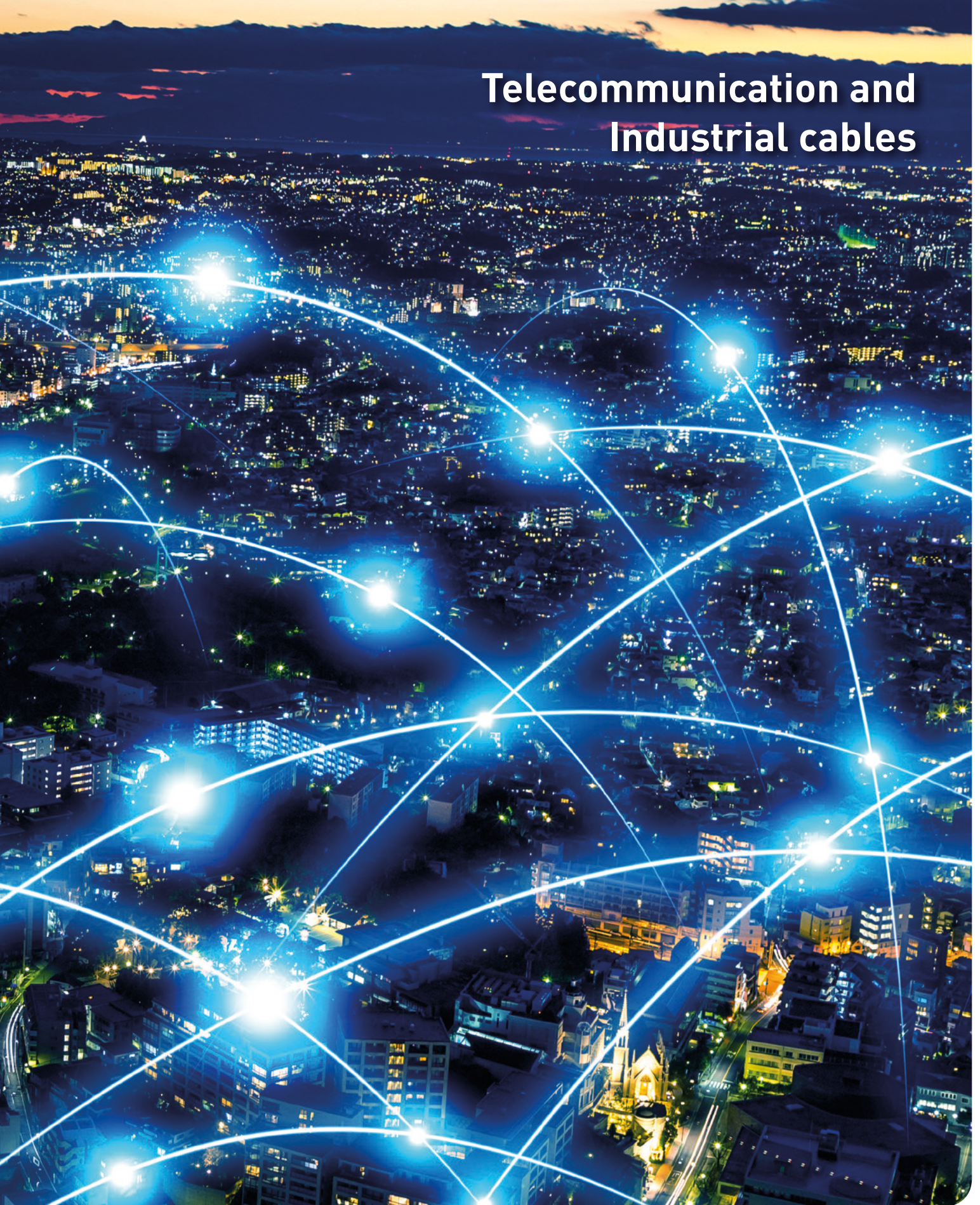


10/2018

HELKAMA

THE PERFECT CONNECTION

Telecommunication and Industrial cables



Fiber optic cables

FMS, FMMS

- Single or dual fiber installation cables for indoor cabling
- For housing and industrial use

FXMSU, FXMMS

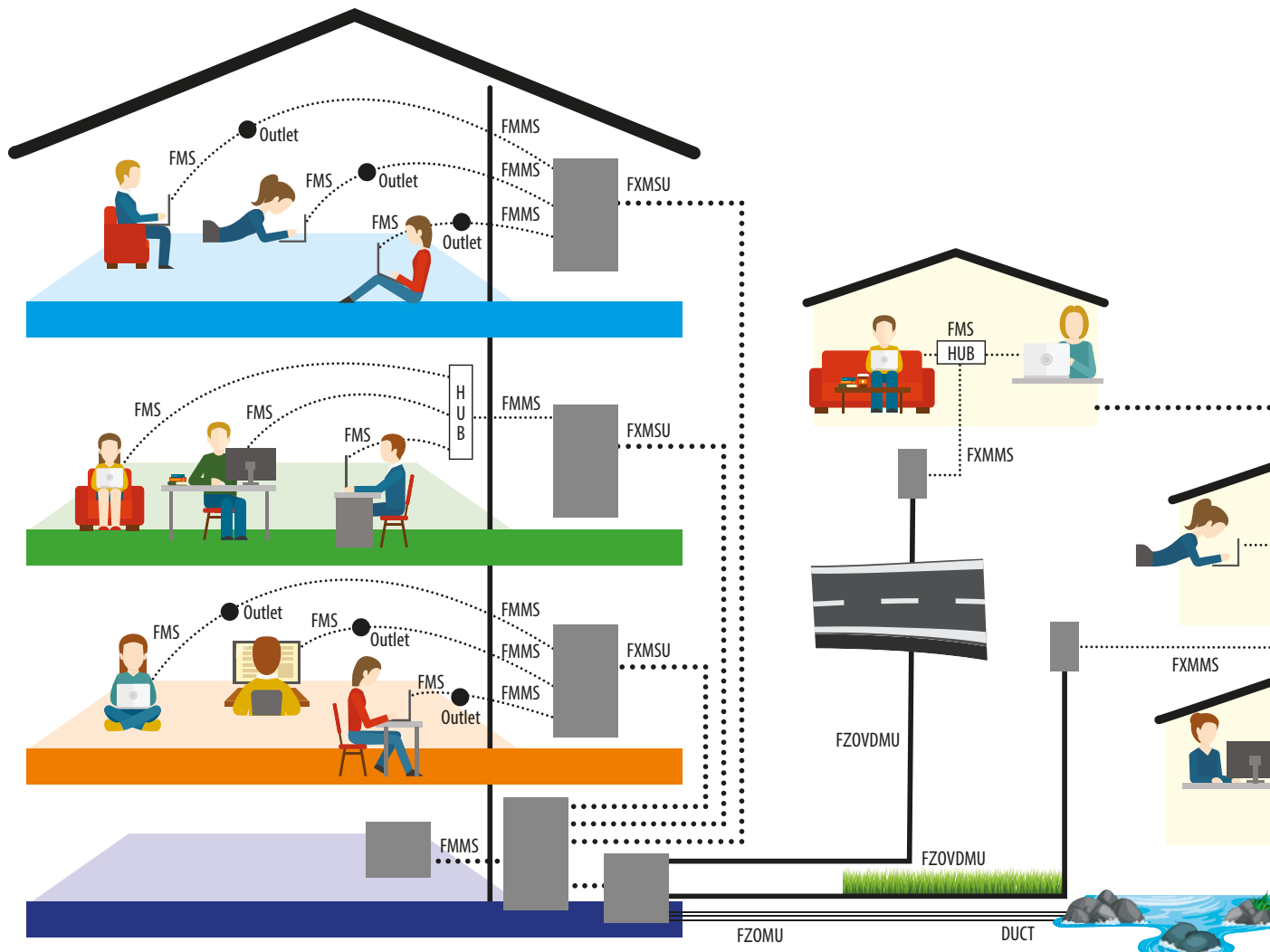
- Excellent tensile and crush strength
- Polypropylene slotted core and swellable tape protect the fibers from mechanical stress and water
- No grease, enabling easy installation at site
- FXMMS cable without swellable tape

FZOVDMU

- Slotted core design
- Typical solutions for direct burial and duct installations
- Improved mechanical protection by corrugated steel tape

Fiber trunk cables

- For telecom applications in towers and underground solutions, where multiple fibers are needed



Fiber optic cables

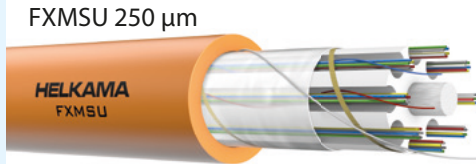
Installation Cables with Aramid yarns

FMS 1	1 fiber	900 μm /2,0 mm
FMS 2	2 fibers	900 μm /2,0 mm
FMMS	2 fibers	900 μm /2,0 mm



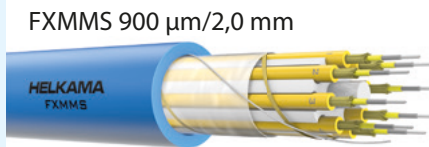
Indoor/Outdoor Cable with PP slotted core

FXMSU	6–48 fibers	250 μm
	4–24 fibers	900 μm



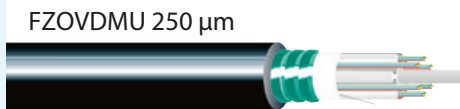
Installation Cable with PP slotted core

FXMMS	2–8 fibers	900 μm /2,0 mm
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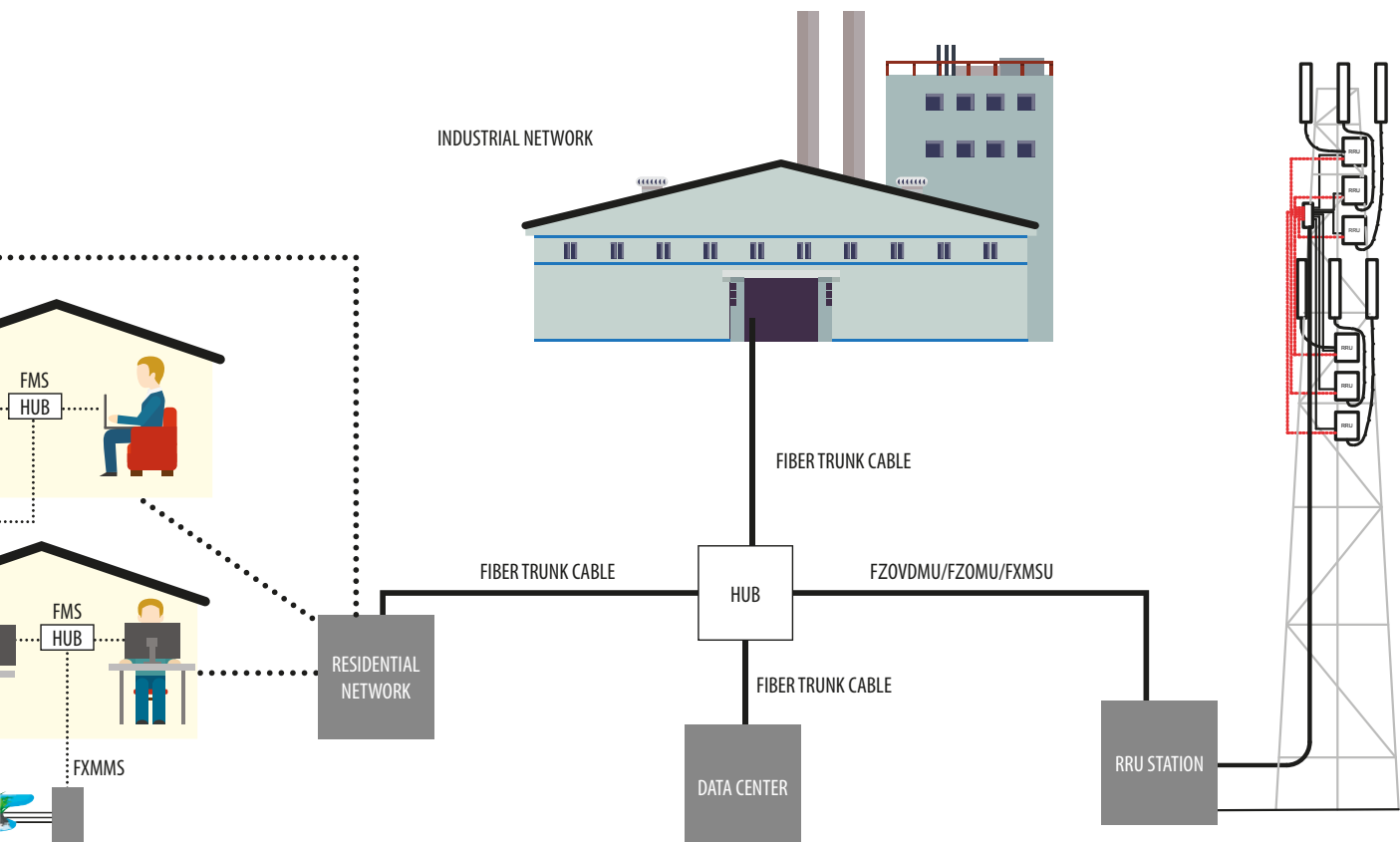
Direct burial and duct cable, steel tape protection

FZOVDMU	6–48 fibers	250 μm
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Trunk Cable	96–144 fibers	250 μm
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Trunk Cable 8x12 fibers,
250 μm loose tube construction



Hybrid cables

HELKAMA mobile networks solutions

Hybrid solution

- Helkama Hybrid main feed power and fiber optic cable
- Single mode LC lower end fiber optic connectors
- Peeled lower end conductors
- Divider
- Helkama power jumpers with peeled conductors
- Fiber optic jumpers with single mode LC connectors

Helkama solution with separate power and fiber optic cables

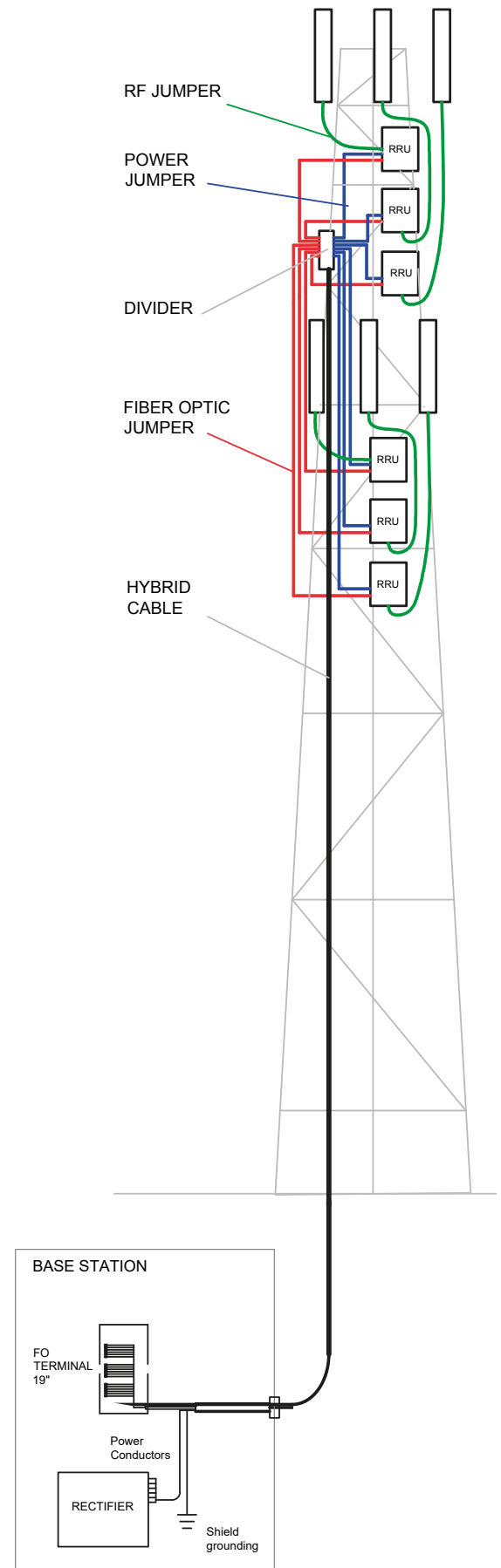
- Helkama main feed power cable
- Helkama FXMSU main feed fiber optic cable
- Divider
- Helkama power jumpers with peeled conductors
- Fiber optic jumpers with single mode LC connectors

Conventional solution with separate cables

- Separate power and fiber optic cables for each remote radio unit

Helkama solutions for wireless network

Combining all power and optical cables into one Hybrid cable creates remarkable savings in weight, wind area, installation time and material costs. Using a hybrid cable shortens installation time by reducing cable tray sizes and the amount of clamps needed in tower or rooftop solutions. By using the Hybrid Solution the installation team can finalize double the amount of installations compared to using the conventional solution with separate cables.



Hybrid cables



Divider options

Separates fibers and/or conductors of the hybrid cable for own terminals. Installation for telecom link stations in both outdoor and indoor locations.

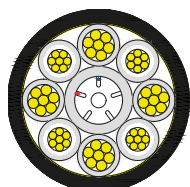
Type 1: DIVIDER PRO is easily expandable after installation. Body anodized aluminum, black with metallic fittings. Special hybrid cable clamp at the lower part for supporting the cable during assembly. Maximum pulling force 2 kN during installation.

Type 2: DIVIDER LITE: Power and Fiber jumpers are fixed installed and not expandable after installation. Body black PE plastic, bottom plate anodized aluminum with metallic fittings. Separate cabling stocking at the lower part for supporting the cable during assembly. Maximum pulling force 2 kN during installation.

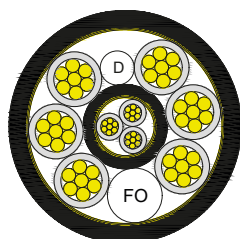
TYPICAL HYBRID CABLE CONSTRUCTIONS



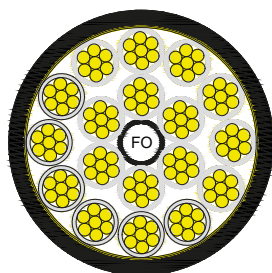
Hybrid jumper



2+2RRU system





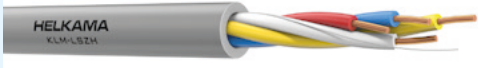



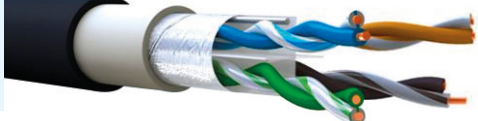

3RRU + FO6 + Alarm cable




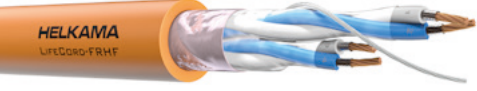


9RRU + FO18



Instrumentation pair cables

RE-2X(St)H RE-2X(St)H PiMF	1–24 pairs 1–24 pairs	EN 50288-7 EN 50288-7		
KLM-LSZH KLMA-LSZH	2 or 4 pairs 2 or 4 pairs	SFS 2751 SFS 2755		
NOVAK-HF KJAAM-HF	2–24 pairs 1–24 pairs	EN 50288-7 EN 50288-7		
CAT 6A, CAT 7	4 pairs	IEC 61156-6		

Fire resistant cables (IEC 60331)

INSTRUMENTATION PAIR CABLES				
Lifecord-FRHF(i)	300 V	2–24 pairs	EN 50288-7	
Lifecord-FRHF(c)	300 V	1–24 pairs	EN 50288-7	
Fireline 750	500 V	2–19 pairs	EN 50288-7	
FIBER OPTIC CABLE				
Lifecord-FRHF(f)		2–24 fibers	250 µm	

Definitions:

- (i) = individual screen and drain wire
- (c) = common screen and drain wire
- (f) = fiber optic cable

Power cables

LIGHT DUTY CABLES 300 V
 $2 \times 0,5 \text{ mm}^2 - 4 \times 0,75 \text{ mm}^2$

EN 50525-3-11

H-Flex PWR



HEAVY DUTY CABLES 1 kV
 $1 \times 1,0 \text{ mm}^2 - 5 \times 185 \text{ mm}^2$

EN 50525-3-11

H-Flex PWR C



Definition:

C = shielded construction

General technical information

Conductors

Bare copper Class 1, 2 or 5; Aluminum Class 2 or 5

Insulation plastic

MDPE or XLPE

Braiding/Copper tape

Power cables with "C" indication have 94% braiding coverage
 Hybrid cables have copper tape with 100% coverage

Sheath

LSZH standard, LSZH-XL for oil resistant, PUR for abrasion resistant

Rip cord

For all cables with power conductors $> 10 \text{ mm}^2$

Bending radius

For fixed installation $R = 6 \times \text{cable diameter}$

Fiber optic characteristics

Acc to ITU-T G.652.D / G657.A1/A2/B3, standard types OS2/OM1/OM3/OM4

Temperature ratings

All standard cables max conductor temperature $90 \text{ }^\circ\text{C}$, $120 \text{ }^\circ\text{C}$ on request

HELKAMA BICA OY

Helkama manufactures telecom, industrial, marine and offshore cables.

Backed up by 50 years of experience and Finnish maritime tradition, our products are tested in the harshest conditions and designed to meet all relevant standards.

We serve our customers promptly, reliably and flexibly. When you need your challenges to turn into solutions, choose Helkama.

We enable the perfect connection for your business.

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