FIBER OPTIC CABLE PRODUCT

ADSS Single **J**acket **F**iber **O**ptic **C**able with **FRP** **R**einforcement

PRODUCT DESCRIPTION

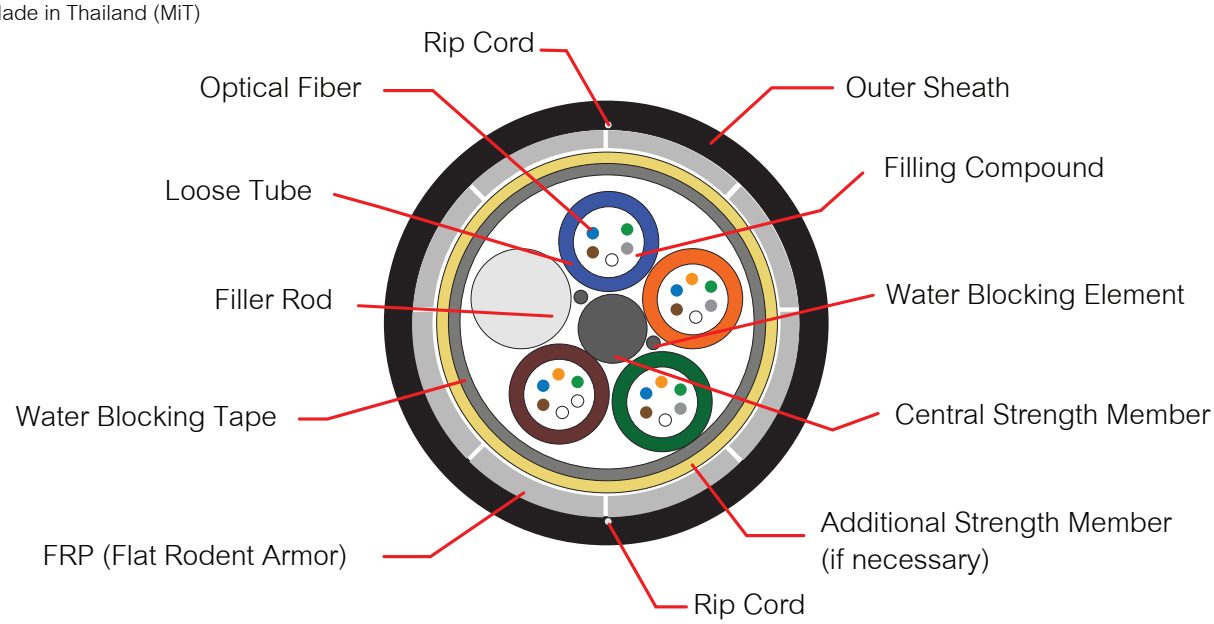
- Provides additional mechanical protection.
- Designed for low-friction installation.
- Offers excellent protection against environmental hazards.
- Features color-coded optical fibers and loose tubes for easy identification.
- Suitable for both duct and aerial installation.

APPLICATIONS

- Ideal for environments with high electric field intensity, such as power communication systems and areas prone to frequent lightning or electrical disturbances.
- Applicable to Ethernet LAN networks, CCTV systems, network cameras, and PLC communication infrastructures.

STANDARDS COMPLIANCE

- ATM, FDDI, FTTX, Fiber Channel,CATV, Communication
- ISO/IEC 11801:2007, ISO/IEC 11801:2011 (Edition 2.2)
- ANSI/TIA/EIA-568-B.3, ANSI/TIA-568-C.3, ANSI/TIA-568.3-D
- ANSI/ICEA S-640-696, ICEA-596
- Telcordia GR-20-CORE, GR-409-CORE
- ANSI/ICEA 596, ICEA696, IEC61034-2, IEC60754-2, IEC60793, IEC60794-1-2
- ITU G.652D, ITU-TG 657A2 , IEC60794-1-2E4
- TIA/EIA-455 Series (FOTP), including TIA-455-25C
- TIA/EIA-598-C (Rev.TIA/EIA-598-A), EIA-359-A.
- IEEE 802.3, 802.3z, 802.3ae (Fast/Gigabit/10G/40G/100G Ethernet)
- RoHS Compliant
- TIS 2166
- Made in Thailand (MiT)



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CABLE CONSTRUCTION DETAILS

Cable type		ADSS
Number of Core Elements		5
Fiber Optic	Material	Silica High Grade / Compound Glass
Central strength member	Material	FRP 1.8 ± 0.2 mm
Loose tube	Material Outer Diameter Inner Diamete	PBT 2.0 ± 0.2 mm 1.5 ± 0.2 mm Each loose tube contains 6 fibers, filled with thixotropic jelly compound.
Protective tape	Material	Incorporates water-blocking tape and yarn to prevent moisture ingress. Aramid yarns
Strength member	Material	Flat FRP non-metallic type (Fiber Reinforced Plastic)
Rodent Protection Armor	Material	nominal thickness 1.0 ± 0.2 mm. Black HDPE (non Rodent Repellent/Rodent Repellent)
Outer Sheath	Material Thickness	The cable sheath shall be made of UV-proof, flame-retardant polyethylene (FRPE), and shall contain suitable antioxidants to provide maximum protection in harsh environments. Refer to Table 3 for detailed cable sheath specifications. The use of recycled or mixed materials is strictly prohibited. 1.8 ± 0.2 mm
Rip Cord	Material No.	Polyester 2
Filler Rod	Material Diameter	Polyethylene, natural Color 2.2 mm ± 0.2 mm
Stranding method	- -	Reverse oscillating lay (ROL) technique in SZ direction. Standard lay length: 75 mm ± 5 mm.
Tensile Load	Short term Long term Pressure	3600 N 2500 N ≥ 3400 N / 10 cm
Overall diameter	Diameter	12 mm
Cable diameter	Diameter (24/48 core)	10.5 ± 1mm / 11.5 ± 1mm.
Weight	(24/48 core)	Approx. 85 / 100±10 kg/km
Span Length		40-100m
Water Blocking Element		Incorporates dry-core technology to prevent moisture ingress.
Width		≥ 126 km/hr
Temperature Range	Operation Temperature Installation Temperature Storage/Shipping Temperature	-40°C to +70 °C -40°C to +70 °C -40°C to +75°C
Color Stripe		3 mm ± 0.5 mm (colored UV curable acrylate)

FIBER COUNT PER TUBE (TIA/EIA-598-A)

No. of fiber	No. of tube	Tube Color (per tube)	1	2	3	4	5
24	4		Blue	Orange	Green	Brown	/
		Fiber Count (per tube)	6	6	6	6	
48	4		Blue	Orange	Green	Brown	/
		Fiber Count (per tube)	12	12	12	12	

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OPTICAL FIBER CHARACTERISTICS

CATEGORY	DESCRIPTION	SPECIFICATIONS
Optical Specifications		ITU-T G.652D (Singlemode OS2) 9/125 µm (OS2) ITU-T G651(Multimode) 62.5/125 µm , 50/125 µm
Attenuation	@1310nm	≤ 0.35 / ≤ 0.33 dB/km
	@1383nm	≤ 0.35 / ≤ 0.31 dB/km
	@1490nm	≤ 0.24 db/km
	@1550nm	≤ 0.21 / ≤ 0.19 dB/km
	@1625nm	≤ 0.23 / ≤ 0.20 dB/km
*at this wavelength represents post hydrogen aging performance according to IEC 60793-2-50 regarding the B1.3 fiber category. *		
Attenuation discontinuity		≤ 0.05 dB
Attenuation vs. Wavelength	1285 -1330	≤ 0.05 dB/km
	1525 -1575	≤ 0.05 dB/km
Zero dispersion wavelength		1300 -1324 nm
Zero dispersion slope		≤ 0. 092 ps/(nm².km)
Dispersion	@1310nm	≤ 3.5 ps/nm.km
	@1550nm	≤ 18 ps/nm.km
Polarization mode dispersion(PMD)		≤ 0.2 ps/km ½
Cable cutoff wavelength (λcc)		≤ 1260 nm (Refer to EIA/TIA-455-170)
Effective group index of reaction	@1310nm	1.4675
	@1550nm	1.4681
Geometric Specifications		
Mode field diameter	@1310nm	9.2 ± 0.6 µm
	@1550nm	10.4 ± 0.8 µm
Cladding diameter		125 ± 1 µm
Cladding non -circularity		≤ 1.0 %
Mode field diameter	Material	UV curable acrylate
	Diameter	245 ± 5µm (uncolored) , 250 ± 15µm (Colored) (Refer to EIA/TIA-455-173)
Coating/Cladding concentricity error		≤ 12 µm
Core/Cladding concentricity error		≤ 0.5µm
Color Fiber Diameter (for colored optical fiber)		250 µm ± 15 µm (Colored)
Fiber proof-tested		0.69 GPa (1.0%, 100kpsi) in accordance with the optical fiber proof test by IEC 60793-1-30
PMD Coefficient	@ 1550 nm.	250 µm ± 15 µm (Colored)
Maximum attenuation due to macrobending (at 100 turns, 30 mm radius)	@ 1550 nm.	≤ 0.10 dB

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OPTICAL FIBER CHARACTERISTICS

CATEGORY	DESCRIPTION	SPECIFICATIONS
Mechanical Specifications		
Proof test level		≥ 1.0 %
Minimum Cable Deployment Radius		≥ 4.0 m
Coating Strip Force		1.3 - 8.9N
Relative Humidity		Up to 90%, no frost
Maximum Span Length	Sag 0.5%	40 m.
	Sag 1.0%	80 m.
Maximum Wind Velocity		126 km./hr.
Tensile Load	Installation	3,600 N (for 6-96 cores)
	Operation	2,500 N (for 6-96 cores)
Crush Resistance		≥ 3,400 N / 10 cm
Minimum Bending Radius	Installation	20 × Cable Diameter
	Operation	10 × Cable Diameter
Thermal Oxidative Stability (OIT)		OIT ≥ 40 min @ 200°C (IEC 60811-410)
Initial Sag		1% of 80 m span length

IDENTIFICATION COLOR CODE OF FIBER AND LOOSE TUBE

The color code of the loose tubes and the individual fibers within each loose tube shall be in accordance TIA/EIA-598-C (TIA/EIA-598-A) and EIA-359-A

NO.	FIBER COLOR	LOOSE TUBE COLOR
1	Blue	Blue
2	Orange	Orange
3	Green	Green
4	Brown	Brown
5	Slate	Slate
6	White	White
7	Red	Red
8	Black	Black
9	Yellow	Yellow
10	Violet	Violet
11	Rose	Rose
12	Aqua	Aqua
13-16	/	Color 1-4 with a black tracer

PACKING AND DRUM

The cable is rounded on a non-returnable wooden drum. Cable Packing 4000m/reel. Both ends of cable are securelyfastened to drum and sealed with a shrinkable cap to prevent ingress of moisture. The following information shall be marked on the outer sheath of the cable at an interval of about 1 meter.

- Cable type and number of optical fiber
- Manufacturer name
- Month and Year of Manufacture
- Cable length
- Logo and Thai word

A sequential meter marking shall be printed along the sheath with a tolerance of ±1%.

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Cable Sheath Test

The procedure for testing fiber cable sheath for compliance with clause shall be as follows or by equivalent method

Test Parameter	Test Standard Method
1. Carbon Black	ISO 6964, ASTM D1603 Standard Test Method for Carbon Black in Olefin Plastics.
2. Tensile strength	ASTM D638
3. Elongation	ASTM D638
4. Environmental stress cracking	ASTM D1693
5. Shrinkback Slab	cut from the cable sheaths 5 cm.(2 in.) long, 13 mm.(1/2 in.) wide, and the same thickness as the cable sheath. The slab specimens shall be placed in a convection type circulating air oven operating at a temperature of 100 ± 1°C for 4 hours period for inner sheath and 115 ± 1 °C for 4 hours period for outer sheath
6. Thermal Oxidation Stability	ASTM D3895

Flame Propa gation

Test Standard	IEC 60332-1 Test of the fire behaviour on a single Cable (Flame retardancy)
Sample Lenght	600 ± 25 mm.
Overall diameter of test piece	D ≤ 25 mm.
Time for flame application (s)	60 sec
Test result	The cable shall pass the test if the distance between the lower edge of the top support and the onset of charring is greater than 50 mm. All soot shall be ignored. Softening or any deformation of non-metallic components shall also be ignored.

TEST REQUIREMENTS

Item	Method	Acceptance criteria
Tensile test IEC 60794-1-2-E1A TIA/EIA-455-33A	- Maximum tensile load: 3,600 N - Sample length: 100 meters - Times: 1 hour	-Fiber strain at maximum -Load max. 0.33 % -Attenuation increase ≤ 0.1dB
Crush or Compression test IEC 60794-1-2-E3 TIA/EIA-455-41A	- Load: 4400 N - Time: 10 minutes - Length: 100 mm	-No splits or cracks in the outer jacket -Attenuation increase ≤ 0.10 dB
Impact test IEC 60794-1-2-E4 TIA/EIA-455-25C	- Impact energy: 450 g - Height: 1 meter - Impact points: min.1 - Number of impacts: 5	- No splitting or cracking observed on the outer jacket. - Increase in attenuation shall not exceed 0.10 dB after the test.
Torsion or Twist test IEC 60794-1-2-E7 TIA/EIA-455-85A	- 1 m cable length with 150 N weight - ±180° ,10 cycles	- No splitting or cracking observed on the outer jacket. - Increase in attenuation shall not exceed 0.10 dB after the test.
Repeated bending Cable bending Test IEC 60794-1-2-E6, TIA/EIA-455-104A IEC 60794-1-2-E11B	- Radius = 20 × cable outer diameter - 1m cable length with 150 N weight, 30 cycles	- No splitting or cracking observed on the outer jacket. - Increase in attenuation shall not exceed 0.10 dB after the test.
Temperature cycling test IEC 60794-1-2-F1 TIA/EIA-455-3A	- Temperature step: +20 ℃ -40 ℃+70 ℃-40 ℃ +70 ℃+20 ℃ - Time per each step: 16 hrs. - Number of cycles: 2 cycles	-Attenuation variation for reference value(the attenuation to be measured before test at +20±3) ≤0.10dB/km
Water penetration test IEC 60794-1-2-F5 TIA/EIA-455-82B	- Water height: 1m - Sample length:3m - Duration of test: 24hrs	-No water leakage at the end of the sample
Drip test IEC 60794-1-2-E14	- Five 0.3m samples suspended vertically in a climate chamber, raised temperature to +70℃	-No filling compound shall drip from tubes after 24 hrs.

ORDERING CODE CONFIGURATION

F - ML - ADSS - FRP9 — (xx) — (xx) — (xx)

(Jacket Material)
- H = HDPE
- L = LSZH
- R = Rodent-resistant
- F = Flame-retardant

(Fiber Count)
- 04 = 4 core fiber
- 06 = 6 core fiber
- 12 = 12 core fiber
- 24 = 24 core fiber
- 48 = 48 core fiber
- 96 = 96 core fiber
- 120 = 120 core fiber

(Jacket Type)
- SJ = Single Jacket

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