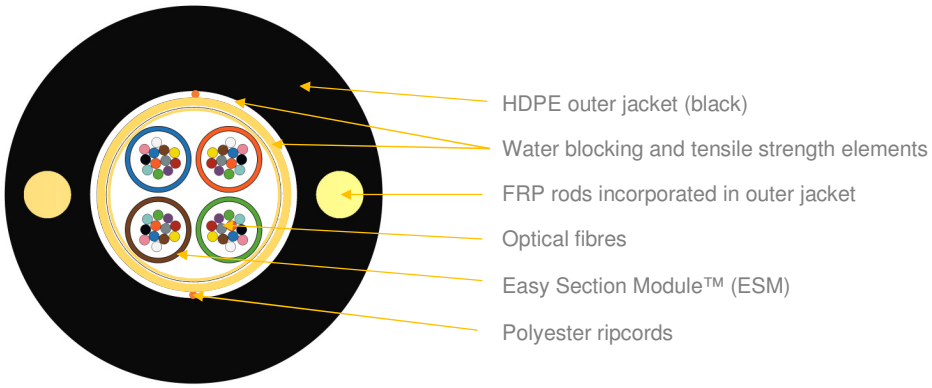
Type:	AERO-FM	REV: 1.2
Issued:	21/01/2019	PB
Modified:	29/12/2020	KP
Project:	5-19	RTM

Single HDPE jacket outdoor distribution aerial and duct cable with Easy Section Modules™ AERO-FM (up to 90m) *(modulo 12)*



*schematic drawing of 48F configuration, not to scale

APPLICATION:

Duct cable
Aerial cable
FTTH networks
Fully dielectric
For installation along power lines with an operation voltage below 150 kV and producing space potential below 4 kV.

DESIGN:

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

DESIGNS:

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	Total elements	Active modules	[mm]	[kg/km]	[N]	[N]
1M x 12F	12	12	1	1	5,9	29	800	500
2M x 12F	24	12	2	2	7,2	38	750	450
3M x 12F	36	12	3	3	8,0	45	900	550
4M x 12F	48	12	4	4	8,5	48	1000	700
6M x 12F	72	12	6	6	10,2	70	1300	700
8M x 12F	96	12	8	8	11,5	90	2000	1000
12M x 12F	144	12	12	12	11,5	95	2000	1000
Other variants, designs, mechanical and environmental properties available on demand								

MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS

Bending performance:	10 x D (10 cycles)	IEC 60794-1-21-E6, Δα reversible
Temperature range:		IEC 60794-1-22-F1,
Installation	-5... +40 [℃]	
Operation	-30… +60 [℃]	Δα≤0,1 dB/km
Transport & Storage	-40… +70 [℃]	Δα reversible

SUGGESTED MAXIMUM SPAN VALUES

Suggested max span [m]	Fibre count / modulo 12						
Loading conditions	**12F**	**24F**	**36F**	**48F**	**72F**	**96F**	**144F**
Ice 6,5 [mm]; **wind** 190 [Pa]	50	50	60	60	60	70	70
Wind 430 [Pa]	80	80	80	80	80	90	90

Test	Specification	Method	Requirements
Tensile strength	IEC60794-1-21 Method E1	**Mandrel diameter**: ≥ 30 x OD **Max load**: as provided in table above	**Fibre strain:** < 0.6%(during test) ≤ 0.05%(after test) Δα reversible (after test)
		Mandrel diameter: ≥ 30 x OD **Operating Load**: as provided in table above	**Fibre strain:** ≤ 0.2%
Crush resistance	IEC60794-1-21 Method E3	**Load:** 1500 N / 10 cm / 5 minutes **Plate size:** 100 mm x 100mm **Number of pts**: 3 (500mm apart)	Δα ≤ 0.05dB @ 1550nm (after test) No jacket cracking and fibre breakage
Impact resistance	IEC60794-1-21 Method E4	**Impact energy**: 10J **Radius**: 300 mm **Distance**: 1m **No. of impacts**: 3 at different points 500mm apart	Δα≤0.1dB @ 1550nm (after test) No jacket cracking and fibre breakage
Torsion	IEC60794-1-21 Method E7	**Cable length to be twisted:** 1m **No. of cycles:** 5 **Twist angle:** ± 180° **Load:** 50N	Δα≤0.1dB @ 1550nm (after test) No jacket cracking and fibre breakage
Bending	IEC60794-1-21 Method E11	**Mandrel radius**: 10 x OD / 5 turns (wrapped and unwrapped) / 10 flexing cycles *All fibres to be monitored*	Δα≤0.05dB @ 1550nm (after test) No jacket cracking and fibre breakage
Water penetration	IEC 60794-1-22 Method F5A	**Water head**: 1m **Sample length**: 3m (3 samples of each cable) **Time**: 24 hrs	No water leakage

OPTICAL FIBRE AND LOOSE TUBES COLOUR IDENTIFICATION

For optical fibres and loose tube identification information please see DSH_Colors_CODE_XXXX document.

FIBRE PARAMETERS

For selected post-production optical fibres parameters please see DSH_OFP document.

MARKING

The following print (white inkjet, laser printing or other suitable method) is applied at 1-meter intervals:

- Supplier: FIBRAIN
- Standard code (product type, fibre type, fibre count)
- Year of manufacture: xxxx
- Length marking in meters
- Cable ID / Drum No

Example: FIBRAIN AERO-FM 48F SM G652D 4M12F "YEAR OF MANUFACTURE" "LASER SYMBOL" "LENGTH MARKING" "BATCH NUMBER"

The accuracy of marking is ±0,5%. Remarking is in accordance with Bellcore GR 20 and supersedes earlier markings. Occasional loss of marking is possible. Cables can be supplied with a range of single mode or multimode fibres and customized print.

PACKING

Cables will be shipped on disposable wooden or treated wooden drums. Both ends of the cable will be capped and accessible for testing. Identification information will be placed on the drum.

DELIVERY LENGTH

2000 – 8000 meters ± 5%, with possibility of supplying up to 5% of total contract quantity as short length cables which should be above 1000 meters long. Tolerance of 5 % of order quantity shall be allowed.