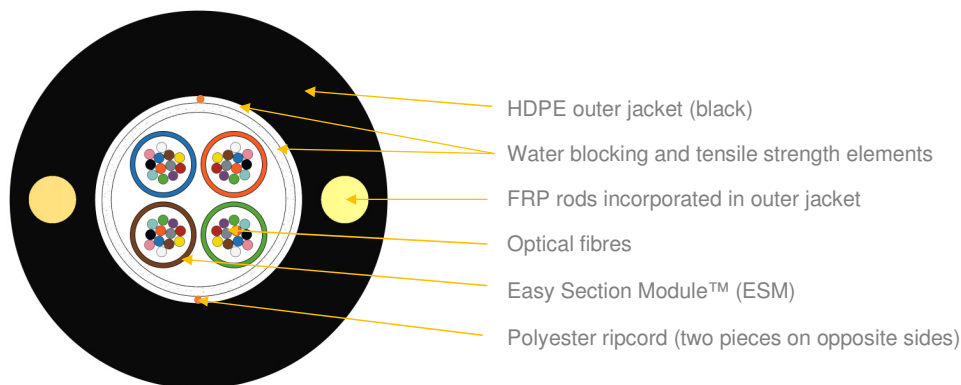


Single HDPE jacket duct cable with Easy Section Modules™ MDC-FM (modulo 12)



*schematic drawing of 48F configuration, not to scale

APPLICATION:

Duct cable
FTTH access networks
Fully dielectric

DESIGN:

ESM™ - Easy Section Module with 12 fibres each, 1,35mm.
Water swellable and tensile strength elements
FRP rods as strength and anti-buckling elements (incorporated into outer jacket)
UV resistant black HDPE sheath
Polyester ripcord, two pieces on opposite sides

DESIGNS:

Variant	Quantity [pcs]				Ø nominal (±5%, min 0,5mm) [mm]	Nominal weight (±10%) [kg/km]	Max allowed tension T _M [N]	Max static tension T _L [N]
	Fibres	Fibres per module	Total elements	Active modules				
23M x 12F	276	12	23	23	14,5	145	3100	1000

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

MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS

Test	Specification	Method	Requirements
Tensile strength	IEC60794-1-21 Method E1	Mandrel diameter: ≥ 30 x OD Load T_M: as provided in the table above	Fibre strain: e ≤ 0.5%, during test, reversible Cable strain: e ≤ 0.6%, during test, reversible Δα ≤ 0,5dB/km, during test, reversible
		Mandrel diameter: ≥ 30 x OD Sustained Load T_L: as provided in the table above	Fibre strain: e ≤ 0.2%, no attenuation change
Crush resistance	IEC60794-1-21 Method E3	Load: 2000 N / 10 cm / 15 minutes Plate size: 100 mm x 100mm Number of pts: at 5 different points 200mm apart	Δα ≤ 0.1dB @ 1550nm, during test, reversible No jacket cracking and fibre breakage
		Load: 2500 N / 10 cm / 15 minutes Plate size: 100 mm x 100mm Number of pts: at 5 different points 200mm apart	Δα reversible, No jacket cracking and fibre breakage
Impact resistance	IEC60794-1-21 Method E4	Impact energy: 5J Striking survice radius: 10 mm No. of impacts: at 3 different points 200mm apart	Δα reversible, No jacket cracking and fibre breakage
Torsion	IEC60794-1-21 Method E7	Cable length to be twisted: 1m No. of cycles: 20 Twist angle: ± 180°	Δα ≤ 0.1dB @ 1550nm, during test, reversible No jacket cracking and fibre breakage

Type:	MDC-FM	REV: 0
Issued:	03/12/2021	KP
Project:	079-21	

Cable kink	IEC60794-1-21 Method E10	Loop diameter: 10 x OD	No cable kink
Repeated bending	EC60794-1-21 Method E6	Mandrel radius: 20x OD No. of cycles: 20	No jacket cracking and fibre breakage
Bending	IEC60794-1-21 Method E11	Mandrel radius: 15 x OD / 5 turns (wrapped and unwrapped) No. of cycles: 10	$\Delta\alpha \leq 0.1$ dB @ 1550nm, during test No jacket cracking and fibre breakage
Water penetration	IEC 60794-1-22 Method F5B	Water head: 1m Sample length: 3m Number of samples: 10 pcs Time: 168 hrs	No water leakage for 9 out of 10 samples
Temperature range	IEC 60794-1-22 Method F1	Operation: -20... +60 [°C]	No attenuation change
		Operation: -30... +60 [°C]	$\Delta\alpha \leq 0.1$ dB/km @1550nm, during test, reversible
		Transport: -40... +70 [°C]	$\Delta\alpha \leq 0.15$ dB/km @1550nm, reversible

STANDARD COMPLIANCE

The product is in compliance with the following standards: IEC 60794-3-11:2010, IEC 60794-1-21:2015, IEC 60794-1-22:2018.

OPTICAL FIBRES COLOUR IDENTIFICATION

Fibre number	1	2	3	4	5	6	7	8	9	10	11	12
Fibre colour	Red	Blue	Green	Yellow	Violet	White	Orange	Grey	Brown	Black	Aqua	Pink

MODULES COLOUR IDENTIFICATION

Up to 12 modules

Tube number	1	2	3	4	5	6	7	8	9	10	11	12
Tube colour	Red	Blue	Green	Yellow	Violet	White	Orange	Grey	Brown	Black	Aqua	Pink

More than 12 modules

Tube number	1	2	3	4	5	6	7	8	9	10	11	12
Tube colour	Red I	Blue I	Green I	Yellow I	Violet I	White I	Orange I	Grey I	Brown I	Light green I	Aqua I	Pink I
Tube number	13	14	15	16	17	18	19	20	21	22	23	
Tube colour	Red II	Green II	Yellow II	Violet II	White II	Orange II	Grey II	Brown II	Light green II	Aqua II	Pink II	

"I", "II" – black marking (dashes)

FIBRE PARAMETERS

Fibre type: ITU-T G.657.A2

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

MARKING

The following print (laser printer or hot stamped) is applied at 1-meter intervals:

FIBRAIN MDC-FM 288F SM G657A2 24M12F "YEAR OF MANUFACTURE" "LASER SYMBOL" "LENGTH MARKING" "BATCH NUMBER"

The accuracy of marking is $\pm 0.5\%$. 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. Cable length on one reel is 4000m $\pm 5\%$, it can be changed upon arrangement and it depends on fibre count.

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