

Optical FTTx Drop Cable

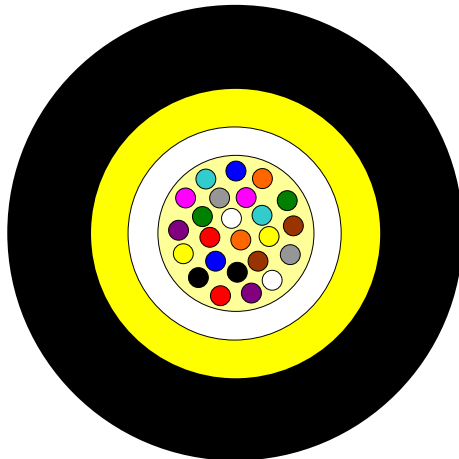
All Dielectric Design

MiDia® Monotube PLUS



A Furukawa Company

Issue March 2020
according to **OFS Generic Specification**



Application

Air-Blown Installation into Micro-Ducts (5,5/7mm)

Design

- Optical Fibres (2 – 24)
AllWave®, AllWave® +, AllWave® FLEX, AllWave® FLEX + or AllWave® One
- Water blocked Buffer Tube
- Tensile Strength Elements
- PE or PA Sheath

Features

- All Dielectric Cable
- Easy Fibre Access
- Light Weight - Optimised for Air-Blown Installation

Version illustrated is the 24 Fibre Cable

Fibre Count	AT-Code**
2	AT-[][][]yFX2-002
4	AT-[][][]yFX4-004
6	AT-[][][]yFX6-006
12	AT-[][][]yFXT-012
24	AT-[][][]yFXF-024

**Please refer to the OFS AT- Code. The blanks specify the fibre type.

y: 7 = PE Sheath

y: 8 = PA Sheath

Cable Diameter (calc.): 3.9 mm
Cable Weight (calc.): 15 kg/km

Sheath Marking

OFS OPTICAL CABLE MIDIA MONOTUBE PLUS [PE or PA] [ID] [MM/YYYY] [Handset Sign] XXXF [Meter Marking]

Alternative Sheath printing available on request.

In case of order the exact sheath printing text will be clarified with the customer.

Identification

Fibre Colour Code:

1	Blue	5	Grey	9	Yellow	13	Blue*	17	Grey*	21	Yellow*
2	Orange	6	White	10	Violet	14	Orange *	18	White*	22	Violet*
3	Green	7	Red	11	Rose	15	Green*	19	Red*	23	Rose*
4	Brown	8	Black	12	Aqua	16	Brown*	20	Natural	24	Aqua*

Fibre Marking Spacing:
* Black ring 50 mm

Alternative fibre colour code available on request.

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Mechanical Properties and Environmental Behaviour

Tests according to IEC 60794

	Parameter	Requirement	Value
Tensile Performance: IEC 60794-1-21-E1A and E1B	Long term load	- No attenuation increase* - No fibre strain	Load: 2 – 20 Fibre: 50 N 24 Fibre: 100 N
	Short term load, during installation	- No changes in attenuation before versus after load* - Max. fibre strain 0.6%	Load: 2 – 10 Fibre: 220 N 12 - 20 Fibre: 330 N 24 Fibre: 500 N
Crush Performance: IEC 60794-1-21-E3A	Short term load	- No changes in attenuation before versus after load* - No damage**	Load: 2 – 20 Fibre: 500 N 24 Fibre: 1200 N
Bending Performance: IEC 60794-1-21-E11	Handling fixed installed	- No attenuation increase*	Bend radius: 20 mm
	During installation (under load)	- No changes in attenuation before versus after load*	Bend radius: 40 mm
Temperatures: IEC 60794-1-22-F1	Operation	Single-mode Fibres:	-20 to +60°C
	Installation	- No attenuation increase*	- 5 to +40°C
	Storage/Shipping		-20 to +60°C

*No changes in attenuation means that any changes in measurement value, either positive or negative within the uncertainty of measurement shall be ignored. The total uncertainty of measurement shall be less than or equal to 0.05 dB.

**Mechanical damage – when examined visually without magnification, there shall be no evidence of damage to the sheath. The imprint of plates will not be considered as damage.

Shipping Information Wooden Reels

Cable Length	Drum Dimensions (approx.)		Shipping Weight (calc.)
	Diameter	Width	Without lagging
2000 m	600 mm	560 mm	40 kg
3000 m	800 mm	450 mm	65 kg
4000 m	800 mm	450 mm	80 kg
5000 m	800 mm	450 mm	95 kg

Shipping Information Plastic Reels

Cable Length	Drum Dimensions (approx.)		Shipping Weight (calc.)
	Diameter	Width	Without lagging
2000 m	600 mm	500 mm	40 kg
3000 m	800 mm	540 mm	60 kg
4000 m	800 mm	540 mm	75 kg
5000 m	800 mm	540 mm	90 kg

The shipping information are given for one-way reels without lagging. Reusable reels are available on request

At least ninety five (95) per cent of cables will be delivered in lengths as specified in the confirmed order within +5% and –0% tolerance. Not more than 5% of cables may be of lengths less than those specified in the confirmed order and with a maximum deviation of –10%. To account for minor attenuation variation along a master length of input fibre, OFS warrants that ninety (90) per cent of all fibres within a cable delivery will have attenuations equal to or less the specified limits. The remaining fibres will be allowed to have a maximum attenuation limit of 0,01dB/km above the upper specification limit.

The information is believed to be accurate at time of issue.

OFS reserves the right to improve, enhance and modify the features and specifications of OFS products without prior notification.

Please ensure you have the latest version of the data sheet.

This data sheet is property of OFS.

For additional information please contact your sales representative.

You can also visit our website at <http://www.ofsoptics.com>.

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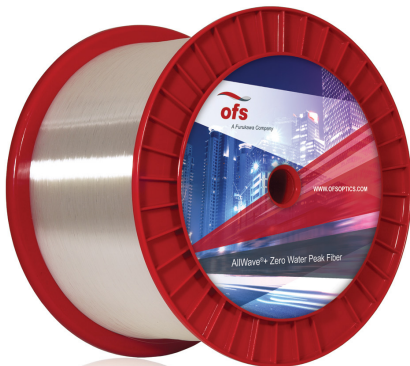




A Furukawa Company

AllWave® + Fiber - Zero Water Peak

The industry's first zero water peak single-mode fiber for reliable full-spectrum performance + enhanced bend performance



Applications

AllWave+ Fiber provides outstanding cable performance and design freedom for fiber management systems in:

- FTTX
- Local access
- Mobile backhaul
- Metro access
- Metro edge
- Campus backbones
- Long haul

Features and Benefits

- Low optical loss across the entire 1260-1625 nm spectrum
- 50% greater usable spectrum than conventional single-mode fiber
- Reduced bend loss across the bend-sensitive 1460-1625 nm S, C and L Bands
- Industry's tightest geometric control for ultra-low splice loss and improved connector performance
- High purity synthetic silica for long-term attenuation stability and mechanical reliability
- Ultra-low fiber PMD for speed and distance upgrades

Overview

When compared to conventional single-mode fiber, AllWave+ Zero Water Peak (ZWP) Single-Mode Fiber dramatically improves performance across the 1260 nm – 1625 nm spectrum. This fiber offers all the benefits of AllWave Fiber plus a 40% smaller minimum bend radius, a 50% lower bend loss and a 33% improved polarization mode dispersion (PMD) link design value.

Product Description

A combination ITU-T G.652.D and G.657.A1 compliant fiber, AllWave+ Fiber delivers low and stable loss in the 1360 nm -1460 nm E-band, enabling 16-channel CWDM, DWDM and FTTX support on a single fiber. In addition, this fiber's bend performance far exceeds G.652.D and complies with G.657.A1, supporting a minimum bend radius of 10 mm and lower bend loss than conventional single-mode fibers.

While this low bend loss improves performance and reliability, it also helps to lower installation costs by allowing the use of smaller cables and terminals. AllWave+ Fiber has the same 9.2 micron mode field diameter as and is fully backward compatible with the installed base of G.652 single-mode fiber for seamless splicing, testing and faster network turn-up.

For additional information please contact your sales representative.

You can also visit our website at www.ofsoptics.com or call 1-888-fiberhelp (1-888-342-3743) USA or 1-770-798-5555 outside the USA.

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Product Specifications

Physical Characteristics		
Clad Diameter	125.0 ± 0.7 μm	
Clad Non-Circularity	≤ 0.7 %	
Core/Clad Concentricity Error (Offset)	≤ 0.5 μm, < 0.2 μm typically	
Coating Diameter (Uncolored)	237 - 247 μm	
Coating-Clad Concentricity Error (Offset)	≤ 12 μm	
Tensile Proof Test	100 kpsi (0.69 GPa)	
Coating Strip Force	Range: 1.0 N ≤ CSF ≤ 8.9 N	
Standard Reel Lengths	50.4 km (31.3 miles)	
Optical Characteristics		
Attenuation	Maximum	Typical
at 1310 nm	≤ 0.34 dB/km	≤ 0.33 dB/km
at 1385 nm	≤ 0.31 dB/km	≤ 0.27 dB/km
at 1490 nm	≤ 0.24 dB/km	≤ 0.21 dB/km
at 1550 nm	≤ 0.20 dB/km	≤ 0.19 dB/km
at 1625 nm	≤ 0.24 dB/km	≤ 0.20 dB/km
Attenuation vs. Wavelength ¹	Reference (nm) λ	α
Range (nm)	1310	0.03
1285 – 1330	1385	0.04
1360 – 1480	1550	0.02
1525 – 1575	1550	0.04
1460 – 1625		
¹ The attenuation in a given wavelength range does not exceed the attenuation of the reference wavelength (λ) by more than the value α.		
Attenuation Uniformity / Point Discontinuities at 1310 nm and 1550 nm	≤ 0.05 dB	
Macrobending Attenuation:		
The maximum attenuation with bending does not exceed the specified values under the following deployment conditions:		
Deployment Condition	Wavelength	Induced Attenuation
1 turn on a 10 mm radius mandrel	1550 nm	≤ 0.75 dB
	1625 nm	≤ 1.5 dB
10 turns on a 15 mm radius mandrel	1550 nm	≤ 0.25 dB
	1625 nm	≤ 1.0 dB
100 turns on 30 mm radius mandrel	1550 nm	≤ 0.03 dB
	1625 nm	≤ 0.03 dB
Chromatic Dispersion		
Zero Dispersion Wavelength (λ ₀)	1302 - 1322 nm	
Zero Dispersion Slope (S ₀)	≤ 0.090 ps/nm ² -km	
Typical Dispersion Slope	0.087 ps/nm ² -km	
Cut-off Wavelength (λ _{cc})	≤ 1260 nm	
Group Refractive Index		
at 1310 nm	1.467	
at 1550 nm	1.468	
Mode Field Diameter		
at 1310 nm	9.2 ± 0.4 μm	
at 1550 nm	10.4 ± 0.5 μm (typical)	
Polarization Mode Dispersion (PMD) ³		
Fiber PMD Link Design Value (LDV) ⁴	≤ 0.04 ps/√km	
Maximum Individual Fiber	≤ 0.1 ps/√km	
Typical Fiber LMC PMD	≤ 0.02 ps/√km	
² As measured with low mode coupling (LMC) technique in fiber form, value may change when cabled. Check with your cable manufacturer for specific PMD limits in cable form.		
³ The PMD Link Design Value complies with IEC 60794-3, September 2001 (N = 20, Q = 0.01%). Details are described in IEC 61282-3 TR Ed 2, October 2006.		
Environmental Characteristics (at 1310, 1550 & 1625 nm)		
Temperature Cycling (-60 + 85 °C)	≤ 0.05 dB/km	
High Temperature Aging (85 ± 2 °C)	≤ 0.05 dB/km	
Temperature & Humidity Cycling (at -10 °C to +85 °C and 85 to ~98% RH)	≤ 0.05 dB/km	
Water Immersion (23 ± 2 °C)	≤ 0.05 dB/km	
Dynamic Fatigue Stress Corrosion Parameter	(n _g) ≥ 20	