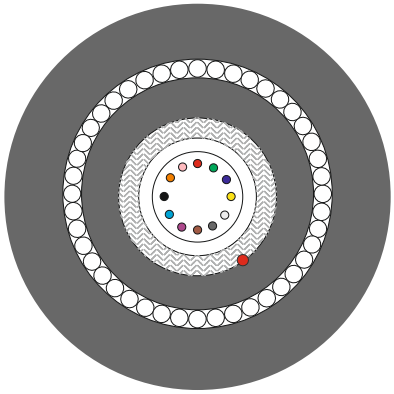
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 4000N [Fiber Strain < 0.33 %] Crush resistance: 5000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 15 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)2Y/SWA/2Y CENTRAL [4-24F]

Loose tube, outdoor, steel wire armoured, suitable for laying on cable trays and in open trenches or for direct buried installation in the ground.



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Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Inner sheath	Black PE compound
Armouring	Galvanised steel wires
Outer jacket	Black PE compound

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics							
Fibers	Tubes	Fibers/ Tube	Steel wire Diameter nominal (mm)	Sheath thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
				Inner	Outer		
2 - 6	1	2 - 6	0.9	1.5	1.8	14.0	280
8 - 12	1	8 - 12	0.9	1.5	1.8	14.0	280
16 - 24	1	16 - 24	0.9	1.5	1.8	14.0	280

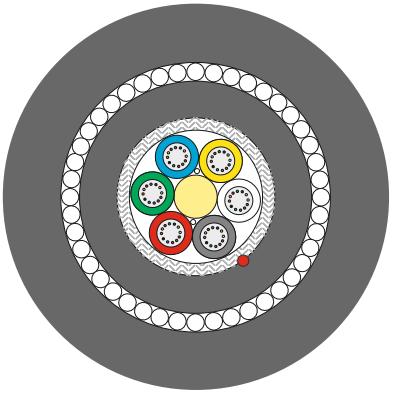
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 3000N [Fiber Strain < 0.33 %] Crush resistance: 6000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 15 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

OUTDOOR CABLES

A-DQ(ZN)2Y/SWA/2Y MLT [12-144F]

Loose tube, outdoor, aluminium shielded and corrugated steel tape armoured, suitable for laying on cable trays and in open trenches or for direct buried installation in the ground.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required):	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Inner sheath	Black PE
Armouring	Galvanised steel wires
Outer jacket	Black, UV resistant PE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics

Fibers	Tubes	Fibers/ Tube	Fillers	Sheath thickness Nominal (mm)		Steel wire Diameter Nominal (mm)	Ø Cable Diameter nominal (mm)	Cable Weight (kg)
				Inner	Outer			
12	1	12	4	1.5	1.8	0.9	15.0	315
24	2	12	3	1.5	1.8	0.9	15.0	315
36	3	12	2	1.5	1.8	0.9	15.0	315
48	4	12	1	1.5	1.8	0.9	15.0	315
60	5	12	0	1.5	1.8	0.9	15.0	315
72	6	12	0	1.5	1.8	0.9	15.0	330
96	8	12	0	1.5	1.8	0.9	16.5	400
144	12	12	0	1.5	1.8	0.9	19.5	500

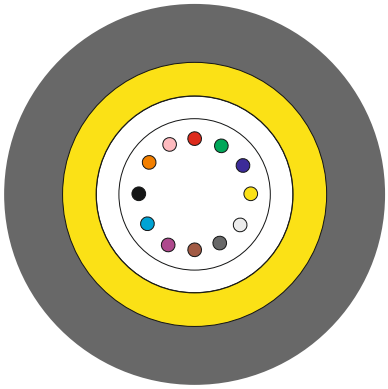
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 5000N [Fiber Strain < 0.33 %] Crush resistance: 6000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 15 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

MICRO CABLES

A-D(ZN)2Y [2-24F] 100N

Loose tube, outdoor, fully dielectric, reduced outer diameter, suitable for air-blown installation in microduct systems.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	Polymer tube, filled with jelly compound
Reinforcing elements	Aramid yarns
Outer jacket	Black, UV resistant PE

Standards

Gen. to IEC 60794-5, VDE 0888

Cables physical characteristics					
Fibers	Tubes	Fibers / Tube	Sheath Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
2 - 6	1	2 - 6	0.35	2.5	6
8 - 12	1	8 - 12	0.35	2.6	8
24	1	24	0.35	3.1	9

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 100N [Fiber Strain < 0.6 %] Crush resistance: 500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 0.2 N. m, 3 impacts spaced, R= 12.5 mm Torsion: 180°, 3 cycles, 20 N (Δα reversible, no damage)	Temperature Range TL= -25°C, TH= +60°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -25°C, TH= +60°C Operation Δα < 0.10 dB/km

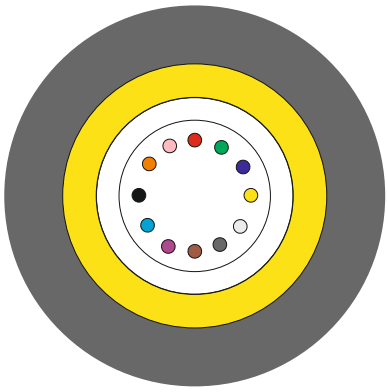
This product group is also available with:
- 200μm fibers
- polyamide sheath

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

MICRO CABLES

A-D(ZN)2Y [2-24F] 250N

Loose tube, outdoor, fully dielectric, reduced outer diameter, suitable for air-blown installation in microduct systems



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Construction

Optical fiber	Coloured glass fiber
Loose tube	Polymer tube, filled with jelly compound
Reinforcing elements	Aramid yarns
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-5, VDE 0888

Cables physical characteristics					
Fibers	Tubes	Fibers / Tube	Sheath Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
2 - 6	1	2 - 6	0.5	3.5	10
8 - 12	1	8 - 12	0.5	3.5	10
24	1	24	0.5	3.5	10

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 250N [Fiber Strain < 0.6 %] Crush resistance: 500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 0.2 N. m, 3 impacts spaced, R= 12.5 mm Torsion: 180°, 3 cycles, 20 N (Δα reversible, no damage)	Temperature Range TL= -25°C, TH= +60°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -25°C, TH= +60°C Operation Δα < 0.10 dB/km

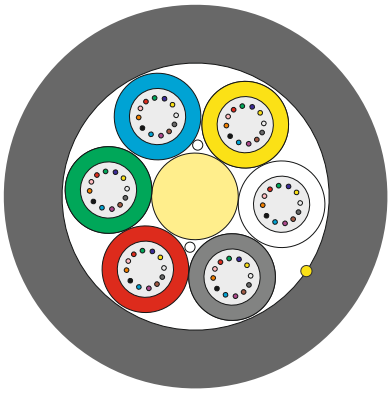
This product group is also available with polyamide sheath

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

MICRODUCT CABLES

A-DQ2Y MLT [12-288F] - 12 F / Tube

Loose tube, outdoor, fully dielectric, reduced outer diameter, suitable for air-blown installation in mini multi-duct systems



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Filler elements (when required)	Natural polymer compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-5, VDE 0888

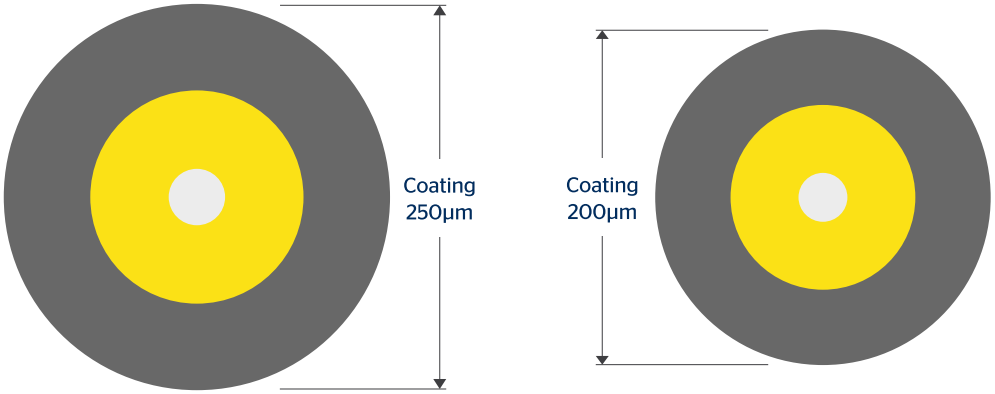
Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Fillers	Sheath Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	1	12	5	0.5	5.5	25
24	2	12	4	0.5	5.5	25
36	3	12	3	0.5	5.5	25
48	4	12	4	0.5	5.5	25
60	5	12	1	0.5	5.5	25
72	6	12	0	0.5	5.5	25
96	8	12	0	0.5	6.3	35
144	12	12	0	0.5	8.0	60
192	16 *	12	0	0.5	8.3	60
216	18 *	12	0	0.5	8.5	60
288	24 *	12	0	0.5	9.5	85

* Applied in two layers

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 1 x W [Fiber Strain < 0.6 %] Crush resistance: 500 N/10cm Bending (static / dynamic): R =15xD/20xD Impact resistance: 1 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 20 N (Δα reversible, no damage)	Temperature Range TL= -25°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -25°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.



- Reduced OF diameter
- 20% more space

Cables physical characteristics						
Micro cables - Fibers with coating 200μm						
Fibers	Tubes	Fibers / Tube	Fillers	Sheath Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	1	12	5	0.5	4.4	16
24	2	12	4	0.5	4.4	16
36	3	12	3	0.5	4.4	16
48	4	12	4	0.5	4.4	16
60	5	12	1	0.5	4.4	16
72	6	12	0	0.5	4.8	20
96	8	12	0	0.5	5.6	30
144	12	12	0	0.5	7.0	40
192	16 *	12	0	0.5	7.5	50
216	18 *	12	0	0.5	7.5	50
288	24 *	12	0	0.5	8.3	65

* Applied in two layers

Cables physical characteristics						
S-Micro cables - Fibers with coating 200μm						
Fibers	Tubes	Fibers / Tube	Fillers	Sheath Thickness Nominal (mm)	Ø Cable Diameter (mm)	Cable Weight (kg)
72	6	12	0	0.5	4.5	20
96	8	12	0	0.5	5.0	25
144	12	12	0	0.5	6.5	35
192	16 *	12	2	0.5	6.8	45
216	18 *	12	0	0.5	6.8	45
288	24 *	12	0	0.5	7.9	60

* Applied in two layers

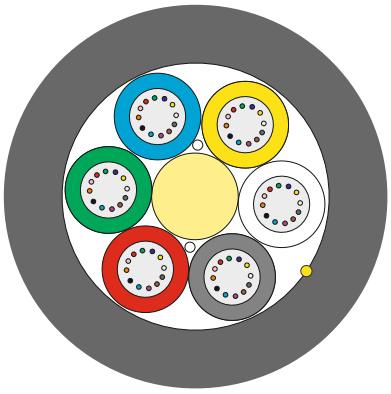
This product group is also available with:
- polyamide sheath

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

MICRODUCT CABLES

A-DQ2Y MLT [144-576F] - 24 F / Tube

Loose tube, outdoor, fully dielectric, reduced outer diameter, suitable for air-blown installation in mini multi-duct systems.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM):	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	24-fiber PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required):	Natural polymer compound
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-5, VDE 0888

Cables physical characteristics						
Fibers	Tubes	Fibers / Tube	Fillers	Sheath Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
144	6	24	0	0.5	7.2	50
192	8	24	0	0.5	8.5	70
216	9	24	0	0.5	9.3	75
288	12	24	0	0.5	11.3	120
432	18 *	24	0	0.5	11.7	120
576	24 *	24	0	0.5	13.5	160

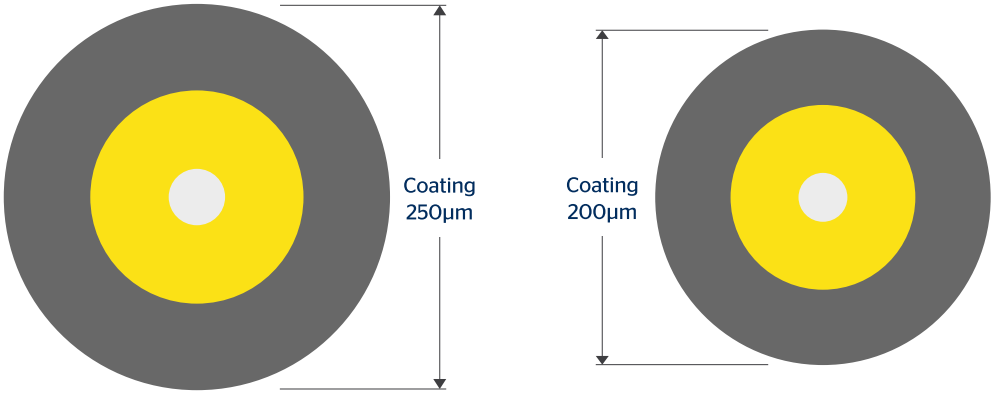
* Applied in two layers

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 1 x W [Fiber Strain < 0.6 %] Crush resistance: 500 N/10cm Bending (static / dynamic): R =15xD/20xD Impact resistance: 1 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 20 N (Δα reversible, no damage)	Temperature Range TL= -25°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -25°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

This product group is also available with:

This product group is also available with:
- polyamide sheath

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.



- Reduced OF diameter
- 20% more space

Cables physical characteristics						
Micro cables - Fibers with coating 200μm						
Fibers	Tubes	Fibers / Tube	Fillers	Sheath Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
144	6	24	0	0.5	6.1	35
192	8	24	0	0.5	6.9	40
216	9	24	0	0.5	7.6	50
288	12	24	0	0.5	9.4	80
432	18 *	24	0	0.5	9.5	80
576	24 *	24	0	0.5	11.0	95

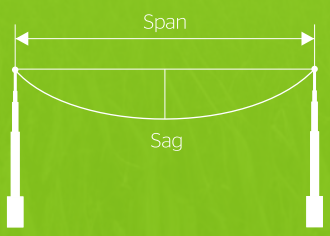
* Applied in two layers

Cables physical characteristics						
S-Micro cables - Fibers with coating 200μm						
Fibers	Tubes	Fibers / Tube	Fillers	Sheath Thickness Nominal (mm)	Ø Cable Diameter (mm)	Cable Weight (kg)
144	6	24	0	0.5	5.5	30
192	8	24	0	0.5	6.4	40
216	9	24	0	0.5	7.0	45
288	12	24	0	0.5	8.3	70
432	18 *	24	0	0.5	8.5	70
576	24 *	24	0	0.5	10	90

This product group is also available with polyamide sheath

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

SPAN is the horizontal distance between two supports (poles).
SAG is the vertical distance between the highest point of a pole and the lowest point of a cable connected between two poles.

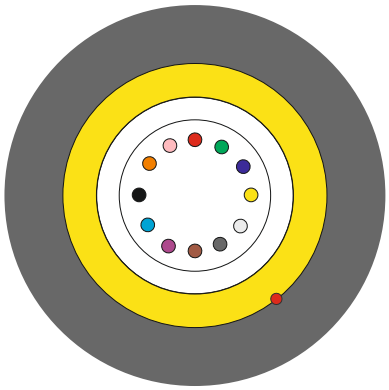


AERIAL LOADING CONDITIONS	LIGHT	MEDIUM	HEAVY
Ice Thickness [mm]	0	6.5	12.5
Wind Velocity [km/h]	95	64	64
Temperature [°C]	-1	-10	-20

Aerial Drop Cables

ADSS UP TO 12FIBERS

Loose tube, outdoor, fully dielectric, suitable for self-supporting aerial installation along existing aerial rights-of-way, for underground installation inside cable ducts, UV resistant polyethylene sheath



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	Polymer tube, filled with jelly compound
Reinforcing elements	Aramid yarns
Ripcord	Polyester thread of sufficient strength
Outer jacket	Black, UV resistant PE (optionally track resistant)

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

Cables physical characteristics					
Fibers	Tubes	Fibers/ Tube	Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
1 - 4	1	1 - 4	1.5	7.0	40
6 - 8	1	6 - 8	1.5	7.0	40
10 - 12	1	10 - 12	1.5	7.0	40

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 1500N [Fiber strain < 0.5%] Crush resistance: 1500 N/10cm Bending (static / dynamic): 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

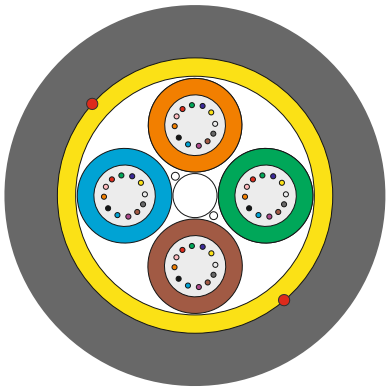
Conditions	LIGHT	MEDIUM	HEAVY
SPAN [m]	60	50	30
SAG [m]	2.3	1.6	1.0

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Aerial Drop Cables

ADSS UP TO 48FIBERS

Loose tube, outdoor, fully dielectric, suitable for self-supporting aerial installation along existing aerial rights-of-way, for underground installation inside cable ducts, UV resistant polyethylene sheath



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Polyester thread of sufficient strength
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Aramid yarns
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

Cables physical characteristics						
Fibers	Tubes	Fibers/ Tube	Fillers	Sheath Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
24	2	12	2	1.2	7.7	45
36	3	12	1	1.2	7.7	45
48	4	12	0	1.2	7.7	45

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 1500N [Fiber strain < 0.5%] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

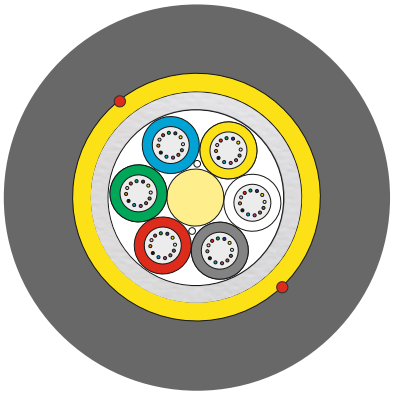
Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Conditions	LIGHT	MEDIUM	HEAVY
SPAN [m]	80	50	30
SAG [m]	2.6	1.8	1.2

Light ADSS Short Span up to 80m

ADSS MLT [12-144F]

Loose tube, outdoor, fully dielectric FO cables suitable for self-supporting aerial installation along existing aerial rights-of-way. They are protected against longitudinal moisture penetration through dry, swellable elements; therefore they are also suitable for underground installation inside cable ducts. The outer covering is an HDPE sheath.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Wrapping	Water blocking tape longitudinally applied with overlap
Reinforcing elements	Aramid yarns
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Fillers	Sheath Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	3	4	3	1.5	9.5	70
24	6	4	0	1.5	9.5	70
48	6	8	0	1.5	9.5	75
72	6	12	0	1.5	10.0	85
96	8	12	0	1.5	11.0	100
144	12	12	0	1.5	14.0	155

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 12-72F 2000N / 96- 144F 2500N [Fiber strain < 0.2%] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

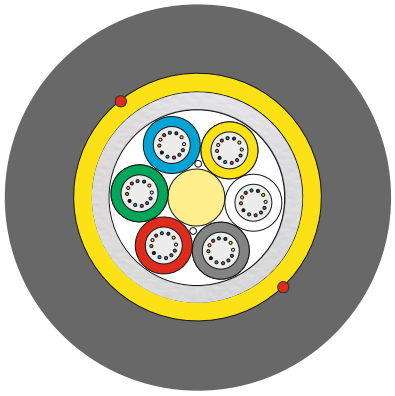
Conditions	LIGHT	MEDIUM	HEAVY
SPAN [m]	120	80	50
SAG [m]	4.0	2.9	2.2

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

ADSS Medium Span up to 150m

ADSS MLT [12-144F]

Loose tube, outdoor, fully dielectric FO cables suitable for self-supporting aerial installation along existing aerial rights-of-way. They are protected against longitudinal moisture penetration through dry, swellable elements; therefore they are also suitable for underground installation inside cable ducts. The outer covering is an HDPE sheath.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Polyester thread of sufficient strength
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Aramid yarns
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

Cables physical characteristics						
Fibers	Tubes	Fibers/ Tube	Fillers	Sheath Thickness Nominal (mm)	Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
12	3	4	3	1.5	10.5	90
24	6	4	0	1.5	10.5	90
48	6	8	0	1.5	10.5	90
72	6	12	0	1.5	10.5	90
96	8	12	0	1.5	11.5	110
144	12	12	0	1.5	14.2	160

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 12-72F 4000N / 96-144F 4500N [Fiber strain < 0.2%] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

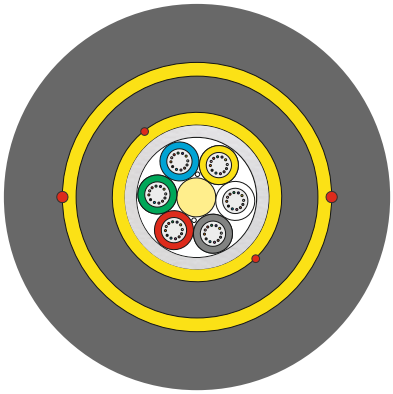
Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Conditions	LIGHT	MEDIUM	HEAVY
SPAN [m]	200	150	100
SAG [m]	6.2	5.3	4.3

ADSS Long Span up to 250m

ADSS MLT [12-144F]

Loose tube, outdoor, fully dielectric FO cables suitable for self-supporting aerial installation along existing aerial rights-of-way. They are protected against longitudinal moisture penetration through dry, swellable elements; therefore they are also suitable for underground installation inside cable ducts. The outer covering is an HDPE sheath.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Wrapping	Water blocking tape longitudinally applied with overlap
Inner sheath	Black PE
Ripcord	Polyester thread of sufficient strength
Reinforcing elements	Layers of aramid yarns
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

Cables physical characteristics

Fibers	Tubes	Fibers / Tube	Fillers	Sheath Thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
				Inner	Outer		
12	3	4	3	1.0	1.5	9.5	70
24	6	4	0	1.0	1.5	9.5	70
48	6	8	0	1.0	1.5	9.5	75
72	6	12	0	1.0	1.5	10.0	85
96	8	12	0	1.0	1.5	11.0	100
144	12	12	0	1.0	1.5	14.0	155

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 9000 N [Fiber strain < 0.2%] Crush resistance: 4000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

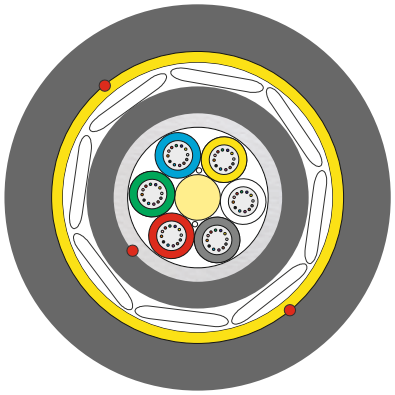
Conditions	LIGHT	MEDIUM	HEAVY
SPAN [m]	300	250	200
SAG [m]	8.2	8.1	8.3

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

ADSS with antiballistic protection

ADSS MLT [12-144F]

Loose tube, outdoor, fully dielectric FO cables suitable for self-supporting aerial installation along existing aerial rights-of-way. They are protected against longitudinal moisture penetration through dry, swellable elements; therefore it is also suitable for underground installation inside cable ducts. The layer of rigid flat E-glass elements offers sufficient antiballistic protection.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Wrapping	Water blocking tape longitudinally applied with overlap
Inner sheath	Black PE
Ripcord	Polyester thread of sufficient strength
Reinforcing elements	Layers of aramid yarns
Armouring	Rigid E-glass flat elements
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

Cables physical characteristics

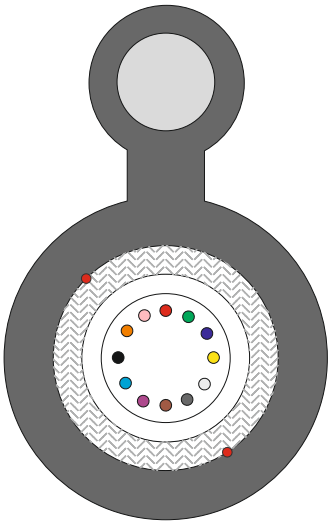
Fibers	Tubes	Fibers/ Tube	Fillers	Flat E-glass elements Thickness Nominal (mm)	Sheath Thickness Nominal (mm)		Ø Cable Diameter Nominal (mm)	Cable Weight (kg)
					Inner	Outer		
12	1	12	4	0.75	0.8	1.6	15.2	190
24	2	12	3		0.8	1.6	15.2	190
48	4	12	1		0.8	1.6	15.2	19
72	6	12	0		0.8	1.6	16.5	235
96	4	24	2		1.2	1.7	18	280
144	6	24	0		1.2	1.7	18	285

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength:10000 N [Fiber strain < 0.2%] Crush resistance: 4000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 15 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 100 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Fig-8 with dielectric support element

A-DQ(ZN)T2Y CENTRAL [4-24F]



Drawing is not to scale

Loose tube, aerial, self-supported, figure-8 FO cables, suitable for aerial installation on poles. They are protected against longitudinal moisture penetration through dry, swellable elements. The FRP embedded in the cable sheath, is the messenger wire that together with the glass yarns applied under the outer sheath are carrying the applicable forces during installation and operation.

Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Ripcord	Polyester or aramide thread of sufficient strength
Reinforcing elements	Glass yarns with water blocking coating
Supporting element	Dielectric, glass fiber reinforced plastic (FRP)
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

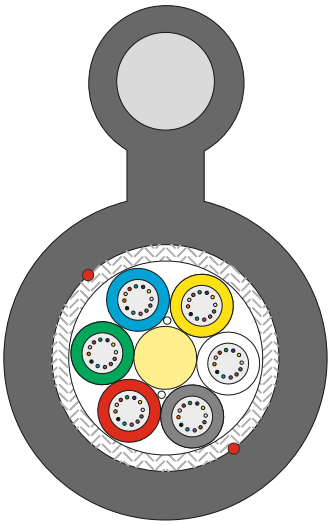
Cables physical characteristics							
Fibers	Tubes	Fibers/ Tube	Ø Messenger Wire (FRP) Diameter Nominal (mm)	Ø Coated Messenger Wire (FRP) Diameter Nominal (mm)	Sheath Thickness Nominal (mm)	Ø Cable overall Diameter x Height Nominal (mm)	Cable Weight (kg)
4 - 8	1	4 - 8	3.5	5.9	1.4	6 x 15	80
10 - 12	1	10 - 12	3.5	5.9	1.4	6 x 15	80
16 - 24	1	16 - 24	3.5	5.9	1.4	6 x 15	80

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength:4000 N [Fiber strain < 0.5%] Crush resistance: 2500 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Fig-8 with dielectric support element

A-DQ(ZN)T2Y MLT [24-48-72F]



Drawing is not to scale

Loose tube, aerial, self-supported, dielectric figure-8 FO cables, suitable for aerial installation on poles. They are protected against longitudinal moisture penetration through dry, swellable elements. The FRP embedded in the cable sheath, is the dielectric messenger wire that together with glass yarns applied under the outer sheath are carrying the applicable forces during installation and operation.

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Ripcord	Polyester or aramide thread of sufficient strength
Reinforcing elements	Glass yarns with water blocking coating
Supporting element	Dielectric, glass fiber reinforced plastic (FRP)
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

Cables physical characteristics								
Fibers	Tubes	Fibers/ Tube	Fillers	Ø Messenger Wire (FRP) Diameter Nominal (mm)	Ø Coated Messenger Wire (FRP) Diameter Nominal (mm)	Sheath Thickness Nominal (mm) (mm)	Ø Cable overall Diameter x Height Nominal (mm)	Cable Weight (kg)
24	3	8	2	3.2	5.6	2.2	11.0x19.5	140
48	4	12	1	3.2	5.6	2.2	11.0x19.5	140
72	6	12	0	3.2	5.6	2.2	11.0x19.8	150
96	8	12	0	3.2	6.5	2.2	14.0x19.8	180

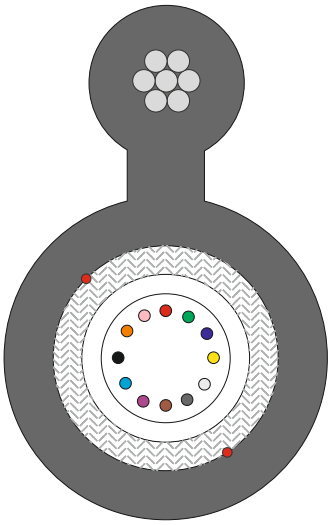
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 5000 N [Fiber strain < 0.2%] Crush resistance: 2500 N/10cm Bending (static / dynamic) : 10xD/15xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Fig-8 with steel support element

A-DQ(ZN)T2Y CENTRAL [4-24F]

Loose tube, aerial, self-supported, figure-8, suitable for aerial installation on poles



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Loose tube	PBT tube, filled with jelly compound
Ripcord	Polyester or aramide thread of sufficient strength
Reinforcing elements	Glass yarns with water blocking coating
Supporting element	7-strand galvanised steel rope
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

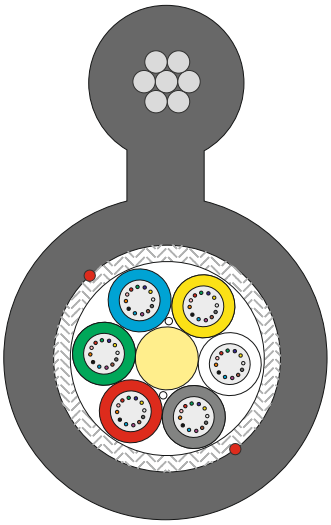
Cables physical characteristics						
Fibers	Tubes	Fibers/ Tube	Ø Messenger Wire (FRP) Diameter Nominal (mm)	Sheath Thickness Nominal (mm)	Ø Cable overall Diameter x Height Nominal (mm)	Cable Weight (kg)
4-12	1	4-24	7x1.0	1.5	6.5x15.5	110
24	1	24	7x1.0	1.5	7.0x16	115

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 3000 N [Fiber strain < 0.33%] Crush resistance: 2000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Fig-8 with steel support element

A-DQ(ZN)T2Y MLT [12-144F]



Drawing is not to scale

Loose tube, aerial, self-supported, figure-8 FO cable, suitable for aerial installation on poles. It is protected against longitudinal moisture penetration through jelly filling compound. The galvanized steel strand embedded in the cable sheath, is the messenger wire that carries the applicable forces during installation and operation.

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Jelly filling compound
Filler elements (when required)	Natural polymer compound
Wrapping	Polyester tape
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Supporting element	7-strand galvanised steel rope
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Cables physical characteristics							
Fibers	Tubes	Fibers/ Tube	Fillers	Ø Messenger Steel rope Diameter Nominal (mm)	Sheath Thickness Nominal (mm) (mm)	Ø Cable overall Diameter x Height Nominal (mm)	Cable Weight (kg)
12	3	4	2	7x1.0	1.5	9.0 x 18.0	125
12	1	12	4	7x1.0	1.5	10.0 x 19.0	130
24	6	4	0	7x1.0	1.5	10.0 x 19.0	160
24	2	12	3	7x1.0	1.5	10.0 x 19.0	130
48	4	12	1	7x1.0	1.5	10.0 x 19.0	140
72	6	12	0	7x1.0	1.5	10.0 x 19.0	150
96	8	12	0	7x1.0	1.5	11.0 x 20.0	170
144	12	12	0	7x1.0	1.5	14.0 x 23.0	230

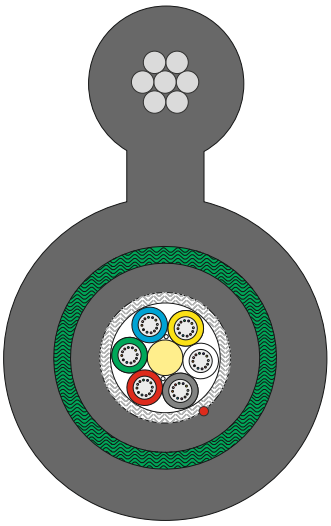
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 4000 N [Fiber strain < 0.2%] Crush resistance: 2000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Fig-8 with steel support element

A-DQ2Y(SR)T2Y MLT [12-96F]

Loose tube, aerial, self supported, figure-8 FO cables, suitable for aerial installation on poles. They are protected against longitudinal moisture penetration through dry, swellable elements. The steel rope embedded in the cable sheath, is the messenger wire carrying the applicable forces during installation and operation. The double HDPE sheath, together with the corrugated steel tape protects the cable against hunting bullets and provides increased resistance against lateral forces.



Drawing is not to scale

Standards

Gen. to IEC 60794-3, IEC 60794-4, IEEE 1122

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Filler elements (when required)	Natural polymer compound
Wrapping	Water blocking tape longitudinally applied with overlap
Ripcord	Polyester or aramide thread of sufficient strength
Inner sheath	Black HDPE
Armouring	Corrugated steel tape, PE coated on both sides, longitudinally applied with overlap.
Supporting element	7-strand galvanised steel rope
Outer jacket	Black, UV resistant HDPE (optionally track resistant)

Cables physical characteristics

Fibers	Tubes	Fibers/ Tube	Fillers	Ø Messenger Steel rope Diameter Nominal (mm)	Sheath Thickness Nominal (mm)		Steel tape Thickness (PE-Steel-PE) Nominal (mm)	Ø Cable overall Diameter x Height Nominal (mm)	Cable Weight (kg)
					Inner	Outer			
12	3	4	2	7 x1.0	1.0	1.5	0.05 – 0.155 – 0.05	12.5 x 21.0	220
24	4	6	1	7 x1.0	1.0	1.5		12.5 x 21.0	220
48	4	12	1	7 x1.0	1.0	1.5		13.5 x 22.0	245
72	6	12	0	7 x1.0	1.0	1.5		13.5 x 23.0	260
96	8	12	0	7 x1.0	1.0	1.5		15.0 x 24.0	300

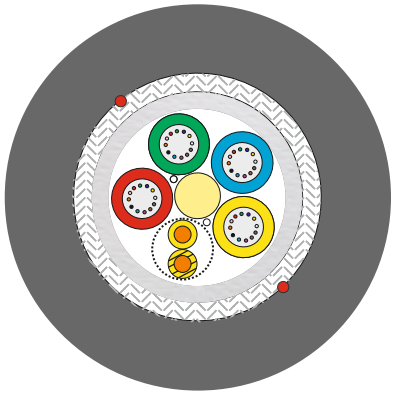
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 6000 N [Fiber strain < 0.2%] Crush resistance: 2000 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - No water detected with UV light

Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Hybrid Cables - Fibers and telecom cores

A-DSQ(ZN)B2Y MLT

Loose tube, outdoor, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches, or even for direct buried installation in the ground. One copper pair is also incorporated.



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Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Copper pair	Solid 0.6mm plain Cu wire, insulated with solid Polyethylene
Filler elements (when required)	Natural polymer compound.
Water blocking element	Swellable, polyester yarns longitudinally applied
Wrapping	Water blocking tape longitudinally applied with overlap
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics							
Fibers	Tubes	Fibers/ Tube	Fillers	Copper wires	Sheath Thickness Nominal (mm) (mm)	Ø Cable overall Diameter x Height Nominal (mm)	Cable Weight (kg)
24	2	12	2	1x2x0.6	1.5	11.0	95
48	4	12	0	1x2x0.6	1.5	11.0	95
72	6	12	0	1x2x0.6	1.5	11.5	110
96	8	12	0	1x2x0.6	1.5	13.0	140
144	12	12	0	1x2x0.6	1.5	16.0	210

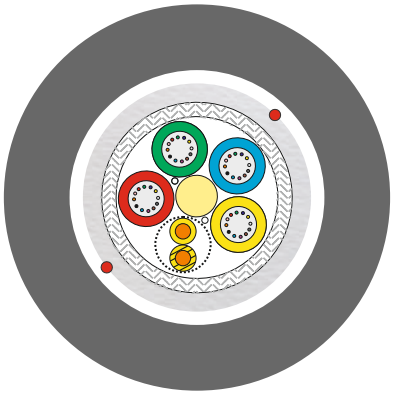
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 24-72F 2500 N / 96-144F 4000N [Fiber Strain < 0.33 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - no water detected with UV light

This product group is also available on request with 1x2x0.4mm copper wires
Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Hybrid Cables - Fibers and telecom cores

A-DSQ(ZN)(L)2Y MLT

Loose tube, outdoor, aluminum tape shielded, suitable for drawing or air-blown installation in plastic cable ducts, or laying on open or protected trenches. A copper pair is also incorporated.



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Standards

Gen. to IEC 60794-3, VDE 0888

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swelling water blocking yarn
Copper pair	Solid 0.6mm plain Cu wire, insulated with solid Polyethylene
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Wrapping	Water blocking tape longitudinally applied with overlap
Ripcord	Polyester or aramide thread of sufficient strength
Moisture barrier	Aluminium tape, PE coated on both sides, longitudinally applied with overlap
Outer jacket	Black, UV resistant HDPE

Cables physical characteristics								
Fibers	Tubes	Fibers/ Tube	Fillers	Copper wires	Aluminium tape thickness (PE-AL-PE) Nominal (mm)	Steel tape Thickness Nominal (mm)	Cable Diameter Nominal (mm)	Cable Weight (kg)
24	2	12	2	1x2x0.6	0.04-0.15-0.04	1.8	12.0	120
48	4	12	0	1x2x0.6	0.04-0.15-0.04	1.8	12.0	120
72	6	12	0	1x2x0.6	0.04-0.15-0.04	1.8	12.5	135
96	8	12	0	1x2x0.6	0.04-0.15-0.04	1.8	14.0	180
144	12	12	0	1x2x0.6	0.04-0.15-0.04	1.8	16.5	245

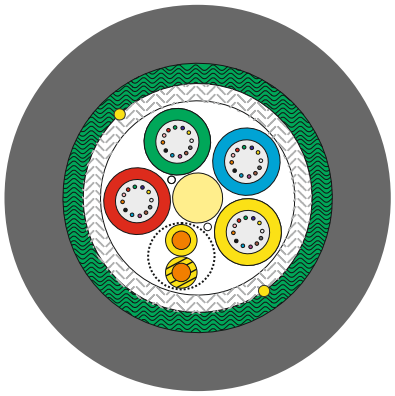
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Tensile strength: 24-72F 2500 N / 96-144F 4000N [Fiber Strain < 0.33 %] Crush resistance: 1500 N/10cm Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - no water detected with UV light

This product group is also available on request with 1x2x0.4mm copper wires
Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Hybrid Cables - Fibers and telecom cores

A-DSQ(ZN)(SR)2Y MLT

Loose tube, outdoor, suitable for drawing or air-blown installation in plastic cable ducts, laying on open or protected trenches, or even for direct buried installation in the ground. One copper pair is also incorporated.



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Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Copper pair	Solid 0.6mm plain Cu wire, insulated with solid Polyethylene
Filler elements (when required)	Natural polymer compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Armouring	Corrugated steel tape, PE coated on both sides, longitudinally applied with overlap
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics								
Fibers	Tubes	Fibers/ Tube	Fillers	Copper wires	Steel tape thickness (PE-Steel-PE) Nominal (mm)	Sheath Thickness Nominal (mm) (mm)	Cable Diameter Nominal (mm)	Cable Weight (kg)
24	2	12	2	1x2x0.6	0.05-0.155-0.05	2.0	12.5	145
48	4	12	0	1x2x0.6	0.05-0.155-0.05	2.0	12.5	145
72	6	12	0	1x2x0.6	0.05-0.155-0.05	2.0	13.5	160
96	8	12	0	1x2x0.6	0.05-0.155-0.05	2.0	15.5	220
144	12	12	0	1x2x0.6	0.05-0.155-0.05	2.0	18.5	310

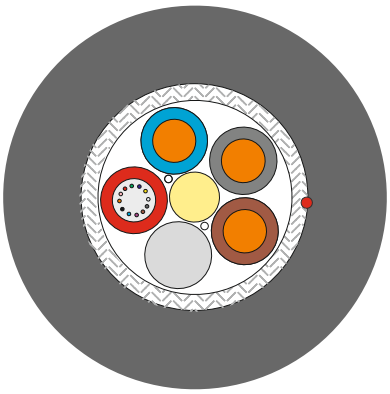
Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Crush resistance: 24-72F 3000 N / 96-144F 4000N [Fiber Strain < 0.33 %] Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - no water detected with UV light

This product group is also available on request with 1x2x0.4mm copper wires
Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Hybrid Cables - Fibers and power cores

A-DSQ(ZN)B2Y MLT

Loose tube, outdoor, suitable for drawing or air-blown installation in plastic cable ducts or laying on open or protected trenches. Copper wires are also incorporated.



Drawing is not to scale

Construction

Optical fiber	Coloured glass fiber
Central Strength Member (CSM)	Dielectric, glass fiber reinforced plastic (FRP)
Loose tube	PBT tube, filled with jelly compound
Water blocking element	Swellable, polyester yarns longitudinally applied
Conductor	Cu wire, insulated with solid PVC/PE
Filler elements (when required)	Natural polymer compound
Reinforcing elements	Glass yarns with water blocking coating
Ripcord	Polyester or aramide thread of sufficient strength
Outer jacket	Black, UV resistant HDPE

Standards

Gen. to IEC 60794-3, VDE 0888

Cables physical characteristics							
Fibers	Tubes	Fibers/ Tube	Fillers	Copper wires	Steel tape Thickness Nominal (mm)	Cable Diameter Nominal (mm)	Cable Weight (kg)
12	1	12	2	2x1.5	1.5	12.0	120
12	1	12	1	3x1.5	1.5	12.0	140
12	1	12	2	2x2.5	1.5	12.5	160
12	1	12	1	3x2.5	1.5	12.5	190

Mechanical Characteristics - tested according to IEC 60794-1-21	Environmental Characteristics - tested according to IEC 60794-1-22
Crush resistance: 3000 N [Fiber Strain < 0.33 %] Bending (static / dynamic) : 15xD/20xD Impact resistance: 10 N. m, 3 impacts spaced, R= 300 mm Torsion: 180°, 3 cycles, 50 N (Δα reversible, no damage)	Temperature Range TL= -30°C, TH= +70°C Storage & Transport TL= -10°C, TH= +50°C Installation Δα < 0.05 dB/km TL= -30°C, TH= +70°C Operation Δα < 0.10 dB/km Water Penetration: 3m cable, 1 m water column, 24 h - no water detected with UV light

This product group is also available on request with other combination of fibers and power cores.
Other physical and mechanical characteristics available upon request.
Technical parameters are subject to modification.

Notes

Notes

HELLENIC CABLES

Member of CENERGY HOLDINGS

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