



ramcro

special cables



**FIBER OPTIC
CABLES**



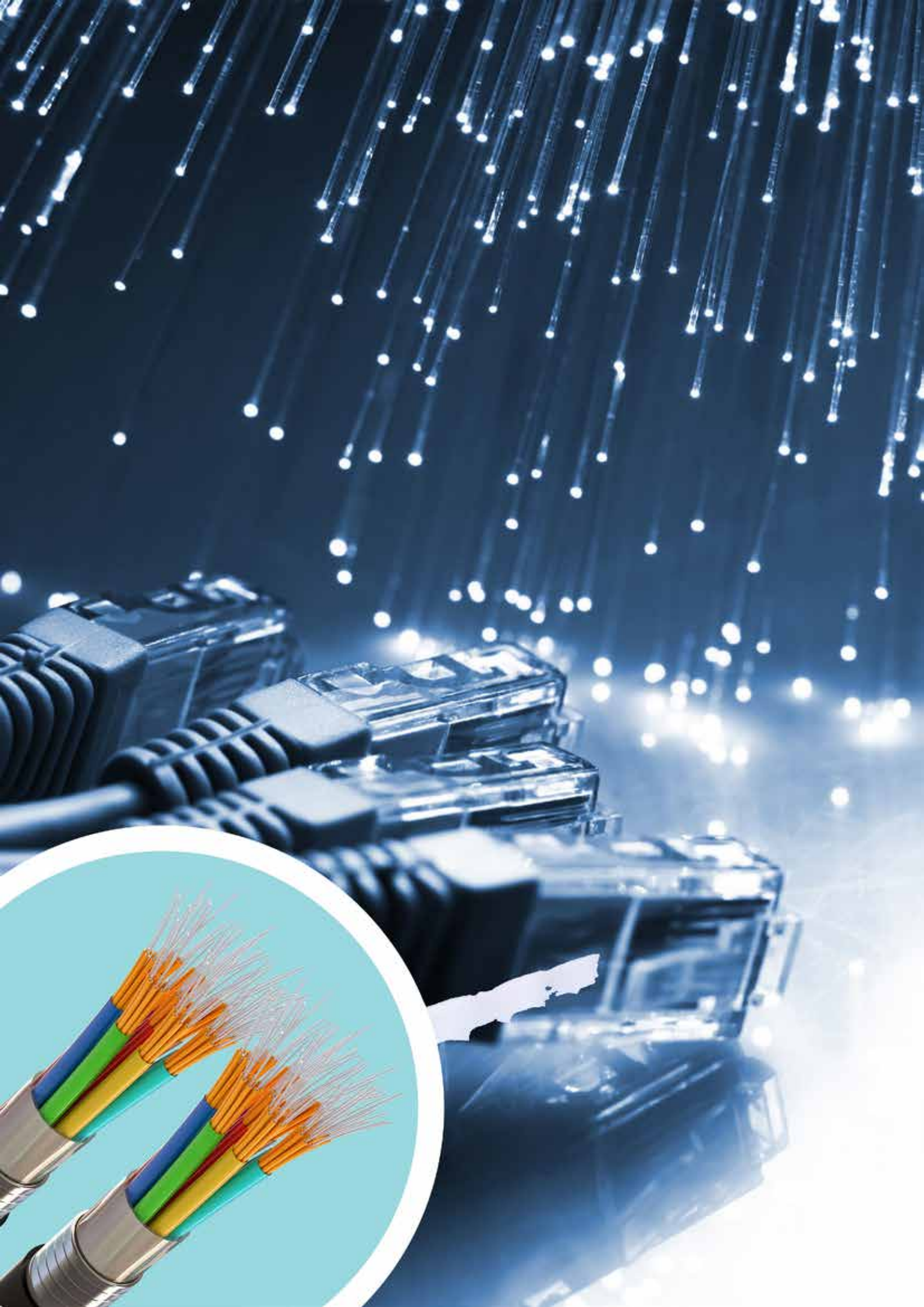
ABOUT COMPANY

Ramcro was founded in 1979, as a family Company producing Special Cables. Family Croci owns 100% of Ramcro S.p.a.. In over 45 years Ramcro successfully expanded its presence in different countries and in a few different but important segments: Oil & Gas, Fire, Railway Signal & Control, BMS, and Optical Cables.

Ramcro production capacity is 4.000 Km/Month and 50.000 Km/Year. Production dpt is 18.000 sqm, of which 3.000 sqm on stock, allowing outstanding very high flexibility in delivery, with also 1.300 sqm of offices and 750 sqm for Laboratory.

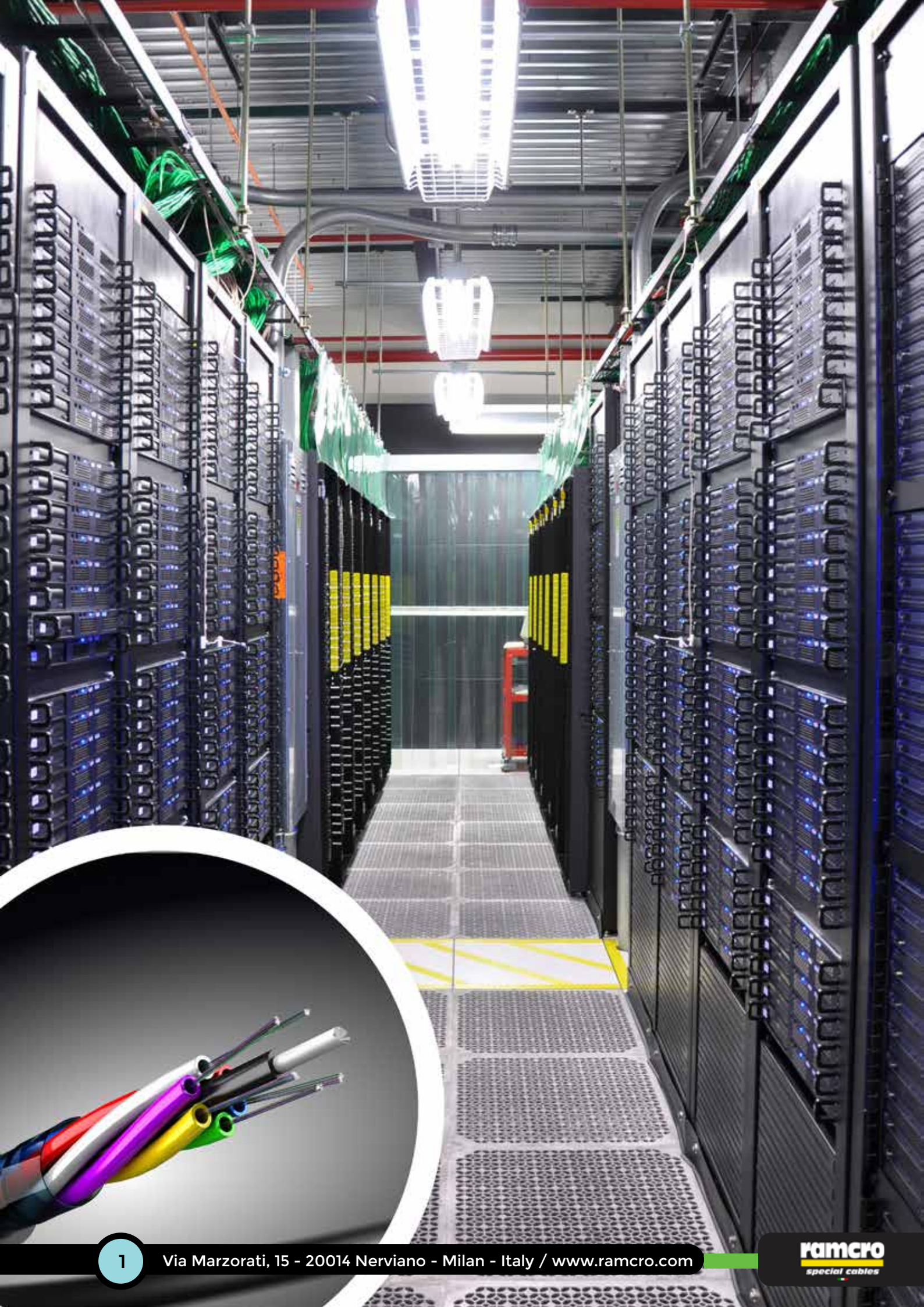
Ramcro Laboratory provides any certificates of tests run following major international specifications and it is ready to be certified ISO 17025. It is also recognized by the international body as a "Third part Laboratory". Ramcro solves any kind of technical issue in the area of the cable, assuring the Client's satisfaction thanks to high quality and personalized solutions, improving the Client's efficiency and optimizing its processes. Ramcro offers extremely flexible solutions and a complete range of services, even tailor-made, based on outstanding worldwide experience





INDEX

CONTENT	PAGE
About Optical Fibre Cable	2
Ramcro Special Cable	3
Application of Optical Fibre uses	4
Single Mode Optical Fibre	6
Multi-mode Optical Fibre: OM1	7
Multi Mode Optical Fibre - OM2, OM3, OM4, OM5	8
Optical Fibre Cable	9
Aerial Loose Tube Cable	11
Loose Tube Cable Re	12
Tight Buffer Cable Construction	13
Optical Duct Unitube Steel Wire	17
Fiber optic - Loose Tube	18
Fiber Optic - Multi Tube	19
Fiber Optic - CR1-C1	22
Deployment of Optical Fibre Cable	24
Handling Storage and Laying of Cables	25
Certificates	29



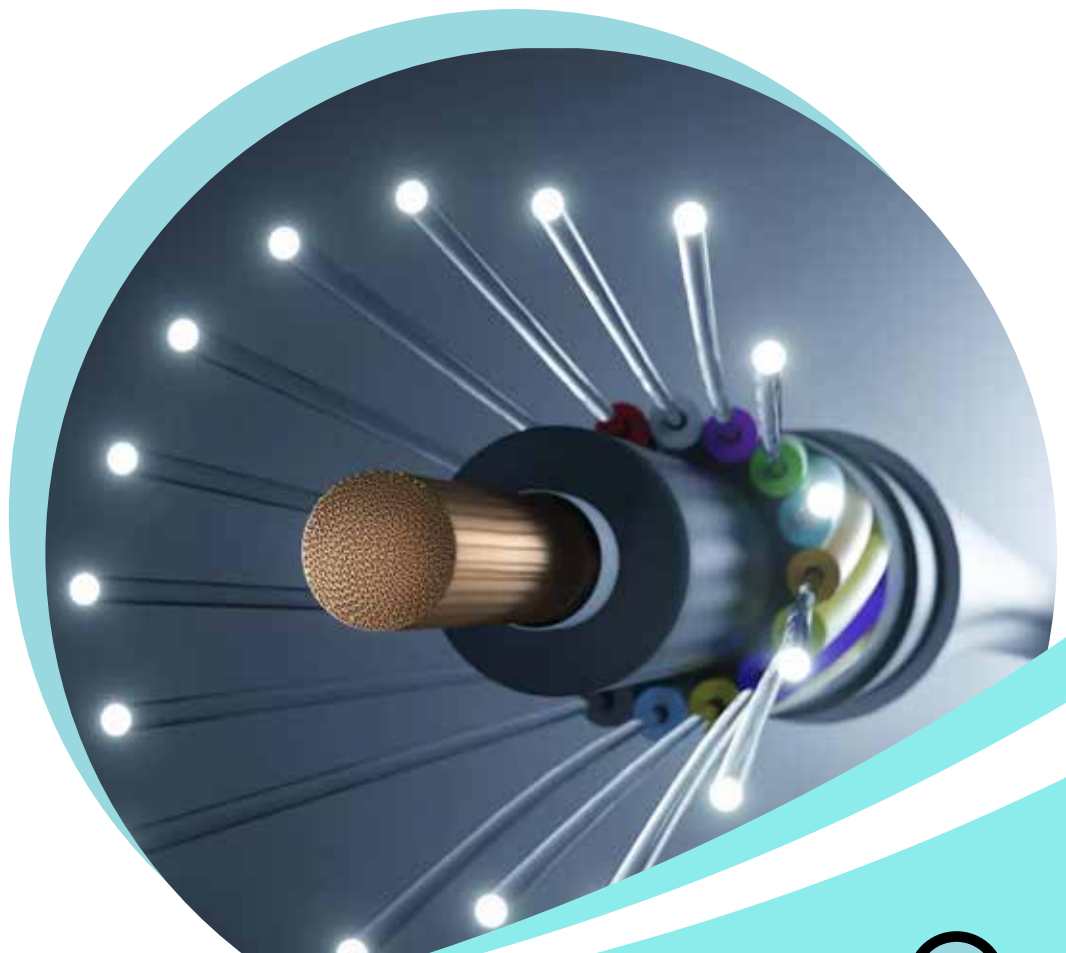
ABOUT OPTICAL FIBRE CABLE

Data cable is an important part for computers or communication systems. It provides a connection between various hardware components. This enables to communicate with its own various parts or additional equipment's. These cables can be divided into three main types: Twisted pair cable, coaxial cable, Optic cables. Optical Fiber Cable (OFC) continues to be the backbone of the digital world. The exponential rise in the digital population and the consequent explosion in data consumption is necessitating the increase in speed and bandwidth of OFC networks. Our OFC products and capabilities have constantly been evolving, enabling us to sustain the market leadership in OFC manufacturing.

WHY TO ADOPT OPTICAL FIBER CABLE

The advantages of fiber optic cables are well known in the industry:

- Greater Bandwidth than traditional copper cables
- Faster Speeds
- Longer Distances
- Better Reliability
- Thinner | Sturdier | Light weight
- The life cycle of fiber cables is 30-50 years, which is much higher than other kind of cables.
- Lower Total Cost of Ownership
- No worries about corrosion/ chemical impact.



RAMCRO SPECIAL CABLE

Ramcro has maintained its advantage in copper communications and Optical Fibre cables, with a full range of products used in consumer electronics, telecommunications, Industrial networks, railway networks and Fibre to Home projects. We provide excellent customized products; meanwhile we also provide system solution in communication engineering design, construction, testing, technical training and other areas.

Our products are widely used in major telecommunication operators, radio and television, state route, railway, metropolitan area network, intelligent buildings, new resource and special industry, and enjoy great popularity both at home and abroad.

Our Data Communication Cables range ?

- Data cable and assemblies
- High-speed data transfer cable & consumer electronic cable
- Wire & cable for rail transit and access
- Communication flexible cables and accessories
- Industrial special cable
- Speaker Cable.
- Optical Fibre Cable



APPLICATION OF OPTICAL FIBRE USES

Optical fibers have a wide range of applications across various fields due to their ability to transmit data at high speeds with minimal loss. Here are some key uses:



TELECOM & BROADBAND

High-density splicing solutions for backbone and metro networks



DATA CENTER

Fast development and connectivity for high-bandwidth networks



SURVEILLANCE

Optical fibers are extensively used in telecommunications to transmit data over long distances with high bandwidth and low signal loss



TRANSPORTATION

Fiber network for roads, highways and metro systems. High-density fiber deployments in rail, tunnels, and subways



INDUSTRIAL AUTOMATION

Robust connections for industrial control and automation



POWER UTILITIES

Optical fibers are extensively used in telecommunications to transmit data over long distances with high bandwidth and low signal loss



HEALTHCARE

Structured cabling for hospitals and medical facilities requiring low-interference communication



UTILITIES

Ruggedized solutions for instrumentation and infrastructure



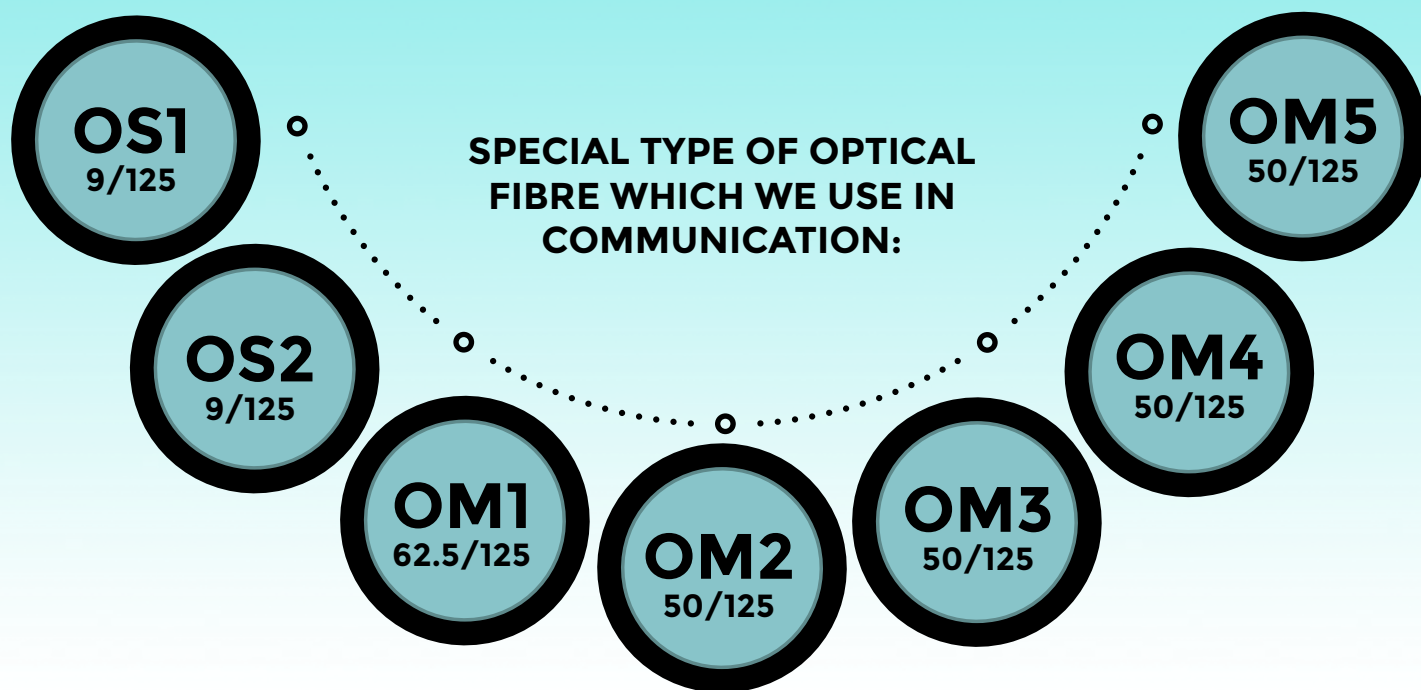
GOVERNMENT & DEFENCE

Scalable, high - performance network for secure communications. Tactical solutions for rugged, reliable field communication



OIL AND GAS

Optical fiber cables enable high-speed data transmission, which is essential for remote operations and data-intensive applications in the oil and gas industry , monitoring both temperature and strain in critical infrastructure



SINGLE MODE OPTICAL FIBRE

Single mode fibre allows for higher bandwidth and longer transmission distances compared to multimode fiber. Single mode fiber is typically used in long-haul applications, such as telecommunications and data centers. This is a full-spectrum fiber that is fully backward-compatible with legacy singlemode fiber. It enables increased optical launch power, improved macrobend specifications from 0.05 dB to 0.03 dB, and tighter zero dispersion wavelength (λ_0) tolerance from a range of ± 10 nm to ± 7 nm. This fiber supports all broadband applications and complies with the most stringent industry standards, ITU-T G.652.D, IEC 60793-2-50, EN 50173, Telcordia GR-20-CORE, ANSI/ICEA S-87-640, RUS 7CFR 1755.900, ANSI/TIA/EIA492CAAA

GEOMETRICAL AND MECHANICAL CHARACTERISTICS

	G.652.D	G.655
Cladding Diameter	$125 \pm 0,7 \mu\text{m}$	$125 \pm 1 \mu\text{m}$
Core/Cladding Concentricity	$\leq 0.5 \mu\text{m}$	$\leq 0.6 \mu\text{m}$
Cladding Non-Circularity	$\leq 0.7 \%$	$\leq 1.0 \%$
Secondary Coating Diameter	$242 \pm 7 \mu\text{m}$	$242 \pm 7 \mu\text{m}$
Coating/Cladding Concentricity	$\leq 12 \mu\text{m}$	$\leq 12 \mu\text{m}$
Coating Non-Circularity	$\leq 7 \%$	$\leq 5 \%$
Proof Test	≥ 100 kspi	≥ 100 kspi

GEOMETRICAL AND MECHANICAL CHARACTERISTICS

G.652.D G.655

Mode Field Diameter (μm)	1310 nm	9.0 ± 0.4	----
	1550 nm	10.1 ± 0.5	9.2 ± 0.5
Attenuation Coefficient (dB/km)	1310 nm	≤ 0.35	≤ 0.40
	1383 nm	≤ 0.35	≤ 1.00
	1460 nm	≤ 0.25	----
	1550 nm	≤ 0.22	≤ 0.25
	1625 nm	≤ 0.23	≤ 0.28
Chromatic Dispersion Coefficient (ps/nm.km)	1310 nm	----	-6
	1530 - 1565 nm	----	5.5 to 10
	1285 - 1330 nm	≤ 3	10 to -3
	1565 - 1625 nm	----	7.5 to 13.8
	1550 nm	≤ 18	8
	1625 nm	≤ 22	12
Zero Dispersion Wavelength (nm)		1300 - 1322	≤ 1440
Zero Dispersion Slope (ps/nm ² Km)		≤ 0.090	$\leq 0,052$
Group Index of Refraction		1467	1.4682
		1468	1.4683
Cable Cutt-Off Wavelength (nm)	Cabling	≤ 1260	≤ 1300
PMD (ps / $\sqrt{\text{km}}$)	1550 nm	≤ 0.1	≤ 0.2

APPLICATION

- Operational in the entire 1260nm to 1625nm wavelength range
- Low chromatic dispersion in the 1310nm operating window
- Low attenuation at the 1383 nm water peak region
- Operational in the 1360nm to 1460 nm wavelength extended band
- All OS2 Optronics cable constructions including tight buffered, loose tube and ribbon
- Supports 1 Gb/s up to an indicative 5 km in data networks
- Supports high speed multi channel video, data and voice services in metropolitan and access networks
- ATM, SONET and WDM, CWDM

MULTI-MODE OPTICAL FIBRE: OM1

Multimode optical fiber is a graded index multimode fiber. This optical fiber comprehensively optimizes the characteristics of 850 nm and 1300 nm operating windows, providing higher bandwidth, lower attenuation, which meet the use requirements in 850 nm and 1300 nm window. The Multimode optical fiber meets the ISO/IEC 11801 OM1 technical specifications and A1b type of optical fibers in IEC 60793-2-10.

GEOMETRICAL AND MECHANICAL CHARACTERISTICS

Core Diameter	62.5 ± 2.5
Core Non-Circularity	≤ 6%
Core / Cladding concentricity error	≤ 1.5
Cladding Diameter	125 ± 2
Cladding non-circularity	≤ 1 %
Secondary coating diameter	245 ± 10
Coating non-circularity	≤ 6%
Coating concentricity error	≤ 12,5
Proof Test	≥ 8.8 N / ≥ 1 % / ≥ 100 Kpsi

OPTICAL CHARACTERISTICS

Attenuation Coefficient (dB/Km)	850 nm	≤ 3.0
	1300 nm	≤ 0.7
Bandwidth (MHz.Km)	850 nm	≥ 200
	1300 nm	≥ 500
Link Distance (m)	1000Base-SX	300
	1000Base-LX	550
Numerical Aperture	0.275 ± 0.015	
Group Index of Refraction	850 nm	1.496
	1300 nm	1.491

APPLICATION

- Gigabit Ethernet in high speed LAN networks, over an indicative 275m link length at 850 nm wavelength
- Legacy networks including Ethernet, Fast Ethernet and FDDI
- All OM1 Optronics cable constructions, including tight buffered, loose tube and ribbon
- Data centres
- Premises cabling in data networks including backbone, riser and horizontal
- Supports video, data and voice services
- Specially suitable for gigabit Ethernet (IEEE802.3z)



MULTI MODE OPTICAL FIBRE - OM2, OM3, OM4, OM5

Graded-Index multimode optical fibres 50/125 micron. The fibres are designed for use at 850, 953 and 1300 nm. These fibres are suitable for use in premises wiring applications, like Local Area Networks (LAN) with video, data and voice using LED, VCSEL or Laser Fabry Perot sources.

The fibre complies with or exceeds ITU-T Recommendation G651.1 (OM2, OM3 y OM4), IEC 60793-2-10 A1a.1, A1a.2, A1a.3, A1a.4 Optical Fibre Specification, ISO/IEC 11801 OM2 / OM3 / OM4 / OM5 specification, TIA/EIA-492AAAB, TIA/EIA-492AAAC, TIA/EIA-492AAD, TIA/EIA-492AAAE, Telcordia GR-20-CORE, GR-409-CORE.

GEOMETRICAL AND MECHANICAL CHARACTERISTICS

Core Diameter	50 ± 2,0
Core Non-Circularity	≤ 5%
Core / Cladding concentricity error	≤ 1
Cladding Diameter	125 ± 1,0
Cladding non-circularity	≤ 0.7 %
Secondary coating diameter	242 ± 5
Coating non-circularity	≤ 5%
Coating concentricity error	≤ 12.5
Proof Test	≥ 8.8 N / ≥ 1 % / ≥ 100 Kpsi

OPTICAL CHARACTERISTICS

		OM2	OM2 XL	OM3 SL	OM3	OM4	OM5
Attenuation Coefficient (dB/Km)	850 nm	≤ 2.4	≤ 2.4	≤ 2.4	≤ 2.4	≤ 2.4	≤ 2.4
	953 nm	-----	-----	-----	-----	-----	≤ 1.8
	1300 nm	≤ 0.7	≤ 0.7	≤ 0.7	≤ 0.7	≤ 0.7	≤ 0.6
Bandwidth (MHz.Km)	850 nm	≥ 500	≥ 600	≥ 700	≥ 1500	≥ 3500	≥ 3500
	953 nm	-----	-----	-----	-----	-----	≥ 1850
	1300 nm	≥ 500	≥ 500	≥ 500	≥ 500	≥ 500	≥ 500
Link Distance (m)	1000Base-SX	550	550	550	900	1100	1000
	1000Base-LX	550	550	550	550	550	600
	10GBASE-SX	82	82	82	300	550	400
	40GBASE-SR4	-----	-----	-----	100	150	150
	100GBASE-SR1	-----	-----	-----	100	150	100
Numerical Aperture				0.200 ± 0.015			
Group Index of Refraction	850 nm	1.482					
	1300 nm	1.477					

APPLICATION

OM2 Fiber:

- Cost-effective solution for legacy systems and short-distance applications.
- Ideal for 1 Gigabit Ethernet deployments within building infrastructures.
- Economical for basic network upgrades.

OM3 Fiber:

- Optimized for 10 Gigabit Ethernet applications, commonly used in data centers and LANs.
- Supports 40 Gigabit and 100 Gigabit Ethernet for shorter distances, providing a pathway to faster network speeds.
- Versatile for modern network environments.

OM4 Fiber:

- Designed for high-speed data centers and demanding network applications.
- Supports 10 Gigabit, 40 Gigabit, and 100 Gigabit Ethernet over extended distances.
- Enables high-bandwidth connectivity for critical applications.
- Used in financial data centers, and large corporate networks.

OM5 Fiber:

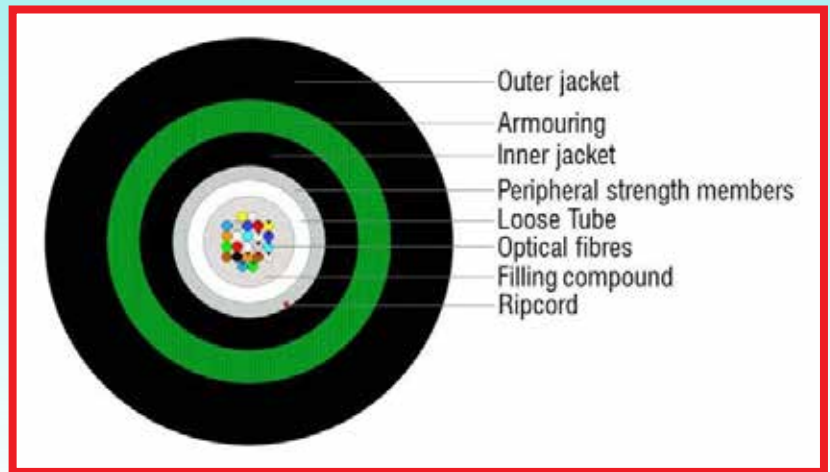
- Next-generation multimode fiber optimized for Short Wavelength Division Multiplexing (SWDM) technology.
- Supports multiple wavelengths on a single fiber, maximizing bandwidth capacity.
- Future-proof solution for 400 Gigabit Ethernet and beyond.
- Ideal for high density data centers that require maximum bandwidth, and fiber efficiency.
- Reduces fiber count in complex networks.

OPTICAL FIBRE CABLE

Unitube Steel wire Armoured Cable (SWA)

Indoor / Outdoor cable

- Fibre optics
- Central tube (jelly filled)
- Strength members
- Inner jacket
- Metallic armour
- Ripcord
- Outer jacket



Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

Applications:

- Universal (Indoor/Outdoor)
- Direct Burial
- Offshores

Rodent Protection

- Excellent rodent resistance Options
- Jacket: PE / PA / MUD
- Strength Members: Aramid
- Special colour code: EIA/TIA 5

Advantages:

- Compact / Tough / Resistant / Reduced diameter / Water-tight / Excellent rodent resistance

SPECIFICATION

Fibre	2/4/6/8/12	16/24
Central Tube (mm)	3.5 ^{±0.2}	3.5 ^{±0.2}
Strength Members	Reinforced Fibreglass WB	
Inner jacket	LSZH-Black	
Armour	Steel Wire Armour	
Outer Jacket	LSZH- Black	
Weight (Kg/Km)	215 ^{±10%}	235 ^{±10%}
Outer Diam. (mm)	11.1 ^{±0.5}	12.3 ^{±0.5}
Max. Tensile Load (N)	3500(Operating)/4500(Installation)	4500(Operating)/6000(Installation)
Max Crush (N/10 cm)	3500	4000
Max Impact (J)	5	
Repeated Bending	25 Cycles r=220 mm, 4 kg	
Torsion	10 Turns ± 180 ° , 4 Kg	
Water Tightness (3m/1m/24h)		
Temperatre Range	-40°C to + 70°C (Operation)/ -5°C to +50°C (Installation)	
Min. Bending Radius (mm)	15x Outer Dia. (Operation) /20x Outer Dia. (Installation)	

-----Special Design-----

The cable can be manufactured with the Following alternative Design

Armoured -SWA/SWB/STA/ Corrugated

Lead cover or Nyloram (AL+HDPE Polyamide)

Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

OPTICAL FIBRE CABLE

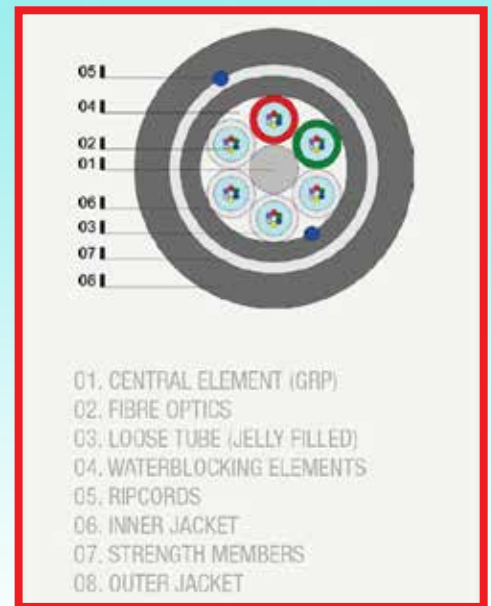
Multitube Steel wire Armoured Cable (SWA)

Indoor / Outdoor cable

- Central element
- Fibre optics
- Loose tubes (jelly filled)
- Strength members
- Ripcords
- Inner jacket
- Metallic armour
- Outer jacket

Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005



Applications:

- Universal (Indoor/Outdoor)
- Direct Burial
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- Jacket: PE / PA / MUD
- Strength Members: Aramid
- Special colour code: EIA/TIA 5

Advantages:

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SPECIFICATION

Fibre	12	24	36	48	72	96	144
Total / Active Tubes	6/1	6/2	6/3	6/4	6/6	8/8	12/12
Fibres per Tube	12						
Strength member	Reinforced Fibreglass Yarn WB						
Inner jacket	LSZH- Black						
Armour	Steel Wire Armour						
Outer jacket	LSZH- Black						
Outer Dia.	14.0 $\pm$ 0.5	14.0 $\pm$ 0.5	14.0 $\pm$ 0.5	14.0 $\pm$ 0.5	14.0 $\pm$ 0.5	15.3 $\pm$ 0.5	19.5 $\pm$ 0.5
Weight (Kg/Km)	318	319	320	321	322	375	593
Max Tensile Load(N)	4500(Operating)/ 6000 (Installation)						
Max Crush (N/10cm)	3000						
Max. Impact (J)	10						
Water Penetration	(3m/ 1m/ 24h/ Optical Core)						
Temperature Range	-40 °C to +70°C (Operating) -10 °C to +50 °C (Installation)						
Min. Bending Radius (mm)	15x Outer Dia. (Operating) / 20x Outer Dia. (Installation)						

-----Special Design-----

The cable can be manufactured with the Following alternative Design

Armoured -SWA/SWB/STA/ Corrugated

Lead cover or Nyloram (AL+HDPE Polyamide)

Fire Resistant version

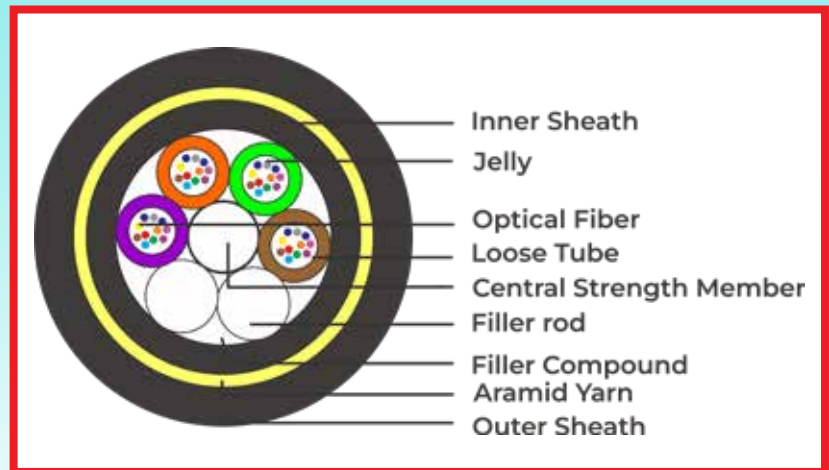
Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

AERIAL LOOSE TUBE CABLE

ADSS 80/120/150/200

Optical Fibre Cable Description

- Central strength member (grp)
- Fibre optics
- Loose tube (thixotropic jelly field)
- Water blocking yarn
- Ripcord
- Filler rod
- Inner sheath
- Armoured yarn
- Outer jacket



Advantages:

- Excellent mechanical resistance
- Totally dielectric / Tough / Resistant
- High density of fibres
- Self-supported aerial applications.
- Good water resistant performance.

Applications:

- All Dielectric Self-Supporting Cable

SPECIFICATION

Maximum Distance			80 m			120 m			150 m			200 m	
Fibres	4	6	8	12	16	24	32	36	48	64	72	96	
Fibres per Tube	2	2	2	2	4	4	8	6	8	8	12	12	
Total Tube	6	6	6	6	6	6	6	6	6	8	6	8	
Inner Jacket						Polythylene							
Strenght Member						Aramid Yarns							
Outer Jacket						Polyethylene							
Colour						Black							
MAT (N)	80 m: 3000			120 m: 4000			150 m: 6000			200 m: 8000			
EDS (N)	80 m: 1200			80 m: 1600			80 m: 2400			80 m: 3200			
Impact						SJ							
Temperature Range						-40° C to +70° C							
Min. Bending Radius						20 x Ø Outer							
80 m													
Weight (Kg/Km)	111	113	115	120	116	120	133	121	139	175	141	177	
Ø Outer (mm)	12,4 ^{±0,5}	12,4 ^{±0,5}	12,4 ^{±0,5}	12,4 ^{±0,5}	12,4 ^{±0,5}	12,4 ^{±0,5}	13,3 ^{±0,5}	12,4 ^{±0,5}	13,3 ^{±0,5}	15,0 ^{±0,5}	13,3 ^{±0,5}	15,0 ^{±0,5}	
Maximum Lenght	3200	3200	3200	3200	3200	3200	2100	3200	2100	2100	2100	2100	
120 m													
Weight (Kg/Km)	113	115	117	122	118	123	133	123	142	177	143	179	
Ø Outer (mm)	12,4 ^{±0,5}	12,4 ^{±0,5}	12,4 ^{±0,5}	12,4 ^{±0,5}	12,4 ^{±0,5}	12,4 ^{±0,5}	13,3 ^{±0,5}	12,4 ^{±0,5}	13,3 ^{±0,5}	15,0 ^{±0,5}	13,3 ^{±0,5}	15,0 ^{±0,5}	
Maximum Lenght	3200	3200	3200	3200	3200	3200	2100	3200	2100	2100	2100	2100	
150 m													
Weight (Kg/Km)	118	120	123	127	123	128	141	128	147	182	148	184	
Ø Outer (mm)	12,7 ^{±0,5}	12,7 ^{±0,5}	12,7 ^{±0,5}	12,7 ^{±0,5}	12,7 ^{±0,5}	12,7 ^{±0,5}	13,6 ^{±0,5}	12,7 ^{±0,5}	13,6 ^{±0,5}	15,3 ^{±0,5}	13,6 ^{±0,5}	15,3 ^{±0,5}	
Maximum Lenght	3200	3200	3200	3200	3200	3200	2100	3200	2100	2100	2100	2100	
200 m													
Weight (Kg/Km)	123	125	127	132	128	132	145	133	151	186	153	188	
Ø Outer (mm)	12,8 ^{±0,5}	12,8 ^{±0,5}	12,8 ^{±0,5}	12,8 ^{±0,5}	12,8 ^{±0,5}	12,8 ^{±0,5}	13,7 ^{±0,5}	12,8 ^{±0,5}	13,7 ^{±0,5}	15,3 ^{±0,5}	13,7 ^{±0,5}	15,3 ^{±0,5}	
Maximum Lenght	3200	3200	3200	3200	3200	3200	2100	3200	2100	21200	2100	2100	

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

LOOSE TUBE CABLE RE

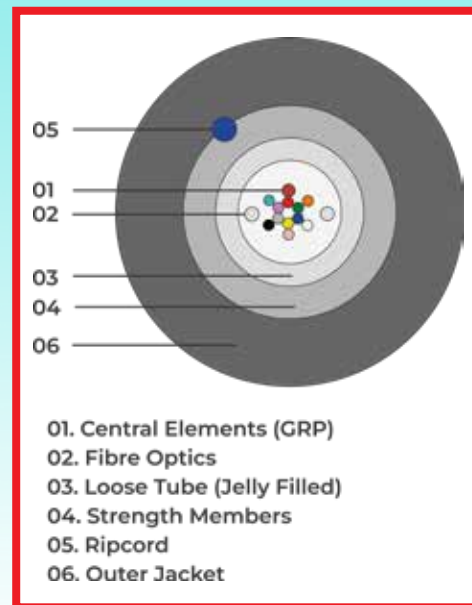
Indoor / Outdoor cable

Cable Description:

- Fibre Optics
- Central Tube Jelly Field
- Fibreglass Reinforcements- WB
- Rip cord
- Outer Jacket

Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005



Rodent Protection:

Advantages:

- Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/Reduce Diameter/Rodent Protected

SPECIFICATION							
FIBRES	2	4	6	8	12	16	24
Central Tube (mm±0.3)	3,2			4,2			
Strength Members	Fibre glass Reinforcements WB (Wtareblocking)						
Outer Jacket	Thermoplastic Low Smoke Halogen Free LSZH9FRNC)						
Colour	Dark Grey						
Weight(kg/Km)	53			60			
Outer(mm±0.3)	7,0			7,9			
Tensile Load (N)	1000 / 1800						
Crush(N)	2000						
Temperature Range	-30 °C to +70 °C						
Min. Bending Radius	20 x Outer Diam.						
Standards							

Environmental and mechanical tests according to EN 187000 and CEI 60794

Fire Test according to : UNE-EN50266(IEC 60332-3)/UNE-EN50267(IEC 60754-1)/UNE-EN 50268(IEC 61034-1/2)

-----Special Design-----

The cable can be manufactured with the Following alternative Design

Armoured -SWA/SWB/STA/ Corrugated

Lead cover or Nyloram (AL+HDPE Polyamide)

Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua
TIA/EIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

Cable Description:

- Fibre Optics
- Central Tube (Jelly Field)
- Fiberglass Reinforcements – WB
- Ripcord
- Outer jacket

Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

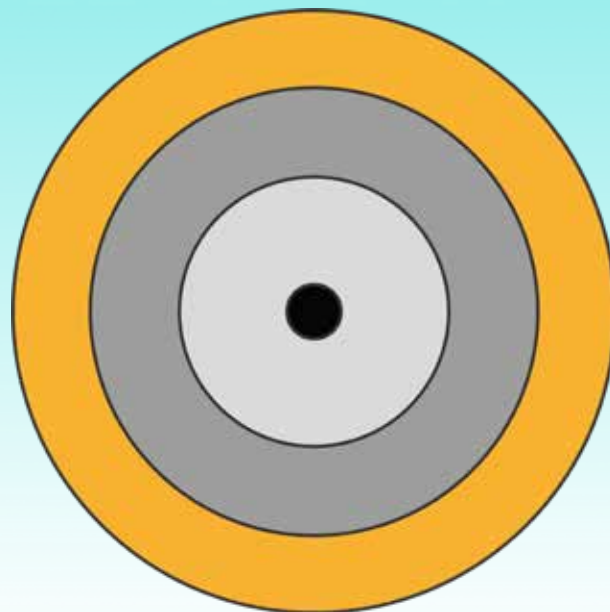
Applications

Universal (Indoor/ Outdoor)

Rodent Protection

Advantages

Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/
Reduced Diameter/ Rodent Protected



SPECIFICATION

FIBRES COUNT	1
Strength Members	Aramid Yarns
Armour	Corrugated Steel Armour
Compound	Thermoplastic FRLS
Colour	Orange (MM62) / Blue (MM50) / Yellow (SM)
Weight(kg/Km)	7,5
Outer(mm±0.3)	2,9 ^{±0,1}
Tensile Load Perm/Inst (N)	200 / 350
Crush(N)	500
Temperature Range	-5 °C to +60 ° C
Min. Bending Radius	15 x Ø Outer
Standards	
Environmental and mechanical tests according to EN 187000 and CEI 60794	

-----Special Design-----

The cable can be manufactured with the Following alternative Design

Armoured -SWA/SWB/STA/ Corrugated

Lead cover or Nyloram (AL+HDPE Polyamide)

Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

Cable Description:

- Fibre Optics
- Central Tube (Jelly Field)
- Fiberglass Reinforcements – WB
- Ripcord
- Outer jacket

Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

Applications

Universal (Indoor/ Outdoor)

Rodent Protection

Advantages

Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/
Reduced Diameter/ Rodent Protected

SPECIFICATION				
	Zipcord	Mini Zip-16	Mini Zip-21	Mini Zip-25
FIBRES COUNT	2			
Identificaton	Colours			
Strength Members	Aramid Yarns			
Outer Jacket	FRLS	LSZH (FRNC)		
Colour	Orange (MM62) / Blue (MM50) / Yellow (SM)			
Weight(kg/Km)	15	5,5	9	12,2
Outer(mm±0.3)	2,8 x 5,9	1,6 x 3,4	2,1 x 4,4	2,5 x 5,3
Tensile Load Perm / Inst (N)	400 / 700	80 / 130	240 / 400	300 / 500
Crush(N)	500	300	300	500
Temperature Range	-5 °C to +60 ° C			
Min. Bending Radius	15 x Ø Outer			

Standards

Environmental and mechanical tests according to EN 187000 and CEI 60794

-----Special Design-----	
The cable can be manufactured with the Following alternative Design	
Armoured -SWA/SWB/STA/ Corrugated	
Lead cover or Nyloram (AL+HDPE Polyamide)	
Fire Resistant version	

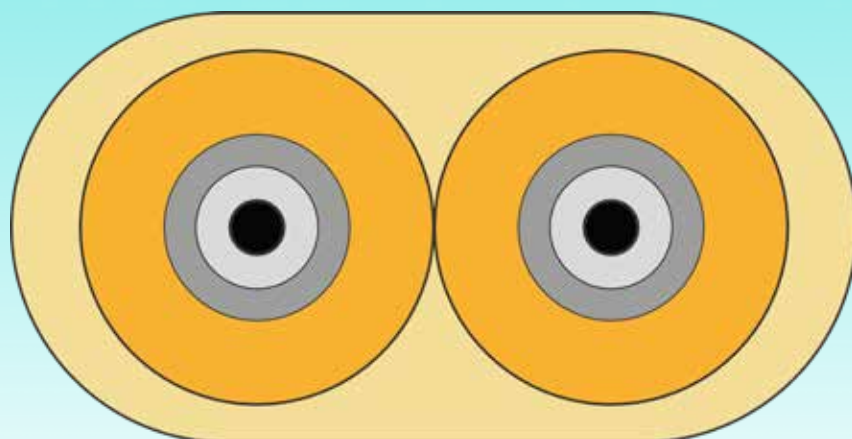
Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

Cable Description:

- Fibre Optics
- Central Tube (Jelly Field)
- Fiberglass Reinforcements – WB
- Ripcord
- Outer jacket

Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005



Applications

Universal (Indoor/ Outdoor)

Rodent Protection

Advantages

Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/
Reduced Diameter/ Rodent Protected

SPECIFICATION

FIBRES COUNT	2
Strength Members	Aramid Yarns
Subcables Jacket	FRLS ¹
Ø Subcables (mm)	2,9 ^{±0,1}
Outer Jacket	Thermoplastic FRLS
Colour	Orange (MM62) / Blue (MM50) / Yellow (SM)
Weight(kg/Km)	27
Outer(mm±0.3)	3.8 x 6.7 ^{±0,2}
Tensile Load Perm/Inst (N)	400 / 700
Crush(N)	750
Temperature Range	-5 °C to +60 ° C
Min. Bending Radius	15 x Ø Outer

Standards

Enviromental and mechanical tests according to EN 187000 and CEI 60794

Fire Test according to UNE-EN 50265 (IEC 60332-1) / UNE-EN 50268 (IEC 61034-1/2)

Inner Jacket colour: Red, Green

¹ FRLS - Special PVC heavy metal free, low halogen and low smoke emission and flame retardant

²For singlemode fibre G.657 the jacket colour is ivory

-----Special Design-----

The cable can be manufactured with the Following alternative Design

Armoured -SWA/SWB/STA/ Corrugated

Lead cover or Nyloram (AL+HDPE Polyamide)

Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

Cable Description:

- Fibre Optics
- Central Tube (Jelly Field)
- Fiberglass Reinforcements – WB
- Ripcord
- Outer jacket

Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

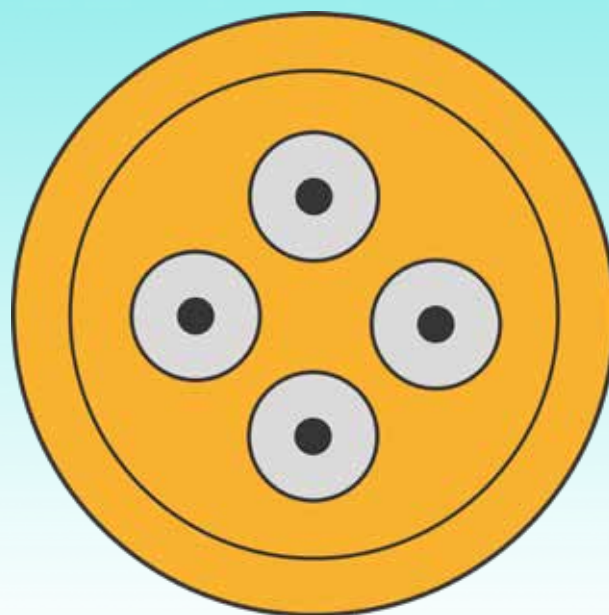
Applications

Universal (Indoor/ Outdoor)

Rodent Protection

Advantages

Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/
Reduced Diameter/ Rodent Protected



SPECIFICATION					
FIBRES COUNT	2	4	6	8	12
Strength Members	Aramid Yarns				
inner Jacket	Thermoplastic LSZH ¹				
Colour	Orange (MM62) / Blue (MM50) / Yellow (SM)				
Weight(kg/Km)	19	22	29	37	49
Ø Outer(mm ^{±0.3})	4,5	4,9	5,6	6,3	7,3
Tensile Load Perm / Inst (N)	400 / 700	500/850	600/1000		
Crush(N)	1000				
Temperature Range	-5 °C to +60 ° C				
Min. Bending Radius	20 x Ø Outer				

Standards

Environmental and mechanical tests according to EN 187000 and CEI 60794

-----Special Design-----

The cable can be manufactured with the Following alternative Design

Armoured -SWA/SWB/STA/ Corrugated

Lead cover or Nyloram (AL+HDPE Polyamide)

Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

OPTICAL DUCT UNITUBE STEEL WIRE

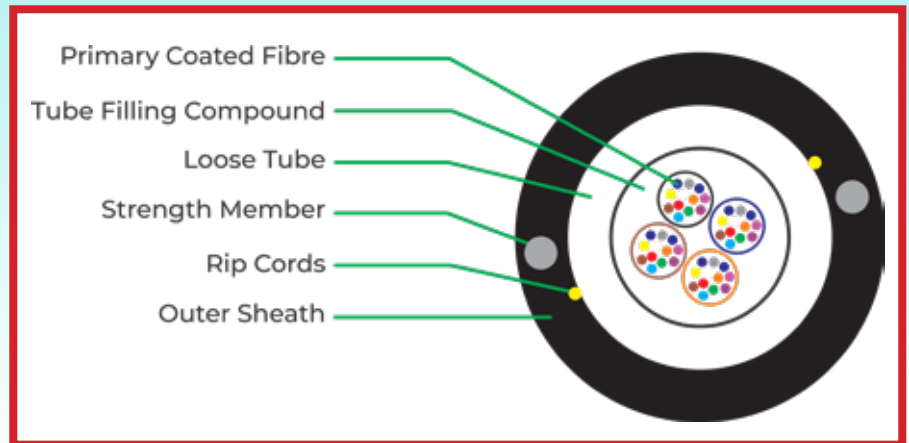
2 to 24 fibre OM1, OM2, OM3, OM4 multimode or OS1/OS2 (ITU-T G.652D singlemode 250µm single loose tube external duct cables with e-glass strength members and polyethylene (PE) or Low Smoke Zero Halogen (LSZH) jacket.

Cable Description:

- Fibre Optics
- Loose Tube Filling Jell Compound
- Strength Member
- Rip cord
- Outer Jacket

Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005



Rodent Protection:

Application:

- Indoor/ Outdoor
- Suitable for Duct Installation
- For CATV application, aerial application

Advantages:

- Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/Reduce Diameter/Rodent Protected

SPECIFICATION		UPTO 12-CORE	24-CORE	48-CORE
Outer Diameter	mm	6.0	8.0	9.5
Weight	Kg/Km	40	60	80
Max. Load (installation)	N	1000		
Max Load (installed)	N	500		
Min. Bending Radius (mm)		15x Outer Dia. (Operating) / 20x Outer Dia. (Installation)		
Temperature Range		-40 °C to +70°C (Operating) -10 °C to +50 °C (Installation)		
Crush Resistance (N/100mm)		1000		

-----Special Design-----

The cable can be manufactured with the Following alternative Design

Armoured -SWA/SWB/STA/ Corrugated

Lead cover or Nyloram (AL+HDPE Polyamide)

Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

FIBER OPTIC - LOOSE TUBE

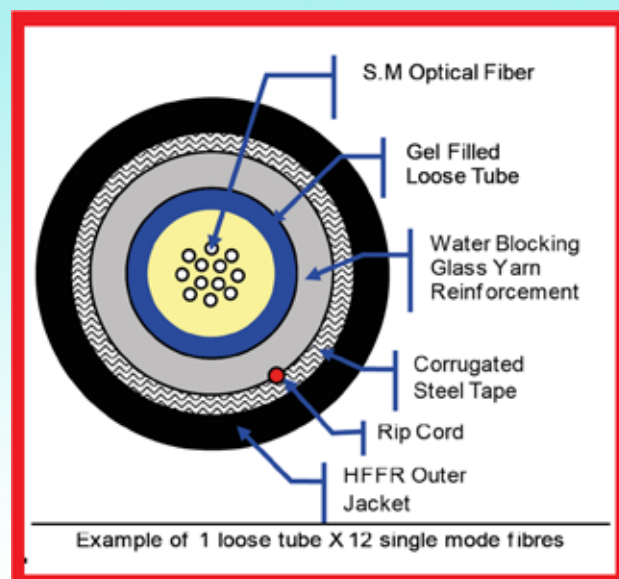
SINGLE MODE 9/125 μm

DESCRIPTION

These Fiber Optic cables can incorporate up to 24 single-mode fibres. The cable is glass yarn reinforced and jacketed with Halogen Free Flame Retardant compound (HFFR). The cable is designed for indoor/outdoor applications in ducts, direct burial, or latched installations. Comply with IEC 60332- 3 & IEC 60331-25 flammability test and with halogen-free according to IEC 60754-2 Corrosively

REFERENCE STANDARD

- IEC 60331-25:1999
- IEC 60332-1-2:2004
- EN 61034-2:2005
- EN 60754-1:2014



CONSTRUCTION

Fibers:

Up to Twenty-four single mode fibers, meeting or exceeding the ITU-T G.652/G.651 and/or IEC 60793 specifications color coded for easy identification

Tubes:

PBT tube.

Filling:

The tube is filled with water blocking, thixotropic gel to prevent the ingress of water.

Tubes Filled:

Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration. LSZH inner jacket is extruded over the yarn.

Armouring:

A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Sheath:

A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armouring.

Ripcords:

laid under the steel tape to facilitate the jacket removal.

IDENTIFICATION OF FIBERS

FIBER COLOR	FIBER NUMBER
Blue	1
Orange	2
Green	3
Brown	4
Slate	5
White	6
Red	7
Black	8
Yellow	9
Violet	10
Rose	11
Aqua	12

FIBER OPTIC - MULTI TUBE

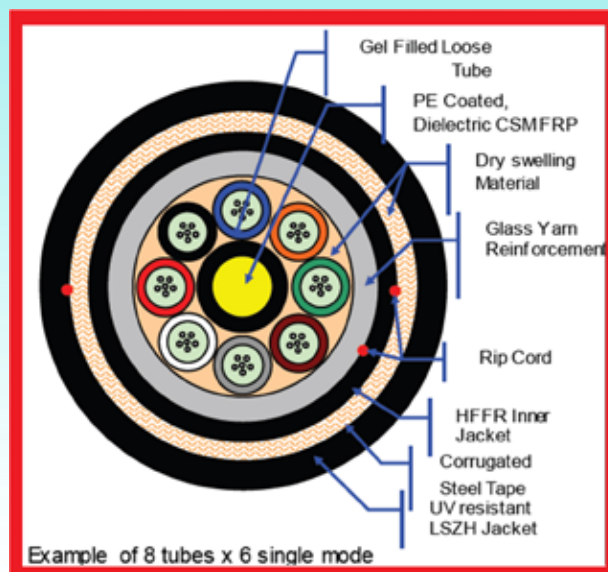
SINGLE MODE 9/125 µm

DESCRIPTION

These Fiber Optic cables can incorporate up to 24 single mode fibers. The cable is glass yarn reinforced and jacketed with Halogen Free Flame Retardant compound (HFFR). The cable is designed for indoor/outdoor applications in ducts, direct burial or latched installations. Comply with IEC 60332- 3 & IEC 60331-25 flammability test and with halogen-free according to IEC 60754-2 Corrosively.

REFERENCE STANDARD

- IEC 60331-25:1999
- IEC 60332-1-2:2004
- EN 61034-2:2005
- EN 60754-1:2014



CONSTRUCTION

Fibers:

Up to 432 optical single mode fibers color coded for easy identification

Tubes:

PBT tube he tubes are SZ stranded around a dielectric central member

Filling:

The tube is filled with water blocking, thixotropic gel to prevent the ingress of water.

Tubes Fills:

Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration. LSZH inner jacket is extruded over the yarn.

Armouring:

A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Sheath:

UV resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armouring.

Ripcords:

laid under the steel tape to facilitate the jacket removal.

IDENTIFICATION OF FIBERS

FIBER COLOR	FIBER NUMBER
Blue	1
Orange	2
Green	3
Brown	4
Slate	5
White	6
Red	7
Black	8
Yellow	9
Violet	10
Rose	11
Aqua	12

FIBER OPTIC - LOOSE TUBE

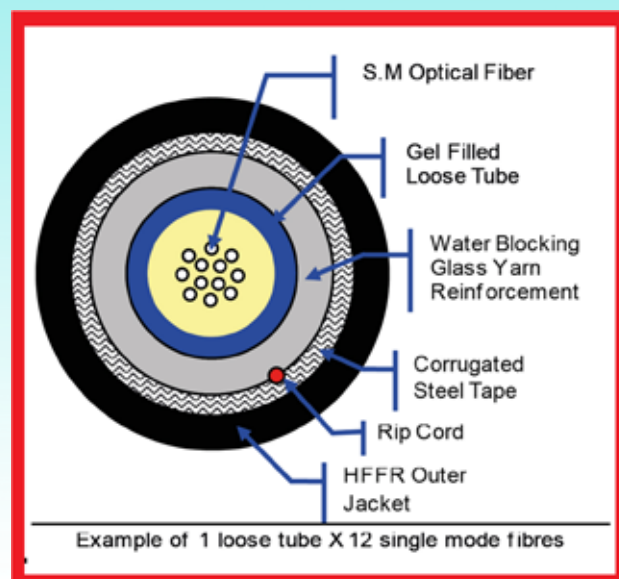
MULTI MODE OM3 50/125 μ m - 50/125 μ m - 62.5/125 μ m

DESCRIPTION

These Fiber Optic cables can incorporate up to 24 single-mode fibres. The cable is glass yarn reinforced and jacketed with Halogen Free Flame Retardant compound (HFFR). The cable is designed for indoor/outdoor applications in ducts, direct burial, or latched installations. Comply with IEC 60332- 3 & IEC 60331-25 flammability test and with halogen-free according to IEC 60754-2 Corrosively.

REFERENCE STANDARD

- IEC 60331-25:1999
- IEC 60332-1-2:2004
- EN 61034-2:2005
- EN 60754-1:2014



CONSTRUCTION

Fibers:

Up to Twenty-four single mode fibers, meeting or exceeding the ITU-T G.652/G.651 and/or IEC 60793 specifications color coded for easy identification

Tubes:

PBT tube.

Filling:

The tube is filled with water blocking, thixotropic gel to prevent the ingress of water

Tubes Filled:

Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration. LSZH inner jacket is extruded over the yarn.

Armouring:

A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Sheath:

A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armouring.

Ripcords:

laid under the steel tape to facilitate the jacket removal.

IDENTIFICATION OF FIBERS

FIBER COLOR	FIBER NUMBER
Blue	1
Orange	2
Green	3
Brown	4
Slate	5
White	6
Red	7
Black	8
Yellow	9
Violet	10
Rose	11
Aqua	12

FIBER OPTIC - MULTI TUBE

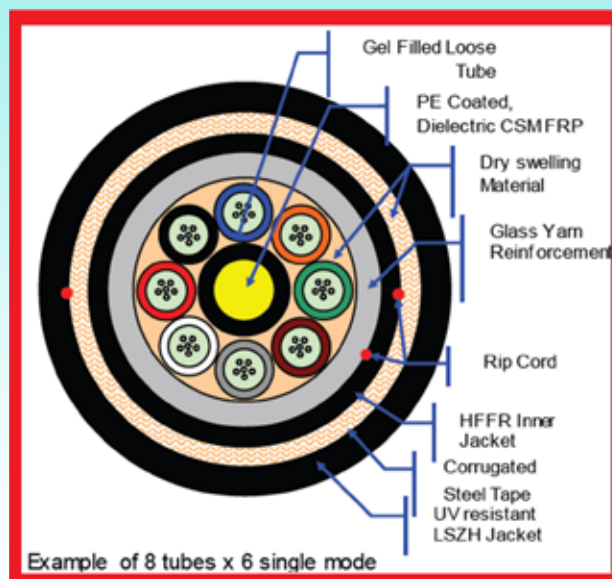
MULTI MODE OM3 50/125 µm - 50/125 µm - 62.5/125 µm

DESCRIPTION

These Fiber Optic cables can incorporate up to 24 single mode fibers. The cable is glass yarn reinforced and jacketed with Halogen Free Flame Retardant compound (HFFR). The cable is designed for indoor/outdoor applications in ducts, direct burial or latched installations. Comply with IEC 60332- 3 & IEC 60331-25 flammability test and with halogen-free according to IEC 60754-2 Corrosively.

REFERENCE STANDARD

- IEC 60331-25:1999
- IEC 60332-1-2:2004
- EN 61034-2:2005
- EN 60754-1:2014



CONSTRUCTION

Fibers:

Up to 432 optical single mode fibers color coded for easy identification

Tubes:

PBT tube the tubes are SZ stranded around a dielectric central member

Filling:

The tube is filled with water blocking, thixotropic gel to prevent the ingress of water.

Tubes Fills:

Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration. LSZH inner jacket is extruded over the yarn.

Armouring:

A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Sheath:

UV resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armoring.

Ripcords:

laid under the steel tape to facilitate the jacket removal.

IDENTIFICATION OF FIBERS

FIBER COLOR	FIBER NUMBER
Blue	1
Orange	2
Green	3
Brown	4
Slate	5
White	6
Red	7
Black	8
Yellow	9
Violet	10
Rose	11
Aqua	12

APPLICATIONS

- Indoor installation
- For fixed installation in ducts, tubes and trenches
- Fire resistant
- Flame and Fire retardant
- Halogen Free
- Low smoke emission – UV stabilized

REFERENCE STANDARD

IEC 60793 IEC 60794-1-2

Flame spread: IEC 60332-1-2 / NF C 32-070 C2

Smoke toxicity: IEC 60754-1 / EN 50267-2-1

CONSTRUCTION

Fibers:

Up to Twenty-four single mode fibers, meeting or exceeding the ITU-T G.652/G.651 and/or IEC 60793 specifications Color coded following TIA/EIA 598 for easy identification

Tube:

PBT tube filled with water blocking, thixotropic gel to prevent the ingress of water

Tubes Fills:

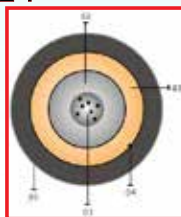
Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration, with overall Fiber Glass Tape.

Ripcord:

laid under the jacket for easy removal.

Sheath:

A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the Fiber Glass Tape.



APPLICATIONS

- Outdoor or indoor/outdoor installation
- For installation in ducts, tubes, trenches, or directly buried
- Fire resistant
- Flame and Fire retardant
- Halogen Free

Smoke opacity: IEC 61034-2 / EN 50268-2

Spread of fire: IEC 60332-3-24 / NF C 32-070 C1

Fire resistance: IEC 60331-25 / NF C 32-070 CR1

CONSTRUCTION

Fibers:

Up to Twenty-four single mode fibers, meeting or exceeding the ITU-T G.652/G.651 and/or IEC 60793 specifications Color coded following TIA/EIA 598 for easy identification

Tube:

PBT tube filled with water blocking, thixotropic gel to prevent the ingress of water

Tubes Fills:

Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration, with overall Fiber Glass Tape.

Ripcords:

laid under the steel tape to facilitate the jacket removal.

Inner Sheath:

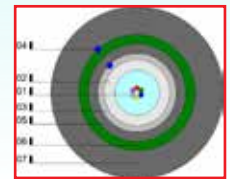
LSZH inner jacket is extruded over the yarn.

Armouring:

A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Sheath:

A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armoring.



Code	Type of Fiber	N. Fibres	Fibres Per Tube	Active Tube	Tube Diameter mm	O Outer Diameter er mm
FO4x9_125SMSTZA-F3XPC	UnArmoured	4	4	1	2,7	8,9
FO6x9_125SMSTZA-F3XPC	UnArmoured	6	6	1	2,7	8,9
FO12x9_125SMSTZA-F3XPC	UnArmoured	12	12	1	2,7	8,9
FO24x9_125SMSTZA-F3XPC	UnArmoured	24	24	1	2,7	8,9
FO4x9_125SMSTCSTZA-F3XPC	Armoured	4	4	1	2,7	10,0
FO6x9_125SMSTCSTZA-F3XPC	Armoured	6	6	1	2,7	10,0
FO12x9_125SMSTCSTZA-F3XPC	Armoured	12	12	1	2,7	10,0
FO24x9_125SMSTCSTZA-F3XPC	Armoured	24	6	1	2,7	10,0

FIBER OPTIC - CR1-C1 MULTI TUBE

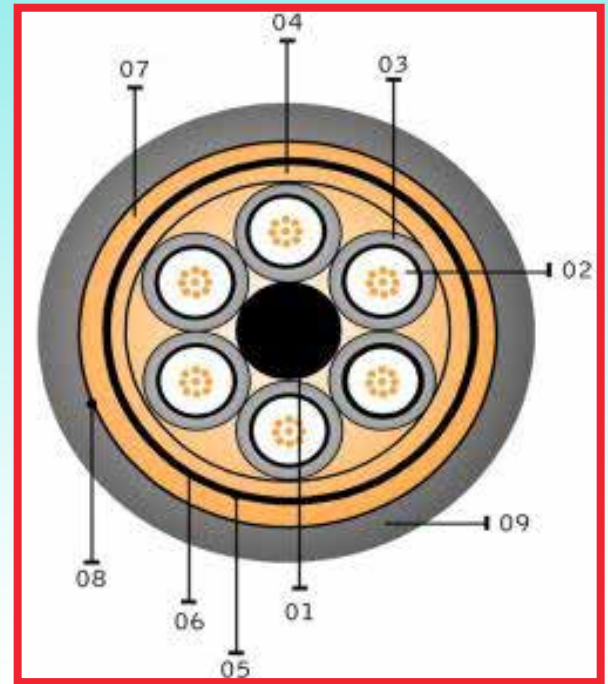
XP C 93-539

DESCRIPTION

- Outdoor installation
- For installation in conduits, cable trays, ducted or directly buried
- Rodent resistant – Reinforced corrugated steel tape armor
- Sealing – Water-repellent barrier construction – Dry conductor
- Flame and Fire retardant
- Halogen Free
- Low smoke emission – UV stabilized

REFERENCE STANDARD

Flame spread:	IEC 60332-1-2 / NF C 32-070 C2
Smoke opacity:	IEC 61034-2 / EN 50268-2
Smoke toxicity:	IEC 60754-1 / EN 50267-2-1
Spread of fire:	IEC 60332-3-24 NF C 32-070 C1
Fire resistance:	IEC 60331-25 NF C 32-070 CR1



CONSTRUCTION

Dielectric central member

Fibers:

Up to 48 optical ITU-T G.652/G.651 and/or IEC 60793 fibers, Color coded following TIA/EIA 598 for easy identification

Tubes:

PBT tube he tubes filled with water blocking, thixotropic gel to prevent the ingress of water.

Tubes Filled:

Dry, water swelling glass yarn is laid over the tubes to serve as peripheral strength members and to block the cable from water penetration, with overall Fiber Glass Tape.

Ripcord:

laid under the jacket for easy removal.

Inner Sheath:

LSZH inner jacket is extruded over the yarn.

Armouring:

A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Ripcords:

laid under the steel tape to facilitate the jacket removal.

Sheath:

A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armouring.

Code	Type of Fiber	N. Fibres	Fibres Per Tube	Active Tube	Tube Diameter mm	O Outer Diameter er mm
FO6x9_125SMMTCSTZA-F3XPC	Single Mode	6	6	1/8	2	8,9
FO6x50_125MMMTCSZTA-F3XPC	Multi Mode					
FO12x9_125SMMTCSTZA-F3XPC	Single Mode	12	6	2/8	2	8,9
FO12x50_125MMMTCSZTA-F3XPC	Multi Mode					
FO24x9_125SMMTCSTZA-F3XPC	Single Mode	24	6	4/8	2	8,9
FO24x50_125MMMTCSZTA-F3XPC	Multi Mode					
FO36x9_125SMMTCSTZA-F3XPC	Single Mode	36	6	6/8	2	8,9
FO36x50_125MMMTCSZTA-F3XPC	Multi Mode					
FO48x9_125SMMTCSTZA-F3XPC	Single Mode	48	6	8/8	2	10,0
FO48x50_125MMMTCSZTA-F3XPC	Multi Mode					
FO72x9_125SMMTCSTZA-F3XPC	Single Mode	72	12	6/8	2	10,0
FO72x50_125MMMTCSZTA-F3XPC	Multi Mode					
FO96x9_125SMMTCSTZA-F3XPC	Single Mode	96	12	8/8	2	10,0
FO96x50_125MMMTCSZTA-F3XPC	Multi Mode					
FO144x9_125SMMTCSTZA-F3XPC	Single Mode	144	24	6/8	2	10,0
FO144x50_125MMMTCSZTA-F3XPC	Multi Mode					

1. Deployment of Optical Fibre Cable:

- (i) Aerial Cable
- (ii) Duct cable
- (iii) Direct Buried cable
- (iv) Micro Duct Cable
- (v) Drop Cable
- (vi) Indoor/ Outdoor- Universal
- (vii) Duct and Ariel
- (viii) OPGW

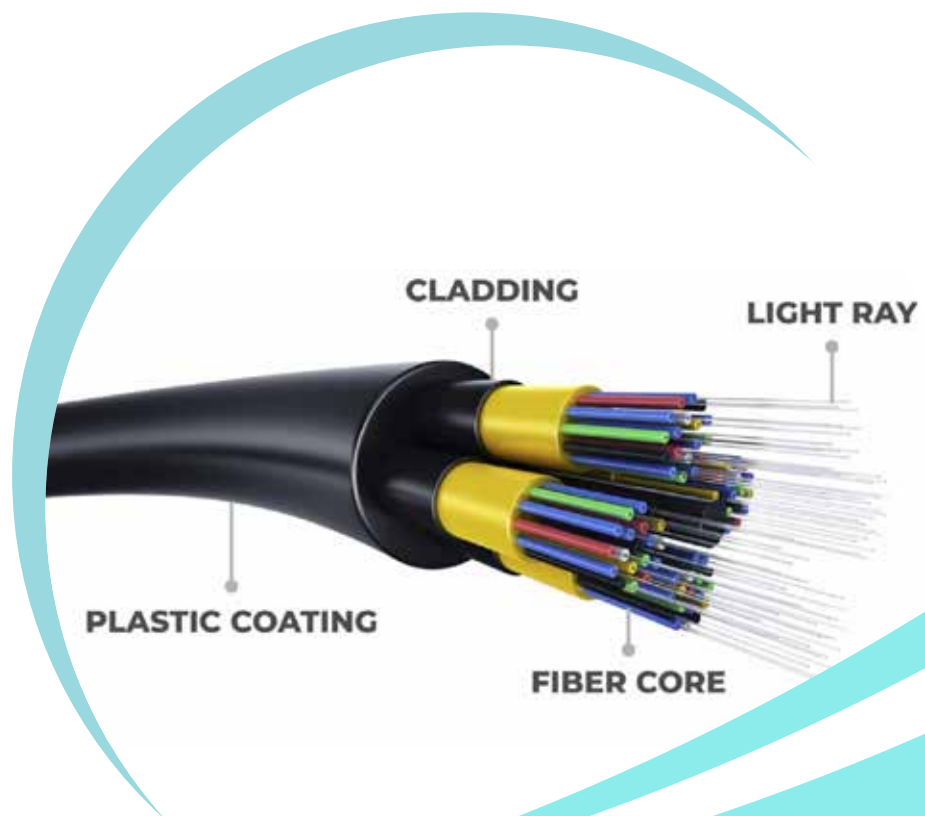
We also have specialized in the Outer Sheet Solution for the Optical Fibre cable.

2. Outer Jacketing Option:

- (i) PE
- (ii) LSHF
- (iii) LSZH
- (iv) PE+ECCS+PE
- (v) ECCS+PE
- (vi) ECCS+PE+ ECCS+PE
- (vii) PE+FRP+PE/PA
- (viii) PE+PA (polyethylene & polyamide)
- (ix) Chemical Protection /
- (x) Moisture barrier- Al HDPE PA

3. Core Type Option Can be Available:

- (i) Dry Tube / Dry Core
- (ii) Jel Core / Dry Core

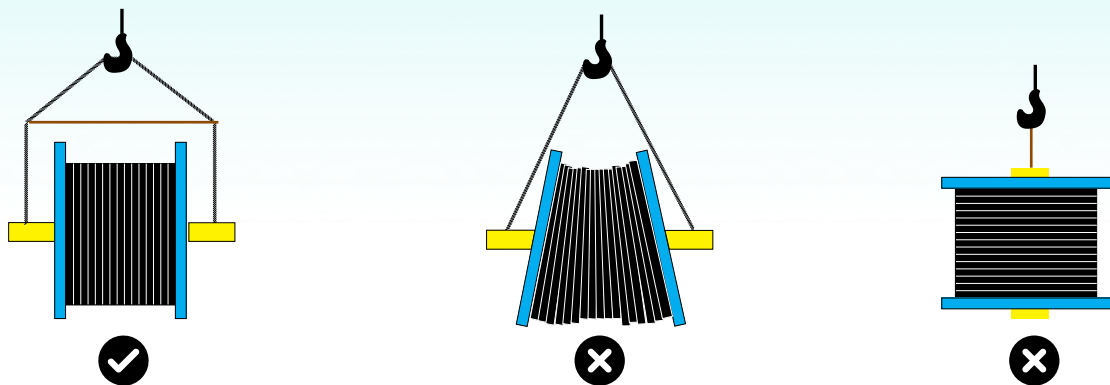


HANDLING STORAGE AND LAYING OF CABLES

The drums with the cables cannot be thrown from any heights! The drums with optical cables have to always stand on the edges of the head, secured with a wedge to prevent movement. The only time when it is not necessary to secure the drums with a wedge is when the drums are mutually secured between each other by standing them crosswise.

It is possible to store Heavy Duplex, Simplex, Duplex type cables and coils with cables up to 5mm in diameter by laying them on the head. However, the cable has to be fastened by shrink wrap to prevent the loosening of individual cable coils.

Cables intended for internal use can only be stored in closed areas without humidity, Directly sun light affect the Cable outer sheath. Cables for universal and outdoor use can be stored in outdoor conditions. However, the cable ends have to be waterproof or capping. However, if the cable is on a plywood spool, it has to be stored in such a manner so as to prevent the effects of water on the spool.



When manipulating with the drums using a crane, a spacer rod has to be placed between the load bearing ropes, so that the ropes do not exert pressure on the cable through the side drums.

A. CABLE INSPECTION

1. Inspect every cable reel for damage before accepting the shipment. Be particularly alert for cable damage if:
2. A reel is lying flat on its side
3. Several reels are stacked one over the other
4. Other freight is stacked on a reel
5. Cable drums are without planks or broken
6. Nails have been driven into reel flanges to secure shipping blocks
7. A reel flange is damaged
8. A cable covering is removed, stained or damaged
9. A cable end seal is removed or damaged. A reel has been dropped (hidden damage likely)

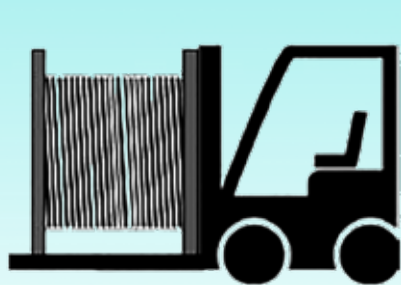
Mechanical stresses during installation are generally more severe than those encountered while in service. Thus care should be taken as regards to the following while installation and laying of cables.

1. Care shall be taken during laying to avoid sharp bending, and twisting.
2. Cable shall be unwound from the drum by lifting the drum on the center.
3. Shaft supported both ends with suitable jacks / stands.
4. Under no circumstances the cable winding shall be lifted off a coil or drum lying flat at the flanges. This would cause serious twist and damages.
5. Suitable protection shall be provided to the cables against mechanical damages, it includes covers, pipes etc.

B. CABLE HANDLING & STORAGE

When lifting the drums using a forklift, the drums can only be gripped from the sides and only when the skids of the forklift are long enough for the head of the drum to be positioned on it with a safe overhang.

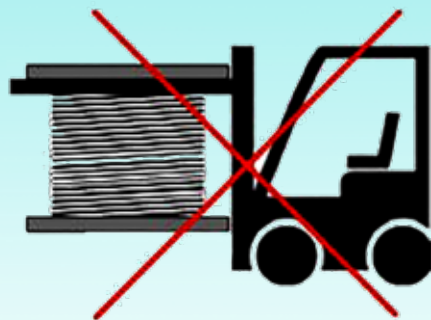
It is only possible to roll the drums short distances and only on a hard and flat surface.



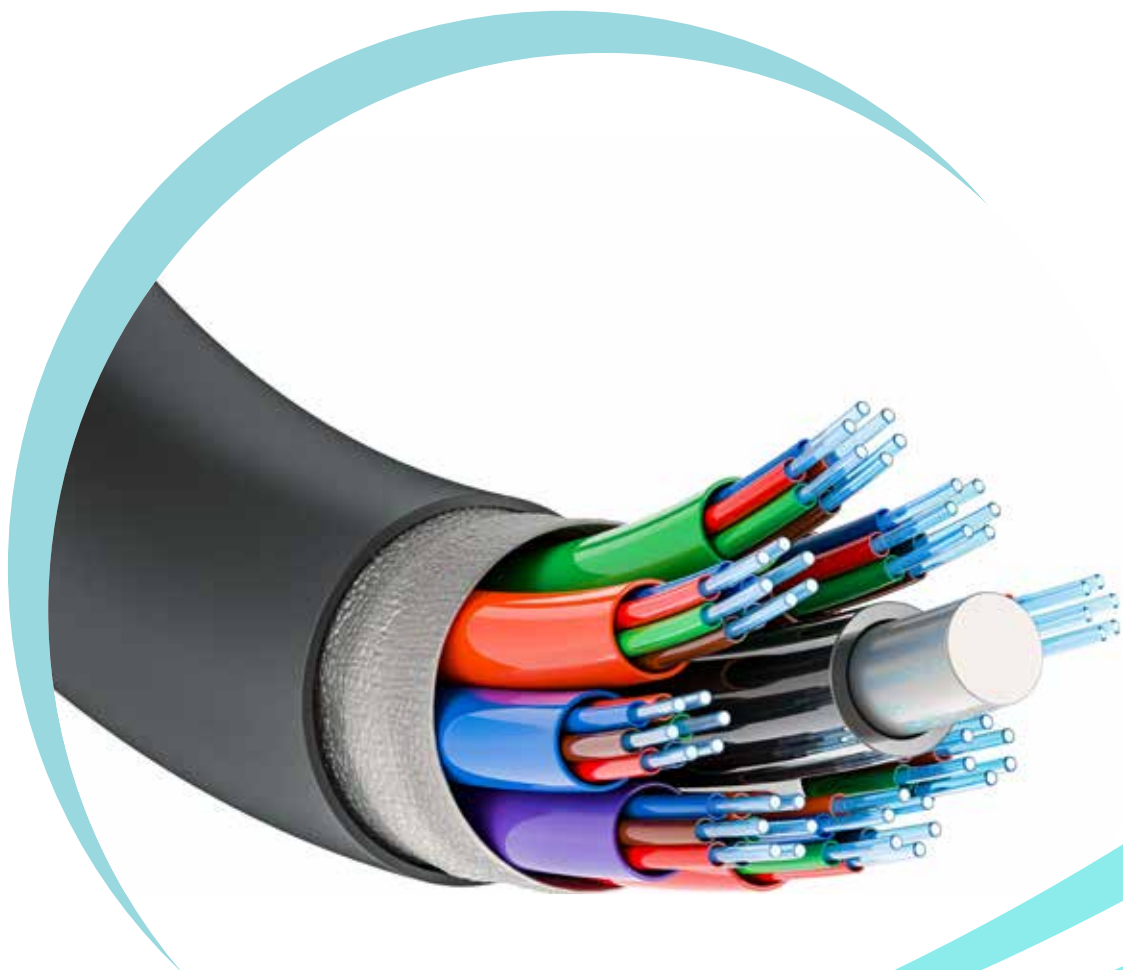
CORRECT



INCORRECT



INCORRECT



“WE SUPPLY **WORLDWIDE**”

ramcro
special cables



CERTIFICATES

LPCB®

www.lpcb.co.uk/en

Certificate of Management System Registration

Certificate Number: 568-1

Issue: 20

RAMCRO S.p.A.

Issued in compliance with the requirements of:

ISO 9001:2015

Quality Management Systems - Requirements

We are certified by BSI Global Ltd, and are authorised to use the LPCB Certification Mark on documents and public areas related to the products and/or services.

RAMCRO S.p.A.

Via Marconi
35-20014 Sesto San
Giovanni
Italy

Scope:

Design, manufacture and supply of electric cables
including cables used for installations that
require safety in the event of fire and flame optics
cables.

This certificate is meaningful and valid as long as through regular surveillance activities:

Robert Dighton
LPCB Representative

15 May 2018
Date of Review

15 May 2017
Expiry Date

15 July 2018
Expiry Date

This certificate is issued for compliance with the requirements of the LPCB Certification Mark and is valid for the duration of the certificate. The certificate is issued for the purpose of the LPCB Certification Mark and is valid for the duration of the certificate. The certificate is issued for the purpose of the LPCB Certification Mark and is valid for the duration of the certificate. The certificate is issued for the purpose of the LPCB Certification Mark and is valid for the duration of the certificate.

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Page 1 of 1

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LPCB®

www.lpcb.co.uk

Certificate of Product Approval

Certificate Number: 568H

Issue: 02

RAMCRO S.p.A.

Via Marzouati 15
20014 Nerviano
Milan
Italy

is authorised to use the LPCB logo in association with this product in accordance with the conditions set out in the certificate and appendix having complied with the requirements of the standards detailed herein.

Product(s)

Cable Types as listed below:
FD Cables (single & multi strand)

Standard(s) (see Appendix for details)

EN 60331-25:1999
EN 60331-1-2:2004+A11:2016
EN 60331-2:2004+A2:2020
EN 60754-1:2014
EN 60332-3-24:2020

This Certificate is maintained and held in force through regular surveillance activities and subject to the corresponding ISO 9001 Certificate being maintained.

 Peter Smith General Manager	Cable Products General Certificate Manager	31 October 2024 Date of Issue	28 July 2017 Date of First Issue
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This certificate and certificate number are the property of LPCB. It shall not be used in connection with any other product or service, nor shall it be used to imply any other product or service. The validity of this certificate and certificate number shall be maintained only if the certificate holder complies with the requirements of the standards detailed herein. The certificate holder shall be responsible for ensuring that the certificate and certificate number are used in accordance with the requirements of the standards detailed herein.

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09/2020 Rev. 0.0

Page 1 of 5

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CISO is a member of



The worldwide certification network
www.isoqnet.com/isoqnet-italy

CERTIFICATO N. EMS-5716/AN

CERTIFICATE No.

SI CERTIFICA CHE IL SISTEMA DI GESTIONE AMBIENTALE DI
IT IS HEREBY CERTIFIED THAT THE ENVIRONMENTAL MANAGEMENT SYSTEM OF

RAMCRO S.P.A.

VIA MAZZORATI, 15 20014 Nerviano (MI) ITALIA
NELLE SEGUENTI UNITÀ OPERATIVE / IN THE FOLLOWING OPERATIONAL UNITS
VIA MAZZORATI, 15 20014 Nerviano (MI) ITALIA

È CONFORME ALLA NORMA / IS IN COMPLIANCE WITH THE STANDARD

ISO 14001:2015

SE AL REGOLAMENTO TECNICO ACCESSO RTM-06 APPLICABILE IN PIÙ
PER I SEGUENTI CAMPI DI ATTIVITÀ / FOR THE FOLLOWING FIELDS OF ACTIVITIES

Per informazioni sulla validità
del certificato, visitate il sito:
www.rina.org

Per informazioni sulla validità
del certificato, visitate il sito:
www.iso.org

dat. 19

PRODUZIONE, PRODUZIONE OF EXTRUSIONE DI MATERIE TERMOPLASTICHE, FORNITURA DI CAVI ELETTRICI
COMPRENSI I CAVI UTILIZZATI PER INSTALLAZIONE DEI RICHIEDENTI SICUREZZA IN CASO DI INCENDIO E CAVI IN FIBRA
OPTICA

DESIGN, EXTRUSION PRODUCTION OF THERMOPLASTICS, SUPPLY OF ELECTRICAL CABLES INCLUDING CABLES USED
FOR INSTALLATIONS REQUIRING FIRE SAFETY AND FIBER OPTIC CABLES

Il dato di validità del presente certificato viene soggetto al controllo del documentario RINA. Il presente dato si riferisce al sistema di gestione di gestione ambientale
La validità della validità del certificato è soggetta a verifica con la RINA secondo la RINA (Certification of Environmental Management System)
La validità del presente certificato è soggetta a verifica con la RINA secondo la RINA (Certification of Environmental Management System)
The validity of this certificate is dependent on an annual on-site audit and on complete records every three years of the management system

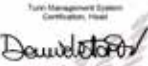
Prima emissione First issue	Data decisione di rinnovo Renewal decision date	Data revisione Reversion date
23 12 2014	18 12 2020	18 12 2020
Data scadenza Expiry Date	23 12 2028	18 12 2020





Decision Date

Turn Management System
Certification, Initial



RINA Services S.p.A.
Via Canale, 61 - 10126 Sempione (TO)



ACCREDITED TO THE STANDARD ISO 9001:2015
ACCREDITED TO THE STANDARD ISO 9001:2015
ACCREDITED TO THE STANDARD ISO 9001:2015





The International Certification
www.international-certification.com

CERTIFICATE N. OHS-2224

CERTIFICATE No.

SI CERTIFICA CHE IL SISTEMA DI GESTIONE DELLA SICUREZZA E DELLA SALUTE SUL LUOGO DI LAVORO DI
IT IS HEREBY CERTIFIED THAT THE OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM OF

RAMCRO S.p.A.

VIA MARZORATI, 15 20014 Nerviano (MI) ITALIA

NELLE SEGUENTI UNITÀ OPERATIVE / IN THE FOLLOWING OPERATIONAL UNITS

VIA MARZORATI, 15 20014 Nerviano (MI) ITALIA

E CONFORME ALLA NORMA / IS IN COMPLIANCE WITH THE STANDARD

ISO 45001:2018

PER I SEGUENTI CAMPI DI ATTIVITÀ / FOR THE FOLLOWING FIELDS OF ACTIVITIES

PROGETTAZIONE, PRODUZIONE PER ESTRUSSIONE DI MATERIE TERMOPLASTICHE, FORNITURA DI CAVI ELETTRICI
COMPRESI I CAVI UTILIZZATI PER INSTALLAZIONI CHE RICHIEDONO SICUREZZA IN CASO DI INCENDIO E CAVI IN FIBRA
OPTICA.

14/17/19

DESIGN, EXTRUSION PRODUCTION OF THERMOPLASTIC SUPPLY OF ELECTRICAL CABLES INCLUDING CABLES USED
FOR INSTALLATIONS REQUIRING FIRE SAFETY AND FIBER OPTIC CABLES

La validità del presente certificato è subordinata a verifiche periodiche annuali / certificate valid at regular intervals of one year, subject to periodic checks

The validity of this certificate is dependent on an annual or more frequent review and on a complete review every three years of the management system

In caso di variazioni del presente certificato è soggetto al rispetto del documento R0001. Aggiornamento con il Sistema di Gestione della Sicurezza e Salute sul luogo di lavoro
In case of changes of this certificate are subject to compliance with the R0001 document. Update for the Certification of Occupational Health and Safety Management System

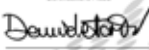
Prima emissione First issue	23.12.2014	Data decisione di rinnovo Renewal decision date	18.12.2023
Data scadenza Expiry date	22.12.2026	Data revisione Revision date	18.12.2023





SICR N° 003 F

David Turi
Turi Management System
Certification Head



RINA Services S.p.A.
Via Cossiga 17 - 10128 Genova Italy



www.international-certification.com



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20014 - Milano - Italy

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For Website



For Product or Pdf

