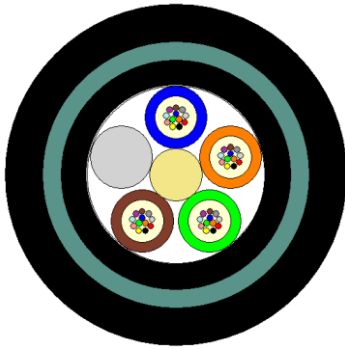


## Indoor/Outdoor Metallic Armoured Optical Cable

### Cable Design

IEC/EN 60794



- not to scale -

- **Central Strength Member (CSM):** glass fibre reinforced plastic rod (FRP)
- **Loose Tube:** thermoplastic material, containing optical fibres and filled with a suitable water tightness compound.
- **Filler Elements:** thermoplastic rods, where needed.
- **Stranding:** loose tubes (and fillers), SZ stranded around the CSM.
- **Longitudinal Water Tightness:** dry core with water swellable elements.
- **Peripheral Strength Elements:** aramid yarns (if required).
- **Inner Sheath:** halogen free, flame retardant and low smoke thermoplastic compound (LSOH & HFFR). Two ripcords beneath.
- **Armour:** both sides copolymer coated corrugated steel tape with overlap. Steel thickness: 0.15 mm. Two ripcords beneath the tape.
- **Outer Sheath:** UV resistant, halogen free, flame retardant and low smoke thermoplastic compound (LSOH & HFFR).

These cables are suitable for installation in ducts, cable trays or directly buried, either indoor or outdoor. Halogen free, low smoke, flame retardant sheath prevents the cable from spreading flames and does not evolve toxic, corrosive nor opaque gases in the event of fire. Metallic armour and double jacket provide excellent mechanical and rodent protection. The cable is chemical resistant as per IIR902.

### Technical data

No. of Fibres		12		48
Design (no. tubes x fibres/tube)		1 x 12		4 x 12
CSM – Ø	mm	2.1		
Inner Sheath Thickness	mm	1.0		
Outer Sheath Thickness	mm	1.5		
Cable Weight	kg / km	210		
Minimum Bending Radius	mm	Without Tension 15 x Cable-Ø		Under Maximum Tension 20 x Cable-Ø
Temperature Range	°C	Installation -10 to +50	Transport & Storage -40 to +70	Operation -40 to +70

Please refer to our General Installation, Safety & Handling recommendations before handling.

### Main characteristics

Test	Test Standard	Specified Value	Acceptance Criteria
Max. Installation Tension	IEC 60794-1-2-E1	1.5 * W [N], min. 2700 N	$\Delta\alpha$ reversible, fibre strain $\leq 0.33\%$
Max. Operation Tension	IEC 60794-1-2-E1	0.5 * W [N], min. 900 N	no fibre strain, $\Delta\alpha \leq 0.05$ dB
Crush	IEC 60794-1-2-E3	3000 N / 100 mm, max. 15 min	$\Delta\alpha \leq 0.05$ dB after the test
Impact	IEC 60794-1-2-E4	10 Nm, 3 impacts, R= 300 mm	$\Delta\alpha \leq 0.05$ dB after the test
Torsion	IEC 60794-1-2-E7	100N, +/- 180°, 10 cycles	$\Delta\alpha \leq 0.05$ dB, no damage
Repeated Bending	IEC 60794-1-2-E6	R=20 x D, 100 N, 35 cycles	no damage
Cable Bend	IEC 60794-1-2-E11	R=20 x D, 4 turns, 3 cycles	$\Delta\alpha \leq 0.05$ dB, no damage
Kink	IEC 60794-1-2-E10	R = 20 x D	No kink occurs
Temperature Cycling	IEC 60794-1-2-F1	-40°C to +70°C	$\Delta\alpha \leq 0.05$ dB/km
Water Penetration	IEC 60794-1-2-F5B	sample=3m, water column=1m	no water leakage in 24h

All optical measurements at 1550 nm (SM) and 1300 nm (MM). Acceptance criteria for MM fibres  $\leq 0.2$  dB for all mechanical test and  $\leq 0.5$  dB/km for temperature cycling, instead of 0.05 dB (SM).

## Optical Characteristics













See the attached cabled optical fibre data sheet.

## Fire Performance

Test	Test Standard	Specified Value	Acceptance Criteria
Flame non-propagation (flame retardant)	IEC 60332-1	unburnt cable length	> 50 mm
Smoke Density (low smoke)	IEC 61034	transmission of light	> 60 %
Halogen Content	IEC 60754-1	halogen content	< 0.5 %
Corrosivity of Smoke Gases	IEC 60754-2	pH-value	≥ 4.3
Conductivity of Smoke Gases	IEC 60754-2	conductivity	≤ 10 µS/mm

## Identification

### Fibre Colours

No.	1	2	3	4	5	6	7	8	9	10	11	12
Colour	blue	orange	green	brown	grey	white	red	black	yellow	violet	pink	aqua
												

### Buffer Tube

No.	1	2	3	4
Colour	blue	orange	green	brown
				

### Filler Elements Colours

All filler elements are uncoloured (natural).

### Sheath Colour

The inner and outer sheath colour is black.

### Sheath Marking

The outer sheath is marked in 1 meter intervals as follows:

<Optional: Customer name>    <Manufacturer>    <year of manufacture>  
 <no. and type of fibre>    <length marking in meter>

## Logistic

### Packing

Wooden drums with protection.

### Delivery Lengths

Standard delivery lengths are 4 km with a tolerance of -1% / +3%

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