FIBRAIN

New construction with ESM micromodules

Flexible. Pliable. But quick to install and failure-free.

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FIBRAIN

Microduct cables

new

MK–FM ESM

TELECOM cables

MDC–FM ESM

TELECOM aerial cables

new

AERO–FM ESM

FTTH cables

VC–D20 ESM

VC–D30 ESM

VC–D40 ESM

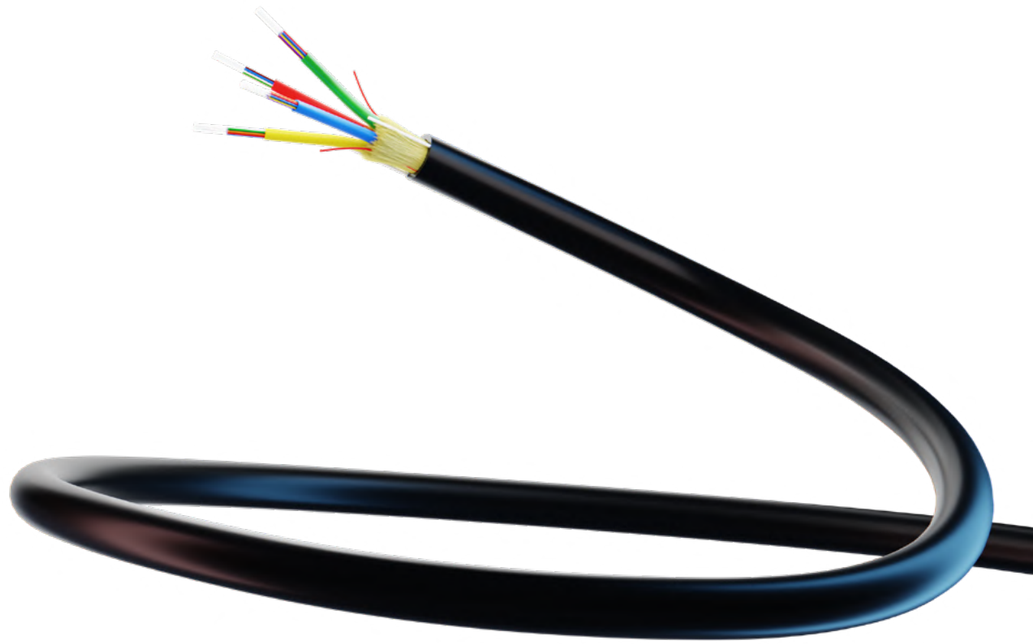
EAC–Ram ESM

New construction with ESM micromodules

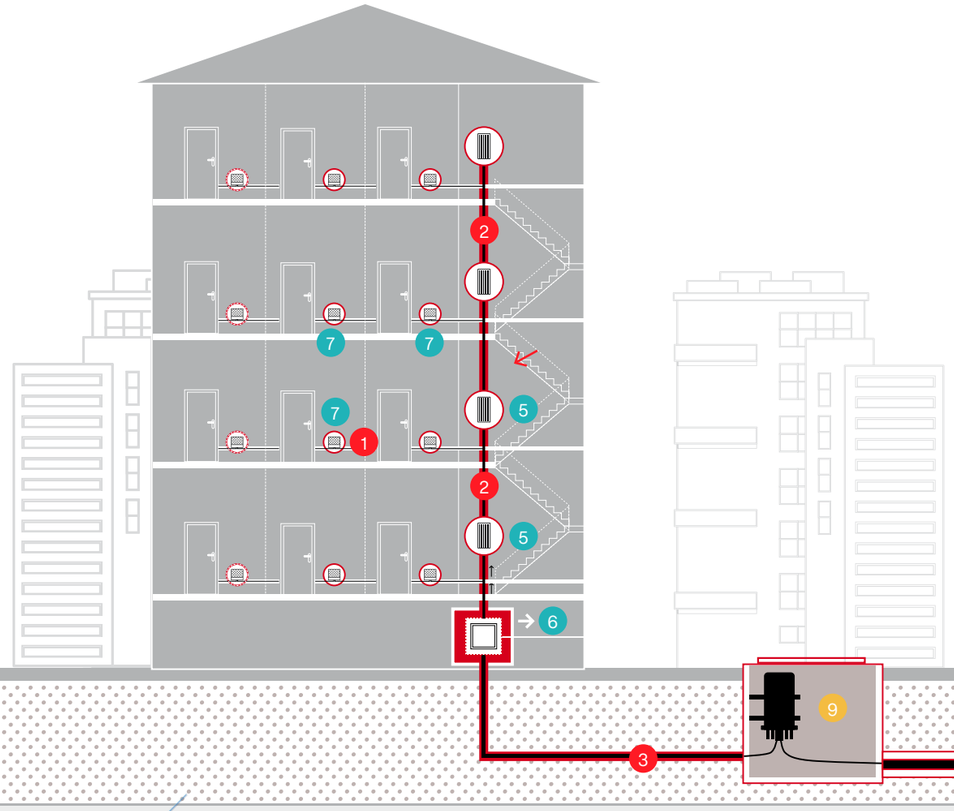
Cables with ESM micromodule cables serves as a replacement for traditional loose tubes offering flexible and pliable material with a low stiffness ratio. They facilitate working with cable significantly by accelerating the stripping and installing cable in connection or distribution points.

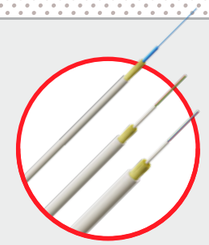
Day and night Installers are looking for new solutions that facilitate installing fiber optic cables. Quicker installation means faster project implementation and savings. To face these expectations, FIBRAIN is launching a new family with ESM micromodules.

Cables with flexible ESM micromodules facilitate installation at the final part of cables, but also when it is necessary to pull out single fibers. A wide range of benefits make this new construction an attractive alternative towards traditional construction based on loose tubes.

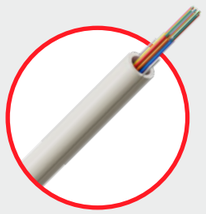


ESM – application example





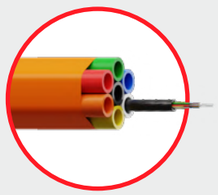
1
VC–D20E ESM
VC–D30E ESM
VC–D40E ESM
Drop cables ESM



2
EAC Ram ESM

3
MDC–FM ESM

4
MK–FM ESM

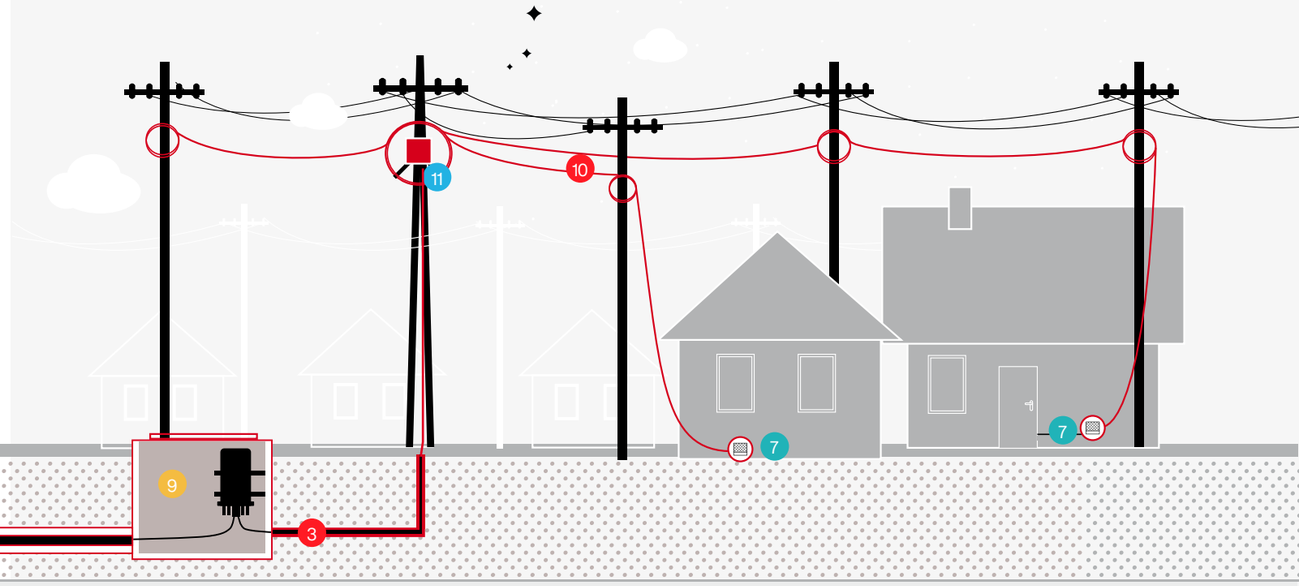


8
MetroJet

5
BU–XN

6
IFDT

7
VFTO
customer outlet



9
FOBP

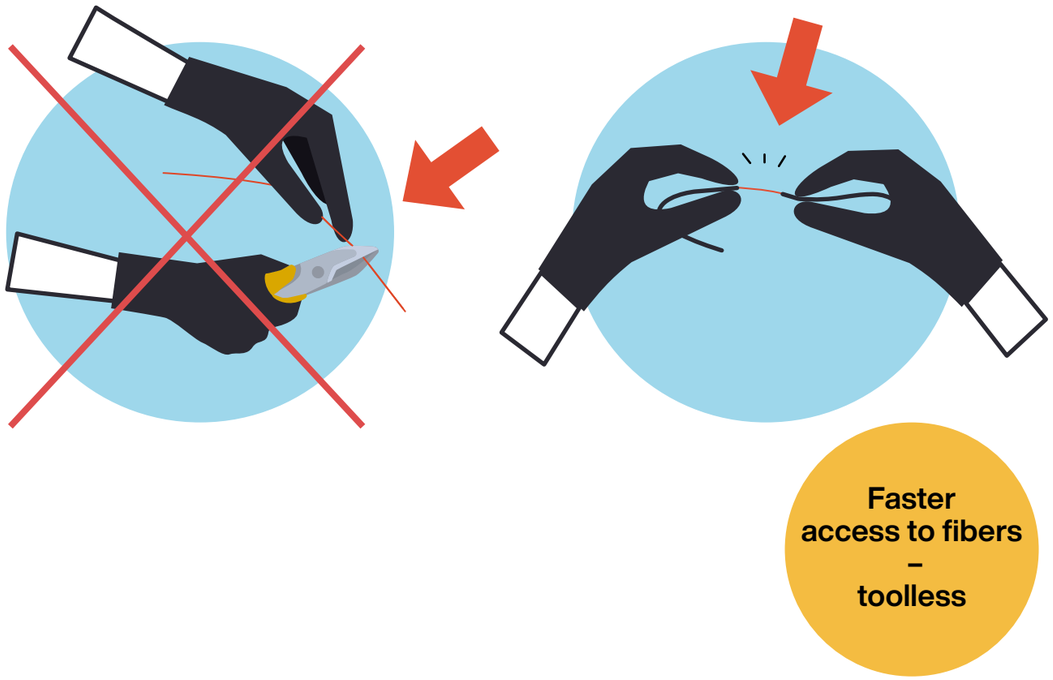
10
AERO–FM ESM

11
OBP S8

Why cables with ESM?

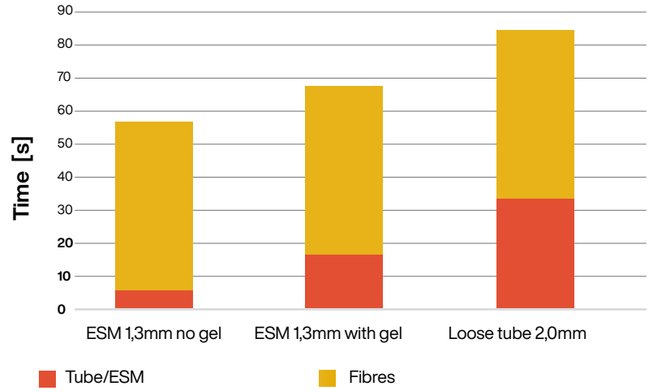
1. Toolless access to fibers

Removing the micromodule coating doesn't require tools that are commonly used with a loose tube. The covering of a micromodule can be easily cut without any tools. Access to the fibers is extremely simple and quick compared to standard solutions. Consequently, it reduces the cable installation time and ensures the simplicity of the whole activity.



Faster access to fibers – toolless

Why cables with ESM?

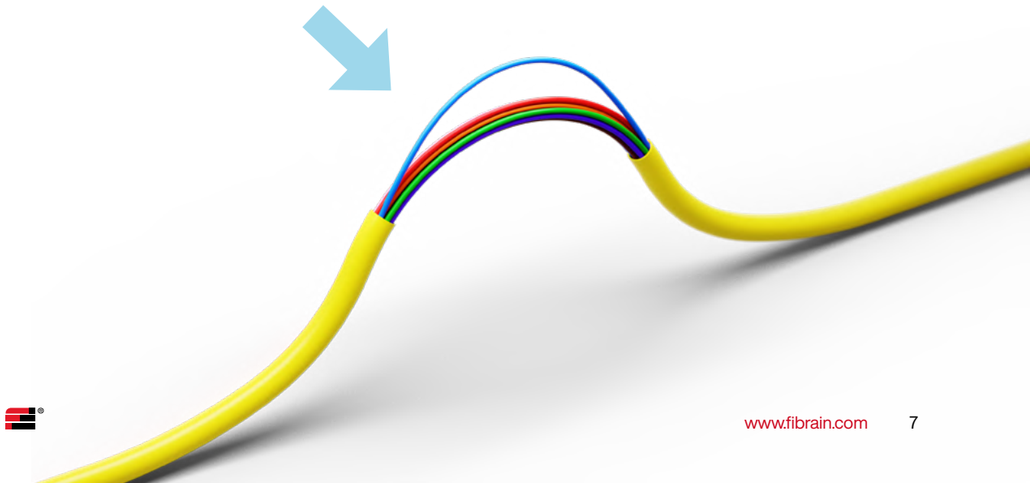


Quicker stripping

Fig. 1. Stripping time

2. Easy access to single fibers 'mid span access'

Installers often need easy access to single fibers without cutting other fibers and generating unnecessary costs of splicing. Undoubtedly, micromodules fulfill these needs and requirements. Similarly, as in case of standard cables, the access to fibers is manual – without extra tools.



Why cables with ESM?

3. Clean installation

Micromodules are filled with less amount of gel comparing to loose tubes. Moreover, you can find in our product portfolio dry constructions, which don't have gel inside a module. It is also very comfortable for Installers as clean installation is fast and easy.

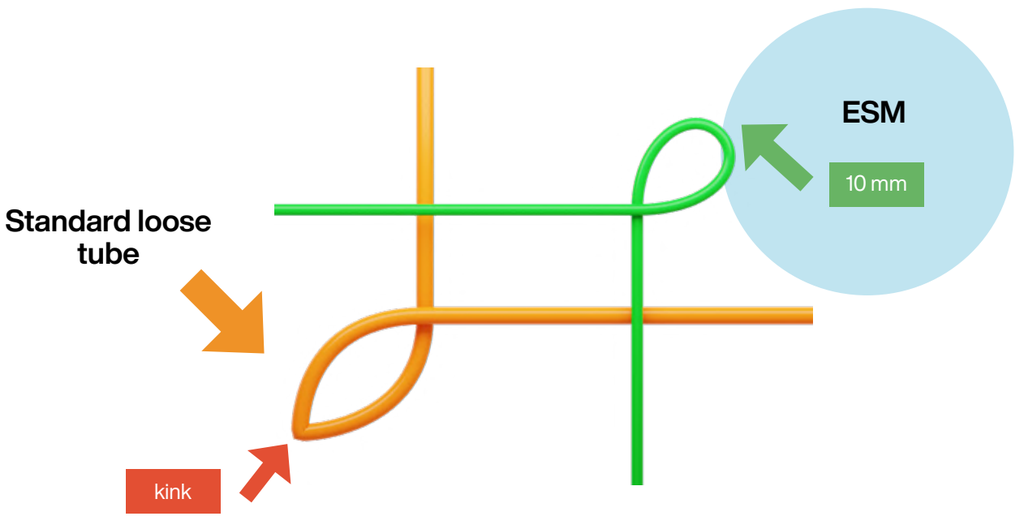
4. Flexibility of the micromodule material

No memory effect of the module, unique flexibility and small diameter guarantee easy installation, for example inside distribution points (fiber optic closures).

5. Anti–Kink

Minimum risk of damage to a micromodule during installation compared to a standard loose tube.

Breaking or folding a loose tube when during installation can often cause damage or higher attenuation of an optical fiber. Flexible material of Easy Section Modules provides much smaller diameter of a micromodule loop minimising the possibility of damaging fibers.



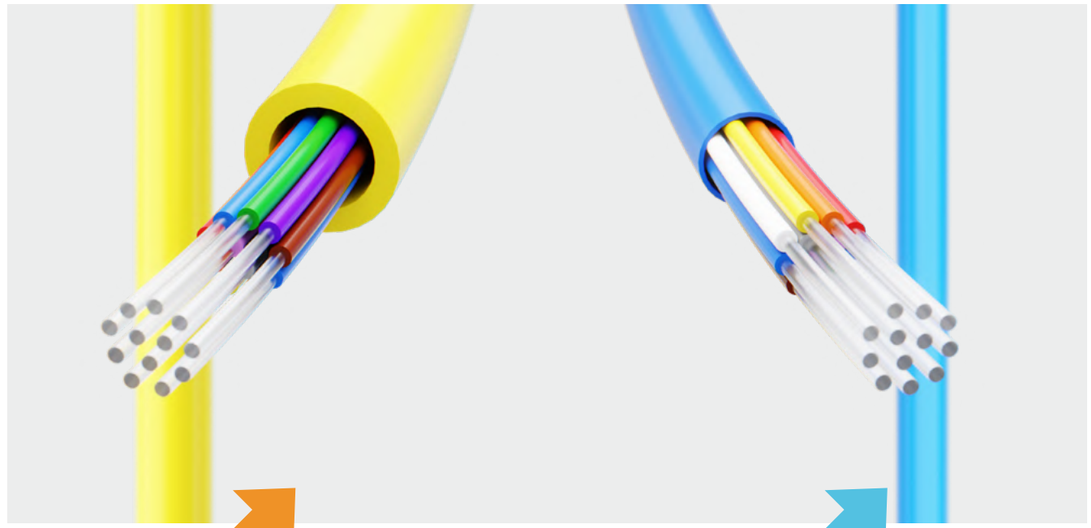
FIBRAIN EASY SECTION MODULE

Why cables with ESM?

6. Smaller dimensions of fiber optic cables

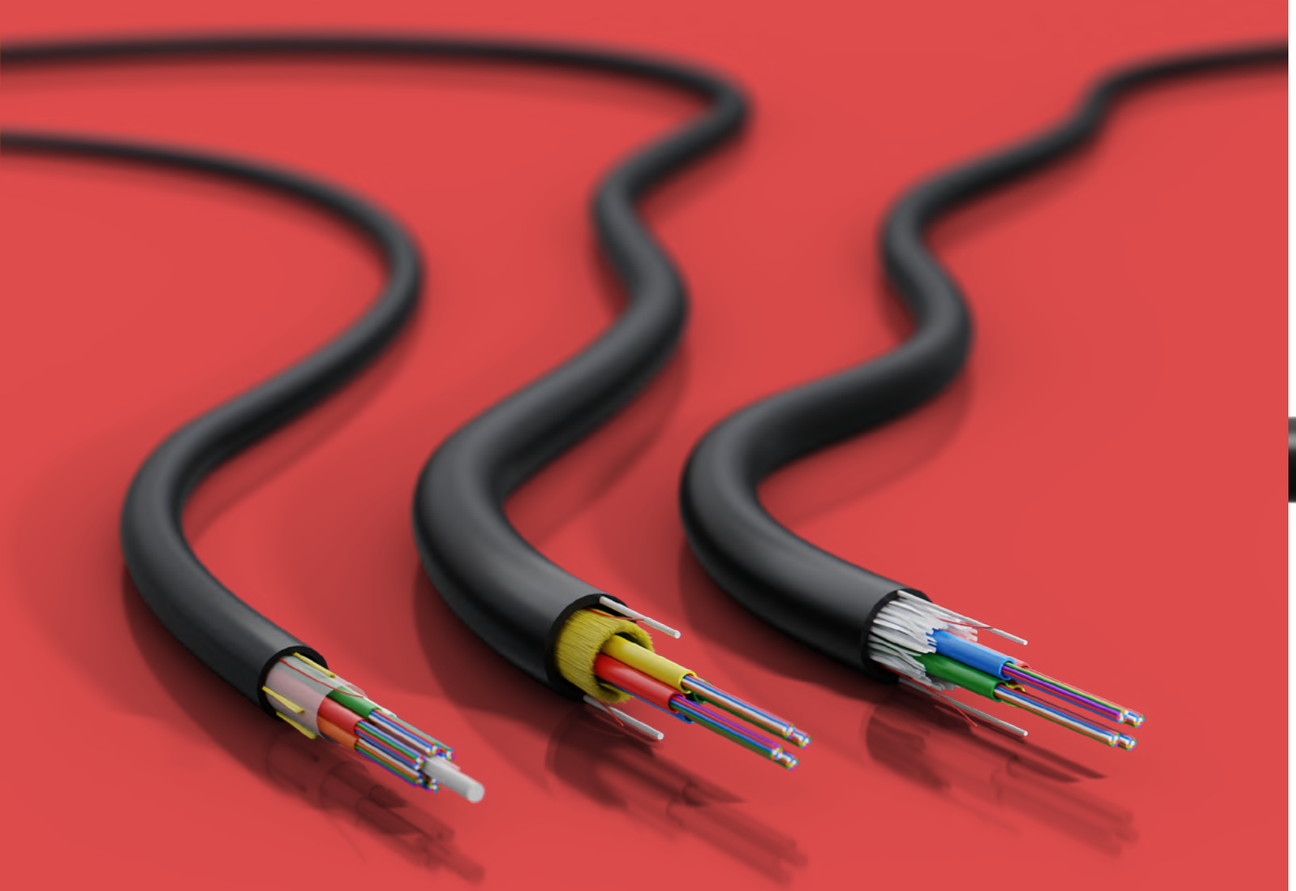
We will analyze this feature on the example. Micromodules with 12 fibers and 1.3 mm diameter means that the cross-section area was reduced by 60% comparing to standard loose tube 2.0 mm.

Moreover, there is a possibility to use compatible fibers with smaller 200 µm diameter. It translates into higher fibers density in the cross-section, and thus, smaller diameter and weight.



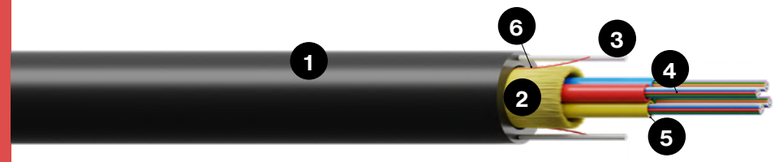
New constructions in FIBRAIN product portfolio

FIBRAIN constantly extend its ESM cable product portfolio. Our customers can find a wide range of drop cables with ESM, and therefore EAS easy access cable and MDC-FM cable installed in microduct systems. In addition, there are new constructions available now, including AERO-FM and MK-FM microduct cable.



New constructions in FIBRAIN product portfolio

AERO–FM ESM



Construction:

1. HDPE outer jacket (black)
2. Water blocking and tensile strength elements
3. FRP rods incorporated in outer jacket
4. Optical fibres
5. Easy Section Module
6. Polyester ripcords

AERO-FM is the upgraded type of MDC-FM cable in which aramid yarns were used as strength elements to achieve higher resistance to stretching for aerial applications. Small dimensions of micromodues and FRP rods incorporated in the outer jacket translated into higher fibers density in the cross-section, and thus, smaller diameter and weight. Moreover, micromodules are also available without gel inside a module in our product portfolio, which guarantees clean and fast installation.

MK–FM ESM

Construction:

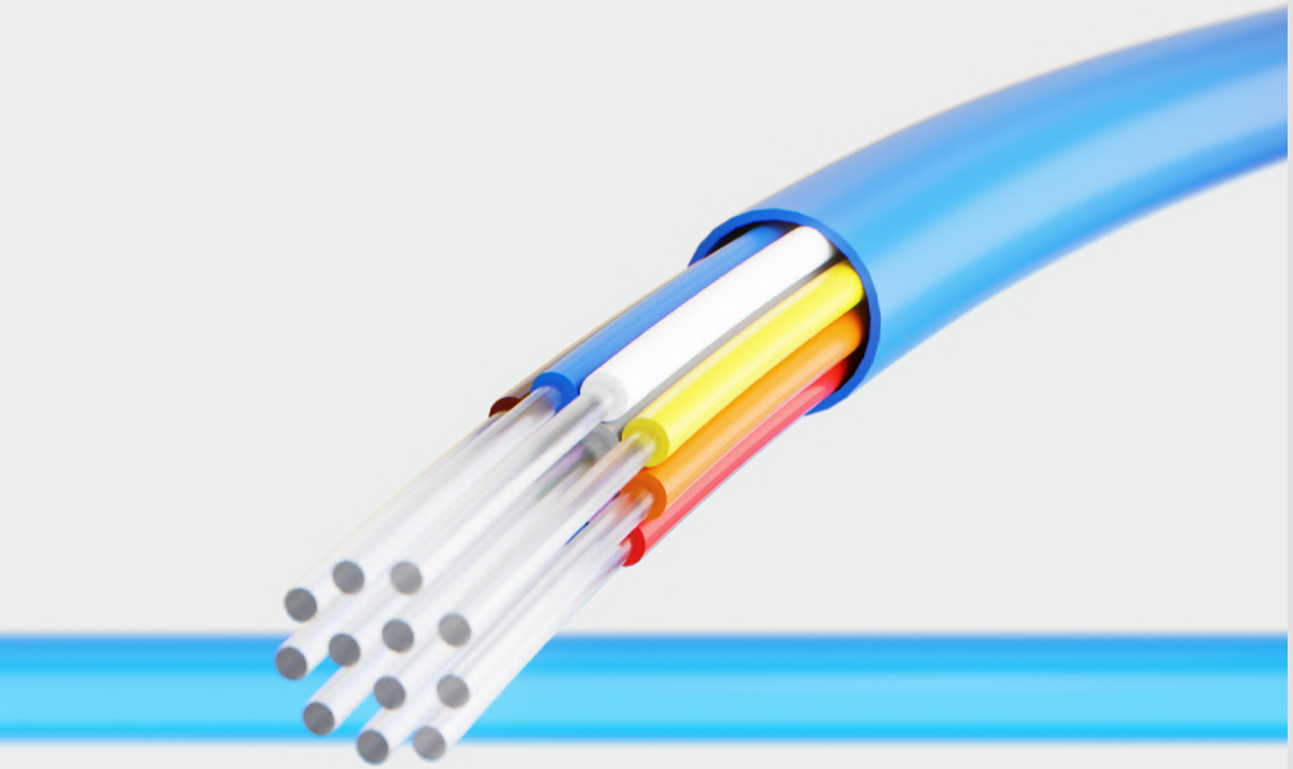
1. Outer sheath: HDPE
2. Easy Section Module with 12 optical fibres
3. Central strength member (FRP)
4. Water swellable yarns on FRP
5. Water swellable tape and aramid yarns
6. Ripcord

MK-FM it is another cable in ESM family for especially designed microduct applications such as Fibrain MetroJet system. It is a combination of easy installation with a possibility for cable blowing in microduct systems. The use of micromodules provides the same advantages as in other cables with Easy Section Module which are fast installation and toolless access to fibers. Other standard characteristics of microcables are maintained, including compact dimensions and stiffness of the structure that facilitates cable blowing.

Summary

For network operators, the choice of ESM means faster installation, lower investment costs, and reduced risk of network failure.

However, micromodules in fiber optic cables doesn't exclude any further dominance of the loose tube on the multi-fiber cable market. Both solutions can complement each other. Loose tubes appear to be a proven solution that has been successfully used well-known for years. However, wherever users appreciate the ease of installation, increased capacity and search for new solutions tailored to their profile, new constructions with the Easy Section Modules seem to be an obvious alternative.



FIBRAIN products

FOBP fiber optic closure

FDH outdoor cabinet

VFTO customer outlet

BU–XN

IFDT distribution cabinet

OBP S8

MetroJet

Optical distribution frame

Product center FIBRAIN → fibrain.com

AERO–FM

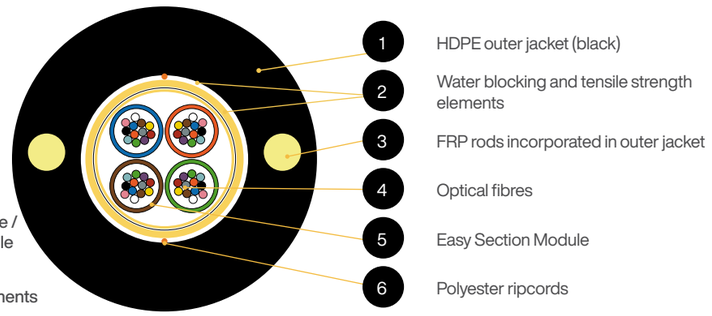
Single HDPE jacket outdoor distribution aerial and duct cable with Easy Section Modules (up to 90 m) modulo 6 / modulo 12

Application:

- Duct cable
- Aerial cable
- FTTH networks
- Fully dielectric

Design:

- 1,0mm ESM™ modules with 6 fibres in each module / 1,3mm ESM™ modules with 12 fibres in each module
- Dry design, no filling compound inside ESM
- Water swellable and tensile strength (aramid) elements
- FRP rods as strength and anti-buckling elements (incorporated in outer jacket)
- UV resistant black HDPE sheath
- Polyester ripcord



1. HDPE outer jacket (black)
2. Water blocking and tensile strength elements
3. FRP rods incorporated in outer jacket
4. Optical fibres
5. Easy Section Module
6. Polyester ripcords

Configuration:

VARIANT	QUANTITY [PCS]		Ø NOMINAL (TYP. ±0,3) UP TO 0,5	NOMINAL WEIGHT (±10%)	MAX ALLOWED TENSION	MAX OPERATING TENSION
	FIBRES	FIBRES PER MODULE	[MM]	[KG/KM]	[N]	[N]
1M x 6F / 1M x 12F	6 / 12	6 / 12	5,9	29	550 / 800	300 / 500
2M x 6F / 1M x 12F	12 / 24	6 / 12	7,2	38	800 / 750	450
3M x 12F	36	12	8,0	45	900	550
4M x 6F / 4M x 12F	24 / 48	6 / 12	8,0	45	900	600 / 700
6M x 6F / 6M x 12F	36 / 72	6 / 12	8,5 / 10,2	48 / 70	900 / 1300	600 / 700
8M x 6F / 12M x 12F	48 / 96	6 / 12	10,2 / 11,5	70 / 90	1300 / 2000	700 / 1000
12M x 6F / 12M x 12F	72 / 144	6 / 12	11,5	95	1600 / 2000	950 / 1000
16M x 6F	96	6	11,5	108	1800	1100
24M x 6F	144	6	13,5	127	2000	1300

Other variants, designs, mechanical and environmental properties available on demand

Mechanical and environmental characteristics:

Bending performance:	10 x D
Temperature range:	
Installation	-5... +40 [°C]
Operation	-30... +60 [°C]
Transport & Storage	-40... +70 [°C]
Crush resistance:	Load: 1500 N

MDC–FM

Single LSOH jacket duct cable with Easy Section

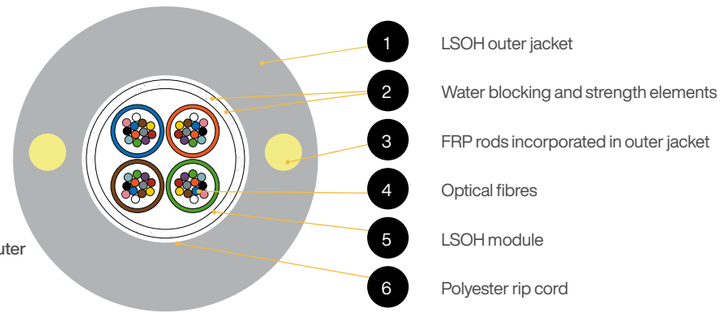
D CA CPR

Application:

- Duct cable
- FTTH access networks
- Fully dielectric cable

Design:

- LSOH modules with 12 pcs of optical fibres each
- Water swellable and tensile strength elements
- FRP rods as strength elements (incorporated in outer jacket)
- LSOH sheath
- Polyester rip cord



1. LSOH outer jacket
2. Water blocking and strength elements
3. FRP rods incorporated in outer jacket
4. Optical fibres
5. LSOH module
6. Polyester rip cord

Configuration:

VARIANT	QUANTITY [PCS]		Ø NOMINAL (TYP. ±0,3) UP TO 0,5	NOMINAL WEIGHT (±10%)	MAX ALLOWED TENSION	MAX OPERATING TENSION
	FIBRES	FIBRES PER MODULE	[MM]	[KG/KM]	[N]	[N]
1M x 12F	12	12	5,9 (max 6,4)	35	800	400
2M x 12F	24	12	7,0 (max 7,5)	45	800	400
3M x 12F	36	12	7,2 (max 7,7)	50	800	400
4M x 12F	48	12	7,9 (max 8,4)	55	1000	500
6M x 12F	72	12	9,0 (max 9,5)	65	1600	800
8M x 12F	96	12	10,2 (max 10,7)	93	1800	900
12M x 12F	144	12	11,2 (max 11,7)	110	2200	1100

Other variants, designs, mechanical and environmental properties available on demand

Mechanical and environmental characteristics:

Bending performance:	15 x D
Temperature range:	
Installation	-5... +40 [°C]
Operation	-30... +60 [°C]
Transport & Storage	-40... +70 [°C]
Crush resistance:	Load: 2000 N

FIBRAIN EASY SECTION MODULE

MDC–FM

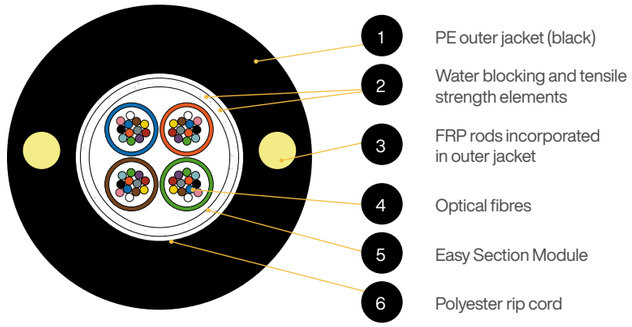
Single HDPE jacket duct cable with Easy Section Modules modulo 6 / modulo 12

Application:

- Duct cable
- FTTH access networks

Design:

- 1,1 mm ESM® modules with 6 fibres in each module / 1,3 mm ESM® modules with 12 fibres in each module
- Dry design, no filling compound inside ESM®
- Water swellable and tensile strength elements
- FRP rods as strength and anti-buckling elements (incorporated in outer jacket)
- UV resistant black HDPE sheath
- Polyester rip cord



1. PE outer jacket (black)
2. Water blocking and tensile strength elements
3. FRP rods incorporated in outer jacket
4. Optical fibres
5. Easy Section Module
6. Polyester rip cord

Configuration:

VARIANT	QUANTITY [PCS]		Ø NOMINAL (TYP. ±0,3)	NOMINAL WEIGHT (±10%)	MAX ALLOWED TENSION	MAX OPERATING TENSION
	FIBRES	FIBRES PER MOD-ULE	[MM]	[KG/KM]	[N]	[N]
1M x 6F / 1M x 12F	6 / 12	6 / 12	7,0 / 7,0	36 / 30	800	400
2M x 6F / 2M x 12F	12 / 24	6 / 12	7,0	37 / 40	800	400
3M x 12F	36	12	7,2	42	800	400
4M x 6F / 4M x 12F	24 / 48	6 / 12	7,0 / 7,9	40 / 49	800 / 1000	400 / 500
6M x 6F / 6M x 12F	36 / 72	6 / 12	7,9 / 9,0	49 / 55	1000 / 1600	500 / 800
8M x 6F / 8M x 12F	48 / 96	6 / 12	9,0 / 10,2	55 / 85	1000 / 1800	500 / 900
12M x 6F / 12M x 12F	72 / 44	6 / 12	10,2 / 11,2	70 / 110	1600 / 2200	800 / 1100
16M x 6F / 16M x 12F	96 / 192	6 / 12	10,2 / 13,0	77 / 140	1600 / 2300	800 / 1100
18M x 12F	216	12	14,0	155	2500	1200
24M x 6F / 24M x 12F	144 / 288	6 / 12	11,5 / 14,5	94 / 147	1800 / 2700	900 / 1300

Other variants, designs, mechanical and environmental properties available on demand

Mechanical and environmental characteristics:

Bending performance:	15 x D
Temperature range:	
Installation	-5... +40 [°C]
Operation	-30... +60 [°C]
Transport & Storage	-40... +70 [°C]
Crush resistance:	Load: 2000 N

FIBRAIN EASY SECTION MODULE

EAC–RAm

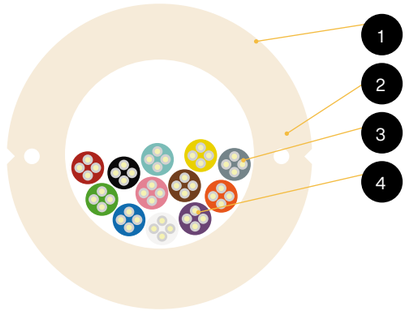
Easy Access, single LSOH jacket cable with retractable Easy Section Modules

Application:

- Distribution cable
- For laying in risers
- FTTH feeder
- Easy access and installation

Design:

- FRP strength members inside cable jacket
- Optical fibres in bundles
- 1-12 elements in cable
- LSOH outer jacket (white by default, various colour possible)



1. LSOH outer sheath
2. Dielectric strength members in cable jacket
3. Easy Section Module® 2-12F
4. Optical fibres (250µm)

Configuration:

VARIANT	QUANTITY [PCS]		Ø NOMINAL (TYP. ±0,3)	NOMINAL WEIGHT (±10%)	TENSILE STRENGTH [N]
	FIBRES	FIBRES PER MODULE	[MM]	[KG/KM]	ε=0,6% Δα≤0,1 dB, REVERSIBLE
2F Easy Section Modules	2-24	1-12	8,7	69	400
	26-30	13-15	10,5	83	400
	32-48	16-24	12,0	106	600
4F Easy Section Modules	2-48	1-12	8,7	70	400
	52-60	13-15	10,5	85	400
	64-96	16-24	12,0	110	600
6F Easy Section Modules	6-48	1-8	8,7	75	400
	54-72	9-12	10,5	112	400
	78-96	13-16	12,0	130	600
8F Easy Section Modules	8-32	1-4	8,7	67	400
	40-96	5-12	10,5	90	400
12F Easy Section Modules	12-48	1-4	8,7	70	400
	60-96	5-8	10,5	90	400
	108-144	9-12	12,0	115	600

Mechanical and environmental characteristics:

Bending performance:	15 x D
Temperature range:	
Installation	-5... +60 [°C]
Operation	-10... +60 [°C]
Transport & Storage	-40... +70 [°C]
Crush resistance:	Load: 1000 N

MK–FM 6,7,8 PE

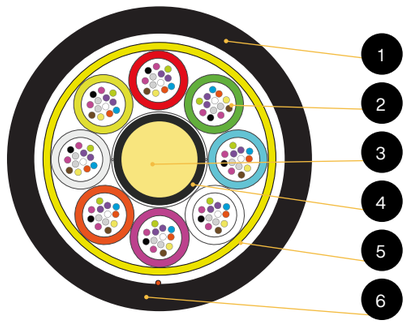
Single HDPE jacket ESM module microcable with aramid yarns and FRP rod reinforcement

Application:

- Microduct cabling air-blowing system application
- Metro networks
- Flexible network design
- Distribution network

Design:

- HDPE, UV stabilized external jacket with low coefficient of friction
- Smallest outer diameter for blowing into microducts
- ESM modules with 12 fibres in each module
- UV resistant black HDPE sheath
- Polyester rip cord



1. Outer sheath: HDPE
2. Easy Section Module with 12 optical fibres
3. Central strength member (FRP)
4. Water swellable yarns on FRP
5. Water swellable tape and aramid yarns
6. Ripcord

Configuration:

VARIANT	QUANTITY [PCS]				NOMINAL WEIGHT (±5%)	NOMINAL WEIGHT (±10%)
	FIBRES	FIBRES PER TUBE	TOTAL ELEMENTS	ACTIVE TUBES	[MM]	[KG/KM]
1-6T x 12F	12-72	12	6	1-6	6,0	30
8T x 12F	96	12	8	8	6,3	40
12T x 12F	144	12	12	12	7,9	61

Other variants, designs, mechanical and environmental properties available on demand

Mechanical and environmental characteristics:

Bending performance:	R=15 x D
Temperature range:	
Installation	- 15 to + 60 [°C]
Operation	- 30 to + 70 [°C]
Transport & Storage	- 40 to + 70 [°C]
Crush resistance:	Load: 400 N

VC–D20 ESM

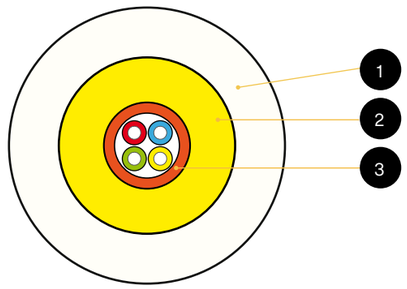
FTTH Single LSOH Jacket Cable – 2-4F in 900µm module – Drop Cable with Aramid Strength Members

Application:

- Optical cable with aramid yarns reinforcement
- For customer connection
- Fully dielectric cable
- Last mile connection
- LAN and FTTX networks
- Distribution network
- ODF connections
- Inside house OLT connection

Design:

- Optical fibres (up to 4 pcs) inside 900µm Easy Section Module
- Aramid strength element
- LSOH outer jacket



1. LSOH outer jacket (white or ivory, various colours available)
2. High modulus aramid yarns as strain reliefs
3. Optical fibres (250µm) in Easy Section Module

Configuration:

VARIANT	QUANTITY [PCS]		Ø NOMINAL (TYP. ±0,1)	NOMINAL WEIGHT (±10%)	MAX ALLOWED TENSION	MAX OPERATING TENSION
	FIBRES	FIBRES PER MODULE	[MM]	[KG/KM]	[N]	[N]
2F	2	2	2,1	5	200	75
4F	4	4	2,1	5	200	75

Mechanical and environmental characteristics:

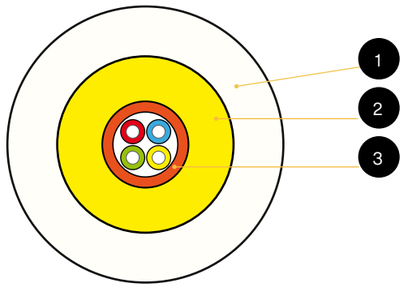
Bending performance:	R=15 mm
Temperature range:	
Installation	-5... +55 [°C]
Operation	-20... +70 [°C]
Transport & Storage	-40... +70 [°C]
Crush resistance:	Load: 300 N

VC–D30 ESM

FTTH Single LSOH Jacket Cable – 2-4F in 900µm module – Drop Cable with Aramid Strength Members

Application:

- Optical cable with aramid yarns reinforcement
- For customer connection
- Fully dielectric cable
- Last mile connection
- LAN and FTTX networks
- Distribution network
- ODF connections
- Inside house OLT connection



1. LSOH outer jacket (white or ivory, various colours available)
2. High modulus aramid yarns as strain reliefs
3. Optical fibres (250µm) in Easy Section Module

Design:

- Optical fibres (up to 4 pcs) inside 900µm Easy Section Module
- Aramid strength element
- LSOH outer jacket

Configuration:

VARIANT	QUANTITY [PCS]		Ø NOMINAL (TYP. ±0,1)	NOMINAL WEIGHT (±10%)	MAX ALLOWED TENSION	MAX OPERATING TENSION
	FIBRES	FIBRES PER MODULE	[MM]	[KG/KM]	[N]	[N]
2F	2	2	3,0	9	170	60
4F	4	4	3,0	9	170	60

Mechanical and environmental characteristics:

Bending performance:	R=15 mm
Temperature range:	
Installation	-5... +55 [°C]
Operation	-20... +70 [°C]
Transport & Storage	-40... +70 [°C]
Crush resistance:	Load: 300 N

EasyReel packing option:

Product coding	ER-500-1-VC-D30E-XXX
Cable length	500 m
Packaging dimensions	270mm x 270mm x 270m

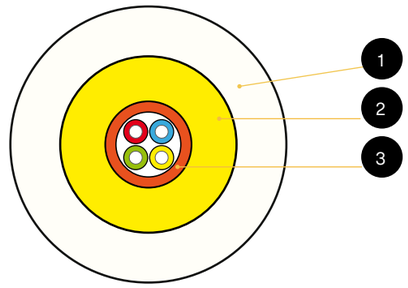
500m sections are wound in the EasyReel system and placed in a cardboard box.
The reel is wound without an internal drum

VC–D40 ESM

FTTH Single LSOH Jacket Cable – 1-4F in 900µm module – Drop Cable with Aramid Strength Members

Application:

- Optical cable with aramid yarns reinforcement
- For customer connection
- Fully dielectric cable
- Last mile connection
- LAN and FTTX networks
- Distribution network
- ODF connections
- Inside house OLT connection



1. LSOH outer jacket (white or ivory, various colours available)
2. High modulus aramid yarns as strain reliefs
3. Optical fibres (250µm) in Easy Section Module

Design:

- Optical fibres (up to 4 pcs) inside 900µm Easy Section Module
- Aramid strength element
- LSOH outer jacket

Configuration:

VARIANT	QUANTITY [PCS]		Ø NOMINAL (TYP. ±0,1)	NOMINAL WEIGHT (±10%)	MAX ALLOWED TENSION	MAX OPERATING TENSION
	FIBRES	FIBRES PER MODULE	[MM]	[KG/KM]	[N]	[N]
2F	2	2	4,1	15	420	150
4F	4	4	4,1	15	420	150

Mechanical and environmental characteristics:

Bending performance:	R=15 mm
Temperature range:	
Installation	-5... +55 [°C]
Operation	-20... +70 [°C]
Transport & Storage	-40... +70 [°C]
Crush resistance:	Load: 300 N

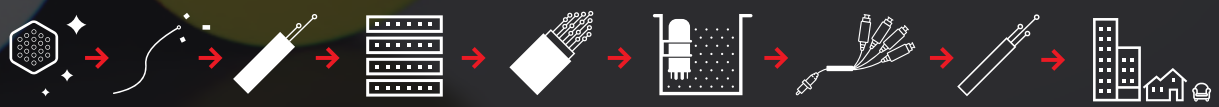
EasyReel packing option:

Product coding	ER-500-2-VC-D40E-XXX
Cable length	500 m
Packaging dimensions	350mm x 350mm x 270m

Odcinki o długości 500m nawijane są w systemie EasyReel i umieszczane w kartonowym pudełku.
Szpule nawijane są bez wewnętrznego bębenka.

FIBRAIN

From a single fiber to millions of satisfied customers around the world.



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