

**FIXNET**

FIBER OPTIC CABLES

fix



CATALOGUE  
2018

# ABOUT THE COMPANY

«Fixnet» is one of the Ukrainian industrial market leader of the fiber optic cables for backbone, regional area and subscriber networks. The company is the constant reliable supplier of the production both for domestic Ukrainian and international markets.

# THE PHILOSOPHY

There are two main goals of our company. The first is a continuous quality improvement of the released production, and the second is a competent organization of uninterrupted deliveries of the fiber optic cables to partners.

Thanks to the high-technology production capacities we produce goods, that completely respond to the call of the times. We are not afraid of the fast-paced market demands and, owing to the flexible approach and embodied innovations, we instantly adapt to the actual game rules with releasing of new structures.

We are sure that the Ukrainian companies will be able to entirely spend their resources to create the high grade and trouble free data transfer networks only if they are confident in the future and in their supplier reliability.

# THE MARK OF PRIDE

The specialization of «Fixnet» company is manufacturing of the fiber optic cables of various designation and design versions as follows:

- FTTH (FIBER-TO-THE-HOME)
- CABLES FOR LAYING IN THE GROUND/CHANNELING
- HANGING CABLES
- INTRABUILDING CABLES AND SO ON



We aspire to expand the assortment as much as possible. This allows our clients to realize any even the most large-scale project using TM FiFix cable. Our production is the mark of our pride. And we do that better than others.

# CLIENTS

The top Ukrainian and foreign companies confide in us, as follows:

- mobile network operators,
- corporations and local internet service providers,
- constructors of a backbone fiber optic communication lines,
- representatives of the energy industry.





# 5 BENEFITS OF «FIXNET»

- **THE RAW MATERIAL THAT WE ARE SURE OF.** The best materials of the producers with world brand and reputation such as Corning, Fujikura, Sumitomo, Borealis, Sabic, PolyOne, Henkel are used at manufacturing process.
- **INNOVATIONS THAT WE MAKE THE BEST USE OF.** We permanently follow for the advanced manufacturing technologies in the cable production industry, instantly develop and implement them into operation. Successful tandem of «Fixnet» consists of the latest automated equipment of the leading global manufacturer and the best professionals in Ukraine.
- **PRODUCTION THAT WE HAVE MADE FLEXIBLE.** The innovative approach to the production process organization allows, where applicable, to redirect instantly the factory production capacities onto the individual orders manufacturing and custom-made structures creation.
- **QUALITY SYSTEM THAT UKRAINE AND THE WHOLE WORLD ARE SURE OF.** The quality management system ISO 9001:2008 has been implemented at our factory. After our competitiveness and expertise in the management as well as the stable high quality of TM FiFix goods had been confirmed, we have been able to come into arena of the global market without obstacles. Furthermore, all the production of «Fixnet» company has been certificated by «UkrSEPRO» which is the unified state system of certification and standardization in our country.
- **DEVELOPMENT THAT CONTINUES ALL THE TIME.** We aspire not only to keep our quality grade, but also to actualize an assortment. In the production catalogue there are 27 cable structures available to order just now. In the near future a product range will be added with some several new products, which are being developed by the production designers of «Fixnet» factory at the moment.



## IN NUMBERS:

- **2 000 KM**  
IS A MONTHLY BUT NOT BOUNDARY PRODUCTIVE CAPACITY OF THE «FIXNET» FACTORY.
- **26 000 KM**  
IS THE TOTAL OUTPUT OF TM FiFix CABLE FROM THE DATE OF STARTUP OF «FIXNET» PRODUCTION LINES. THIS NUMBER IS TWICE AS LARGE AS THE DIAMETER OF OUR PLANET.
- **115 000 KM**  
IS THE OPTICAL FIBRE QUANTITY USED WITHIN THE WHOLE OPERATION TIME OF «FIXNET» FACTORY. IT IS ENOUGH TO GIRDLING THE EARTH THREE TIMES AROUND EQUATORIAL CIRCUMFERENCE.





Extrusion line control cabinet



Caterpillar haul-off unit



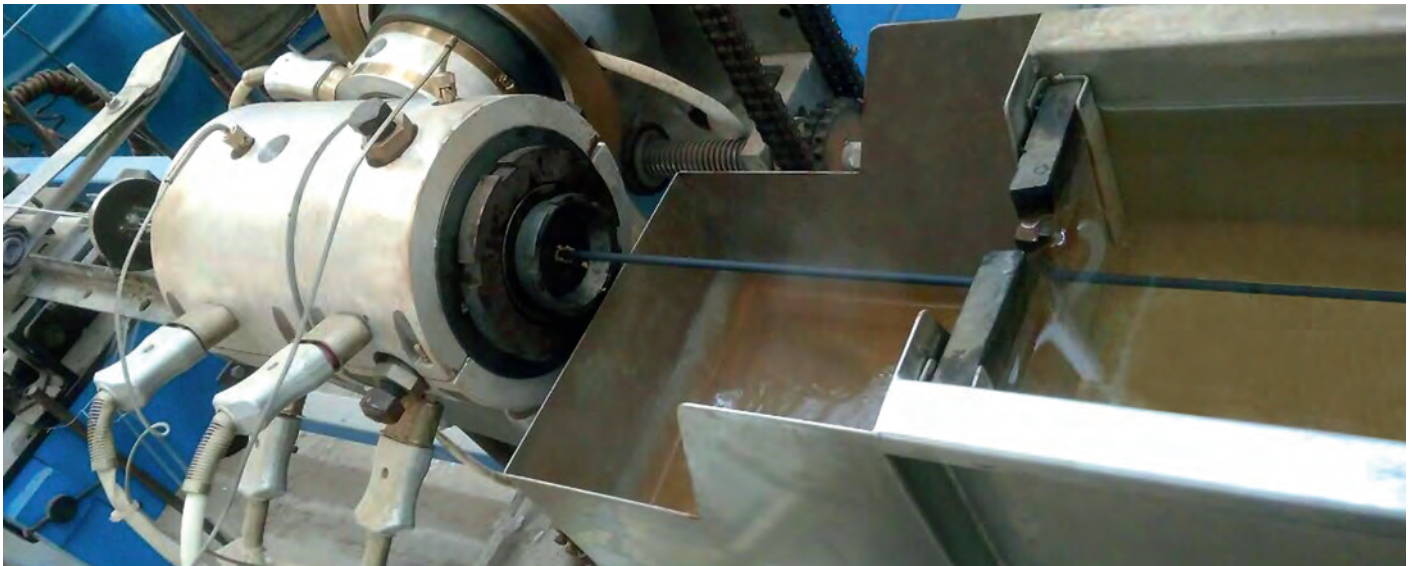
Pay-off



Accumulator of tape armoring



Cable diameter measuring instrument



Cable sheathing process

## REFERENCE INFORMATION

Color identification of optical fibre

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

# REFERENCE INFORMATION

## CHARACTERISTICS OF OPTICAL FIBRES

TYPE OF FIBER CHARACTERISTICS	SINGLEMODE OPTICAL FIBRE				MULTIMODE OPTICAL FIBER	
	Standard fibre SM	Non zero-dispersion shifted optical fibre NZDSF	Low-loss high performance fiber SM	Fiber with improved resistance to macrobend	50 / 125	62,5 / 125
	ITU-T G. 652 D	ITU-T G. 655	ITU-T G. 657 A1	ITU-T G. 657 A2/B2	ITU-T G. 651	IEC 60793-2
<b>OPTICAL CHARACTERISTICS</b>						
Wavelength attenuation						
850 nm	-	-	-	-	≤ 3,0 dB/km	≤ 3,0 dB/km
1300 nm	-	-	-	-	≤ 1,0 dB/km	≤ 1,0 dB/km
1310 nm	≤ 0,36 dB/km	-	≤ 0,32 dB/km	≤ 0,32 dB/km	-	-
1550 nm	≤ 0,22 dB/km	≤ 0,35 dB/km	≤ 0,18 dB/km	≤ 0,18 dB/km	-	-
Mode field diameter	9,3 ± 0,5 μm (1310 nm)	9,5 ± 0,5 μm (1550 nm)	8,6-9,5 μm (1310 nm)	8,6-9,5 μm (1310 nm)	-	-
Cutoff wavelength						
λ <sub>c</sub> (OF – 2 m)	1190-1330 nm	-	1190-1330 nm	1190-1330 nm	-	-
λ <sub>cc</sub> (OF or OC – 22 m)	≤ 1260 nm	1450 nm	≤ 1260 nm	≤ 1260 nm	-	-
Chromatic dispersion						
1285 – 1330 nm	≤ 3,5 pc/(nm·km)	-	≤ 18 pc/(nm·km)	≤ 18 pc/(nm·km)	-	-
1550 nm	≤ 18 pc/(nm·km)	-	-	-	-	-
1530 – 1565 nm	-	1,0...6,0 pc/(nm·km)	-	-	-	-
1525 – 1575 nm	-	-	≤ 22 pc/(nm·km)	≤ 23 pc/(nm·km)	-	-
1625 nm	-	-	-	-	-	-
Band width						
λ = 850 nm	-	-	-	-	≥ 250 MHz·km	≥ 200 MHz·km
λ = 1300 nm	-	-	-	-	≥ 500 MHz·km	≥ 400 MHz·km
Wavelength range with zero variance value	1300 – 1325 nm	-	1300 – 1324 nm	1300 – 1324 nm	-	-
Maximum slope of dispersion curve at the point of its zero value	≤ 0,092 pc/(nm <sup>2</sup> ·km)	-	≤ 0,092 pc/(nm <sup>2</sup> ·km)	≤ 0,092 pc/(nm <sup>2</sup> ·km)	-	-
Polarization mode dispersion (PMD) 1550 nm	≤ 0,22 pc·km <sup>1/2</sup>	≤ 0,2 pc·km <sup>1/2</sup>	≤ 0,2 pc·km <sup>1/2</sup>	≤ 0,2 pc·km <sup>1/2</sup>	-	-
Numerical aperture (NA)	-	-	-	-	0,21 ± 0,02	0,275 ± 0,015
<b>GEOMETRICAL CHARACTERISTICS</b>						
Non-circularity of core	-	-	-	-	≤ 6 %	≤ 6 %
Core diameter	-	-	-	-	50 ± 3	62,5 ± 3
Cladding diameter	125 ± 1 μm	125 ± 1 μm	125 ± 0,7 μm	125 ± 0,7 μm	125 ± 3 μm	125 ± 2 μm
Cladding Non-circularity	≤ 1,0 %	≤ 1,0 %	≤ 1,0 %	≤ 1,0 %	≤ 1,0 %	≤ 2,0 %
Excentricity						
- core / cladding	-	-	-	-	≤ 1,5 μm	≤ 1,5 μm
- mode field / cladding	≤ 0,5 μm	≤ 0,6 μm	≤ 0,5 μm	≤ 0,5 μm	-	-
Coating diameter	245 ± 10 μm					
<b>MECHANICAL CHARACTERISTICS</b>						
Strength test	≥ 1,0 % (0,69 hPa)					
Radius of own bend	≥ 4,0 m	≥ 4,0 m	≥ 4,0 m	≥ 4,0 m	-	-
Macrobend losses:						
- radius of mandrel, mm	30	30	10 15	10 15 7,5	-	-
- number of coils, pc.	100	100	10 1	10 1 1	-	-
- Increase in attenuation, dB at wavelength						
1550 nm			0,25 0,75	0,03 0,1 0,5		
1625 nm	0,1	0,5	1,0 1,5	0,1 0,2 1,0		
<b>ENVIRONMENTAL IMPACTS</b>						
Dependence of attenuation in the temperature range (-60...+85) °C at wavelength						
850 nm	-	-	-	-	≤ 0,2 dB/km	≤ 0,2 dB/km
1300 nm	-	-	-	-	≤ 0,2 dB/km	≤ 0,2 dB/km
1310 nm	≤ 0,05 dB/km	-	≤ 0,05 dB/km	≤ 0,05 dB/km	-	-
1550 nm	≤ 0,05 dB/km	≤ 0,05 dB/km	≤ 0,05 dB/km	≤ 0,05 dB/km	-	-





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FTTH fiber optic cables

# REFERENCE DESIGNATION of FIBER OPTIC CABLES FTTH

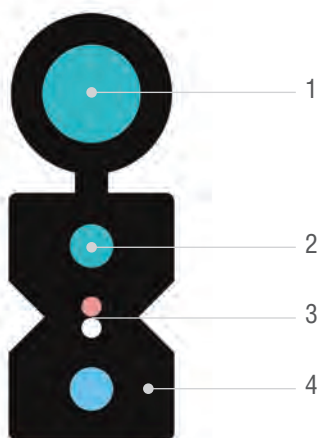
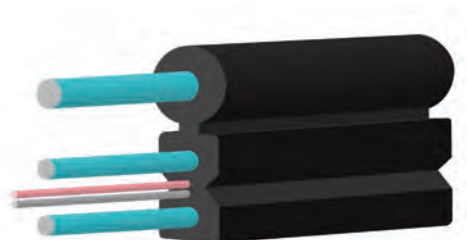
1	2	3 -	4 -	5 -	6	7	8 -	9
								<b>MATERIAL OF PROTECTIVE COATING</b> LSZH - Flame-retardant, low-smoke, halogen-free compound cladding PVC - Polyvinylchloride cladding PU - Polyurethane cladding
								<b>FIBER TYPE</b> G. 652 D - Singlemode optical fibre in accordance with recommendation of ITU-T G. 652 D G. 657 A1/A2 - Singlemode optical fibre in accordance with recommendation of ITU-T G. 657 A1 or A2
								<b>TOTAL NUMBER OF OPTICAL FIBERS IN THE CABLE</b> from 1F to 12F optical fibers
								<b>TYPE OF PERIPHERAL LOAD-BEARING ELEMENT</b> D - dielectric (glass fiber rods) M - metal (steel wire) A - aramid yarn G - fiberglass threads
								<b>CABLE FORM</b> r – round shape
								<b>TYPE OF REMOTE LOAD-BEARING ELEMENT</b> D - dielectric (glass fiber rod) M – metal (steel wire)
								<b>AREA OF APPLICATION</b> U - «Universal» - universal for internal/external use I - «Indoor» - for internal use
								<b>CABLE TYPE</b> FTTH - construction of FTTH "Fiber to the Home" broadband access networks in the residential houses
								<b>BRAND</b> FiFix





## 1.1. FIFIX FTTH UMM

(remote and peripheral load-bearing elements – metal wire)



### AREA OF APPLICATION

Drop cable is designed for last-one-mile in the FTTx network, enhancing the accessibility to the fiber and maximizes the installation workability

### FEATURES

- 2 parallel peripheral strength members protecting the fibers ensure good performance of crush resistance: Simple structure, small weight and high practicability
- Easy jacket removal without special tools
- Easily splice, simplify the installation and maintenance
- Environmental protection – Low smoke, zero halogen and flame retardant sheath
- Self-support structure

### CABLE STRUCTURE

- 1 – Suspension member – steel wire
- 2 – Strength member – two steel wires
- 3 – Singlemode optic fibers meet
- 4 – Outer sheath – LSZH

### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	1; 2	4	8; 12
Cable diameter, mm	5,2 x 2,0	5,8 x 2,1	6,1 x 2,1
Cable weight, kg/km	20	25	28
Maximum allowed tensile force (short-term load), kN	1,0		
Minimum bending radius, mm	20 x cable diameter		
Maximum allowed crushing force, N/mm	500		
Operation temperature range, °C	-40°C - +60°C		
Storage temperature range, °C	-20°C - +60°C		
Installation temperature range, °C	- 10°C - +60°C		
Factory length, km	1,5	1,5	1,5

### CABLE MARKING ON THE SHEATH:

FiFix FTTH UMM 2F G 652 D LSZH 0000



## 1.2. FIFIX FTTH UDD

(remote and peripheral load-bearing elements – dielectric)

### AREA OF APPLICATION

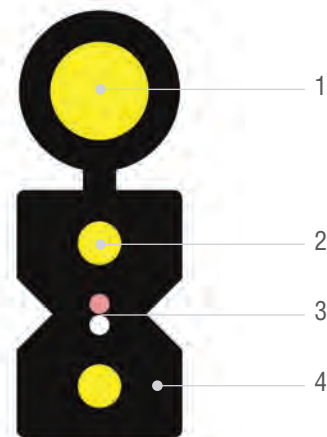
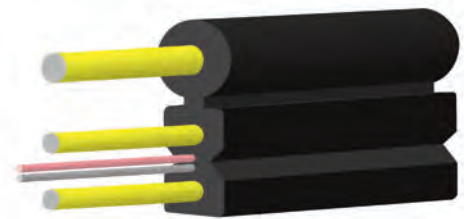
Drop cable is designed for last-one-mile in the FTTx network, enhancing the accessibility to the fiber and maximizes the installation workability

### FEATURES

- 2 parallel peripheral strength members protecting the fibers ensure good performance of crush resistance
- Simple structure, small weight and high practicability
- Easy jacket removal without special tools
- Easily splice, simplify the installation and maintenance
- Environmental protection – Low smoke, zero halogen and flame retardant sheath
- Self-support structure

### CABLE STRUCTURE

- 1 – Suspension member – Fiber reinforced plastic (FRP)
- 2 – Strength member – two FRP
- 3 – Singlemode optic fibers meet
- 4 – Outer sheath – LSZH



### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	1; 2	4	8; 12
Cable diameter, mm	5,3 x 2,0	5,8 x 2,1	6,1 x 2,1
Cable weight, kg/km	20	25	28
Maximum allowed tensile force (short-term load), kN	0,7		
Minimum bending radius, mm	20 x cable diameter		
Maximum allowed crushing force, N/mm	500		
Operation temperature range, °C	-40°C - +60°C		
Storage temperature range, °C	-20°C - +60°C		
Installation temperature range, °C	- 10°C - +60°C		
Factory length, km	1,5	1,5	1,5

### CABLE MARKING ON THE SHEATHE:

FiFix FTTH UDD 2F G 652 D LSZH 0000



## 1.3. FIFIX FTTH UMD

(remote load-bearing elements – metal wire,  
peripheral load-bearing elements – dielectric)

### AREA OF APPLICATION

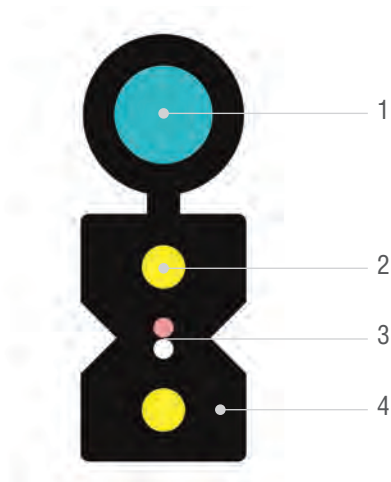
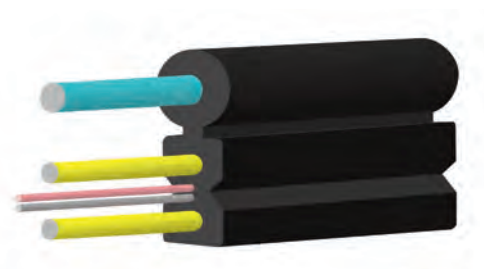
Drop cable is designed for last-one-mile in the FTTx network, enhancing the accessibility to the fiber and maximizes the installation workability

### ADVANTAGES

- 2 parallel peripheral strength members protecting the fibers ensure good performance of crush resistance
- Simple structure, small weight and high practicability
- Easy jacket removal without special tools
- Easily splice, simplify the installation and maintenance
- Environmental protection – Low smoke, zero halogen and flame retardant sheath
- Self-support structure

### CABLE STRUCTURE

- 1 – Suspension member – steel wire
- 2 – Strength member – two FRP
- 3 – Singlemode optic fibers meet
- 4 – Outer sheath – LSZH



### OPERATING CHARACTERISTICS:

Number of optic fibers in the cables	1; 2	4	8; 12
Cable diameter (H x W), mm	5,3 x 2,0	5,8 x 2,1	6,1 x 2,1
Cable weight, kg/km	20	25	28
Tensile strength, kN	0,7		
Minimum bending radius, mm	20 x cable diameter		
Crush resistanse, N/100 mm	500		
Operating temperature, °C	-40°C - +60°C		
Storage temperature, °C	-20°C - +60°C		
Installation temperature, °C	- 10°C - +60°C		
Length on the reel, km	1,5	1,5	1,5

### CABLE MARKING ON THE SHEATHE

FiFix FTTH UMD 2F G 652 D LSZH 0000



# 1.4. FIFIX FTTH UDr

(ADSS self-supporting cables 3,0 mm in diameter)

### AREA OF APPLICATION

- Construction of FTTH «Fiber to the Home» broadband access networks
- Indoor and outdoor cable installation

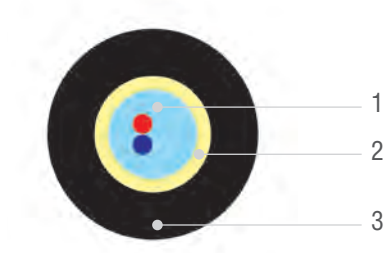
### ADVANTAGES

- Thin and light
- Flexibility, small bending radius
- High performance
- Possibility of indoor and outdoor cable installation



### CABLE STRUCTURE

- 1 – Single-mode optical fibre
- 2 – Load-bearing element – aramid yarn
- 3 – Polyurethane sheath



### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	1...4
Cable diameter, mm	3,0 ± 0,3
Cable weight, kg/km	8
Maximum allowed tensile force (short-term load), N	500
Minimum bending radius, mm	20 x cable diameter
Maximum allowed crushing force, N/mm	500
Operation temperature range, °C	-30°C - +60°C
Storage temperature range, °C	0°C - +60°C
Installation temperature range, °C	0°C - +60°C
Factory length, m	1000

### CABLE MARKING ON THE SHEATHE

FiFix FTTH UDr A 2F G 657A1 D PU 0000





## 2.1. FIFIX FTTH UM/IM (load-bearing elements – metal wire)

### AREA OF APPLICATION

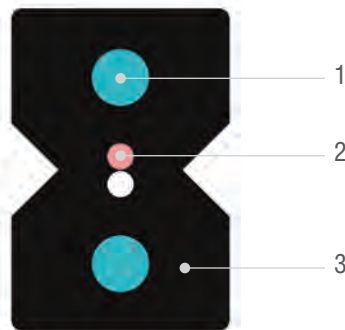
- Construction of FTTH “Fiber to the Home” broadband access networks
- Indoor and outdoor cable installation

### ADVANTAGES

- Thin and light
- Flexibility, small bending radius
- High performance
- Possibility of indoor and outdoor cable installation

### CABLE STRUCTURE

- 1 – Strength member – two steel wires
- 2 – Singlemode optic fibers meet
- 3 – Outer sheath – LSZH



### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	1; 2; 4
Cable diameter, mm	3,1 x 2,0
Cable weight, kg/km	11
Maximum allowed tensile force (short-term load), N	0,1
Minimum bending radius, mm	20 x cable diameter
Operation temperature range, °C	-20°C - +60°C
Storage temperature range, °C	0°C - +60°C
Installation temperature range, °C	0°C - +60°C
Factory length, km	3,0

### CABLE MARKING ON THE SHEATHE:

**Outdoor/Indoor cable** - FiFix FTTH UM 2F G 652 D LSZH 0000

**Indoor cable** - FiFix FTTH IM 2F G 652 D LSZH 0000

## 2.2. FIFIX FTTH UD/ID (load-bearing elements – dielectric)

### AREA OF APPLICATION

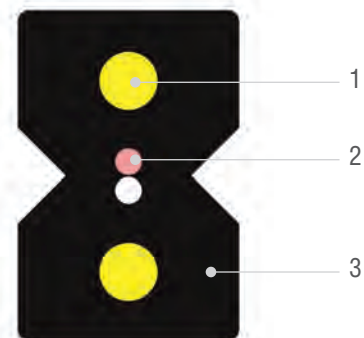
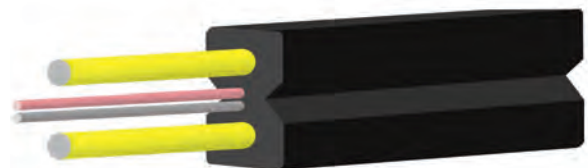
- Construction of FTTH “Fiber to the Home” broadband access networks
- Indoor and outdoor cable installation

### ADVANTAGES

- Thin and light
- Flexibility, small bending radius
- High performance

### CABLE STRUCTURE

- 1 – Strength member – two FRP
- 2 – Singlemode optic fibers meet
- 3 – Outer sheath – LSZH



### OPERATING CHARACTERISTICS:

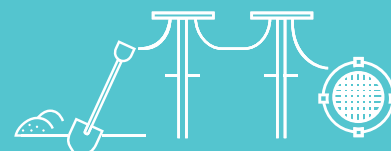
Quantity of optical fibres, pcs.	1; 2; 4
Cable diameter, mm	3,1 x 2,0
Cable weight, kg/km	11
Maximum allowed tensile force (short-term load), N	0,1
Minimum bending radius, mm	20 x cable diameter
Operation temperature range, °C	-20°C - +60°C
Storage temperature range, °C	0°C - +60°C
Installation temperature range, °C	0°C - +60°C
Factory length, km	3,0

### CABLE MARKING ON THE SHEATHE

**Outdoor/Indoor cable** - FiFix FTTH UD 2F G 652 D LSZH 0000

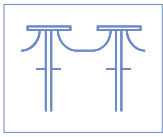
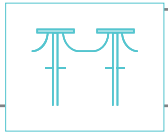
**Indoor cable** - FiFix FTTH ID 2F G 652 D LSZH 0000

# REFERENCE DESIGNATION of CENTRAL TUBE CABLES



Fiber-optic cables with central tube

1	2	3-	4-	5-	6	7	8-	9
								<b>ALLOWED TENSILE FORCE</b> 0,5...3,5 kN
								<b>MATERIAL OF PROTECTIVE COATING (CLADDING, FIBER CABLE PROTECTION HOSE)</b> PE - Polyethylene cladding PU - Polyurethane cladding FR - Flame-retardant polymer cladding LSZH - Flame-retardant, low-smoke, halogen-free polymer cladding PVC - Polyvinylchloride cladding <b>FIBER TYPE</b> G. 652 D - Singlemode optical fibre in accordance with recommendation of ITU-T G. 652 D G. 657 A1/A2 - Singlemode optical fibre in accordance with recommendation of ITU-T G. 657 A1 or A2
								<b>NUMBER OF OPTICAL FIBERS IN THE CABLE</b> 1...96 F
								<b>TYPE OF REINFORCING REMOTE LOAD-BEARING ELEMENT</b> G - fiber-glass roving A - aramid yarn B - basalt yarn M - remote load-bearing element made of steel wire Mk - remote load-bearing element made of steel rope
								<b>CABLE FORM</b> r - round shape 8 - in the form of "Figure-8" f - flat form o - oval shape
								<b>TYPE OF CABLE ARMORING AND PERIPHERAL LOAD-BEARING ELEMENT</b> M — Metal load-bearing element — radial distribution of laminated steel wires D — Dielectric load-bearing element — radial distribution of glass fiber rods B — cable armoring — steel-wire breakdown L — cable armoring — laminated steel tape
								<b>CORE TYPE</b> T - Optical module tube
								<b>AREA OF APPLICATION</b> O - «Outdoor» - for external use
								<b>CABLE TYPE</b> Mini, Mini Drop - scaled-down, without prefix «of standard size»



## 1.1.1. FIFIX OTDr (round shape)

### AREA OF APPLICATION

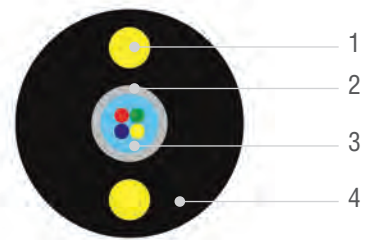
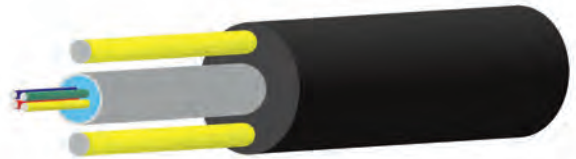
- Construction of broadband access networks
- it is designed and suitable for suspension and operation on supports of the air lines of communications, urban electric transport, overhead power transmission lines and overhead contact railway systems, where it may be exposed to wind load, ice load or combination of these loads

### ADVANTAGES

- High performance
- Ease of preparation and installation

### CABLE STRUCTURE

- 1 – Strength member – Fiber reinforced plastic (FRP)
- 2 – Peripheral strength member – glass years
- 3 – Central tubes gel-filled with optic fibers UV colored
- 4 – Outer sheath – polyethylene



### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	12
Cable diameter, mm	5,2 ± 0,3
Cable weight, kg/km	20
Maximum allowed tensile force (short-term load), kN	1,0
Minimum bending radius, mm	20 x cable diameter
Maximum allowed crushing force, N/mm	500
Operation temperature range, °C	- 40°C - +60°C
Storage temperature range, °C	- 20°C - +60°C
Installation temperature range, °C	- 10°C - +60°C
Factory length, km	2,00

### CABLE MARKING ON THE SHEATHE

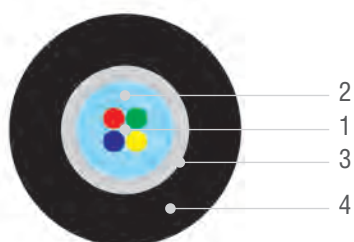
FiFix OTDr G 2F G 652D PE 1,0 0000





## 1.1.2. FiFix OTr

(round shape, ADSS)



### AREA OF APPLICATION

- outdoor cable installation
- it is designed and suitable for suspension and operation on supports of the air lines of communications, urban electric transport, overhead power transmission lines and overhead contact railway systems, where it may be exposed to wind load, ice load or combination of these loads

### ADVANTAGES

- High performance
- Ease of preparation and installation

### CABLE STRUCTURE

- 1 – Single-mode optical fibres in accordance; loose central tube containing the fibers and a thixotropic gel
- 2 – Central tube
- 3 – load-bearing elements – fiberglass threads / aramid yarn
- 4 – Polyethylene sheath

### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	24
Cable diameter, mm	5,5 +/- 0,3
Cable weight, kg/km	40
Maximum allowed tensile force (short-term load), kN	1,0...660
Minimum bending radius, mm	20 x cable diameter
Maximum allowed crushing force, N/mm	500
Operation temperature range, °C	-10°C - +60°C
Storage temperature range, °C	-10°C - +60°C
Installation temperature range, °C	0°C - +60°C
Factory length, km	1,00

### CABLE MARKING ON THE SHEATHE

FiFix OTr G 2F G 652D PE 0000



## 1.1.3. FIFIX OTDo (oval shape)

### AREA OF APPLICATION

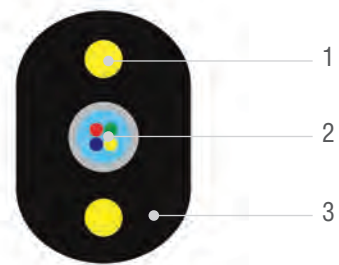
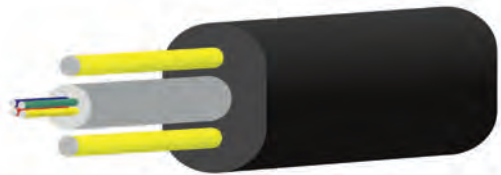
- Construction of broadband access networks
- for outdoor installation
- it is designed and suitable for suspension and operation on supports of the air lines of communications, urban electric transport, overhead power transmission lines and overhead contact railway systems, where it may be exposed to wind load, ice load or combination of these loads

### ADVANTAGES

- High performance
- Ease of preparation and installation

### CABLE STRUCTURE

- 1 – Strength member – Fiber reinforced plastic (FRP)
- 2 – Central tubes gel-filled with optic fibers UV colored
- 3 – Outer sheath – polyethylene



### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	1...12
Cable diameter, mm	$(6,0 \times 3,2) \pm 0,3$
Cable weight, kg/km	22
Maximum allowed tensile force (short-term load), kN	1,0
Minimum bending radius, mm	20 x cable diameter
Maximum allowed crushing force, N/mm	500
Operation temperature range, °C	- 40°C - +60°C
Storage temperature range, °C	- 20°C - +60°C
Installation temperature range, °C	- 10°C - +60°C
Factory length, km	2,00

### CABLE MARKING ON THE SHEATHE

FiFix OTDo 2F G 652D PE 1,0 0000



## 1.1.4. FIFIX MINI DROP OTDf

(oval shape, scaled down version)

### AREA OF APPLICATION

- Construction of broadband access networks
- for outdoor installation
- it is designed and suitable for suspension and operation on supports of the air lines of communications, urban electric transport, overhead power transmission lines and overhead contact railway systems, where it may be exposed to wind load, ice load or combination of these loads

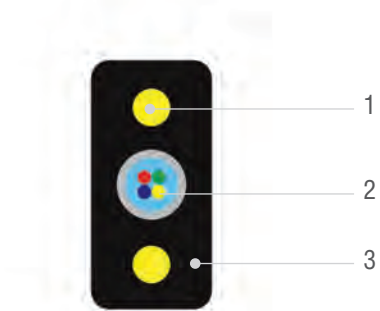


### ADVANTAGES

- High performance
- Ease of preparation and installation

### CABLE STRUCTURE

- 1 – circumferential load-carrying member – fiberglass bar
- 2 – single-mode optical fiber in accordance loosely encased in the central tube filled with thixotropic hydrophobic gel
- 3 – high-density polyethylene cladding



### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	2
Cable diameter, mm	$(4,2 \times 2,2) \pm 0,3$
Cable weight, kg/km	12
Maximum allowed tensile force (short-term load), kN	1,0
Minimum bending radius, mm	20 x cable diameter
Maximum allowed crushing force, N/mm	500
Operation temperature range, °C	- 40°C - +60°C
Storage temperature range, °C	- 20°C - +60°C
Installation temperature range, °C	- 10°C - +60°C
Factory length, km	2,00

### CABLE MARKING ON THE SHEATHE

FiFix MiniDrop OTDf 2F G 652D PE 0000



## 1.1.5. FIFIX MINI OTDr (round shape, scaled down version)

### AREA OF APPLICATION

- Construction of broadband access networks
- for outdoor installation
- it is designed and suitable for suspension and operation on supports of the air lines of communications, urban electric transport, overhead power transmission lines and overhead contact railway systems, where it may be exposed to wind load, ice load or combination of these loads

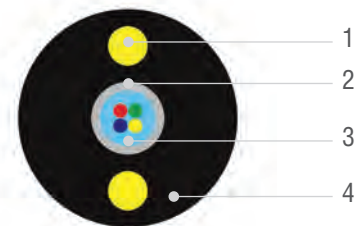


### ADVANTAGES

- High performance
- Ease of preparation and installation

### CABLE STRUCTURE

- 1 – circumferential load-carrying member – fiberglass bars
- 2 – primary load-carrying member – fiberglass filament
- 3 – single-mode optical fiber loosely encased in the central tube filled with thixotropic hydrophobic gel
- 4 – high-density polyethylene cladding



### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	2
Cable diameter, mm	4,5 ± 0,3
Cable weight, kg/km	12
Maximum allowed tensile force (short-term load), kN	0,8
Minimum bending radius, mm	20 x cable diameter
Maximum allowed crushing force, N/mm	500
Operation temperature range, °C	- 40°C - +60°C
Storage temperature range, °C	- 20°C - +60°C
Installation temperature range, °C	- 10°C - +60°C
Factory length, km	3,000

### CABLE MARKING ON THE SHEATHE

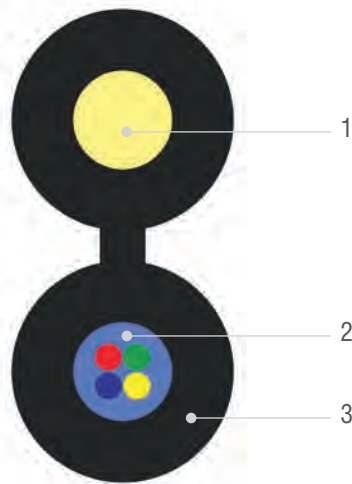
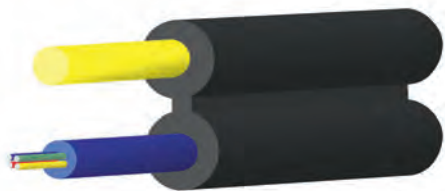
FiFix Mini OTDr G 1F G 652D PE 0000





## 1.2.1. FIFIX OTD8

(dielectric remote load-bearing element)



### AREA OF APPLICATION

- Construction of broadband access networks
- outdoor cable installation
- it is designed and suitable for suspension and operation on supports of the air lines of communications, urban electric transport, overhead power transmission lines and overhead contact railway systems, where it may be exposed to wind load, ice load or combination of these loads

### ADVANTAGES

- High performance
- Ease of preparation and installation

### CABLE STRUCTURE

- 1 – Remote load-bearing element – glass fiber rod
- 2 – Single-mode optical fibres; loose central tube containing the fibers and a thixotropic hydrophobic filler
- 3 – High density polyethylene sheath

### OPERATING CHARACTERISTICS:

Maximum quantity of optical fibres, pcs.	12
Geometrical dimensions of a cable, mm	$(8,8 \times 4,4) \pm 0,3$
Geometrical dimensions of jumpers (width x height), mm	$(3,0 \times 2,0) \pm 0,3$
Cable weight, kg/km	50
Maximum allowed tensile force (short-term load), kN	1,5
Minimum bending radius, mm	20 x cable diameter
Maximum allowed crushing force, N/mm	500
Operation temperature range, °C	- 40°C - +60°C
Storage temperature range, °C	- 20°C - +60°C
Installation temperature range, °C	- 10°C - +60°C
Factory length, km	2,00

CABLE MARKING ON THE SHEATH  
FiFix OTD8 4F G 652D PE 1,5 0000



## 1.2.2. FIFIX OTM8 (metal remote load-bearing element)

### AREA OF APPLICATION

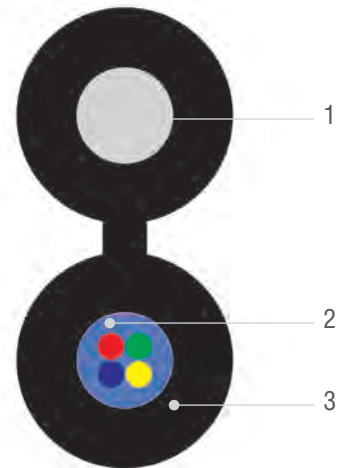
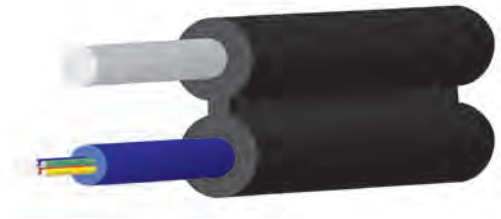
- Construction of broadband access networks
- for outdoor installation
- it is designed and suitable for suspension and operation on supports of the air lines of communications, urban electric transport, overhead power transmission lines and overhead contact railway systems, where it may be exposed to wind load, ice load or combination of these loads

### ADVANTAGES

- High performance
- Ease of preparation and installation

### CABLE STRUCTURE

- 1 – Remote load-bearing element – zinc-coated steel wire
- 2 – Single-mode optical fibres; loose central tube containing the fibers and a thixotropic hydrophobic filler
- 3 – High density polyethylene sheath



### OPERATING CHARACTERISTICS:

Maximum quantity of optical fibres, pcs.	12
Geometrical dimensions of a cable, mm	$(8,8 \times 4,4) \pm 0,3$
Geometrical dimensions of jumpers (width x height), mm	$(3,0 \times 2,0) \pm 0,3$
Cable weight, kg/km	50
Maximum allowed tensile force (short-term load), kN	1,5
Minimum bending radius, mm	20 x cable diameter
Maximum allowed crushing force, N/mm	500
Operation temperature range, °C	- 40°C - +60°C
Storage temperature range, °C	- 20°C - +60°C
Installation temperature range, °C	- 10°C - +60°C
Factory length, km	2,00

### CABLE MARKING ON THE SHEATHE

FiFix OTM8 4F G 652D PE 1,5 0000



## 2.1. FiFIX OTMr

(load-bearing elements – fiberglass threads)

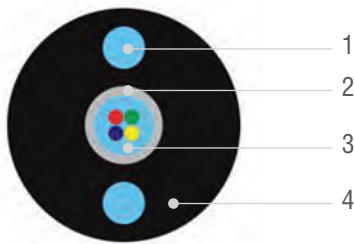
### AREA OF APPLICATION

Cable is designed for direct installation in cable ducts, tubes, blocks, into grounds of all categories including high corrosivity grounds, in areas infested by rodents and through swamps, lakes, non-floated and unnavigable rivers up to 15 m depth excluding areas subjected to freezing and other deformations



### CABLE STRUCTURE

- 1 – circumferential load-carrying member – zinc-coated steel wire
- 2 – primary load-carrying member – fiberglass filament
- 3 – single-mode optical fiber in accordance, loosely encased in the central tube, filled with thixotropic hydrophobic gel
- 4 – high-density polyethylene cladding



### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	12
Cable diameter, mm	8,7 ± 0,5
Cable weight, kg/km	90
Maximum allowed tensile force (short-term load), kN	1,5 ... 2,7
Minimum bending radius, mm	20 x cable diameter
Operation temperature range, °C	- 40°C - +60°C
Storage temperature range, °C	- 20°C - +60°C
Installation temperature range, °C	- 10°C - +60°C
Factory length, km	2,0

### CABLE MARKING ON THE SHEATH

FiFix OTMr G 2F G 652D PE 1,5 0000



## 2.2. FIFIX OTBMr/OTBr (cable armoring – steel-wire breakdown)

### AREA OF APPLICATION

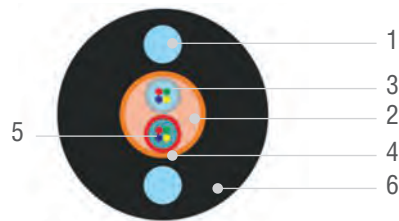
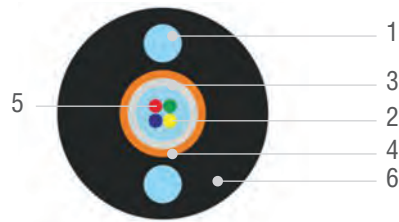
- for broadband service access network construction
- for outdoor installation

### ADVANTAGES

- armoring availability
- high performance
- easy cable termination and installation

### CABLE STRUCTURE

- 1 – circumferential load-carrying member – zinc-coated steel wire
- 2 – central tube
- 3 – reinforcing primary load-carrying member – fiberglass filament
- 4 – cable armoring: steel-wire braiding
- 5 – single-mode optical fiber in accordance, encased in the central tube, filled with thixotropic hydrophobic gel
- 6 – high-density polyethylene cladding



### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	12	24
Cable diameter, mm	8,5 ± 0,5	9,0 ± 0,5
Cable weight, kg/km	70	75
Maximum allowed tensile force (short-term load), kN	1,5	1,5
Minimum bending radius, mm	20 x cable diameter	20 x cable diameter
Crush resistance, N/100 mm	2 000	2 000
Operation temperature range, °C	- 40°C - +60°C	- 40°C - +60°C
Storage temperature range, °C	- 20°C - +60°C	- 20°C - +60°C
Installation temperature range, °C	- 10°C - +60°C	- 10°C - +60°C
Factory length, km	2,00	2,00

### CABLE MARKING ON THE SHEATH

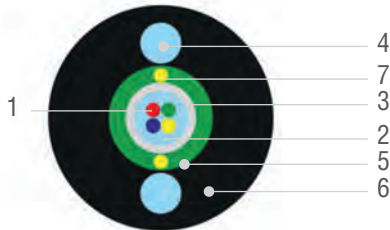
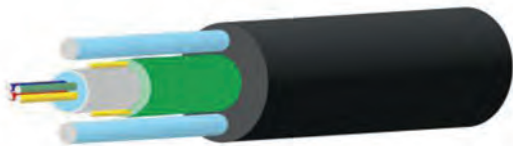
FiFix OTBMr G 12F G 652D PE 1,5 0000 / FiFix OTBMr G 2x12F G 652D PE 1,5 0000





## 2.3. FIFIX OTLMr

(cable armoring – laminated steel tape)



### AREA OF APPLICATION

Cable is designed for direct installation in cable ducts, tubes, blocks, into grounds of all categories including high corrosivity grounds, in areas infected by rodents and through swamps, lakes, non-floated and innavigable rivers up to 15 m depth excluding areas subjected to freezing and other deformations

### ADVANTAGES

- High performance
- Ease of preparation and installation

### CABLE STRUCTURE

- 1 – UV Colored Optic Fibers
- 2 – thixotropic Hydrophobic Gel
- 3 – central tube with Thixotropic Water-Blocking Jelly
- 4 – strength Member – steel wires
- 5 – armoring – Corrugated laminated steel tape
- 6 – outer Sheath – Polyethylene
- 7 – ripcord

### OPERATING CHARACTERISTICS

Quantity of optical fibres, pcs.	1 ... 24/8 или 12
Cable diameter, mm	11,0 ± 0,5
Cable weight, kg/km	90
Maximum allowed tensile force (short-term load), kN	1,5
Minimum bending radius, mm	20 x cable diameter
Crush resistance, N/100 mm	2 000
Operation temperature range, °C	- 40°C - +60°C
Storage temperature range, °C	- 20°C - +60°C
Installation temperature range, °C	- 10°C - +60°C
Factory length, km	2,00

### CABLE MARKING ON THE SHEATHE

FiFix OTLMr 16F G 652D PE 1,5 0000



Intra-Facility  
Fiber Optic Cables

# REFERENCE DESIGNATION of INTRA-FACILITY FIBER OPTIC CABLES

1	2	3 -	4 -	5 -	6	7	8 -
							Cable diameter, mm
							<b>MATERIAL OF PROTECTIVE COATING</b> LSZH - Flame-retardant, low-smoke, halogen-free compound cladding PE - Polyethylene cladding PVC - Polyvinylchloride cladding PU - Polyurethane cladding
							<b>FIBER TYPE</b> G. 652 D or C- Singlemode optical fibre in accordance with recommendation of ITU-T G. 652 D/C G. 657 A - Singlemode optical fibre in accordance with recommendation of ITU-T G. 657 A1
							<b>TOTAL NUMBER OF OPTICAL FIBERS IN THE CABLE</b> from 1F to 12F optical fibres
							<b>TYPE OF PERIPHERAL LOAD-BEARING ELEMENT</b> G - fiberglass threads A - aramid yarn
							<b>CABLE TYPE</b> TB - Tight buffer S - Simplex Dx - Duplex HDx - Heavy duplex D - Distribution B - Breakout
							<b>AREA OF APPLICATION</b> I - «Indoor» - for internal use
							<b>BRAND</b> FiFix



## 3.1. FIFIX ITB (TIGHT/SEMI-TIGHT BUFFER)

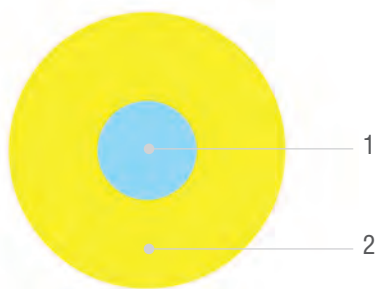
### AREA OF APPLICATION

– For intra-bay wiring of the communication stations, in PC and other equipment, as well as for manufacturing the optical connecting cords (pigtaills, patchcords)



### CABLE STRUCTURE

1 – Optical fibre  
2 – Solid protective sheathe made of flame-retardant polymer



### DESIGN VERSIONS

Solid protective sheathe made of the following materials:

- Low-smoke, low-gas PVC-plasticate
- Flame-retardant, low-smoke, halogen-free (LSZH) compound
- Polymeric amide
- Polybutylene terephthalate

### OPERATING CHARACTERISTICS:

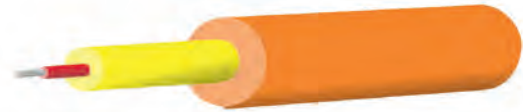
Cable weight, kg/km	0,9
Cable diameter, mm	0,85...1,3
Minimum bending radius, mm	20 x cable diameters
Operation temperature range, °C	0...+60
Storage temperature range, °C	0...+60
Installation temperature range, °C	0...+60



## 3.2. FIFIX IS A/G (SIMPLEX)

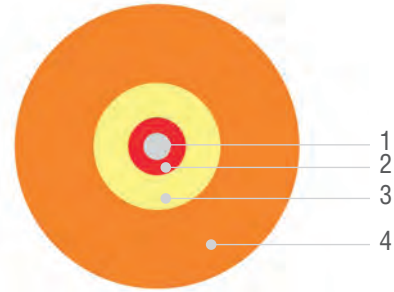
### AREA OF APPLICATION

- intra-bay wiring of the communication stations
- manufacturing the optical connecting cords (pigtailed, patchcords)
- cable routing in the engineering and utility services rooms of local networks
- creation of the horizontal main lines of the large
- structured cabling systems with routing to the workplace
- inside the decorative boxes.



### CABLE STRUCTURE

- 1 – Optical fibre
- 2 – Solid protective sheathe made of flame-retardant, low-smoke, halogen-free (LSZH) compound
- 3 – Load-bearing element – aramid yarn
- 4 – Sheathe made of flame-retardant, low-smoke, halogen-free (LSZH) compound.



### DESIGN VERSIONS

1. Solid protective sheathe made of the following materials:
  - Low-smoke, low-gas PVC-plasticate
  - UV-curable material
  - Polymeric amide
  - Polybutylene terephthalate
2. Load-bearing element – fiberglass threads
3. PVC-plasticate sheathe

### OPERATING CHARACTERISTICS:

Cable weight, kg/km	3,5	5,0	7,0	8,0	8,5
Cable diameter, mm	1,8	2,0	2,5	2,8	3,0
Maximum allowed tensile force, N	80	100	200	300	400
Allowed crushing force, N/100 mm	500				
Resistance to impacts with initial energy, J	1 (3 impacts)				
Resistance to axial twist	20 cycles				
Minimum bending radius, mm	20 x cable diameters				
Operation temperature range, °C	-20...+70				
Storage temperature, °C	- 10...+60				
Installation temperature, °C	0...+60				

### CABLE MARKING ON THE SHEATHE

FiFix IS A 1 G657 A1 LSZH 2,0 mm



## 3.3. FIFIX IDX A/G (DUPLEX)

### AREA OF APPLICATION

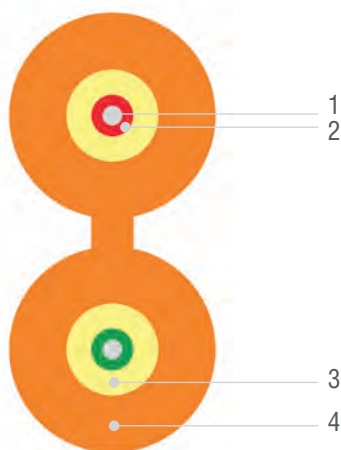
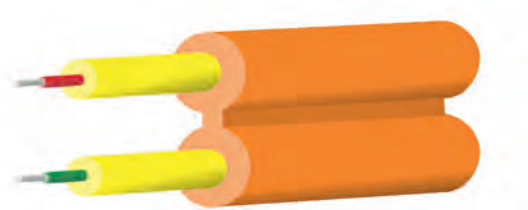
- intra-bay wiring of the communication stations;
- manufacturing the optical connecting cords (pigtails, patchcords)
- cable routing in the engineering and utility services rooms of local networks
- creation of the horizontal main lines of the large structured cabling systems with routing to the workplace inside the decorative boxes. Cable routing in the buildings inside the vertical pipelines and in the risers for cables is acceptable

### CABLE STRUCTURE

- 1 – Optical fibre
- 2 – Solid protective sheathe made of flame-retardant, low-smoke, halogen-free (LSZH) compound
- 3 – Load-bearing element – aramid yarn
- 4 – Sheathe made of flame-retardant, low-smoke, halogen-free (LSZH) compound

### DESIGN VERSIONS

1. Solid protective sheathe made of the following materials:
  - Low-smoke, low-gas PVC-plasticate
  - UV-curable material
  - Polymeric amide
  - Polybutylene terephthalate
2. Load-bearing element – fiberglass threads
3. PVC-plasticate sheathe



### OPERATING CHARACTERISTICS:

Cable weight, kg/km	7,0	11	18	22	35
Cable diameter, mm	1,8x3,6	2,0x4,0	2,5x5,0	2,8x5,6	3,0x6,0
Maximum allowed tensile force, N	160	200	400	600	800
Allowed crushing force, N/100 mm	500				
Resistance to impacts with initial energy, J	1 (3 impacts)				
Resistance to axial twist	20 cycles				
Minimum bending radius, mm	20 x cable diameters				
Operation temperature range, °C	-20...+70				
Storage temperature, °C	- 10...+60				
Installation temperature, °C	0...+60				

### CABLE MARKING ON THE SHEATHE

FiFix IDx G 2 G657 A1 LSZH 2,0x4,0 mm





## 3.4. FIFIX IHD A/G (HEAVY DUPLEX)

### AREA OF APPLICATION

- intra-bay wiring of the communication stations
- manufacturing the optical connecting cords (pigtails, patchcords)
- connection of cable systems and electronic equipment with fiber optic cable
- cable routing in the engineering and utility services rooms of local networks
- creation of the horizontal main lines of the large structured cabling systems with routing to the workplace inside the decorative boxes. Cable routing in the buildings inside the vertical pipelines and in the risers for cables is acceptable.

### CABLE STRUCTURE

- 1 – Optical fibre
- 2 – Solid protective sheathe made of flame-retardant, low-smoke, halogen-free (LSZH) compound
- 3 – Load-bearing element – aramid yarn
- 4 and 5 – Sheathe made of flame-retardant, low-smoke, halogen-free (LSZH) compound
- 6 – Cutting cord

### DESIGN VERSIONS

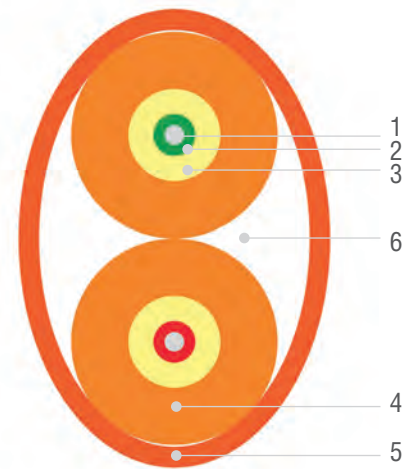
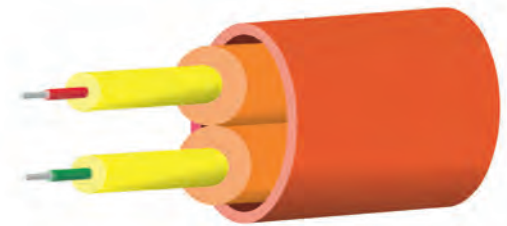
1. Solid protective sheathe made of the following materials:
  - Low-smoke, low-gas PVC-plasticate;
  - UV-curable material;
  - Polymeric amide;
  - Polybutylene terephthalate.
2. Load-bearing element – fiberglass threads
3. PVC-plasticate sheathe

### OPERATING CHARACTERISTICS:

Cable weight, kg/km	11	15	35	38	
Cable diameter, mm	2,8x4,6	3,0x5,0	3,5x6,0	3,8x6,6	
Maximum allowed tensile force, N	160	200	400	600	800
Allowed crushing force, N/100 mm	500				
Resistance to impacts with initial energy, J	1 (3 impacts)				
Resistance to axial twist	20 cycles				
Minimum bending radius, mm	20 x cable diameters				
Operation temperature range, °C	-20...+70				
Storage temperature, °C	- 10...+60				
Installation temperature, °C	0...+60				

### CABLE MARKING ON THE SHEATHE

FiFix IHD A 2 G657 A1 LSZH 3,0x5,0 mm





## 3.5. FIFIX ID A/G (DISTRIBUTION)

### AREA OF APPLICATION

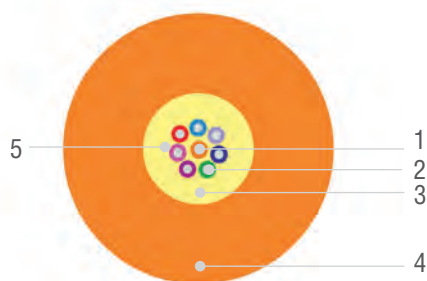
- use as distributing cable in the local networks for connection of communication equipment with route cable
- Cable routing in the buildings inside the vertical pipelines and in the risers for cables.

Cable routing between the buildings at a small distance in the protective polyethylene or asbestos-cement pipes is acceptable.



### CABLE STRUCTURE

- 1 – Optical fibre
- 2 – Solid protective sheathe made of flame-retardant, low-smoke, halogen-free (LSZH) compound
- 3 – Load-bearing element – aramid yarn
- 4 – Sheathe made of flame-retardant, low-smoke, halogen-free (LSZH) compound
- 5 – Cutting cord



### DESIGN VERSIONS

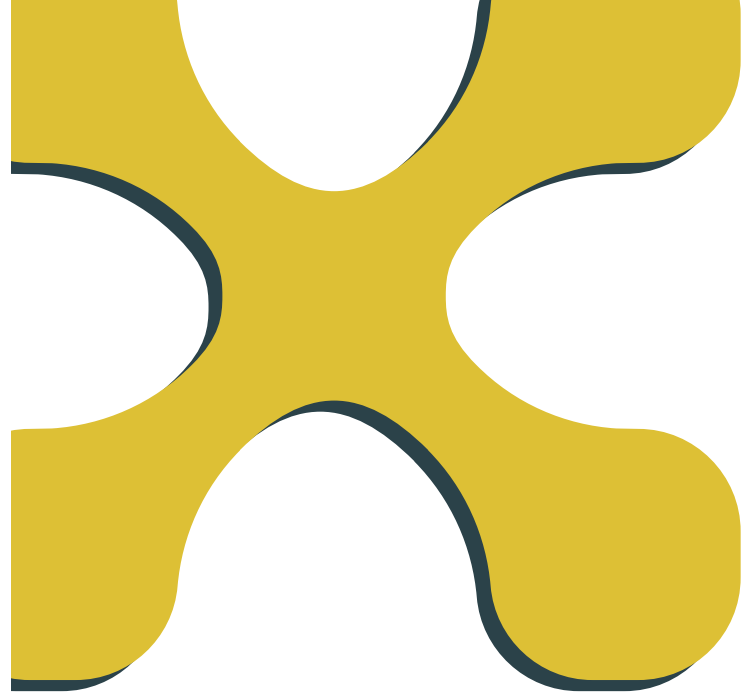
1. Solid protective sheathe made of the following materials:
  - Low-smoke, low-gas PVC-plasticate
  - UV-curable material
  - Polymeric amide
  - Polybutylene terephthalate
2. Load-bearing element – fiberglass threads
3. PVC-plasticate sheathe
4. Central element - aramid yarn in the polymeric sheath or polymeric insulating cord
5. Without central element

### OPERATING CHARACTERISTICS:

Quantity of optical fibres, pcs.	2...12
Cable weight, kg/km	26...50
Cable diameter, mm	4,0...10
Maximum allowed tensile force, N	0,4...2,7
Allowed crushing force, H/100 mm	1000
Resistance to impacts with initial energy, J	1 (3 impacts)
Resistance to axial twist	10 cycles
Minimum bending radius, mm	20 x cable diameters
Operation temperature range, °C	-20...+70
Storage temperature, °C	-10...+60
Installation temperature, °C	0...+60

### CABLE MARKING ON THE SHEATHE

FiFix ID A 4 G657 A1 LSZH 4,0 mm



18, Ivana Akinfiyeva str, Dnipro  
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