Toneable Micro-Micromodule Cable

24F/48F/72F, 24AWG

Rendering for Schematic Purposes Only

Part Numbers:

10-30002.01A - 24F Micro-Micromodule Cable

10-30008.01A - 48F Micro-Micromodule Cable

10-30016.01A - 72F Micro-Micromodule Cable

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General/Scope:

This Specification covers the design requirements and performance standard for the supply of optical fiber cable in the industry. RaDD ensures a stable quality control system for our cable products through several programs including ISO 9001, ISO 14001 and OHS.

Cable type	Application
Micro-Micromodule Module Toneable-24/48/72, 24AW	Duct installation or aerial installation with lased wire

Reference:

The cable offered by RaDD are designed, manufactured and tested according to the standards as follows:

ITU-T G.657	Characteristics of a bending-loss insensitive single-mode optical fiber and cable
IEC 60794-1-1	Optical fiber cables-part 1-1: Generic specification-General
IEC 60794-1-21	Optical fiber cables- part1-2-Generic specification-Basic optical cable test procedure-Mechanical test methods
IEC 60794-1-22	Optical fiber cables- part1-2-Generic specification-Basic optical cable test procedure-Environmental test methods
IEC 60794-3	Optical fiber cables-part 3: Sectional specification-Outdoor cables
IEC-60794-3-11	Optical fiber cables – Part 3-11: Outdoor cables – Product specification for duct, directly buried, and lashed aerial single-mode optical fiber telecommunication cables

Life Time:

Optical fiber cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of twenty-five (25) years without detriment to the operation characteristics of the cable.

Application:

Item	Value
Installation temperature	-15 °C～+60 ° C
Operation temperature	-20 °C～+70 ° C
Storage temperature	-20 °C～+70 ° C
Static bending radius	10 times the cable diameter
Dynamic bending radius	20 times the cable diameter

Optical Fiber:

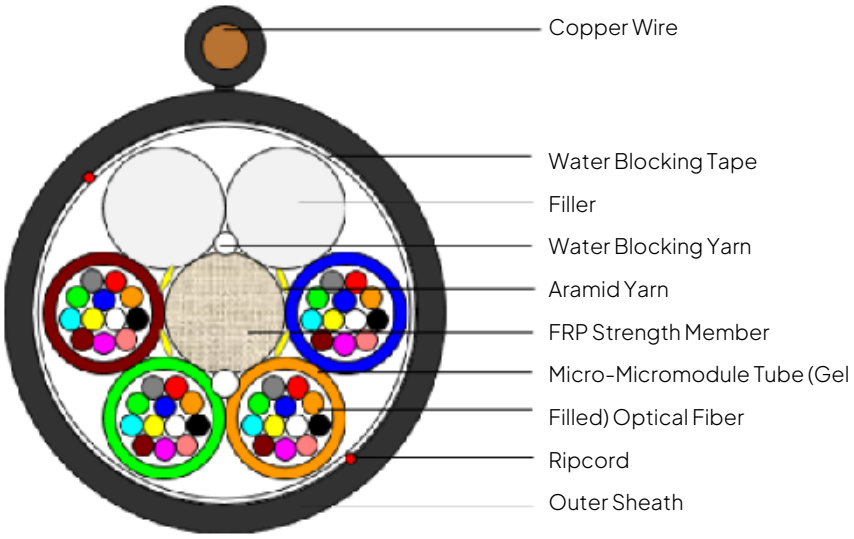
Optical Fibers supplied in this specification meet the requirements of ITU-T G.657A1

Category	Description	Specification
Geometrical Characteristics	Cladding diameter	125.0 ± 0.7 μm
	Cladding non-circularity	≤ 0.7 %
	Core concentricity error	≤ 0.5 μm
	Coating diameter	235~255 μm (Before Colored)
		235~265 μm (Colored)
	Coating/cladding concentricity error	≤ 12.0 μm
Optical Characteristics	Mode field diameter at 1310 nm	8.4 ~ 9.2 μm
	Attenuation at 1310 nm	≤ 0.36 dB/km
	Attenuation at 1550 nm	≤ 0.23 dB/km
	Attenuation at 1625 nm	≤ 0.24 dB/km
	Point discontinuity at 1310nm and 1550nm	≤ 0.05 dB
	Zero dispersion wavelength	1300 ~ 1324 nm
	Zero dispersion slope	≤0.092 ps/(nm^2·km)
	Cable cut-off wavelength (λcc)	≤ 1260 nm
	Polarization mode dispersion individual fiber	≤ 0.2 ps/√km
	Polarization mode dispersion design link value (M=20, Q=0.01%)	≤ 0.1 ps/√km
	Macro-bend loss (10 turns, 15mm radius)	1550nm: ≤ 0.25 dB; 1625nm: ≤1.0 dB;
	Macro-bend loss (1 turn, 10mm radius)	1550nm: ≤ 0.75 dB; 1625nm: ≤ 1.5 dB;
Mechanical Specification	Proof stress level	≥100kpsi (0.69 GPa)
	Coating strip force (peak value)	1.3~8.9 N
	Dynamic Fatigue Parameter（nd）	≥20
	Fiber curl (Radius)	≥2 m

Technical Characteristics:

- The unique second coating and stranding technology provide the fibers with enough space and bending endurance, which ensure good optical property of the fibers in the cable
- Accurate process control ensures good mechanical and temperature performance
- High quality raw material guarantees the long service life of cable

Cross Section of Cable:



10-30008.01A - 48F Micro-Micromodule Cable
Schematic for Reference Only

Fiber and Micromodule Identification:

The color code of fibers and micro-micromodules will be identification in accordance with the following color sequence, other sequence also is available. The color of fillers will be natural.

Color code	1	2	3	4	5	6
	Blue	Orange	Green	Brown	Grey	White
	7	8	9	10	11	12
	Red	Black	Yellow	Purple	Pink	Aqua

Dimensions and Descriptions:

The standard optical cable structure is shown in the following table, other structure and fiber count are also available according to customer requirements.

Item	Contents	Value
		24F, 24AWG 48F, 24AWG 72F, 24AWG
Structure	Type	1+6
Micro-Micromodule	Fiber counts/tube	12
Central strength member	Material	FRP
Peripheral strength member	Material	Aramid yarn
Water blocking	Material	Water blocking yarn and tape
Messenger Wire	Material	Copper wire
	Type	24AWG
Outer Sheath	Material	HDPE
	Color	Black
Ripcord	Number	2
Cable diameter(mm)		5.6±0.5
Cable height(mm)		7.5±0.8
Cable weight(kg/km) Approx.		30

Main Mechanical Performance:

Item	Tension(N)	Crush(N/100mm)
24F,24AWG 48F,24AWG 72F,24AWG	1300	500

Mechanical, Physical and Environmental Test Characteristics:

The mechanical and environmental performance of the cable are in accordance with the following table. Unless otherwise specified, all attenuation measurements required in this section shall be performed at 1550nm.

Items	Test Method	Requirements
Tension	IEC 60794-1-21-E1 Load: According to 3.5 Sample length: Not less than 50m. Duration time: 1min.	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Crush	IEC 60794-1-21-E3A Load: According to 3.5 Duration of load: 1min	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Impact	IEC 60794-1-21-E4 Radius: 300 mm Impact energy:1J Impact number: 3 0.5m distance each impact point	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Bending	IEC 60794-1-21-E11A Diameter of mandrel: 20 times cable diameter Turns:3	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Torsion	IEC 60794-1-21-E7 Cycles:10 Length under test: 1m Turns: ± 180°	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Water Penetration	IEC 60794-1-22-F5B Time : 24 hours Sample length : 3m Water height : 1m	No water leakage.
Temperature cycling	IEC 60794-1-22-F1 Sample length: at least 1000m Temperature range: -20 °C ~+70 °C Cycles: 2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.15 dB/km.
Other parameters	According to IEC 60794-1	

Packaging and Drum:

Cable Sheath Marking

Unless otherwise specified, the cable sheath marking shall be as follows:

Color: white

Contents: RaDD, the year of manufacture, the type of cable, cable number, length marking Interval: 1 m

Outer sheath marking legend can be changed according to user's requests.

Reel Length

Standard reel length: 10,000ft/reel with a tolerance of ±5%, other length is also available.

Cable Drum

The cables are packed in fumigated wooden or iron wooden drums.

Cable Packing

Both ends of the cable will be sealed with suitable plastic caps to prevent the entry of moisture during shipping, handling and storage. The inner end is available for testing.