




Be ready for the future: Draka Datacom Solution

Modern networks face stiff demands. They must be fast and reliable, resist fire and not interfere with other equipment.

UC FIBRE
Optical Fibre Cable – a fast, reliable and always available part of the **Draka Datacom Solution**

Draka

Indoor cables

Indoor cables must be flexible and light, though rugged and reliable in order to be suitable for the installation in buildings or the application as a flexible connecting cable. Strain relieved with highly resistant Aramid yarns and sheathed with a resistant LSHF compound or with PUR – in case of highly flexible applications – the mechanical properties of the cables are ideally combined.

Protecting LSHF sheath

Data cables – often installed 'open' in buildings and facilities – can cause fire propagation, i.e. a spread of the fire. Thus, flame retardancy has been among the minimum requirements of indoor cables for many years. Already today, responsible network designers prepare for greater safety requirements in buildings and facilities.

High-quality LSHF materials with considerably improved characteristics in case of fire are a proven and future-oriented alternative to the traditional PVC cables. The highest precautionary measures as to the cabling apply at crowded places (e.g. hospitals, airports, schools, department stores, hotels), in buildings with a high concentration of commodity values and wherever a breakdown would involve high expenses (e.g. industrial plants, electric power stations, EDP centres, banks, power plants) as well as in alarm, signal and control systems.

Improved fire protection characteristics

- No spread of fire (fire propagation), e.g. transmission of the local fire alongside the cables
- No emission of corrosive gases, possibly creating acid with extinguishing water
- Very low smoke development
- No Dioxin in the fire remains
- Considerably low toxicology of fire gases

UC^{FIBRE} I T N DA LSHF 0.4kN

Mechanical properties			2G
Cable diameter	mm		3.0 /6.2
Weight	kg/km		16
Bending radius during installation	mm		50
during operation	mm		25
Tensile force	N		400

Applications

The duplex cable acc. to IEC 60794-2-10 with aramide strength members with flame-retardant, halogen-free outer sheath (LSHF) can be mounted to all common connectors and therefore is suitable for pigtails or interconnections. Data centre cabling 10-40Gbit solution acc. to TIA942 in all areas, especially for the Equipment Distribution Area.

UC^{FIBRE} I FL N DA LSHF 0.4kN

Mechanical properties			2G
Cable diameter	mm		3.8 /6.8
Weight	kg/km		32
Bending radius during installation	mm		60
during operation	mm		30
Tensile force	N		400

Applications

The duplex fibre cable with Aramide strength members with flame-retardant, halogen-free outer sheath (LSHF) can be mounted to all common connectors and therefore is suitable for pigtails or interconnections. Data centre cabling 10-40Gbit solution acc. to TIA942 in all areas, especially for the Equipment Distribution Area.

UC^{FIBRE} I B N DA LSHF 0.8kN

Mechanical properties		4G	6G	8G	12G
Cable diameter	mm	7.2	9.9	12.5	12.9
Weight	kg/km	54	74	136	130
Bending radius during installation	mm	130	150	250	250
during operation	mm	75	100	150	150
Tensile force	N	800	1200	1600	2000

Applications

Due to the tensile relief of each core and to single sheaths, FO connectors can be connected right away. For rising and distribution purpose (plenum) the cables can be split individually by opening the outer sheath. The cables with LSHF material accord to the UL/NEC and IEC fire proofing requirements. Data centre cabling 10-40Gbit solution acc. to TIA942 in all areas, especially for the Equipment Distribution Area.

UC^{FIBRE} I DI N DA LSHF 0.8kN

Mechanical properties		4G	6G	8G	12G
Cable diameter	mm	5.0	5.5	5.5	6.5
Weight	kg/km	20	25	25	31
Bending radius during installation	mm	100	100	100	130
during operation	mm	50	50	50	75
Tensile force	N	500	600	600	700

Applications

Mini-Breakout cables (distribution cables) are used in universal cabling systems. Applications are short distance connections, rising cables or distribution cables. The distribution cables with maximum 12 semi-tight fibres and glass yarn strength members have a flame-retardant and halogen-free outer sheath.

Universal cables

At the transition from the inside of the building to the access network between buildings, there is often a requirement profile that demands indoor as well as outdoor properties from the cables.

Therefore, universal or drop cables of series UC[FIBRE] I/O CT can be applied as buried or duct cables and as riser cables in the interior of the building at the same time. Up to 24 fibres are available for constructions with central tubes, which permit a cost efficient and small sized cable design. The cables
are UV-resistant, non-metallic, resistant to rodents, longitudinal watertight, have a high tensile strength and are halogen-free flame-retardant. They are suitable for both direct burial and indoor installation.

Fibre optic cables of series UC[FIBRE] I/O ST with stranded loose tubes are often applied in the campus and building backbones where a higher number of fibres is required. The compact loose tube design with 12 fibres per core permits a high packing density of the fibres, thus facilitating the fibre management in the distribution facilities. The cables are UV-resistant, non-metallic, resistant to rodents, longitudinal water-tight, have a very high tensile strength and are halogen-free flame-retardant. They are suitable for both direct burial and indoor installation.

In an industrial environment – both inside and outside the buildings – conditions are much rougher. In general, the cables are in fact watertight. However, additional aspects such as the following have to be considered when choosing the right cable:

- Chemical substances such as oils, solvents, etc.
- Permanent movements or vibration with the application e.g. in drag chains
- Extended ambient temperatures
- Electromagnetic influence both on the cable and caused by the cable

Fibre optic cables of series UC[FIBRE] I/O ST with stranded single elements are designed for harsh environment. Due to the tensile relief of each core, FO connectors can be connected right away. For rising and distribution purposes, the cables can be split individually by opening the outer sheath. These cables are UV-resistant, non-metallic, rodent-protected, halogen-free flame-retardant, longitudinal watertight with a high tensile strength and therefore suitable for indoor riser installation and for outdoor duct or direct buried installation.

UC[FIBRE] I/O CT D DA LSHF 1kN

Mechanical properties			24G
Cable diameter	mm		6.5
Weight	kg/km		45
Bending radius during installation	mm		150
during operation	mm		100
Tensile force	N		1000

Applications

FO indoor/outdoor cables with central loose tube design is UV-resistant, non-metallic, rodent protected, halogen-free flame-retardant, longitudinally watertight with tensile strength and therefore suitable for indoor riser installation as well as outdoor duct installation or direct burial.

UC[FIBRE] I/O CT D DA LSHF 3.0kN

Mechanical properties			24G
Cable diameter	mm		9.5
Weight	kg/km		85
Bending radius during installation	mm		160
during operation	mm		100
Tensile force	N		3000

Applications

FO indoor/outdoor cables with stranded tubes are required for access networks in case a high number of fibres is necessary. They are suitable for outdoor duct and direct buried installation.

UC[FIBRE] I/O ST D DA LSHF 6.0kN

Mechanical properties			72G
Cable diameter	mm		13
Weight	kg/km		170
Bending radius during installation	mm		300
during operation	mm		180
Tensile force	N		6000

Applications

FO indoor/outdoor cables with stranded tubes are required for access networks in case a high number of fibres is necessary. They are suitable for outdoor duct and direct buried installation.

UC[FIBRE] I/O CT D DA LSHF 1.5kN

Mechanical properties			24G
Cable diameter	mm		8.0
Weight	kg/km		60
Bending radius during installation	mm		160
during operation	mm		100
Tensile force	N		1500

Applications

FO indoor/outdoor cables with central tubes are suitable for outdoor duct and indoor riser installation. The cable is UV-resistant, non-metallic, rodent-protected, halogen-free flame-retardant, longitudinally watertight with tensile strengthening.

UC[FIBRE] I/O ST D DA LSHF 1.8kN

Mechanical properties			72G
Cable diameter	mm		10.5
Weight	kg/km		120
Bending radius during installation	mm		300
during operation	mm		210
Tensile force	N		1800

Applications

FO indoor/outdoor cables with stranded tubes are required for access networks in case a high number of fibres is necessary. They are suitable for outdoor duct and indoor riser installation.

UC[FIBRE] I/O B D DA LSHF 3.0kN

Mechanical properties			6G
Cable diameter	mm		11.5
Weight	kg/km		120
Bending radius during installation	mm		200
during operation	mm		120
Tensile force	N		3000

Applications

FO indoor/outdoor cables are made for harsh environment. Due to the tensile relief of each core and to single sheaths, FO connectors can be connected right away. For rising and distribution purpose the cables can be split individually by opening the outer sheath. They are suitable for outdoor duct and direct buried installation.

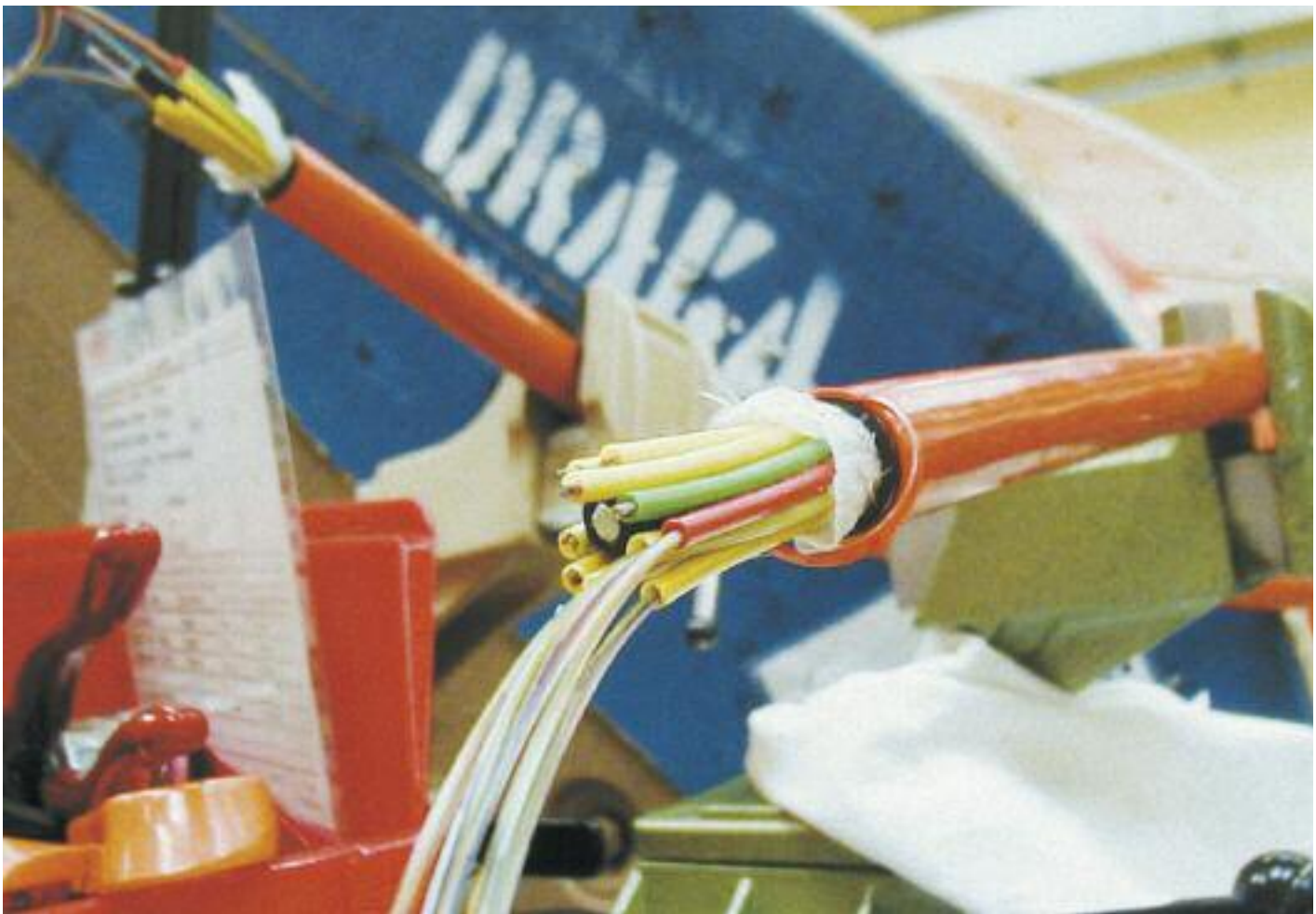
Outdoor cables

A sudden impact with the installation, a hammer accidentally falling down, extreme temperature changes, small cable ducts, humidity in the installation area – UC^{FIBRE} outdoor cables guarantee best transmission performance also under extreme conditions. Of particular importance for an efficient and easy installation and network maintenance: smooth handling of the connectorisation and during the splicing process.

Outdoor cables of series UC^{FIBRE} O ST with stranded loose tube serve as buried or duct cables and are applied in the campus backbone where more than 24 fibres are required. The compact loose tube design with 12 fibres per core permits a high packing density of the fibres, thus facilitating the fibre management in the distribution facilities. The cables are UV-resistant, non-metallic, resistant to rodents, longitudinal watertight and have a very high tensile strength. They can be blown in and are suitable for direct burial.

Micro-cables for blow-in systems

Draka's micro-cables for blow-in systems are not only a technical advancement or a system in order to plan and build new networks, it also offers clear cost advantages compared to the traditional installation completely equipped with standard cables. Compact and robust designs offer proven network solutions specifically where shortages of space for the cable routing prevail. We offer a complete series of innovative cables, thus achieving highest possible flexibility for the cabling within broadband networks. The system is based on blow-in technology and links distances meanwhile going far beyond the "last mile".



UC^{FIBRE} O CT D DA PE 1.5kN

Mechanical properties			
Cable diameter	mm		7.5
Weight	kg/km		45
Bending radius during installation	mm		160
during operation	mm		100
Tensile force	N		1500

Applications

FO outdoor cables with central tubes are required for LAN backbones and access networks in case a high number of fibres is necessary. The cable is UV resistant, metal free, rodent protected, longitudinal water tight, tensile strengthened and suitable for direct burial installation.

UC^{FIBRE} O ST D DA PA 1.8kN

Mechanical properties			72G	108G	132G
Cable diameter	mm		16.0	16.0	18.0
Weight	kg/km		205	205	260
Bending radius during installation	mm		240	240	270
during operation	mm		100	100	100
Tensile force	N		1800	1800	1800

Applications

FO outdoor cables with stranded tubes are required for LAN backbone and access networks in case a high number of fibres is necessary. The cables are also suitable for direct burial where only light rodent protection is needed and where soil conditions are not difficult.

UC^{FIBRE} O CT D DA PE 3.0kN

Mechanical properties			
Cable diameter	mm		9.5
Weight	kg/km		75
Bending radius during installation	mm		160
during operation	mm		100
Tensile force	N		3000

Applications

FO outdoor cables with central tubes are required for LAN backbones and access networks in case a high number of fibres is necessary. They are suitable for outdoor duct and direct buried installation. The cable is UV resistant, non-metallic, rodent protected, longitudinal watertight with high tensile strength and suitable for direct burial.

UC^{FIBRE} O ST D DA PE 6.0kN

Mechanical properties			72G	96G	144G
Cable diameter	mm		13.0	14.5	17.5
Weight	kg/km		140	170	260
Bending radius during installation	mm		250	250	320
during operation	mm		160	180	210
Tensile force	N		6000	6000	6000

Applications

FO outdoor cables with stranded tubes are required for LAN backbone and access networks in case a high number of fibres is necessary. The cables are also suitable for direct burial where only light rodent protection is needed and where soil conditions are not difficult. The cable is UV resistant, non-metallic, rodent protected, longitudinal watertight with high tensile strength.

Optical properties

Fibre types	Quality	850 nm	1310 nm	1550 nm
MM 50/125 µ	B	$\alpha \leq 2.7$ dB/km	$\alpha \leq 0.8$ dB/km	–
NA = 0,20		B ≥ 500 MHz·km	B ≥ 800 MHz·km	–
	A	$\alpha \leq 2.5$ dB/km	$\alpha \leq 0.7$ dB/km	–
		B ≥ 600 MHz·km	B ≥ 1200 MHz·km	–
HiCap™	OM 2+	$\alpha \leq 2.5$ dB/km	$\alpha \leq 0.7$ dB/km	–
		B ≥ 600 MHz·km	B ≥ 2000 MHz·km[1)]	–
MM 62,5/125 µm	B	$\alpha \leq 3.2$ dB/km	$\alpha \leq 1.0$ dB/km	–
NA = 0,27		B ≥ 200 MHz·km	B ≥ 500 MHz·km	–
	A	$\alpha \leq 3.0$ dB/km	$\alpha \leq 0.9$ dB/km	–
		B ≥ 200 MHz·km	B ≥ 600 MHz·km	–
HiCap™	OM 1+	$\alpha \leq 3.0$ dB/km	$\alpha \leq 0.7$ dB/km	–
		B ≥ 200 MHz·km	B ≥ 2000 MHz·km[1)]	–
MaxCap 300	OM 3	$\alpha \leq 2.7$ dB/km	$\alpha \leq 0.5$ dB/km	–
		B ≥ 1500 MHz·km	B ≥ 500 MHz·km	–
		1GbE R > 900 m	R > 550 m	
		10GbE R > 300 m	R > 300 m	
MaxCap H550	OM 4	$\alpha \leq 2.5$ dB/km	$\alpha \leq 0.7$ dB/km	–
		B ≥ 3500 MHz·km	B ≥ 500 MHz·km	–
		1GbE R > 1100 m	R > 550 m	
		10GbE R > 550 m	R > 300 m	

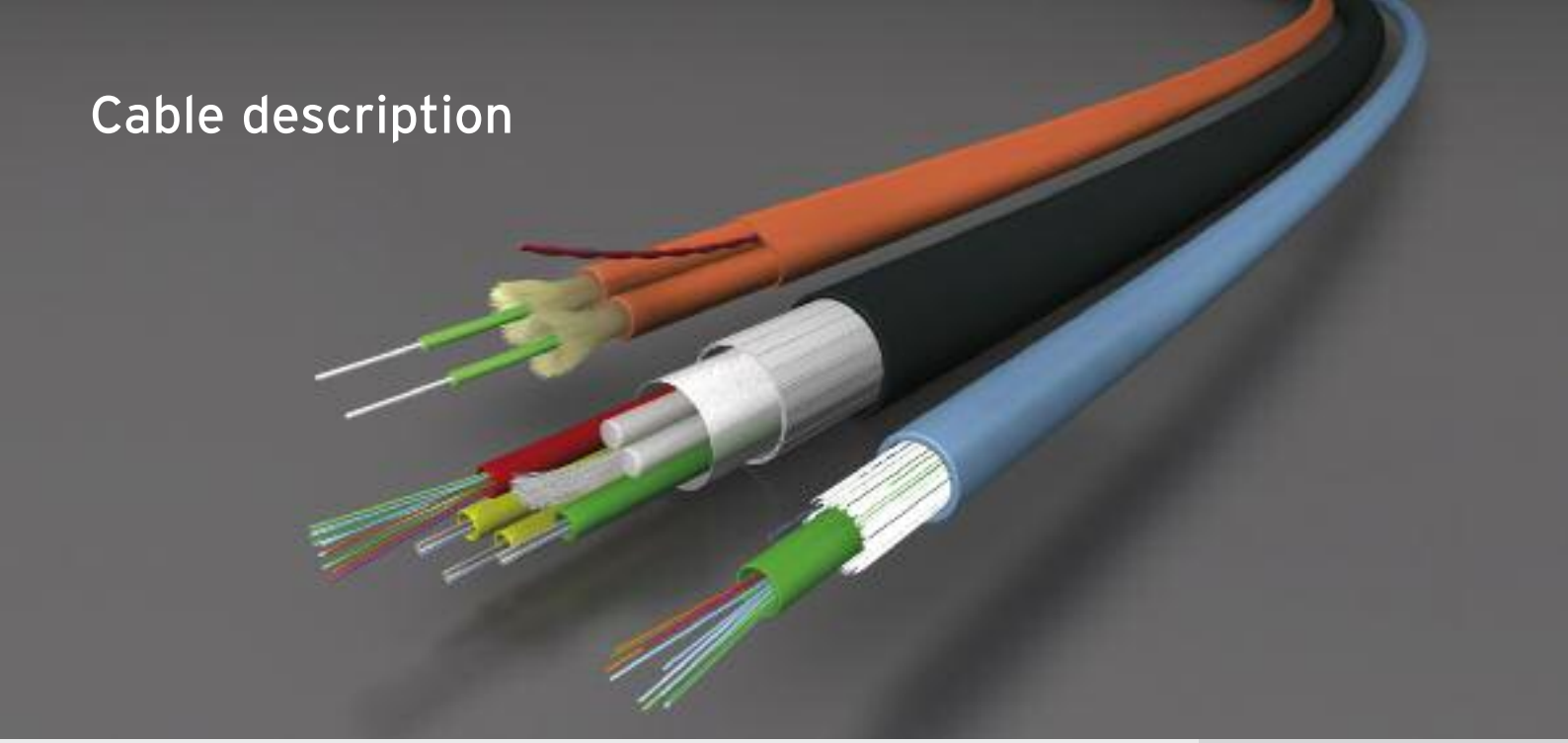
Fibre types	Quality	1300 nm	1550 nm	1625 nm
SM 9/125	G.652.A/B	$\alpha \leq 0.36$ dB/km	$\alpha \leq 0.25$ dB/km	–
$\lambda_{cc} < 1270$ nm		CD ≤ 3.5 ps/km·nm	CD ≤ 18 ps/km·nm	–
SM 9/125	G.652.C/D*	$\alpha \leq 0.36$ dB/km	$\alpha \leq 0.25$ dB/km	–
$\lambda_{cc} < 1270$ nm		CD ≤ 3.5 ps/km·nm	CD ≤ 18 ps/km·nm	–
SM 9/125	G.655	–	$\alpha \leq 0.25$ dB/km	$\alpha \leq 0.35$ dB/km
$\lambda_{cc} < 1400$ n		–	CD ≤ 1 ps/km·nm	CD ≤ 10 ps/km·nm
SM 9/125	G.657 B	$\alpha \leq 0.39$ dB/km	$\alpha \leq 0.25$ dB/km	
$\lambda_{cc} < 1260$ nm		CD ≤ 3.0 ps/km·nm	CD ≤ 18 ps/km·nm	–

1) = Measurement method in preparation: IEC60793-1-49
***)** = a ≠ 0,4dB/km in the entire wavelength range 1285 nm < λ < 1625 nm
λ_{cc} = SM cable cut-off wavelength in the cable (cut-off)

α = Attenuation
NA = Numerical aperture
B = Overfilled modal bandwidth

CD = Chromatic dispersion
R = Distance
1GbE = 1Gibagit Ethernet
10GbE = 10Gigabit Ethernet

Cable description



UC FIBRE_	I/O_	CT_	D_	DA_	LSHF-FR_	1kN_	12_	MM52

MM52 Multimode 50/125 OM2
MM53 Multimode 50/125 OM3
MM54 Multimode 50/125 OM4
MM61 Multimode 62,5/125 OM1
MM62 Multimode 62,5/125 OM2
SM2D Singlemode 9/125 G.652 D
SM7B Singlemode 9/125 G.657 B

N Number of total Fibres, **N** = X × n;
X = number of elements,
n = number of fibres per element

xkN **0 - 9** kiloNewton

LSHF-FR Low Smoke Halogen Free-Flame Retardent sheath IEC 60332-3 C
LSHF Low Smoke Halogen Free sheath IEC 60332-1
PE PE sheath
PUR PUR sheath
PR Plastics Rubber
PF Plastics Fluroplastics
PA PA sheath

DA Dielectric Armour
MA Metallic Armour

D Dry, unfilled (waterblocked with waterswellable materials)
F Jelly Filled
N Not waterblocked

S Single cable
T Twin duplex cable
FL Flat duplex cable with additional outer sheath
DI Distribution (Mini-Break-Out)
B Break-Out cable
CT Central Tube cable
ST Stranded Tube cable

I Indoor
I/O Indoor/Outdoor
O Outdoor

UC FIBRE Universal Cable **FIBRE**

Draka Communications – Cables in Copper and Optical Fibre Technology for:

Office Communication
Central Office Switching
Data Centre
Home Networks
Industry
Studio
CATV
Long-distance networks
Subscriber networks (FttX)
Telecommunication networks
Mobile telephone systems
OPGW
Signalling cables