Prysmian Group

xsMobile

Value Innovation for your Wireless Network

xsMobile

Fibre to the Antenna

PRYSMIAN

Draka

Prysmian Group – linking the future

As the worldwide leader in the cable industry, Prysmian Group believes in the effective, efficient and sustainable supply of energy and information as a primary driver in the development of communities.

With this in mind, we provide major global organisations in many industries with best-in-class cable solutions, based on state-of-the-art technology. Through two renowned commercial brands – Prysmian and Draka – based in more than 50 countries, we're constantly close to our customers, enabling them to further develop the world's energy and telecoms infrastructures, and achieve sustainable, profitable growth.

Drawing on over 130 years' experience and continuously investing in R&D, we apply excellence, understanding and integrity to everything we do, meeting and exceeding the precise needs of our customers across all continents,at the same time shaping the evolution of our industry.

Meeting the demand for mobile broadband access

The global mobile market is growing fast: the number of mobile subscribers grew to 6.7 billion in 2013 and is projected to reach 9.3 billion by the end of 2019.

The global mobile market is growing fast: the number of mobile subscribers grew to 6.7 billion in 2013 and is projected to reach 9.3 billion by the end of 2019.

Unsurprisingly, the importance of broadband access to today's economy is undeniable, and is fast becoming an essential part of consumers' lives. Mobile subscribers are growing rapidly and bandwidth demand is increasing. The growth in mobile data traffic between 2013 and 2019 will be multiplied tenfold, reaching close to 20 ExaBytes.

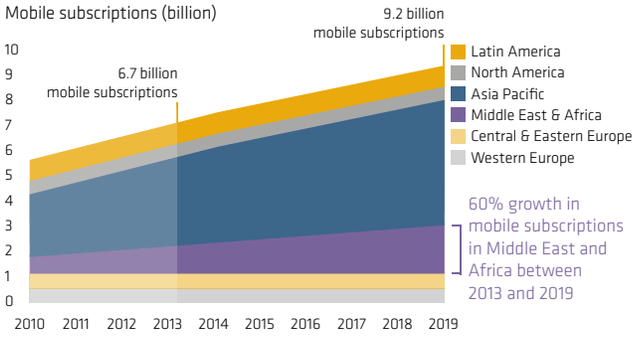
Already, traffic generated by mobile phones has exceeded that from mobile PCs, tablets and routers. Inside this mobile data traffic, mobile video is expected to multiply by a factor of 13, between 2013 and 2019.

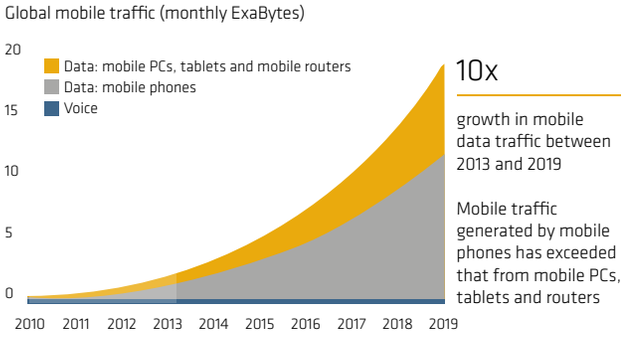
As the number of mobile devices increases, so does the demand for a smart, sophisticated mobile network grid. Backhaul capacity must increase so mobile broadband, data access and video services can effectively support consumer usage trends and keep mobile infrastructure costs in check.

There is a challenge, however. Deploying next-generation mobile networks requires greater service portability and interoperability. The networks must allow all devices to be connected transparently, providing high-performance computing and delivering enhanced real-time video and multimedia.

Acknowledging this fact, mobile operators have looked to deploy smaller cells and fit-for-purpose technologies. A full fibre-based mobile network infrastructure offers potential savings in both capital expenditure (CapEx) and operating expenses (OpEx), compared to traditional coaxial cable-based solutions.

Quality of Service (QoS) is a key success factor in this new service provision, creating a competitive edge. To be able to deliver QoS, the mobile network infrastructure needs to be state-of-the-art, with 3G, 4G/LTE technologies enabled. These new generations require a more dense fibre infrastructure built on FTTA and a fast backhaul connection to offload the bitstream.





10x

growth in mobile data traffic between 2013 and 2019

Mobile traffic generated by mobile phones has exceeded that from mobile PCs, tablets and routers

Source: The Ericsson Mobility Report, June 2014.

OMMITTED TO THE PLANET ONE LEADER, TWO BRANDS. PASSION FO
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Next-generation mobile networks

Everywhere, efficiently

xsMobile is an extensive cable portfolio for mobile sites. It ensures both the data transmission between the base station (BTS) and the Remote Radio Heads (RRHs) at the antennas, and the remote powering of the RRHs from the BTS site.

The portfolio consists of a wide range of product solutions to cover both separate data and power paths to the RRH (FTTA and PTTA separate cables) and composite cables providing both functions inside one cable (HTTA).

These FTTA+PTTA and HTTA solutions are available in a variety of constructions to accommodate any specific deployment environment.

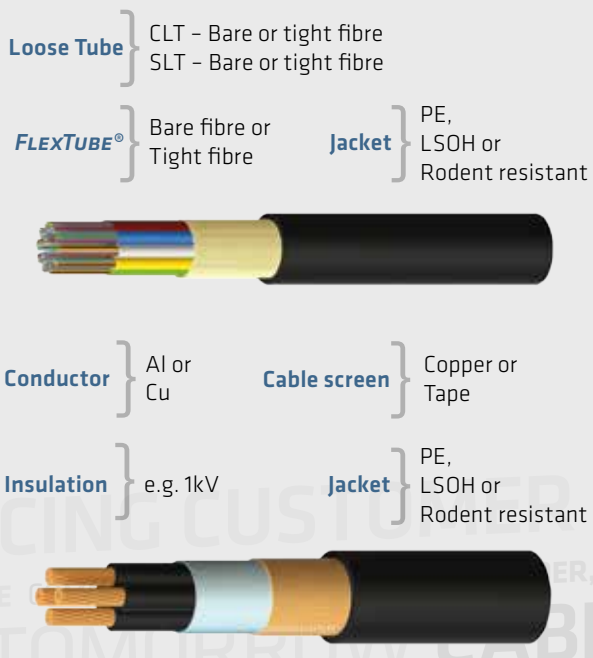
FTTA – Fibre to the Antenna

The FTTA section of the portfolio includes a variety of products for data transmission between BTS and RRH: Loose Tube (be it Central Loose Tube with bare or tight fibre), Stranded Loose Tube (with bare or tight fibre) or micromodule *FlexTube*® (also with bare or tight fibre).

They all rely on the superior performances of Prysmian's bend-immune *BendBright*^{XS} fibre, which secures quality of transmission even in the most aggressive designs and environments.

PTTA – Power to the Antenna

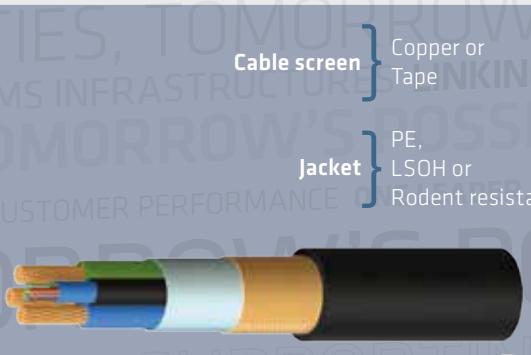
Securing the powering of the active equipment of the RRH remotely, from the base station, the PTTA cables offered in *xsMobile* solutions cover a wide range of constructions. Customers can select the conductor type (Al or Cu), the insulation level (e.g. 1kV) or the type of cable screen (copper, tape). Different options for the jacket material (PVC, PE, LSOH, etc.) cover any environment, whether outdoor or indoor.



HTTA – Hybrid to the Antenna

Prysmian Group's hybrid composite cable combines both elements within the same cable: data transmission and remote powering. Encapsulated within one cable construction, where large conductors are in the vicinity of small optical modules containing the transmission fibres, they leverage the superior performance of bend-immune *BendBright*^{XS} fibre which fully preserves the quality of transmission.

The HTTA products offered within the *xsMobile* solution include the different types of powering construction (the full PTTA range, spanning conductor, insulation, screen and jacket types) and the type of fibre module requirements (loose tube, *FlexTube*®, jacket).



THE BEST OF BOTH WORLDS

xsMobile

Answering the mobile infrastructure challenge.

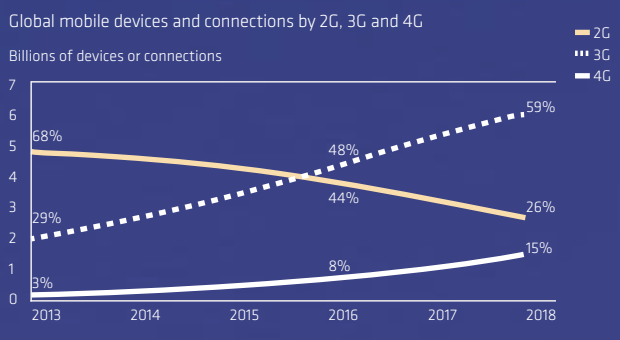
Due to the vast and rapidly increasing network capacity requirements, fibre is being called on for a variety of applications. It is used for backhaul, linking all base stations towards the core network, as well as for fronthaul, linking the base station to the antenna. In fronthaul, fibre is used for capacity and power efficiency reasons. For mobile backhaul, it is introduced to cope with increasing bandwidth requirements.

The roll-out of mobile backhaul presents challenges very similar to those involved in rolling out an FTTx access network: going through people's property, sharing infrastructure, controlling deployment costs, right of way and so on. Therefore, many solutions developed for outdoor fixed access, leveraging bend-immune fibres, are also applicable to mobile backhaul.

The same applies to the indoor challenges of mobile. Bend-immune fibres are used in distributed antenna topologies for improved indoor coverage, or for femto-cells backhaul, for example, leveraging solutions for indoor FTTx. For the fronthaul, in Fibre-to-the-Antenna configurations, flexible and compact cables are necessary for deployments on towers, masts, rooftops and façades, among many other locations.

The vast majority of cables connecting the base station to the remote radio head in the antenna with fibre now use bend-immune fibres, for their improved tolerances and resilience. These qualities also make them suitable for hybrid power/fibre cables, connecting the active equipment of the antenna and providing the data connection and remote power supply in a composite cable.

The flexibility and scope of Prysmian Group's xsMobile portfolio makes it the easy, quick and cost-effective solution for mobile operators as they transition to more flexible and higher bandwidth networks.



Source: Cisco VNI

Linking communications to communities

Cable solutions to support the development of the world's telecoms infrastructure

As the world's largest producer of telecoms cables, supporting the infrastructures of many of the world's leading telecoms operators, the Prysmian Group delivers optical fibre and copper cabling solutions that help link communications to communities around the globe.

Covering voice, video and data transmission, we are a world leader in the production of optical fibre, offering unique and fully owned technology. Our portfolio sets the benchmark in global innovation, and is the outcome of continuous multi-million euro investment in R&D and production in more than 30 facilities worldwide.

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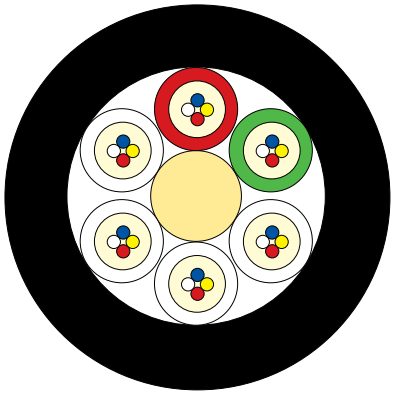

Not to scale

Cable design IEC/EN 60794

- **Central Strength Member (CSM):** glass Fibre-reinforced Plastic (FRP) rod, with plastic oversheathing when needed.
- **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.
- **2 ripcords**
- **Outer sheath:** HDPE

Technical data

No. of fibres		6	12	24
Design		3 x 2	6 x 2	6 x 4
Loose tube/filler – Ø	mm	1.7		
CSM – Ø	mm	2.0		
CSM-oversheathing – Ø	mm	-		
Outer sheath thickness	mm	1.2		
Cable diameter	mm	7.8		
Cable weight	kg / km	50		
Minimum bending radius	mm	Without tension 15 x cable-Ø		Under maximum tension 20 x cable-Ø
Temperature range	°C	-10 to +50	-30 to +70	-30 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	1500 N	$\Delta\alpha$ reversible, fibre strain ≤ 0.5%
Crush	IEC 60794-1-2-E3	1500 N / 100 mm, max. 15 min	$\Delta\alpha \leq 0.05$ dB, no damage
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=20x D, 100N, 35 cycles	No damage
Cable bend	IEC 60794-1-2-E11	R=20x D, 4 turns, 3 cycles	$\Delta\alpha \leq 0.05$ dB, no damage
Temperature cycling	IEC 60794-1-2-F1	-40°C to +80°C	$\Delta\alpha \leq 0.1$ dB/km
Water penetration	IEC 60794-1-2-F5B	Sample=3m, water column=1m	No water leakage in 24hrr

All optical measurements at 1550 nm.

CDS 4424 05/14

Optical characteristics

See the attached cabled optical fibre data sheet.

Identification

Fibre colours

No.	1	2	3	4
Colour	Blue	Yellow	Red	White

Buffer tube colours:						
Tube	1	2	3	4	5	6
Colour	Red	Green	White	White	White	White

Filler elements colours:

All filler elements are uncoloured (natural).

Sheath colour:

The outer sheath colour is black.

Sheath marking:

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

<Manufacturer> <year of manufacture> <no. and type of fibre> <length marking in metre>

Logistic

Packing:

Wooden drums with protection.

Delivery length:

Standard delivery length is 4km with a tolerance of -1% to +3%.

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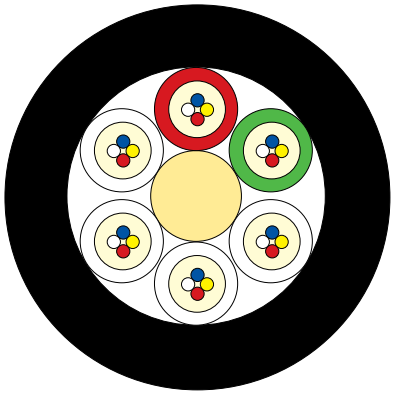
PRYSMIAN Draka

A/I-DQH



Not to scale

Cable design IEC/EN 60794

- **Central Strength Member (CSM):** glass Fibre-reinforced Plastic (FRP) rod, with plastic oversheathing when needed.
- **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.
- **2 ripcords**
- **Outer sheath:** HFFR

Technical data

No. of fibres		6	12	24
Design		3 x 2	6 x 2	6 x 4
Loose tube/filler – Ø	mm	1.7		
CSM – Ø	mm	2.0		
CSM-oversheathing – Ø	mm	-		
Outer sheath thickness	mm	1.2		
Cable diameter	mm	7.8		
Cable weight	kg / km	60		
Minimum bending radius	mm	Without tension 10 x cable-Ø	Under maximum tension 20 x cable-Ø	
Temperature range	°C	Installation -10 to +50	Transport & Storage -30 to +70	Operation -30 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	1500 N	$\Delta\alpha$ reversible, fibre strain ≤ 0.5%
Crush	IEC 60794-1-2-E3	1500 N / 100 mm, max. 15 min	$\Delta\alpha \leq 0.05$ dB, no damage
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=20x D, 100N, 35 cycles	No damage
Cable bend	IEC 60794-1-2-E11	R=20x D, 4 turns, 3 cycles	$\Delta\alpha \leq 0.05$ dB, no damage
Temperature cycling	IEC 60794-1-2-F1	-40°C to +80°C	$\Delta\alpha \leq 0.1$ dB/km
Water penetration	IEC 60794-1-2-F5B	Sample=3m, water column=1m	No water leakage in 24hr

All optical measurements at 1550 nm.

CDS 4425 05/14

Optical Characteristics

See the attached cabled optical fibre data sheet.

Fire performance

Test	Test standard	Specified value	Acceptance criteria
Single cable test	IEC 60332-1	unburnt cable length	> 50 mm
Smoke density	IEC 61034	light transmission	> 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
Colour	Blue	Yellow	Red	White

Buffer tube colours

Tube	1	2	3	4	5	6
Colour	Red	Green	White	White	White	White

Filler elements colours:

All filler elements are uncoloured (natural).

Sheath colour:

The outer sheath colour is black.

Sheath marking:

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

<Manufacturer> <year of manufacture> <no. and type of fibre> <length marking in metre>

Logistic

Packing:

Wooden drums with protection.

Delivery length:

Standard delivery length is 4km with a tolerance of -1% to +3%.

Prysmian Group

PRYSMIAN Draka

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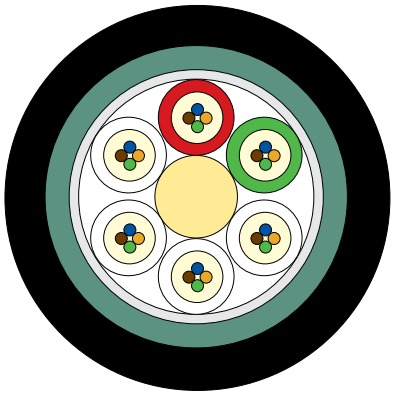


Not to scale

Cable design IEC/EN 60794

- **Central Strength Member (CSM):** glass Fibre-reinforced Plastic (FRP) rod, with plastic oversheathing when needed.
- **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.
- **Armour:** both sides copolymer coated corrugated steel tape with overlap, water swellable elements. Steel thickness: 0.15mm. 2 ripcords beneath the tape.
- **Outer sheath:** HDPE

Technical data

No. of fibres		6	12	24
Design		3 x 2	6 x 2	6 x 4
Loose tube/filler – Ø	mm	1.7		
CSM – Ø	mm	2.0		
CSM-oversheathing – Ø	mm	-		
Outer sheath thickness	mm	1.2		
Cable diameter	mm	9.9		
Cable weight	kg / km	100		
Minimum bending radius	mm	Without Tension 10 x Cable-Ø	Under Maximum Tension 20 x Cable-Ø	
Temperature range	°C	Installation - 10 to + 50	Transport & Storage - 30 to + 70	Operation - 30 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	1500 N	$\Delta\alpha$ reversible, fibre strain ≤ 0.5%
Crush	IEC 60794-1-2-E3	1500 N / 100 mm, max. 15 min	$\Delta\alpha \leq 0.05$ dB, no damage
Impact	IEC 60794-1-2-E4	15 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=20x D, 100N, 35 cycles	No damage
Cable bend	IEC 60794-1-2-E11	R=20x D, 4 turns, 3 cycles	$\Delta\alpha \leq 0.05$ dB, no damage
Temperature cycling	IEC 60794-1-2-F1	-40°C to +80°C	$\Delta\alpha \leq 0.1$ dB/km
Water penetration	IEC 60794-1-2-F5B	Sample=3m, water column=1m	No water leakage in 24hr

All optical measurements at 1550 nm.

CDS 4426 05/14

Optical characteristics

See the attached cabled optical fibre data sheet.

Identification

Fibre colours

No.	1	2	3	4
Colour	Blue	Yellow	Red	White

Buffer tube colours						
Tube	1	2	3	4	5	6
Colour	Red	Green	White	White	White	White

Filler elements colours:

All filler elements are uncoloured (natural).

Sheath colour:

The outer sheath colour is black.

Sheath marking:

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

<Manufacturer> <year of manufacture> <no. and type of fibre> <length marking in metre>

Logistic

Packing:

Wooden drums with protection.

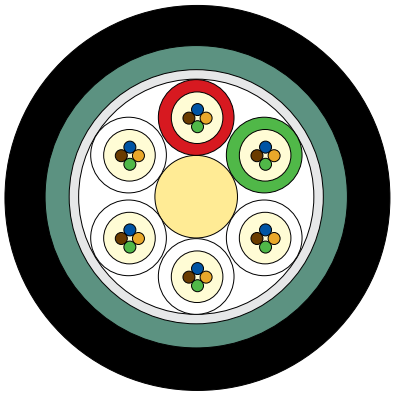
Delivery length:

Standard delivery length is 4km with a tolerance of -1% to +3%.

Prysmian Group

PRYSMIAN Draka

A/I-DQ(SR)H



Not to scale

Cable design IEC/EN 60794

- **Central Strength Member (CSM):** glass Fibre-reinforced Plastic (FRP) rod, with plastic oversheathing when needed.
- **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.
- **Armour:** both sides copolymer coated corrugated steel tape with overlap, water swellable elements. Steel thickness: 0.15mm. 2 ripcords beneath the tape.
- **Outer sheath:** HFFR

Technical data

No. of fibres		6	12	24
Design		3 x 2	6 x 2	6 x 4
Loose tube/filler – Ø	mm	1.7		
CSM – Ø	mm	2.0		
CSM-oversheathing – Ø	mm	-		
Outer sheath thickness	mm	1.2		
Cable diameter	mm	9.9		
Cable weight	kg / km	1.15		
Minimum bending radius	mm	Without tension 10 x cable-Ø	Under maximum tension 20 x cable-Ø	
Temperature range	°C	Installation - 10 to + 50	Transport & Storage - 30 to + 70	Operation - 30 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	1500 N	$\Delta\alpha$ reversible, fibre strain ≤ 0.5%
Crush	IEC 60794-1-2-E3	2000 N / 100 mm, max. 15 min	$\Delta\alpha$ ≤ 0.05 dB, no damage
Impact	IEC 60794-1-2-E4	15 Nm, 3 impacts, R= 300 mm	$\Delta\alpha$ ≤ 0.05 dB after the test
Torsion	IEC 60794-1-2-E7	100N, +/- 180°, 10 cycles	$\Delta\alpha$ ≤ 0.05 dB, no damage
Repeated bending	IEC 60794-1-2-E6	R=20x D, 100N, 35 cycles	No damage
Cable bend	IEC 60794-1-2-E11	R=20x D, 4 turns, 3 cycles	$\Delta\alpha$ ≤ 0.05 dB, no damage
Temperature cycling	IEC 60794-1-2-F1	-40°C to +80°C	$\Delta\alpha$ ≤ 0.1 dB/km
Water penetration	IEC 60794-1-2-F5B	Sample=3m, water column=1m	No water leakage in 24hr

All optical measurements at 1550 nm.

CDS 4427 05/14

Optical characteristics

See the attached cabled optical fibre data sheet.

Fire performance

Test	Test standard	Specified value	Acceptance criteria
Single cable test	IEC 60332-1	Unburnt cable length	> 50 mm
Smoke density	IEC 61034	Light transmission	> 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
Colour	Blue	Yellow	Red	White

Buffer tube colours

Tube	1	2	3	4	5	6
Colour	Red	Green	White	White	White	White

Filler elements colours:

All filler elements are uncoloured (natural).

Sheath colour:

The outer sheath colour is black.

Sheath marking:

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

<Manufacturer> <year of manufacture> <no. and type of fibre> <length marking in metre>

Logistic

Packing:

Wooden drums with protection.

Delivery length:

Standard delivery length is 4km with a tolerance of -1% to +3%.

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PRYSMIAN Draka

FLEXTUBE® OUTDOOR

Not to scale

Cable design IEC/EN 60794

- **Micro-module:** Thin wall tubing (FLEXTUBE®), filled with a suitable compound, housing the optical fibres.
- **Assembly of the micro-modules**
- **Water tightness:** dry core with swellable elements.
- **Reinforcement:** dielectric yarns.
- **Strength members:** glass fibre reinforced plastic material, embedded in the outer sheath.
- **Outer sheath:** HDPE. 2 ripcords beneath the sheath.

Technical data

No. of fibres		8	12	24
Design		2 x 4	3 x 4	6 x 4
Optical module Ø	mm	0.95		
Outer sheath thickness	mm	1.9	2.05	
Cable diameter	mm	7.9	9.5	
Cable weight	kg / km	45	65	
Maximum tension	daN	120	170	
Minimum bending radius	mm	Without tension 10 x cable-Ø		
Temperature range	°C	Installation -5 -> +45	Transport & Storage -40 -> +70	Operation -5 -> +70

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

Main characteristics

Test	Test standard	Specified value	Acceptance criteria
Max. tension	IEC 60794-1-2-E1	See table above	Δα reversible, fibre strain ≤ 0.3%
Crush	IEC 60794-1-2-E3	25 daN / cm	Δα reversible
Impact	IEC 60794-1-2-E4	5 Nm	Δα reversible, no damage
Torsion	IEC 60794-1-2-E7	55N, 1m, +/-180°, 10 cycles	Δα ≤ 0.1 dB, no damage
Cable kink	IEC 60794-1-2-E10	R=10x D	No kink, no damage
Cable bend	IEC 60794-1-2-E11B	R=20x D	Δα ≤ 0.1 dB, no damage
Temperature range	IEC 60794-1-2-F1	-5°C to +60°C -40°C to +80°C	Δα ≤ 0.1 dB/km Δα reversible
Water penetration	IEC 60794-1-2-F5B	Sample=3m, water column=1m	No water leakage in 24hr

All optical measurements at 1550 nm.

CDS 4428 05/14

Optical characteristics

See the attached cabled optical fibre data sheet.

Identification

Fibre colours

No.	1	2	3	4
Colour	Red	Blue	Green	Yellow

***FLEXTUBE*® colours**						
No.	1	2	3	4	5	6
Colour	Red	Blue	Green	Yellow	Violet	White

Sheath colour:

The outer sheath colour is black.

Sheath marking:

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

<Manufacturer> <year of manufacture> <no. and type of fibre> <length marking in metre>

Logistic

Packing:

Wooden drums with protection.

Delivery length:

Standard delivery length is 4km with a tolerance of -1% to +3%.

Prysmian Group

PRYSMIAN Draka

FLEXTUBE® INDOOR

Not to scale

Cable design IEC/EN 60794

- **Micro-module:** Thin wall tubing (FLEXTUBE®), filled with a suitable compound, housing the optical fibres.
- **Assembly of the micro-modules**
- **Water tightness:** dry core with swellable elements.
- **Strength members:** glass fibre reinforced plastic material, embedded in the outer sheath.
- **Outer sheath:** LSZH-FR material. Longitudinal markers in order to position the cable opening window.

Technical data

No. of fibres		8	12	24
Design		2 x 4	3 x 4	6 x 4
Optical module Ø	mm	0.95		
Outer sheath thickness	mm	2.2		
Cable diameter	mm	8.7		
Cable weight	kg / km	75		
Minimum bending radius	mm	Without tension 20 x cable-Ø		
Temperature range	°C	Installation -5 -> +45	Transport & Storage -40 -> +70	Operation -5 -> +70

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

Main characteristics

Test	Test standard	Specified value	Acceptance criteria
Max. tension	IEC 60794-1-2-E1	50 daN	$\Delta\alpha$ reversible, fibre strain ≤ 0.5%
Crush	IEC 60794-1-2-E3	15 daN / cm	$\Delta\alpha$ reversible
Impact	IEC 60794-1-2-E4	3 Nm	$\Delta\alpha$ reversible, no damage
Torsion	IEC 60794-1-2-E7	55N, 1m, +/-180°, 10 cycles	$\Delta\alpha$ ≤ 0.1 dB, no damage
Cable kink	IEC 60794-1-2-E10	R=10x D	No kink, no damage
Cable bend	IEC 60794-1-2-E11B	R=20x D	$\Delta\alpha$ ≤ 0.1 dB, no damage
Temperature range	IEC 60794-1-2-F1	-5°C to +60°C -40°C to +80°C	$\Delta\alpha$ ≤ 0.1 dB/km $\Delta\alpha$ reversible
Water penetration	IEC 60794-1-2-F5B	Sample=3m, water column=1m	No water leakage in 24hr
Fire performance	EN 60332-1-2		EN 60332-1-2

All optical measurements at 1550 nm.

CDS 4429 05/14

Optical characteristics

See the attached cabled optical fibre data sheet.

Identification

Fibre colours

No.	1	2	3	4
Colour	Red	Blue	Green	Yellow

***FLEXTUBE*® colours:**						
No.	1	2	3	4	5	6
Colour	Red	Blue	Green	Yellow	Violet	White

Sheath colour:

The outer sheath colour is black.

Sheath marking:

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

<Manufacturer> <year of manufacture> <no. and type of fibre> <length marking in metre>

Logistic

Packing:

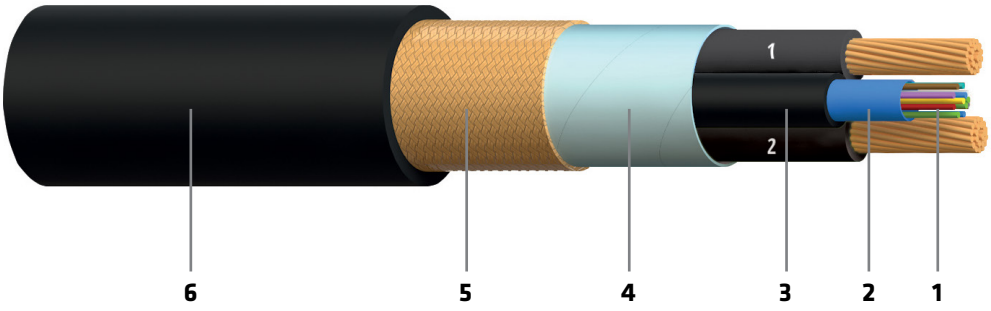
Wooden drums with protection.

Delivery length:

Standard delivery length is 4km with a tolerance of -1% to +3%.

AFUMEX ROZ1 1kV HTTA BRAID

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Bare electrolytic copper class 2 up to 10mm^2, class 5 onwards according to IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores +1 optical cable (2 f.o.): Red – Black
   - 6 cores +1 optical cable (3 f.o./6 f.o./12 f.o.): Black numbered in white
   - 12 cores +1 optical cable (12 f.o./24 f.o.): Black numbered in white
3. **Optical fibre:** Loose tube containing 2, 3, 6, or 12 OF type G657A2
4. **Separator:** Polyester binding tape
5. **Screen:** Copper braid (75 – 85% coverage)
6. **Outer sheath:** LSOH sheath type ST7 according to IEC 60502-1 Colour: Black
   - **Marking:** PRYSMIAN SAP AFUMEX ROZ1 HTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Power cable characteristics	Data
Specification	IEC 60502-1
Nominal service voltage	0.6/1kV
Voltage test	3500V a.c. during 5 minutes
Service temperature	-40°C to +90°C
Installation temperature	-5°C to +50°C
Maximum conductor temperature	90°C
Shortcircuit temperature	250°C
Bending radius	10D

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Optical cable characteristics	Data
Specification	G657A2
Mode field diameter at 1310 nm	8.8 ± 0.4 µm
Mode field diameter at 1550 nm	9.8 ± 0.5 µm
Chromatic dispersion coefficient IEC/EN 60793-1-42	
In the interval 1285 nm – 1330 nm	ps/km • nm ≤ |3.7|
At 1550 nm	ps/km • nm ≤ 18.5
At 1625 nm	ps/km • nm ≤ 23.0
Zero dispersion wavelength, λ0	1300 – 1324 nm
Zero dispersion slope	≤ 0.092 ps/(nm2 • km)
Cut-off wavelength	≤ 1260 * λcc nm
Polarisation mode dispersion (PMD) coefficient	≤ 0.1 ps/√km
PMDQ Link Design Value	≤ 0.06 ps/√km
(computed with Q=0.01%, N=20)	

Attenuation	Data
Maximum attenuation value of cable at 1310 nm	≤ 0.38 dB/km
Maximum attenuation value of cable at 1383 nm*	≤ 0.38 dB/km
Maximum attenuation value of cable at 1550 nm	≤ 0.23 dB/km
Maximum attenuation value of cable at 1625 nm	≤ 0.25 dB/km
Local discontinuity at 1310 and 1550 nm	max. 0.1 dB

Attenuation variation vs bending	Data
10 turns on a mandrel R = 15 mm, @1550nm	≤ 0.03 dB
10 turns on a mandrel R = 15 mm, @1625nm	≤ 0.1 dB
1 turn on a mandrel R = 10 mm, @1550nm	≤ 0.1 dB
1 turn on a mandrel R = 10 mm, @1625nm	≤ 0.2 dB
1 turn on a mandrel R = 7.5 mm, @1550nm	≤ 0.5 dB
1 turn on a mandrel R = 7.5 mm, @1625nm	≤ 1.0 dB

Group index refraction	Data
1310 nm	1.467
1550 nm	1.467
1625 nm	1.468

Geometrical properties	Data
Cladding diameter	125.0 ± 0.7 µm
Cladding non-circularity	≤ 0.7 %
Core (MDF)-cladding concentricity error	≤ 0.5 µm
Primary coating diameter – ColorLock®XS and natural	242 ± 7 µm
Primary coating non-circularity	≤ 5 %
Primary coating-cladding concentricity error	≤ 12 µm

Mechanical properties	Data
Proof stress level	≥ 0.7 (≈ 1 %) GPa
Strip force (peak)	1.2 ≤ Fpeak.strip ≤ 8.9 N
Dynamic fatigue resistance aged and unaged	≥ 20 (Nd)
Static fatigue, aged	≥ 23 (Ns)

Fire performance

Flame retardant	IEC 60332-1
Halogen free	IEC 60754-1
Low smoke emission	IEC 60134-1, IEC 60134-2
Corrosivity	IEC 60754-2 pH≥4,3 y C≤10µS/mm
Toxicity index	NES 713/ NF C 20454 IT≤1,5

Applications

Halogen free power cable and optical cable for HTTA uses. Includes both copper power supply and optical fibre data links for use in new buildings and upgrading projects. Important reduction of installation times and suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc).

Dimensions

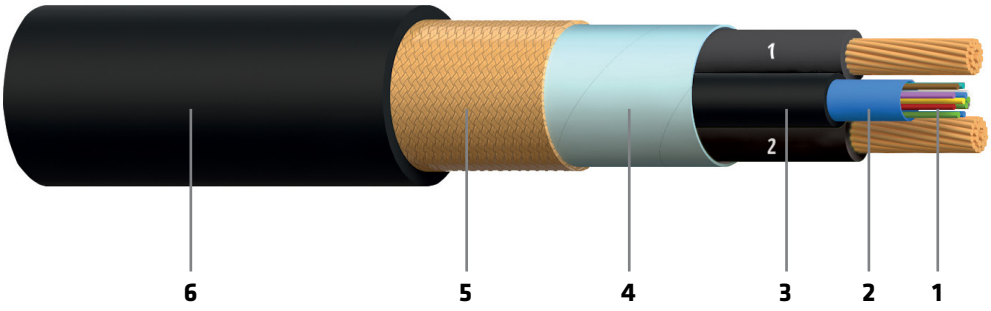
Section [mm²]	Conductor Diameter [mm]	Insulation thickness [mm]	Fo cable Diameter [mm]	Screen Diameter [Mm]	Sheath Thickness [Mm]	Outer Diameter [Mm]	Weight [Kg/km]	PRYSMIAN CODE
2x4	2.5	0.7	5.2	10.6	1.4	13.4	238	60040910
2x6	2.9	0.7	5.2	11.4	1.4	14.2	280	20114933
2x10	3.8	0.7	5.2	12.0	1.4	14.8	360	20114934
2x16	5.3	0.8	5.2	14.5	1.4	17.3	488	20114935
2x25	6.7	0.9	5.2	17.8	1.4	20.6	695	20114938
2x35	7.8	0.9	5.2	20.1	1.4	22.9	880	20114939

6x4 (3 f.o.)	2.5	0.7	5.2	14.1	1.4	16.9	465	20131075
6x6 (3 f.o.)	2.9	0.7	5.2	15.7	1.4	18.5	564	20131076
6x10 (3 f.o.)	3.8	0.7	5.2	16.5	1.4	19.3	794	20131077
6x16 (3 f.o.)	5.3	0.8	5.2	21.5	1.4	24.3	1150	20131078
6x25 (3 f.o.)	6.7	0.9	5.2	26.6	1.4	29.4	1760	20131079
6x4 (6 f.o.)	2.5	0.7	5.2	14.1	1.4	16.9	469	20114945
6x6 (6 f.o.)	2.9	0.7	5.2	15.7	1.4	18.5	567	20114937
6x10 (6 f.o.)	3.8	0.7	5.2	16.5	1.4	19.3	795	60040767
6x16 (6 f.o.)	5.3	0.8	5.2	21.5	1.4	24.3	1148	20114941
6x25 (6 f.o.)	6.7	0.9	5.2	26.6	1.4	29.4	1750	20119100
6x6 (12 f.o.)	2.9	0.7	5.2	15.7	1.4	18.5	570	20119101
6x10 (12 f.o.)	3.8	0.7	5.2	16.5	1.4	19.3	795	20119102
6x16 (12 f.o.)	5.3	0.8	5.2	21.5	1.4	24.3	1148	20119103
6x25 (12 f.o.)	6.7	0.9	5.2	26.6	1.4	29.4	1750	20119104
12x4 (2 f.o.)	2.5	0.7	5.2	18.4	1.4	21.2	770	20114942
12x6 (12 f.o.)	2.9	0.7	5.2	19.9	1.4	22.7	995	20114943
12x10 (12 f.o.)	3.8	0.7	5.2	21.6	1.4	24.4	1445	60040766
12x10 (24 f.o.)	3.8	0.7	5.7	22.0	1.4	24.8	1450	20117451

Values depending on manufacturing tolerances

AFUMEX ROZ1 1kV HTTA TIGHT BRAID

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Bare electrolytic copper class 2 up to 10mm^2, class 5 onwards according to IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores +1 optical cable (2 f.o.): Red – Black
   - 6 cores +1 optical cable (6 f.o.): Black numbered in white
   - 12 cores +2 optical cable (6 f.o.): Black numbered in white
3. **Optical fibre:** Tight buffering tube containing 2 or 6 OF tight-buffering type G657A2
4. **Separator:** Polyester binding tape
5. **Screen:** Copper braid (75 – 85% coverage)
6. **Outer sheath:** LSOH sheath type ST7 according to IEC 60502-1 Colour: Black
   - **Marking:** PRYSMIAN SAP AFUMEX ROZ1 HTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Power cable characteristics	Data
Specification	IEC 60502-1
Nominal service voltage	0.6/1kV
Voltage test	3500V a.c. during 5 minutes
Service temperature	-40°C to +90°C
Installation temperature	-5°C to +50°C
Maximum conductor temperature	90°C
Shortcircuit temperature	250°C
Bending radius	10D

Optical cable characteristics	Data
Mode field diameter at 1310 nm	G657A2
Mode field diameter at 1550 nm	8.8 ± 0.4 µm
Chromatic dispersion coefficient IEC/EN 60793-1-42	9.8 ± 0.5 µm
In the interval 1285 nm – 1330 nm	
At 1550 nm	ps/km • nm ≤ |3.7|
At 1625 nm	ps/km • nm ≤ 18.5
Zero dispersion wavelength, λ0	ps/km • nm ≤ 23.0
Zero dispersion slope	1300 – 1324 nm
Cut-off wavelength	≤ 0.092 ps/(nm2 • km)
Polarisation mode dispersion (PMD) coefficient	≤ 1260 * λcc nm
PMDQ Link Design Value	≤ 0.1 ps/√km
(computed with Q=0.01%, N=20)	≤ 0.06 ps/√km
(computed with Q=0.01%, N=20)	

Attenuation	Data
Maximum attenuation value of cable at 1310 nm	≤ 0.38 dB/km
Maximum attenuation value of cable at 1383 nm*	≤ 0.38 dB/km
Maximum attenuation value of cable at 1550 nm	≤ 0.23 dB/km
Maximum attenuation value of cable at 1625 nm	≤ 0.25 dB/km
Local discontinuity at 1310 and 1550 nm	max. 0.1 dB

Attenuation variation vs bending	Data
10 turns on a mandrel R = 15mm, @1550 nm	≤ 0.03 dB
10 turns on a mandrel R = 15mm, @1625 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1550 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1625 nm	≤ 0.2 dB
1 turn on a mandrel R = 7.5mm, @1550 nm	≤ 0.5 dB
1 turn on a mandrel R = 7.5 mm, @1625 nm	≤ 1.0 dB

Group index refraction	Data
1310 nm	1.467
1550 nm	1.467
1625 nm	1.468

Geometrical properties	Data
Optical cable diameter	6.3 mm
Tight buffer fibre diameter	900 µm
Cladding diameter	125.0 ± 0.7 µm
Cladding non-circularity	≤ 0.7 %
Core (MDF)-cladding concentricity error	≤ 0.5 µm
Primary coating diameter – ColorLock®XS and natural	242 ± 7 µm
Primary coating non-circularity	≤ 5 %
Primary coating-cladding concentricity error	≤ 12 µm

Mechanical properties	Data
Proof stress level	≥ 0.7 (≈ 1 %) GPa
Strip force (peak)	1.2 ≤ Fpeak.strip ≤ 8.9 N
Dynamic fatigue resistance aged and unaged	≥ 20 (Nd)
Static fatigue, aged	≥ 23 (Ns)

Fire performance

Flame retardant:	IEC 60332-1
Halogen free:	IEC 60754-1
Low smoke emission:	IEC 60134-1, IEC 60134-2
Corrosivity:	IEC 60754-2 pH≥4,3 y C≤10µS/mm
Toxicity index:	NES 713/ NF C 20454 IT≤1,5

Applications

Halogen free power cable and optical cable for HTTA uses. Includes both copper power supply and optical fibre data links for use in new buildings and upgrading projects. Important reduction of installation times and suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc),

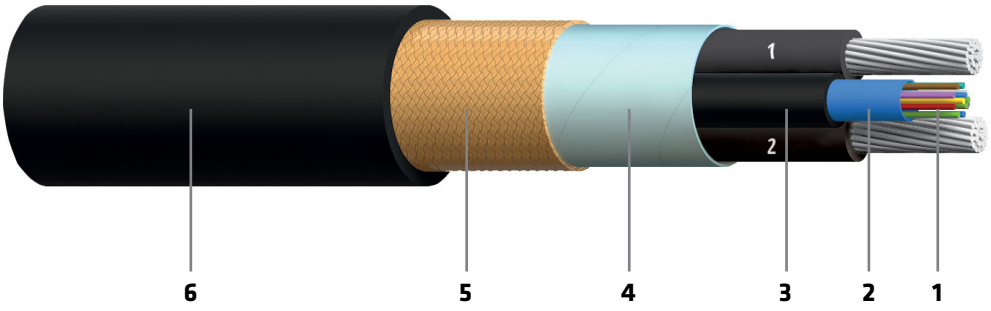
Dimensions

Section [mm²]	Conductor diameter [mm]	Insulation thickness [mm]	FO Cable diameter [mm]	Screen diameter [mm]	Sheath thickness [mm]	Outer diameter [mm]	Weight [Kg/Km]	PRYSMIAN CODE
2x4	2.5	0.7	6.3	11.2	1.4	14.0	255	20116382
2x6	2.9	0.7	6.3	11.8	1.4	14.6	295	20116383
2x10	3.8	0.7	6.3	12.8	1.4	15.6	380	20116384
2x16	5.3	0.8	6.3	14.8	1.4	17.6	483	20116385
2x25	6.7	0.9	6.3	18.0	1.4	20.8	710	20116386

2x35	7.8	0.9	6.3	20.0	1.4	22.9	912	20116387
6x4	2.5	0.7	6.3	15.3	1.4	18.1	488	20116388
6x6	2.9	0.7	6.3	16.0	1.4	18.8	585	20116389
6x10	3.8	0.7	6.3	17.5	1.4	20.3	821	20116390
6x16	5.3	0.8	6.3	21.5	1.4	24.3	1148	20116391
12x4	2.5	0.7	6.3 (2 tubes)	20.7	1.4	23.5	850	20116392
12x6	2.9	0.7	6.3 (2 tubes)	21.9	1.4	24.7	1065	20116393
12x10	3.8	0.7	6.3 (2 tubes)	24.6	1.4	27.4	1540	20116394

AL-AFUMEX ROZ1-K 1kV HTTA BRAID

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Aluminium class 5 based in IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores +1 optical cable (2 f.o.): Red – Black
   - 6 cores +1 optical cable (6 f.o.): Black numbered in white
   - 12 cores +2 optical cable (6 f.o.): Black numbered in white
3. **Optical fibre:** Loose tube containing 2, 6 or 12 OF type G657A2
4. **Separator:** Polyester binding tape
5. **Screen:** Copper braid (75 – 85% coverage)
6. **Outer sheath:** LSOH sheath type ST7 according to IEC 60502-1 Colour: Black
   - **Marking:** PRYSMIAN SAP AFUMEX ROZ1 HTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Power cable characteristics	Data
Specification	IEC 60502-1
Nominal service voltage	0.6/1kV
Voltage test	3500V a.c. during 5 minutes
Service temperature	-40°C to +90°C
Installation temperature	-5°C to +50°C
Maximum conductor temperature	90°C
Shortcircuit temperature	250°C
Bending radius	10D

Optical cable characteristics	Data
Specification	G657A2
Mode field diameter at 1310 nm	8.8 ± 0.4 µm
Mode field diameter at 1550 nm	9.8 ± 0.5 µm
Chromatic dispersion coefficient IEC/EN 60793-1-42	
In the interval 1285 nm – 1330 nm	ps/km • nm ≤ |3.7|
At 1550 nm	ps/km • nm ≤ 18.5
At 1625 nm	ps/km • nm ≤ 23.0
Zero dispersion wavelength, λ0	1300 – 1324 nm
Zero dispersion slope	≤ 0.092 ps/(nm2 • km)
Cut-off wavelength	≤ 1260 * λcc nm
Polarisation mode dispersion (PMD) coefficient	≤ 0.1 ps/√km
PMDQ Link Design Value	≤ 0.06 ps/√km
(computed with Q=0.01%, N=20)	

Attenuation	Data
Maximum attenuation value of cable at 1310 nm	≤ 0.38 dB/km
Maximum attenuation value of cable at 1383 nm*	≤ 0.38 dB/km
Maximum attenuation value of cable at 1550 nm	≤ 0.23 dB/km
Maximum attenuation value of cable at 1625 nm	≤ 0.25 dB/km
Local discontinuity at 1310 and 1550 nm	max. 0.1 dB

Attenuation variation vs bending	Data
10 turns on a mandrel R = 15mm, @1550 nm	≤ 0.03 dB
10 turns on a mandrel R = 15mm, @1625 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1550 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1625 nm	≤ 0.2 dB
1 turn on a mandrel R = 7.5mm, @1550 nm	≤ 0.5 dB
1 turn on a mandrel R = 7.5mm, @1625 nm	≤ 1.0 dB

Group index refraction	Data
1310 nm	1.467
1550 nm	1.467
1625 nm	1.468

Geometrical properties	Data
Cladding diameter	125.0 ± 0.7 µm
Cladding non-circularity	≤ 0.7 %
Core (MDF)-cladding concentricity error	≤ 0.5 µm
Primary coating diameter – ColorLock®XS and natural	242 ± 7 µm
Primary coating non-circularity	≤ 5 %
Primary coating-cladding concentricity error	≤ 12 µm

Mechanical properties	Data
Proof stress level	≥ 0.7 (≈ 1 %) GPa
Strip force (peak)	1.2 ≤ Fpeak.strip ≤ 8.9 N
Dynamic fatigue resistance aged and unaged	≥ 20 (Nd)
Static fatigue, aged	≥ 23 (Ns)

Fire performance

Flame retardant	IEC 60332-1
Halogen free	IEC 60754-1
Low smoke emission	IEC 60134-1, IEC 60134-2
Corrosivity	IEC 60754-2 pH≥4,3 y C≤10µS/mm
Toxicity index	NES 713/ NF C 20454 IT≤1,5

Applications

Halogen free power cable and optical cable for HTTA uses. Includes both aluminium power supply and optical fibre data links for use in new buildings and upgrading projects. Important reduction of installation times and suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc).

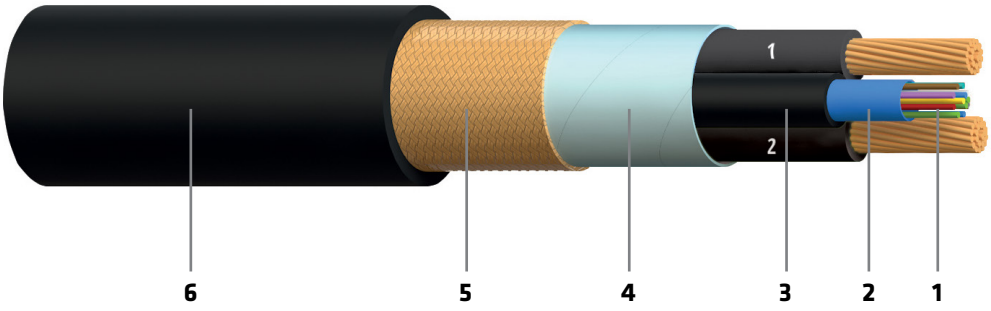
Dimensions

Section [mm²]	Conductor diameter [mm]	Insulation thickness [mm]	FO cable diameter [mm]	Screen diameter [mm]	Sheath thickness [mm]	Outer diameter [mm]	Weight [Kg/Km]	PRYSMIAN CODE
2x6	2.8	0.7	5.2	10.8	1.4	13.6	208	20119182
2x10	4.2	0.7	5.2	12.6	1.4	15.4	255	20119183
2x16	5.4	0.7	5.2	14.7	1.4	17.5	330	20119184
2x25	6.9	0.9	5.2	18.3	1.4	21.1	425	20119185
2x35	7.9	0.9	5.2	20.4	1.4	23.2	525	20119186
2x50	9.2	1.0	5.2	23.4	1.5	26.4	665	20119187

6x6	2.8	0.7	5.2	14.6	1.4	17.4	360	20119200
6x10	4.2	0.7	5.2	17.6	1.4	20.4	450	20119201
6x16	5.4	0.7	5.2	21.7	1.4	24.5	655	20119202
6x25	6.9	0.9	5.2	26.8	1.5	29.8	955	20119203
12x6	2.8	0.7	5.2	19.2	1.4	22.0	545	20119204
12x10	4.2	0.7	5.2	25.0	1.5	28.0	910	20119205
12x16	5.4	0.7	5.2	29.0	1.6	32.2	1140	20119206

AFUMEX ROE 1kV HTTA BRAID

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Bare electrolytic copper class 2 up to 10 mm^2, class 5 onwards according to IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores +1 optical cable (2 f.o.): Red – Black
   - 6 cores +1 optical cable (6 f.o.): Black numbered in white
   - 12 cores +2 optical cable (6 f.o.): Black numbered in white
3. **Optical fibre:** Loose tube containing 2, 6 or 12 OF type G657A2
4. **Separator:** Polyester binding tape
5. **Screen:** Copper braid (75 – 85% coverage)
6. **Outer sheath:** High density polyethylene type ST7 according to IEC 60502-1 Colour: Black
   – Marking: PRYSMIAN SAP AFUMEX ROZ1 HTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Power cable characteristics	Data
Specification	IEC 60502-1
Nominal service voltage	0.6/1kV
Voltage test	3500V a.c. during 5 minutes
Service temperature	-40°C to +90°C
Installation temperature	-5°C to +50°C
Maximum conductor temperature	90°C
Shortcircuit temperature	250°C
Bending radius	10D

Optical cable characteristics	Data
Specification	G657A2
Mode field diameter at 1310 nm	8.8 ± 0.4 µm
Mode field diameter at 1550 nm	9.8 ± 0.5 µm
Chromatic dispersion coefficient IEC/EN 60793-1-42	
In the interval 1285 nm – 1330 nm	ps/km • nm ≤ |3.7|
At 1550 nm	ps/km • nm ≤ 18.5
At 1625 nm	ps/km • nm ≤ 23.0
Zero dispersion wavelength, λ0	1300 – 1324 nm
Zero dispersion slope	≤ 0.092 ps/(nm2 • km)
Cut-off wavelength	≤ 1260 * λcc nm
Polarisation mode dispersion (PMD) coefficient	≤ 0.1 ps/√km
PMDQ Link Design Value	≤ 0.06 ps/√km
(computed with Q=0.01%, N=20)	

Attenuation	Data
Maximum attenuation value of cable at 1310 nm	≤ 0.38 dB/km
Maximum attenuation value of cable at 1383 nm*	≤ 0.38 dB/km
Maximum attenuation value of cable at 1550 nm	≤ 0.23 dB/km
Maximum attenuation value of cable at 1625 nm	≤ 0.25 dB/km
Local discontinuity at 1310 and 1550 nm	max. 0.1 dB

Attenuation variation vs bending	Data
10 turns on a mandrel R = 15mm, @1550 nm	≤ 0.03 dB
10 turns on a mandrel R = 15mm, @1625 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1550 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1625 nm	≤ 0.2 dB
1 turn on a mandrel R = 7.5mm, @1550 nm	≤ 0.5 dB
1 turn on a mandrel R = 7.5mm, @1625 nm	≤ 1.0 dB

Group index refraction	Data
1310 nm	1.467
1550 nm	1.467
1625 nm	1.468

Geometrical properties	Data
Cladding diameter	125.0 ± 0.7 µm
Cladding non-circularity	≤ 0.7 %
Core (MDF)-cladding concentricity error	≤ 0.5 µm
Primary coating diameter – ColorLock®XS and natural	242 ± 7 µm
Primary coating non-circularity	≤ 5 %
Primary coating-cladding concentricity error	≤ 12 µm

Mechanical properties	Data
Proof stress level	≥ 0.7 (≈ 1 %) GPa
Strip force (peak)	1.2 ≤ Fpeak.strip ≤ 8.9 N
Dynamic fatigue resistance aged and unaged	≥ 20 (Nd)
Static fatigue, aged	≥ 23 (Ns)

Applications

Halogen free power cable and optical cable for HTTA uses. Includes both aluminium power supply and optical fibre data links for use in new buildings and upgrading projects. Important reduction of installation times and suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc).

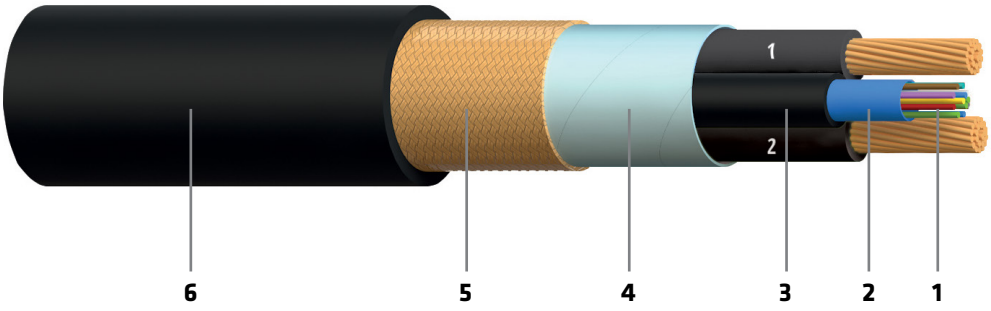
Dimensions

Section [mm²]	Conductor diameter [mm]	Insulation thickness [mm]	FO cable diameter [mm]	Screen diameter [mm]	Sheath thickness [mm]	Outer diameter [mm]	Weight [Kg/Km]	PRYSMIAN CODE
2x4	2.5	0.7	5.2	10.6	1.4	13.4	215	20119241
2x6	2.9	0.7	5.2	11.4	1.4	14.2	254	20119242
2x10	3.8	0.7	5.2	12.0	1.4	14.8	334	20119243
2x16	4.7	0.8	5.2	14.5	1.4	17.3	468	20119244
2x25	6.7	0.9	5.2	17.8	1.4	20.6	660	20119245
2x35	7.8	0.9	5.2	18.8	1.4	21.6	842	20119246
6x4	2.5	0.7	5.2	14.1	1.4	16.9	437	20119247
6x6	2.9	0.7	5.2	15.7	1.4	18.5	550	20119248
6x10	3.8	0.7	5.2	16.5	1.4	19.3	769	20119249
6x16	5.3	0.8	5.2	21.5	1.4	24.3	1140	20119250
12x4	2.5	0.7	5.2	18.4	1.4	21.2	722	20119251
12x6	2.9	0.7	5.2	19.9	1.4	22.7	917	20119252
12x10	3.8	0.7	5.2	21.6	1.4	24.4	1377	20119253

Values depending on manufacturing tolerances.

RETENAX ROV 1kV HTTA BRAID

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Bare electrolytic copper class 2 up to 10mm^2, class 5 onwards according to IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores +1 optical cable (2 f.o.): Red – Black
   - 6 cores +1 optical cable (6 f.o.): Black numbered in white
   - 12 cores +2 optical cable (12 f.o.): Black numbered in white
3. **Optical fibre:** Loose tube containing 2, 6 or 12 OF type G657A2
4. **Separator:** Polyester binding tape
5. **Screen:** Copper braid (75 – 85% coverage)
6. **Outer sheath:** PVC compound type ST2 according to IEC 60502-1 Colour: Black
   - **Marking:** PRYSMIAN SAP AFUMEX ROZ1 HTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Power cable characteristics	Data
Specification	IEC 60502-1
Nominal service voltage	0.6/1kV
Voltage test	3500V a.c. during 5 minutes
Service temperature	-40°C to +90°C
Installation temperature	-5°C to +50°C
Maximum conductor temperature	90°C
Shortcircuit temperature	250°C
Bending radius	10D

Optical cable characteristics	Data
Specification	G657A2
Mode field diameter at 1310 nm	8.8 ± 0.4 µm
Mode field diameter at 1550 nm	9.8 ± 0.5 µm
Chromatic dispersion coefficient IEC/EN 60793-1-42	
In the interval 1285 nm – 1330 nm	ps/km • nm ≤ |3.7|
At 1550 nm	ps/km • nm ≤ 18.5
At 1625 nm	ps/km • nm ≤ 23.0
Zero dispersion wavelength, λ0	1300 – 1324 nm
Zero dispersion slope	≤ 0.092 ps/(nm2 • km)
Cut-off wavelength	≤ 1260 * λcc nm
Polarisation mode dispersion (PMD) coefficient	≤ 0.1 ps/√km
PMDQ Link Design Value	≤ 0.06 ps/√km
(computed with Q=0.01%, N=20)	

Attenuation	Data
Maximum attenuation value of cable at 1310 nm	≤ 0.38 dB/km
Maximum attenuation value of cable at 1383 nm*	≤ 0.38 dB/km
Maximum attenuation value of cable at 1550 nm	≤ 0.23 dB/km
Maximum attenuation value of cable at 1625 nm	≤ 0.25 dB/km
Local discontinuity at 1310 and 1550 nm	max. 0.1 dB

Attenuation variation vs bending	Data
10 turns on a mandrel R = 15mm, @1550 nm	≤ 0.03 dB
10 turns on a mandrel R = 15mm, @1625 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1550 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1625 nm	≤ 0.2 dB
1 turn on a mandrel R = 7.5mm, @1550 nm	≤ 0.5 dB
1 turn on a mandrel R = 7.5mm, @1625 nm	≤ 1.0 dB

Group index refraction	Data
1310 nm	1.467
1550 nm	1.467
1625 nm	1.468

Fire performance

Flame retardant	IEC 60332-1
Low halogen content	IEC 60754-1

Applications

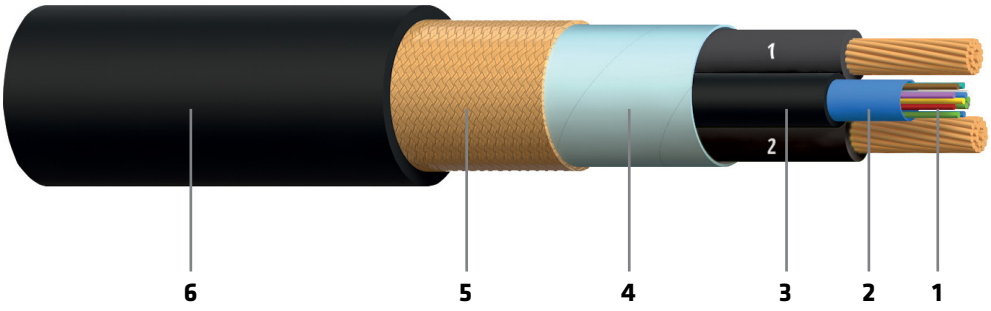
Power cable and optical cable for HTTA uses. Includes both copper power supply and optical fibre data links for use in new buildings and upgrading projects. Important reduction of installation times and suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc).

Dimensions

Section [mm²]	Conductor diameter [mm]	Insulation thickness [mm]	FO cable diameter [mm]	Screen diameter [mm]	Sheath thickness [mm]	Outer diameter [mm]	Weight [Kg/Km]	PRYSMIAN CODE
2x4	2.5	0.7	5.2	10.6	1.4	13.4	248	20119333
2x6	2.9	0.7	5.2	11.4	1.4	14.2	290	20119271
2x10	3.8	0.7	5.2	12.0	1.4	14.8	372	20119272
2x16	4.7	0.8	5.2	14.5	1.4	17.3	514	20119273
2x25	6.7	0.9	5.2	17.8	1.4	20.6	714	20119274
2x35	7.8	0.9	5.2	18.8	1.4	21.6	900	20119275
6x4	2.5	0.7	5.2	14.1	1.4	16.9	482	20119276
6x6	2.9	0.7	5.2	15.7	1.4	18.5	582	20119277
6x10	3.8	0.7	5.2	16.5	1.4	19.3	814	20119278
6x16	5.3	0.8	5.2	21.5	1.4	24.3	1208	20119279
12x4	2.5	0.7	5.2	18.4	1.4	21.2	778	20119280
12x6	2.9	0.7	5.2	19.9	1.4	22.7	1008	20119281
12x10	3.8	0.7	5.2	21.6	1.4	24.4	1474	20119282

RETENAX ROV 1kV HTTA TIGHT BRAID

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Bare electrolytic copper class 2 up to 10mm^2, class 5 onwards according to IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores +1 optical cable (2 f.o.): Red – Black
   - 6 cores +1 optical cable (6 f.o.): Black numbered in white
   - 12 cores +2 optical cable (12 f.o.): Black numbered in white
3. **Optical fibre:** Tight buffering tube containing 2 or 6 OF tight-buffering type G657A2
4. **Separator:** Polyester binding tape
5. **Screen:** Copper braid (75 – 85% coverage)
6. **Outer sheath:** PVC compound type ST2 according to IEC 60502-1 Colour: Black
   – Marking: PRYSMIAN SAP RETENAX ROV HTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Power cable characteristics	Data
Nominal service voltage	IEC 60502-1
Voltage test	0.6/1kV
Service temperature	3500V a.c. during 5 minutes
Installation temperature	-40°C to +90°C
Maximum conductor temperature	-5°C to +50°C
Shortcircuit temperature	90°C
Bending radius	250°C
Bending radius	10D

Optical cable characteristics	Data
Specification	G657A2
Mode field diameter at 1310 nm	8.8 ± 0.4 µm
Mode field diameter at 1550 nm	9.8 ± 0.5 µm
Chromatic dispersion coefficient IEC/EN 60793-1-42	
In the interval 1285 nm – 1330 nm	ps/km • nm ≤ |3.7|
At 1550 nm	ps/km • nm ≤ 18.5
At 1625 nm	ps/km • nm ≤ 23.0
Zero dispersion wavelength, λ0	1300 – 1324 nm
Zero dispersion slope	≤ 0.092 ps/(nm2 • km)
Cut-off wavelength	≤ 1260 * λcc nm
Polarisation mode dispersion (PMD) coefficient	≤ 0.1 ps/√km
PMDQ Link Design Value	≤ 0.06 ps/√km
(computed with Q=0.01%, N=20)	

Attenuation	Data
Maximum attenuation value of cable at 1310 nm	≤ 0.38 dB/km
Maximum attenuation value of cable at 1383 nm*	≤ 0.38 dB/km
Maximum attenuation value of cable at 1550 nm	≤ 0.23 dB/km
Maximum attenuation value of cable at 1625 nm	≤ 0.25 dB/km
Local discontinuity at 1310 and 1550 nm	max. 0.1 dB

Attenuation variation vs bending	Data
10 turns on a mandrel R = 15mm, @1550 nm	≤ 0.03 dB
10 turns on a mandrel R = 15mm, @1625 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1550 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1625 nm	≤ 0.2 dB
1 turn on a mandrel R = 7.5mm, @1550 nm	≤ 0.5 dB
1 turn on a mandrel R = 7.5mm, @1625 nm	≤ 1.0 dB

Group index refraction	Data
1310 nm	1.467
1550 nm	1.467
1625 nm	1.468

Geometrical properties	Data
Optical cable diameter	6.3 mm
Tight buffer fibre diameter	900 µm
Cladding diameter	125.0 ± 0.7 µm
Cladding non-circularity	≤ 0.7 %
Core (MDF)-cladding concentricity error	≤ 0.5 µm
Primary coating diameter – ColorLock®XS and natural	242 ± 7 µm
Primary coating non-circularity	≤ 5 %
Primary coating-cladding concentricity error	≤ 12 µm

Mechanical properties	Data
Proof stress level	≥ 0.7 (≈ 1 %) GPa
Strip force (peak)	1.2 ≤ Fpeak.strip ≤ 8.9 N
Dynamic fatigue resistance aged and unaged	≥ 20 (Nd)
Static fatigue, aged	≥ 23 (Ns)

Fire performance

Flame retardant	IEC 60332-1
Low halogen content	IEC 60754-1

Applications

Power cable and optical cable for FTTA uses. Includes both copper power supply and optical fibre data links for use in new buildings and upgrading projects. Important reduction of installation times and suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc).

Dimensions

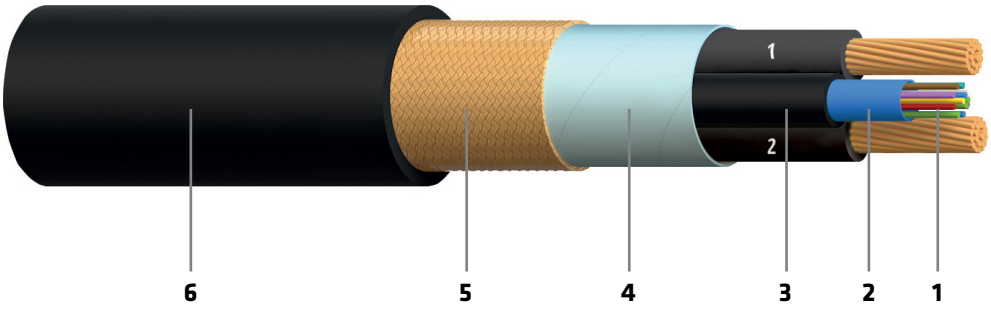
Section [mm²]	Conductor diameter [mm]	Insulation thickness [mm]	FO cable diameter [mm]	Screen diameter [mm]	Sheath thickness [mm]	Outer diameter [mm]	Weight [Kg/Km]	PRYSMIAN CODE
2x4	2.5	0.7	6.3	11.2	1.4	14.0	265	20122675
2x6	2.9	0.7	6.3	11.8	1.4	14.8	307	20122676
2x10	3.8	0.7	6.3	12.8	1.4	15.6	394	20122677
2x16	5.3	0.8	6.3	14.8	1.4	17.6	503	20122678
2x25	6.7	0.9	6.3	18.0	1.4	20.7	729	20122679
2x35	7.8	0.9	6.3	20.0	1.4	22.7	933	20122680
6x4	2.5	0.7	6.3	15.3	1.4	18.1	480	20122681
6x6	2.9	0.7	6.3	16.0	1.4	18.8	596	20122682

6x10	3.8	0.7	6.3	17.5	1.4	20.3	836	20122683
6x16	5.3	0.8	6.3	21.5	1.4	23.9	1177	20122684
12x4	2.5	0.7	6.3 (2 tubes)	20.7	1.4	23.5	870	20122686
12x6	2.9	0.7	6.3 (2 tubes)	21.9	1.4	24.7	1082	20122687
12x10	3.8	0.7	6.3 (2 tubes)	24.6	1.4	27.4	1574	20122685

Values depending on manufacturing tolerances.

AFUMEX ROE 1kV HTTA TIGHT BRAID

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Bare electrolytic copper class 2 up to 10 mm^2, class 5 onwards according to IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores +1 optical cable (2 f.o.): Red – Black
   - 6 cores +1 optical cable (6 f.o.): Black numbered in white
   - 12 cores +2 optical cable (6 f.o.): Black numbered in white
3. **Optical fibre:** Tight buffering tube containing 2 or 6 OF tight-buffering type G657A2
4. **Separator:** Polyester binding tape
5. **Screen:** Copper braid (75 – 85% coverage)
6. **Outer sheath:** High density polyethylene type ST7 according to IEC 60502-1 Colour: Black
   Marking: PRYSMIAN SAP AFUMEX ROE HTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Power cable characteristics	Data
Specification	IEC 60502-1
Nominal service voltage	0.6/1kV
Voltage test	3500V a.c. during 5 minutes
Service temperature	-40°C to +90°C
Installation temperature	-5°C +50°C
Maximum conductor temperature	90°C
Shortcircuit temperature	250°C
Bending radius	10D

NCP n° 140229 rev: 2.0 10/2014

Optical cable characteristics	Data
Specification	G657A2
Mode field diameter at 1310 nm	8.8 ± 0.4 µm
Mode field diameter at 1550 nm	9.8 ± 0.5 µm
Chromatic dispersion coefficient IEC/EN 60793-1-42	
In the interval 1285 nm – 1330 nm	ps/km • nm ≤ |3.7|
At 1550 nm	ps/km • nm ≤ 18.5
At 1625 nm	ps/km • nm ≤ 23.0
Zero dispersion wavelength, λ0	1300 – 1324 nm
Zero dispersion slope	≤ 0.092 ps/(nm² • km)
Cut-off wavelength	≤ 1260 * λcc nm
Polarisation mode dispersion (PMD) coefficient	≤ 0.1 ps/√km
PMDQ Link Design Value	≤ 0.06 ps/√km
(computed with Q=0.01%, N=20)	

Attenuation	Data
Maximum attenuation value of cable at 1310 nm	≤ 0.38 dB/km
Maximum attenuation value of cable at 1383 nm*	≤ 0.38 dB/km
Maximum attenuation value of cable at 1550 nm	≤ 0.23 dB/km
Maximum attenuation value of cable at 1625 nm	≤ 0.25 dB/km
Local discontinuity at 1310 and 1550 nm	max. 0.1 dB

Attenuation variation vs bending	Data
10 turns on a mandrel R = 15mm, @1550 nm	≤ 0.03 dB
10 turns on a mandrel R = 15mm, @1625 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1550 nm	≤ 0.1 dB
1 turn on a mandrel R = 10mm, @1625 nm	≤ 0.2 dB
1 turn on a mandrel R = 7.5mm, @1550 nm	≤ 0.5 dB
1 turn on a mandrel R = 7.5mm, @1625 nm	≤ 1.0 dB

Group index refraction	Data
1310 nm	1.467
1550 nm	1.467
1625 nm	1.468

Geometrical properties	Data
Optical cable diameter	6.3 mm
Tight buffer fibre diameter	900 µm
Cladding diameter	125.0 ± 0.7 µm
Cladding non-circularity	≤ 0.7 %
Core (MDF)-cladding concentricity error	≤ 0.5 µm
Primary coating diameter – ColorLock®XS and natural	242 ± 7 µm
Primary coating non-circularity	≤ 5 %
Primary coating-cladding concentricity error	≤ 12 µm

Mechanical properties	Data
Proof stress level	≥ 0.7 (≈ 1 %) GPa
Strip force (peak)	1.2 ≤ Fpeak.strip ≤ 8.9 N
Dynamic fatigue resistance aged and unaged	≥ 20 (Nd)
Static fatigue, aged	≥ 23 (Ns)

Applications

Power cable and optical cable for HTTA uses. Includes both copper power supply and optical fibre data links for use in new buildings and upgrading projects. Important reduction of installation times and suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc).

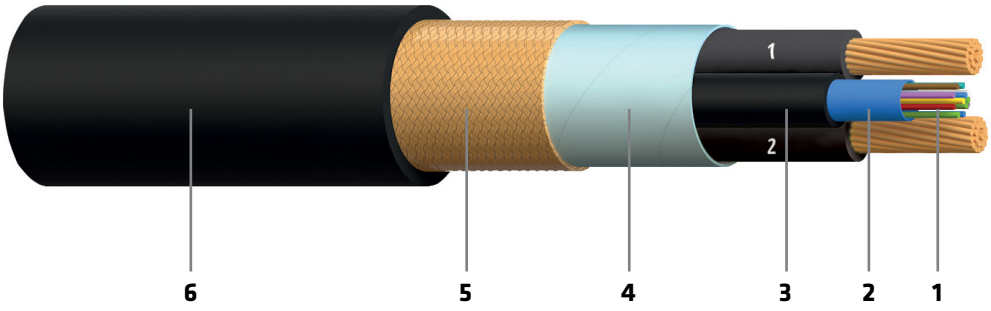
Dimensions

Section [mm²]	Conductor diameter [mm]	Insulation thickness [mm]	FO cable diameter [mm]	Screen diameter [mm]	Sheath thickness [mm]	Outer diameter [mm]	Weight [Kg/Km]	PRYSMIAN CODE
2x4	2.5	0.7	6.3	11.2	1.4	14.0	230	20123016
2x6	2.9	0.7	6.3	11.8	1.4	14.8	270	20123017
2x10	3.8	0.7	6.3	12.8	1.4	15.6	280	20123018
2x16	5.3	0.8	6.3	14.8	1.4	17.6	458	20123019
2x25	6.7	0.9	6.3	18.0	1.4	20.7	674	20123020
2x35	7.8	0.9	6.3	20.0	1.4	22.7	872	60040768
6x4	2.5	0.7	6.3	15.3	1.4	18.1	440	20123022
6x6	2.9	0.7	6.3	16.0	1.4	18.8	552	20123023
6x10	3.8	0.7	6.3	17.5	1.4	20.3	788	20123024
6x16	5.3	0.8	6.3	21.5	1.4	23.9	1127	20123025
12x4	2.5	0.7	6.3 (2 tubes)	20.7	1.4	23.5	766	20123026
12x6	2.9	0.7	6.3 (2 tubes)	21.9	1.4	24.7	975	20123027
12x10	3.8	0.7	6.3 (2 tubes)	24.6	1.4	27.4	1459	20123028

Values depending on manufacturing tolerances.

AFUMEX ROZ1 1kV HTTA-OM2 BRAID

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Bare electrolytic copper class 2 up to 10 mm², class 5 onwards according to IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores + 1 optical cable (2 OM2 f.o.): Red – Black
   - 6 cores + 2 optical cable (8 OM2 f.o.): Black numbered in white
3. **Optical fibre:** Loose tube containing 2 or 8 OF type BB-OM2
4. **Separator:** Polyester binding tape
5. **Screen:** Copper braid (75 – 85% coverage)
6. **Outer sheath:** LSOH sheath type ST7 according to IEC 60502-1 Colour: Black
   Marking: PRYSMIAN SAP AFUMEX ROZ1 HTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Power cable characteristics	Data
Specification	IEC 60502-1
Nominal service voltage	0.6/1kV
Voltage test	3500V a.c. during 5 minutes
Service temperature	-40°C to +90°C
Installation temperature	-5°C +50°C
Maximum conductor temperature	90°C
Shortcircuit temperature	250°C
Bending radius	10D

NCP n° 140285 rev: 2.0 10/2014

Fire performance

Flame retardant	IEC 60332-1
Halogen free	IEC 60754-1
Low smoke emission	IEC 60134-1, IEC 60134-2
Corrosivity	IEC 60754-2 pH≥4,3 y C≤10µS/mm
Toxicity index	NES 713/ NF C 20454 IT≤1,5

Applications

Halogen free power cable and optical cable for HTTA uses. Includes both copper power supply and optical fibre data links for use in new buildings and upgrading projects. Important reduction of installation times and suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc).

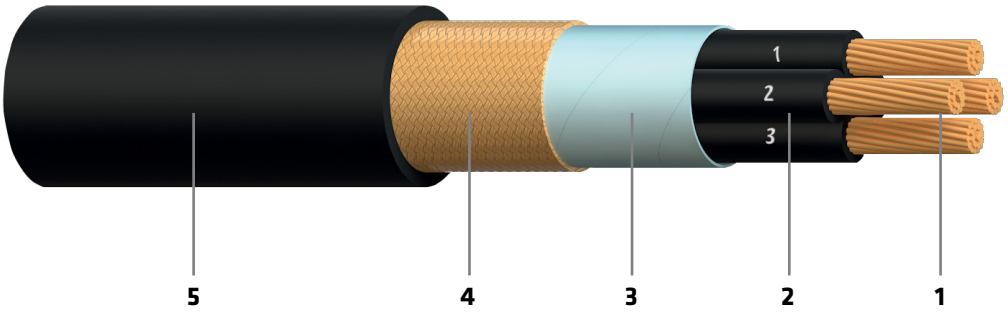
Dimensions

Section [mm²]	Conductor diameter [mm]	Insulation thickness [mm]	FO cable diameter [mm]	Screen diameter [mm]	Sheath thickness [mm]	Outer diameter [mm]	Weight [Kg/ Km]	PRYSMIAN CODE
2x4 (2 OM2 f.o.)	2.5	0.7	5.2	10.6	1.4	13.4	235	20131398
2x6 (16 OM2 f.o.)	2.9	0.7	5.2	12.4	1.4	15.2	315	20131397

Values depending on manufacturing tolerances.

AFUMEX ROZ1 1kV PTTA BRAID

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Bare electrolytic copper class 2 up to 10mm^2, class 5 onwards according to IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores: Red – Black
   - 6 cores: Black numbered in white
   - 12 cores: Black numbered in white
3. **Separator:** Polyester binding tape
4. **Screen:** Copper braid (75 – 85% coverage)
5. **Outer sheath:** LSOH sheath type ST7 according to IEC 60502-1 Colour: Black
   - **Marking:** PRYSMIAN SAP AFUMEX ROZ1 PTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Characteristics	Data
Specification	IEC 60502-1
Nominal service voltage	0.6/1 Kv
Voltage test	3500V a.c. during 5 minutes
Service temperature	-40°C +90°C
Installation temperature	-5°C+50°C
Maximum conductor temperature	90°C
Shortcircuit temperature	250°C
Bending radius	10D

NCP n° 130777 rev: 2.0 02/2014

Fire Performance

Flame retardant	IEC 60332-1
Halogen free:	IEC 60754-1
Low smoke emission	IEC 60134-1, IEC 60134-2
Corrosivity	IEC 60754-2 pH≥4,3 y C≤10µS/mm
Toxicity index	NES 713/ NF C 20454 IT≤1,5

Applications

Halogen free power cable. Suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc), RRH power supply and other industrial installations.

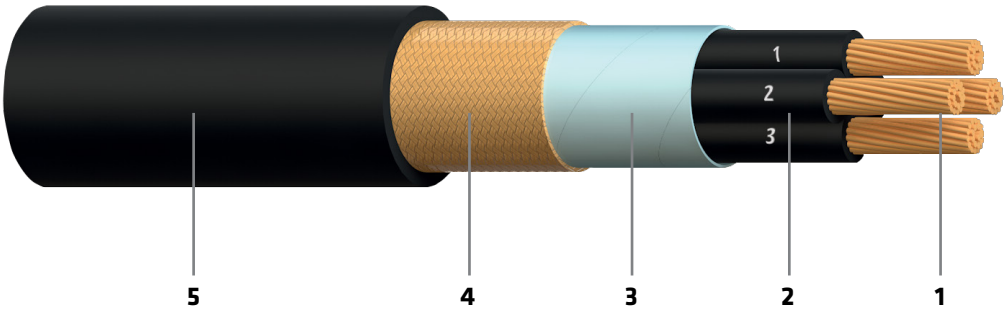
Dimensions

Section [mm²]	Conductor diametre [mm]	Insulation thickness [mm]	Screen diametre [mm]	Sheath thickness [mm]	Outer diametre [mm]	Weight [Kg/Km]	PRYSMIAN CODE
2x4	2.5	0.7	8.6	1.4	11.4	180	20114322
2x6	3.2	0.7	10.0	1.4	12.8	245	20114336
2x10	3.8	0.7	11.2	1.4	14.0	320	20114337
2x16	5.3	0.8	14.3	1.4	17.1	455	20114344
2x25	6.7	0.9	17.8	1.4	20.6	660	20114345
2x35	7.8	0.9	20.1	1.4	22.9	870	20114346
6x4	2.5	0.7	12.7	1.4	15.5	415	20114338
6x6	3.2	0.7	14.6	1.4	17.4	570	20114339
6x10	3.8	0.7	16.4	1.4	19.2	770	20114340
6x16	5.3	0.8	21.0	1.4	23.8	1120	20114347
12x4	2.5	0.7	17.2	1.4	20.0	720	20114341
12x6	3.2	0.7	20.1	1.4	23.0	1050	20114342
12x10	3.8	0.7	22.6	1.4	25.4	1440	20114343

Values depending on manufacturing tolerances.

AFUMEX ROZ1 1kV PTTA POL-CU

Specification: IEC 60502-1
Nominal voltage: 0.6/1kV



Colours can be changed according to the requirement of the customer.

Design

1. **Conductor:** Bare electrolytic copper class 2 up to 10 mm^2, class 5 onwards according to IEC 60228
2. **Insulation:** Cross-linked polyethylene XLPE according to IEC 60502-1, colours:
   - 2 cores: Red – Black
   - 6 cores: Black numbered in white
   - 12 cores: Black numbered in white
3. **Separator:** Polyester binding tape
4. **Screen:** Polyester copper tape with 0.5 mm^2 drain wire class 5
5. **Outer sheath:** LSOH sheath type ST7 according to IEC 60502-1 Colour: Black
   - **Marking:** PRYSMIAN SAP AFUMEX ROZ1 PTTA 0.6/1kV, [section], [fab. year], [metre marking]

Technical characteristics

Characteristics	Data
Specification	IEC 60502-1
Nominal service voltage	0.6/1kV
Voltage test	3500V a.c. during 5 minutes
Service temperature	-40°C +90°C
Installation temperature	-5°C +50°C
Maximum conductor temperature	90°C
Shortcircuit temperature	250°C
Bending radius	10D

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Fire Performance

Flame retardant:	IEC 60332-1
Halogen free:	IEC 60754-1
Low smoke emission:	IEC 60134-1, IEC 60134-2
Corrosivity:	IEC 60754-2 pH≥4,3 y C≤10µS/mm
Toxicity index:	NES 713/ NF C 20454 IT≤1,5

Applications

Halogen free power cable. Suitable for public places (hotels, airports, railway, underground metro stations, schools, hospitals, etc), RRH power supply and other industrial installations

Dimensions

Section [mm²]	Conductor diametre [mm]	Insulation thickness [mm]	Screen diametre [mm]	Sheath thickness [mm]	Outer diametre [mm]	Weight [Kg/Km]	PRYSMIAN CODE
2x4	2.5	0.7	8.1	1.4	10.9	163	20114296
2x6	3.2	0.7	9.5	1.4	12.3	220	20114297
2x10	3.8	0.7	10.6	1.4	13.4	288	20114295
2x16	5.3	0.8	13.6	1.4	16.4	404	20114311
2x25	6.7	0.9	17.2	1.4	20.0	608	20114309
2x35	7.8	0.9	19.4	1.4	22.2	790	20114310
6x4	2.5	0.7	12.0	1.4	14.8	375	20114298
6x6	3.2	0.7	14.1	1.4	16.9	535	20114299
6x10	3.8	0.7	15.8	1.4	18.6	725	20114300
6x16	5.3	0.8	20.3	1.4	23.1	1040	20114316
12x4	2.5	0.7	16.6	1.4	19.4	668	20114301
12x6	3.2	0.7	19.4	1.4	22.2	975	20114302
12x10	3.8	0.7	21.8	1.4	24.6	1340	20114303

Values depending on manufacturing tolerances.

Prysmian Group

PRYSMIAN Draka

C24 – *BendBright*^{XS}

Properties of cable with standard *BendBright*^{XS} fibre

ESMF, low water peak G652D, OS2, G657A2&B2 low bend, FTTH

General and application

The optical fibres are made of a high grade doped silica core surrounded by a silica cladding; they are coated with a dual layer, UV cured acrylate based coating. This enhanced low macro bending sensitive, low water peak fibre, gives unsurpassed bending performance. The preferred use of the *BendBright*^{XS} fibre is in office installations, for patch cords, interconnection cables and for Fibre-to-the-Home networks. The *BendBright*^{XS} offers reduced bending radii for many cables types. The fibre fulfils the new ITU G.657 A2 and G.657 B2 specification (edition 2009), as well as G.652.D. The low macro bending sensitivity further guarantees that the 1625 nm window (L-band) will be available for future use in this bandwidth hungry environment.

Standards and norms

IEC 60793-2-50 Category B6_a and B6_b	EN 50 173-1:2007, cat. OS2
EN 60793-2-50: Class B6_a and B6_b	ISO/IEC 11801:2002, cat. OS1
ITU Recommendation G.657.A2 and G.657.B2 (2009)	ISO/IEC 24702:2006 cat. OS2 and OS1
ITU Recommendation G.652 A, B, C and D (2009)	IEEE 802.3 – 2002 incl. 802.3ae

Optical properties

Attribute	Measurement method	Units	Limits
Mode field diameter at 1310 nm Mode field diameter at 1550 nm	IEC/EN 60793-1-45	µm µm	8.8 ± 0.4 9.8 ± 0.5
Chromatic dispersion coefficient: In the interval 1285 nm – 1330 nm At 1550 nm At 1625 nm	IEC/EN 60793-1-42	 ps/km • nm ps/km • nm ps/km • nm	 ≤ |3.7| ≤ 18.5 ≤ 23.0
Zero dispersion wavelength, λ0		ps/km • nm	1300 – 1324
Zero dispersion slope		ps/(nm^2 • km)	≤ 0.092
Cut-off wavelength	IEC/EN 60793-1-44	λcc nm	≤ 1260*
Polarisation mode dispersion (PMD) coefficient	IEC/EN 60793-1-48	ps/√km	≤ 0.1
PMDQ Link Design Value (computed with Q=0.01%, N=20)	IEC/EN 60794-3	ps/√km	≤ 0.06

** Guaranteed value according to the ITU-T (ATM G650) method.*

Attenuation

Attribute	Measurement method	Units	Limits
Maximum attenuation value of cable at 1310 nm	IEC/EN 60793-1-40	dB/km	≤ 0.38
Maximum attenuation value of cable at 1383 nm*	IEC/EN 60793-1-40	dB/km	≤ 0.38
Maximum attenuation value of cable at 1550 nm	IEC/EN 60793-1-40	dB/km	≤ 0.23
Maximum attenuation value of cable at 1625 nm	IEC/EN 60793-1-40	dB/km	≤ 0.25
Local discontinuity at 1310 and 1550 nm	IEC/EN 60793-1-40	dB	max. 0.1

** Including H2-ageing according to IEC 60793-2-50, type B.1.3, @1383nm.*

Attenuation variation vs bending

Attribute	Measurement method	Units	Limits
10 turns on a mandrel R = 15mm, @1550 nm	IEC/EN 60793-1-47	dB	≤ 0.03
10 turns on a mandrel R = 15mm, @1625 nm	IEC/EN 60793-1-47	dB	≤ 0.1
1 turn on a mandrel R = 10mm, @1550 nm	IEC/EN 60793-1-47	dB	≤ 0.1
1 turn on a mandrel R = 10mm, @1625 nm	IEC/EN 60793-1-47	dB	≤ 0.2
1 turn on a mandrel R = 7.5mm, @1550 nm	IEC/EN 60793-1-47	dB	≤ 0.5
1 turn on a mandrel R = 7.5mm, @1625 nm	IEC/EN 60793-1-47	dB	≤ 1.0

Group index of refraction

Attribute	Measurement method	Units	Limits
1310 nm	IEC/EN 60793-1-22	–	1.467
1550 nm	IEC/EN 60793-1-22	–	1.467
1625 nm	IEC/EN 60793-1-22	–	1.468

Geometrical properties

Attribute	Measurement method	Units	Limits
Cladding diameter	IEC/EN 60793-1-20	µm	125.0 ± 0.7
Cladding non-circularity	IEC/EN 60793-1-20	%	≤ 0.7
Core (MDF)-cladding concentricity error	IEC/EN 60793-1-20	µm	≤ 0.5
Primary coating diameter – ColorLock®XS and natural	IEC/EN 60793-1-21	µm	242 ± 7
Primary coating non-circularity	IEC/EN 60793-1-21	%	≤ 5
Primary coating-cladding concentricity error	IEC/EN 60793-1-21	µm	≤ 12

Attenuation

Attribute	Measurement method	Units	Limits
Proof stress level	IEC/EN 60793-1-30	GPa	≥ 0.7 (≈ 1 %)
Strip force (peak)	IEC/EN 60793-1-32	N	$1.2 \leq F_{peak.strip} \leq 8.9$
Dynamic fatigue resistance aged and unaged	IEC/EN 60793-1-33	(N_d)	≥ 20
Static fatigue, aged	IEC/EN 60793-1-33	(N_s)	≥ 23