



FTTx PRODUCT SOLUTION GUIDE

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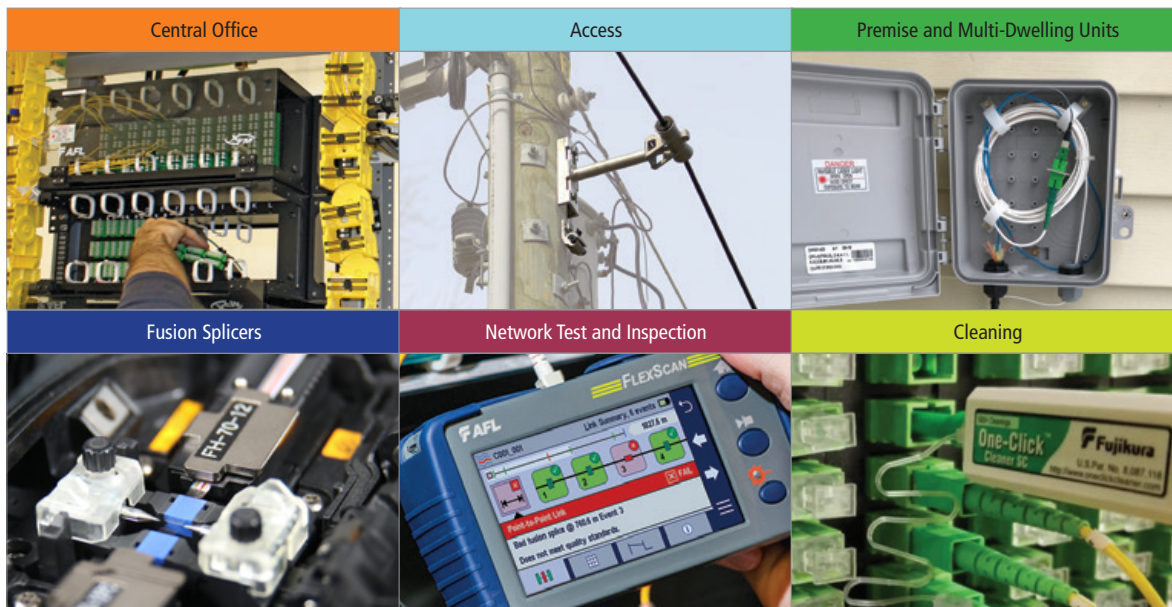
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Introduction

Optical fiber is the future that is here now. There is no comparison for speed, bandwidth and latency in any other transmission medium. With continued advancement in the electronics used over the fiber medium, fiber is a communications pipeline built to last. As wireless advancements like 5G make news headlines, they are increasingly relying on deeper fiber networks to backhaul information. No matter how far fiber is going in your network, trust AFL to provide solutions to meet your needs.

AFL offers unmatched end-to-end solutions to meet the demands of a fiber-to-the-x (FTTx) project. For electric utilities, enterprise, and service providers, we provide a full solution of passive components. From the central office to the end point of the network, AFL has a wide variety of fiber cable, hardware, and optical connection products. In addition to these products, AFL also boasts industry leading fusion splicers and testing and inspection equipment.

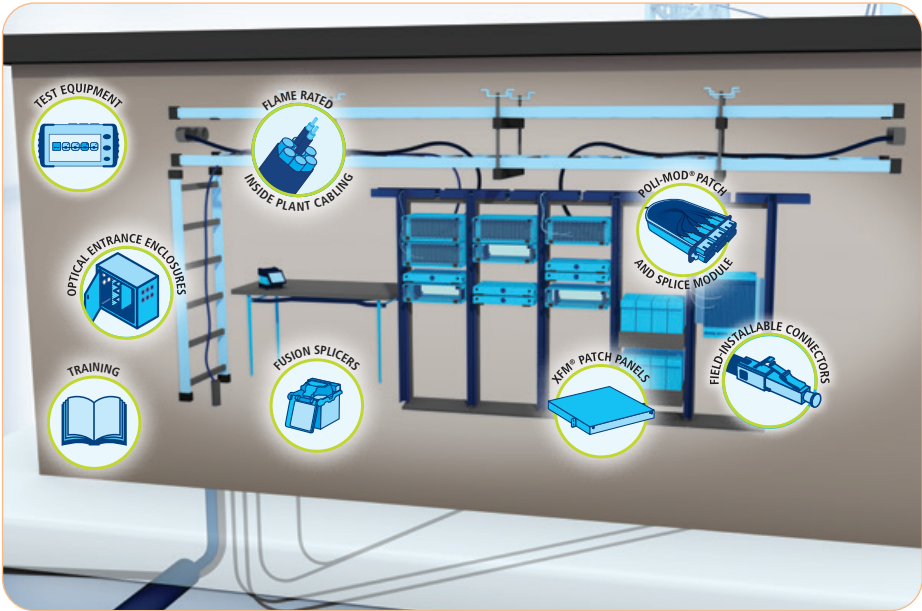
This guide walks through some typical FTTx network solutions from the headend to “x” – for whatever you are taking fiber to, highlighting some of the typical passive AFL products that can be used for your network.



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CENTRAL OFFICE

All fiber networks have a start point. At the central office or headend, and possibly at different aggregation points throughout the network, clean and compact fiber management is important. From traditional to high-density rack mount applications to a simple wall-mount panel, AFL has a solution to meet your needs.



Xpress Fiber Management® (XFM®) Panels – 1RU, 2RU, 4RU

Ordering Information

DESCRIPTION	MODEL NO.	AFL NO.
Xpress Fiber Management 1RU Patch Panel, Black, Empty	XFM-1-U-B-0	FM002711-BE
Xpress Fiber Management 2RU Patch Panel, Black, Empty	XFM-2-U-B-0	FM002712-BE
Xpress Fiber Management 4RU Patch Panel, Black, Empty	XFM-4U-B-0	FM001090-B
Xpress Fiber Management 4RU Patch Panel, Black, Empty, Key Lock	XFM-4U-B-K	FM001218-B



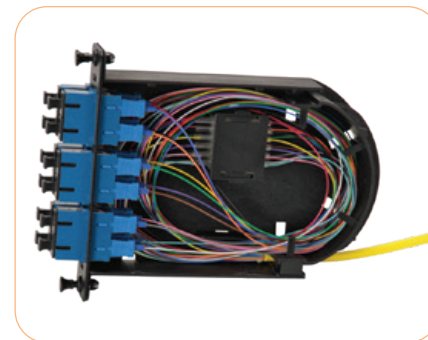
XFM 4RU Patch Panel

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Poli-MOD® Patch and Splice Modules

Common Poli-MOD FTTx Configurations

AFL NO.	DESCRIPTION
PM-L-24-ALC-0-S-01	Poli-MOD loaded with Adapter Plate and Pigtails, 24 fiber per connector, Angle-polish LC, single-mode, standard fiber arrangement, and 1 Poli-MOD per box
PM-L-12-ASC-0-S-01	Poli-MOD loaded with Adapter Plate and Pigtails, 12 fiber per connector, Angle-polish SC, single-mode, standard fiber arrangement, and 1 Poli-MOD per box



12-Fiber SC/UPC Configuration

Additional Poli-MOD Configurations

Example: PM-L-12-ASC-0-S-01

PM	L	12	ASC	0	S	01
	Configuration	Fiber/Connector Count	Connector Type ³	Fiber Type	Fiber Arrangement	Packaging
	E = Empty (Splicing Only) H = Half Loaded (Adapter Plate only) L = Loaded (Adapter Plate & Pigtails) D = DAS Poli-MOD ¹	06 = 6 Fibers/Connectors 12 = 12 Fibers/Connectors 24 = 24 Fibers/Connectors ² XX = Empty	ASC = Angle-Polished SC USC = Ultra-Polished SC PSC = Multimode SC ALC = Angle-Polished LC ULC = Ultra-Polished LC PLC = Multimode LC UST = Ultra-Polished ST PST = Multimode ST AFC = Angle-Polished FC UFC = Ultra-Polished FC PFC = Multimode FC XXX = Empty	0 = Single-mode (G.657.A1 BIF) 1 = 62.5 μm (OM1) 2 = 50 μm (OM2) 3 = 50 μm (OM3) 4 = 50 μm (OM4) X = Empty	S = Single/Standard R = Ribbon 3 = 3 mm, 3 meter DAS X = No Fiber (Half Loaded or Empty)	01 = 1 Poli-MOD per box* 06 = 6 Poli-MODs per box 12 = 12 Poli-MODs per box

1. DAS Poli-MOD requires specialty packaging and is packaged as "1 Poli-MOD per box" ONLY.

2. 24 Fibers/Connectors are only available in a LC Duplex configuration.

3. Angle and Ultra-Polished connector types are only available with single-mode fiber configurations.

Wall-Mount Panels with One, Two or Four LGX® Mounting Positions

Ordering Information

EMPTY	
DESCRIPTION	AFL NO.
WME01 Empty	WME01E
WME02 Empty	WME02E
WME04 Empty	WME04E



WME01



WME-02



WME04 shown fully loaded

HALF LOADED: WME WITH ADAPTER PLATES AND ADAPTERS ONLY

CONN. TYPE	NO. OF FIBERS	AFL NO. UPC SM (BLUE)	APC SM (GREEN)
WME01			
SC	6	WME01AS-USCSM-006000	WME01AS-ASCSM-006000
	12	WME01AS-USCSM-012000	WME01AS-ASCSM-012000
LC	6	WME01AS-UDLSM-006000	WME01AS-ADLSM-006000
	12	WME01AS-UDLSM-012000	WME01AS-ADLSM-012000
	24	WME01AH-UDLSM-024000	WME01AH-ADLSM-024000
WME02			
SC	6	WME02AS-USCSM-006000	WME02AS-ASCSM-006000
	12	WME02AS-USCSM-012000	WME02AS-ASCSM-012000
	24	WME02AH-USFSM-024000	WME02AH-ASFSM-024000
LC	6	WME02AS-UDLSM-006000	WME02AS-ADLSM-006000
	12	WME02AS-UDLSM-012000	WME02AS-ADLSM-012000
	24	WME02AH-UDLSM-024000	WME02AH-ADLSM-024000
WME04			
SC	24	WME04AS-USCSM-024000	WME04AS-ASCSM-024000
	48	WME04AH-USFSM-048000	WME04AH-ASFSM-048000
LC	24	WME04AS-UDLSM-024000	WME04AS-ADLSM-024000
	48	WME04AH-UDLSM-048000	WME04AH-ADLSM-048000

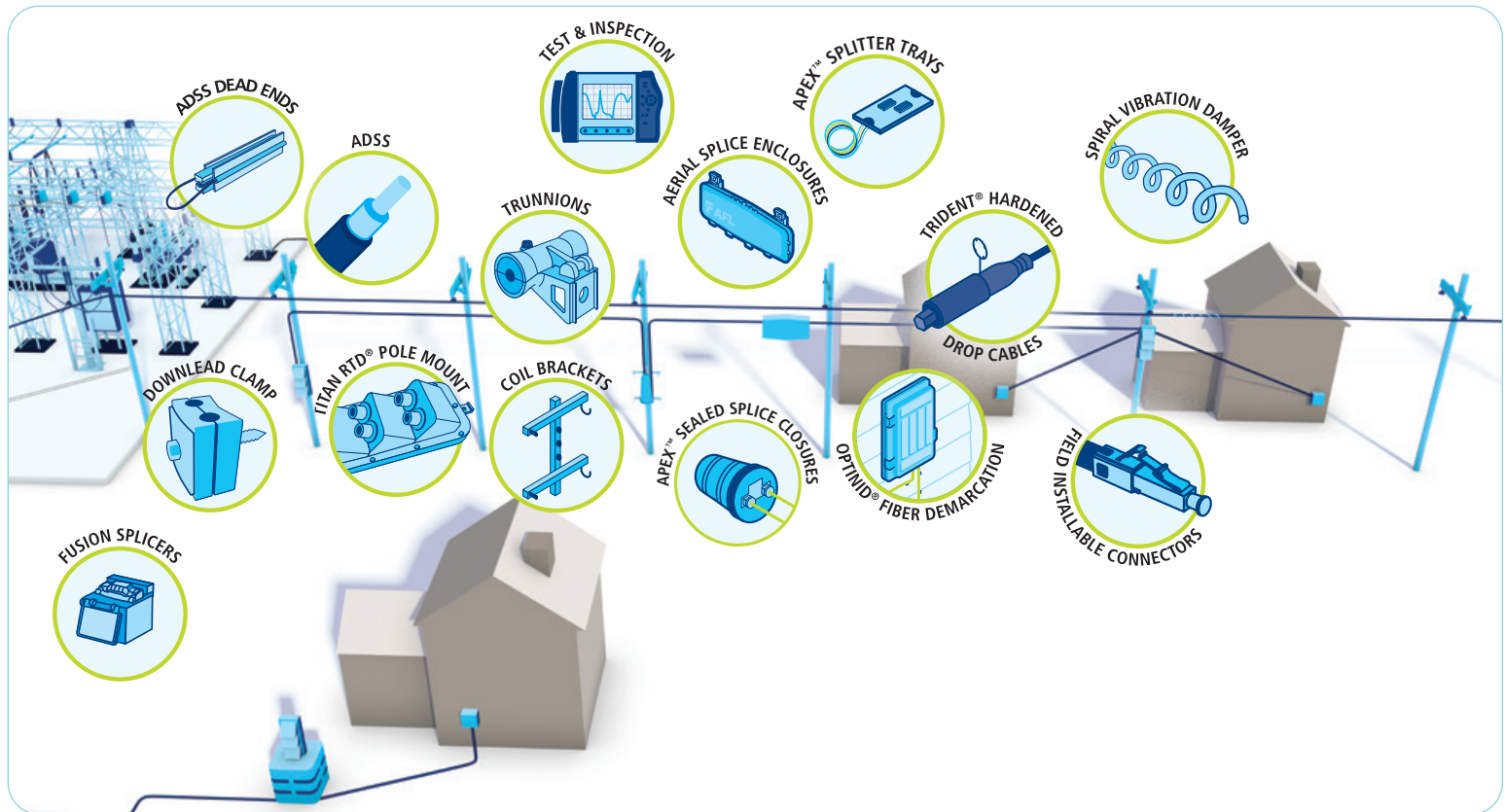
LOADED: WME WITH ADAPTER PLATES/ADAPTERS/SPLICE CHIP/PIGTAIL (900 µm TIGHT BUFFERED FIBERS 3 METERS IN LENGTH)

CONN. TYPE	NO. OF FIBERS	AFL NO. UPC SM (BLUE)	APC SM (GREEN)
WME01			
SC	6	WME01FS-USCSM-0061C0	WME01FS-ASCSM-0061C0
	12	WME01FS-USCSM-0121C0	WME01FS-ASCSM-0121C0
LC	6	WME01FS-UDLSM-0061C0	WME01FS-ADLSM-0061C0
	12	WME01FS-UDLSM-0121C0	WME01FS-ADLSM-0121C0
	24	WME01FH-UDLSM-0241C0	WME01FH-ADLSM-0241C0
WME02			
SC	6	WME02FS-USCSM-006110	WME02FS-ASCSM-006110
	12	WME02FS-USCSM-012110	WME02FS-ASCSM-012110
	24	WME02FH-USFSM-024120	WME02FH-ASFSM-024120
LC	6	WME02FS-UDLSM-006110	WME02FS-ADLSM-006110
	12	WME02FS-UDLSM-012110	WME02FS-ADLSM-012110
	24	WME02FH-UDLSM-024120	WME02FH-ADLSM-024120
WME04			
SC	24	WME04FS-USCSM-024120	WME04FS-ASCSM-024120
	48	WME04FH-USFSM-048140	WME04FH-ASFSM-048140
LC	24	WME04FS-UDLSM-024120	WME04FS-ADLSM-024120
	48	WME04FH-UDLSM-048140	WME04FH-ADLSM-048140

ACCESS

Beyond the central office, the bulk of a FTTx network is in the access. Whether aerial or underground, there are a variety of cable designs and technologies to choose from for your application. Splice enclosures are also capable of strand mount, pole mount, and underground placement. For FTTx PON designs, optical splitting is typically done at the central office, in exterior distribution cabinets, or in the splice enclosures.

Last mile deployment has been increasingly relying on multiport terminals and hardened drop cables for quick and easy subscriber connections.



ADSS Cable and Hardware Design Packages

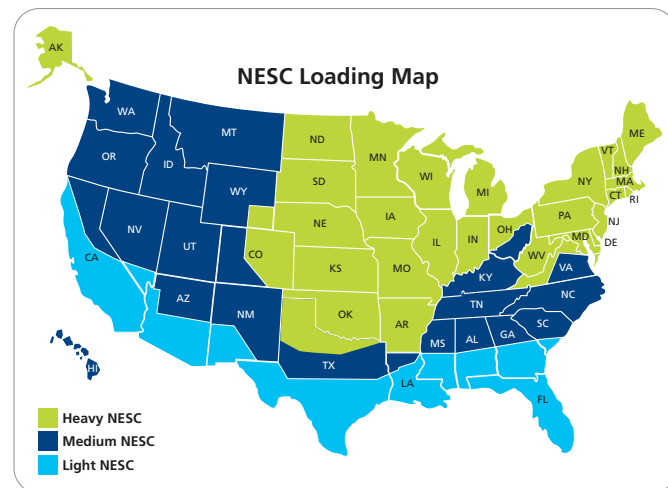
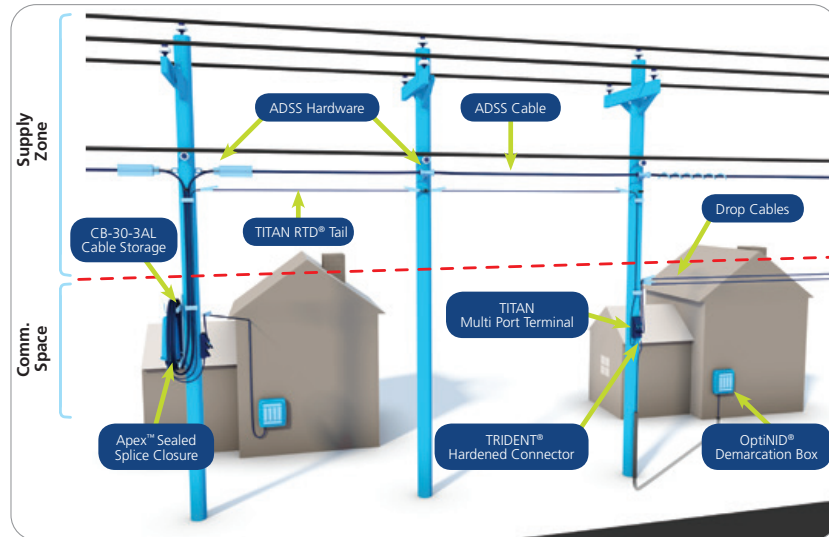
ADSS fiber cables can provide advantages over traditional strand and lash fiber networks in many cases. Some of these advantages to ADSS cables include:

- No metallic components – can install in supply space and grounding is not required
- Little to no “make ready” cost
- Lower hardware costs
- Speed and ease of installation
- Minimal long-term maintenance
- Longer expected design life

In many scenarios, these advantages lead to a lower total cost.

All-dielectric self-supporting (ADSS) cable design packages are listed below with common diameter range taking hardware components. These packages range in strength capability. ADSS cables can be used for span lengths greater than 6000', so strength capability in distribution environments typical for FTTx applications is of no concern. To find the most cost effective ADSS design for a FTTx network, the loading requirements should be reviewed. The loading requirements can be determined using the maximum pole-to-pole span length and the loading condition that is defined by the National Electric Safety Code (NESC) based on the location of the project.

Three general ADSS design packages are shown on [page 9](#). AFL can also design customized ADSS designs to meet your specific requirements.



ADSS Cable and Hardware Design Packages

Design Package 1 – Light Strength

NESC SPAN MAXIMUM (@ 1.5% INITIAL SAG) FEET		
LIGHT	MEDIUM	HEAVY
700	500	300

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	DEAD END	TANGENT TRUNNION	DOWNLEAD CLAMP	VIBRATION DAMPER
12	AE0129C520AA5	0.425	ADESE425/451C	ATGN420/474	AGC468468D	AVD327/461
24	AE0249C520AA5					
48	AE0489C520AA5					
72	AE0729O520EA1	0.484	ADESE482/510C	ATGN475/525	AGC562562D	AVD462/563
96	AE0969O520EA1					
144	AE1449O620A08					
288	AE2889OC20EA0	0.732	ADESE693/737C	ATGN726/775	AGC750750D	AVD564/770

Design Package 2 – Medium Strength

NESC SPAN MAXIMUM (@ 1.5% INITIAL SAG) FEET		
LIGHT	MEDIUM	HEAVY
1050*	700	450

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	DEAD END	TANGENT TRUNNION	DOWNLEAD CLAMP	VIBRATION DAMPER
12	AE0129C520EA2	0.433	ADESE425/451C	ATGN420/474	AGC468468D	AVD327/461
24	AE0249C520EA2					
48	AE0489C520EA2					
72	AE0729C620EA0	0.492	ADESE482/510C	ATGN475/525	AGC562562D	AVD462/563
96	AE0969O520EA9					
144	AE1449O620EA1					
288*	AE2889OC20EA3	0.736	ADESE693/737C	ATGN726/775	AGC750750D	AVD564/770

* 288F option is only capable of 800 ft.

Design Package 3 – High Strength

NESC SPAN MAXIMUM (@ 1.5% INITIAL SAG) FEET		
LIGHT	MEDIUM	HEAVY
1550	1200	750

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	DEAD END	TANGENT TRUNNION	DOWNLEAD CLAMP	VIBRATION DAMPER
12	AE0129C521BA4	0.528	ADESE511/542C	ATGN526/575*	AGC562562D	AVD462/563
24	AE0249C521BA4					
48	AE0489C521BA4					
72	AE0729O621BA2	0.575	ADESE543/577C	ATGN526/575*	AGC656656D	AVD564/770
96	AE0969O621BA2					
144	AE1449O621BA2					
288	AE2889OC11BA7	0.831	ADEME785/834C	ATGN826/875*	AGC849849D	AVD771/876

* Other tangent hardware might be required based on span length and loading conditions, refer to "Trunnion" and "ADSS Suspension" sections on [page 11](#).

Formed Wire Suspension

Used up to 30-degree line angle changes, the formed wire suspension is needed in applications where span lengths exceed the trunnion and the ADSS suspension unit. Based on the cable span length capabilities, this may be applicable for ADSS Design Package 3. Contact AFL for further information on the formed wire suspension unit.

Design Package 3 – High Strength

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	FORMED WIRE SUSPENSION
12	AE0129C521BA4	0.528	ASU512/536
24	AE0249C521BA4		
48	AE0489C521BA4		
72	AE0729O621BA2	0.575	ASU574/598
96	AE0969O621BA2		
144	AE1449O621BA2		
288	AE2889OC11BA7	0.831	ASU815/845

ADSS Suspensions

Design Package 1 – Light Strength

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	ADSS SUSPENSION UNIT
12	AE0129C520AA5	0.425	ASN420/474
24	AE0249C520AA5		
48	AE0489C520AA5		
72	AE0729O520EA1	0.484	ASN475/525
96	AE0969O520EA1		
144	AE1449O620A08		
288	AE2889OC20EA0	0.732	ASN726/775

Design Package 2 – Medium Strength

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	ADSS SUSPENSION UNIT
12	AE0129C520EA2	0.433	ASN420/474
24	AE0249C520EA2		
48	AE0489C520EA2		
72	AE0729C620EA0	0.492	ASN475/525
96	AE0969O520EA9		
144	AE1449O620EA1		
288*	AE2889OC20EA3	0.736	ASN726/775

*288F option is only capable of 800 ft.

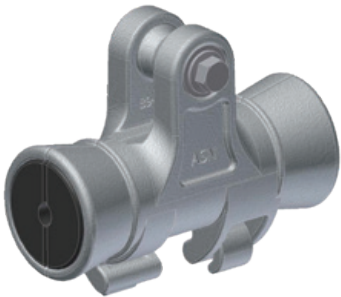
Design Package 3 – High Strength

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	ADSS SUSPENSION UNIT
12	AE0129C521BA4	0.528	ASN526/575
24	AE0249C521BA4		
48	AE0489C521BA4		
72	AE0729O621BA2	0.575	ASN526/575
96	AE0969O621BA2		
144	AE1449O621BA2		
288	AE2889OC11BA7	0.831	ASN826/875

ADSS Suspensions

The AFL ADSS suspension units can be used for line angle changes up to 30 degrees. This hardware can be useful when a line angle exceeds the maximum 22 degrees for the trunnion to avoid using a double dead end.

NESC LOADING CONDITION		
HEAVY	MEDIUM	LIGHT
600'	900'	1200'



Trunnions

The AFL trunnion clamp can be used up to 22-degree line angle change. The trunnion can be used to string the ADSS cable during install, eliminating the need of a sheave at that point.

NESC LOADING CONDITION			
DIAMETER	HEAVY	MEDIUM	LIGHT
<0.875"	600'	850'	1200'
>0.875"	500'	750'	950'



Single Trunnion Cable Support



Double Trunnion Cable Support

Double trunnion suspensions are also available to allow for two cables at one pole penetration point.

Vibration Dampers

Vibration dampers are used to minimize cable vibration. They are typically recommended for span lengths greater than 350 feet but are dependent on the installed tension of the cable. Contact AFL for specific recommendations on vibration dampers.



Spiral Vibration Damper on ADSS Cable

Slack Storage

Storing slack cable at splice locations and throughout a FTTx network is critical. There are two primary methods for slack storage, on the pole (coil bracket) and in-line with the cable (fiber storage units).

Coil Bracket

The CB-30-3AL is 30 inches wide and stores up to 80 ft. total length of ADSS cable. It is used with AFL's Apex™ Sealed Splice Closures ([see page 17](#)). The CB-30-3AL coil bracket can be bolted or banded to the structure.

Splice Enclosure Mounting Bracket

Used for quick and simple attachment of the Apex sealed splice enclosures to the CB-30-3AL coil bracket.

Ordering Information

MODEL	AFL NO.
CB-30-3AL ADSS Coil Storage Bracket for Apex Sealed Splice Closures	CB-30-3AL
Mounting Bracket for Apex Sealed Splice Closure	AX-BR30



Coil Bracket holds excess ADSS cable

Standoff Bracket for ADSS Hardware Clamps

The Standoff Bracket positions the AFL ADSS trunnion or AFL ADSS suspension 14" off of structure.

Specifications

PARAMETER	VERTICAL	HORIZONTAL
Load Rating	1,250 lbs	1,250 lbs

Ordering Information

AFL NO.	DESCRIPTION
DTSB12	14" Standoff Bracket, for use with AFL's ATGN Trunnion Clamp or ASN Suspension Clamp on ADSS Fiber Optic Cable



Standoff Bracket with AFL ATGN Single Trunnion

Fiber Storage Units

Fiber Storage Units (FSU) are used to conveniently store an extra length of cable along the ADSS cable run for later use.



Specifications

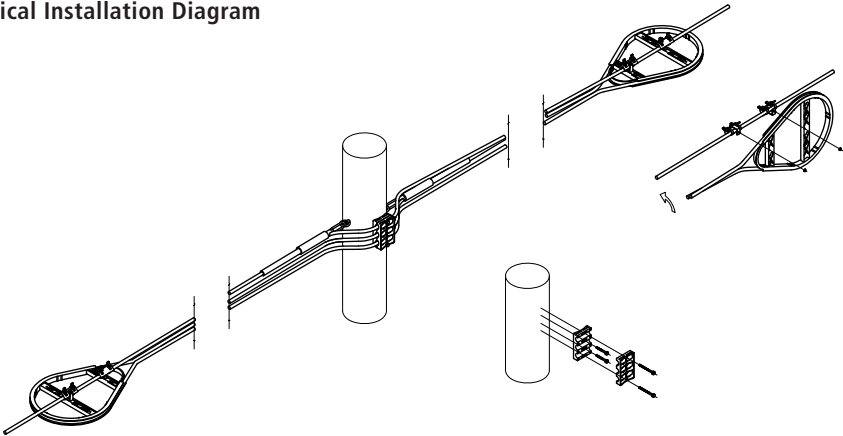
PARAMETER	FOSP-ADSS-12	FOSP-ADSS-17
Nominal Channel Width	0.625"	1.00"
Minimum Bend Diameter	12"	17.5"

Ordering Information

DESCRIPTION	FOSP-ADSS-12	FOSP-ADSS-17
FOS ADSS Kit	FA000049	FA000050

Kits contain one pair of FOSP and two sets of hanger brackets.

Typical Installation Diagram



Download Clamps

Download clamps are used to secure the cable to the pole. Typically, one clamp is used every 5-8 feet down the length of the pole.

[See page 9](#) for ordering information.

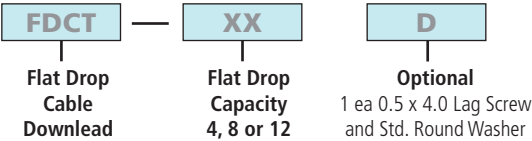


Flat Drop Download

The Flat Drop Cable Download accessory provides a means of suspending multiple flat drop cables to structures where termination is undesirable. The accessory can also be used in download applications to guide flat drop cables from the top of the structure to the splice box.

Ordering Information

AFL NO.	FLAT DROP CAPACITY	HARDWARE INCLUDED
FDCT-4	up to 4	—
FDCT-12	up to 12	—
FDCT-8	up to 8	—
FDCT-4D	up to 4	Lag screw hardware kit
FDCT-12D	up to 12	Lag screw hardware kit



Temporary Grip

Temporary Grips are used in stringing the ADSS during sagging and where it is necessary to make short term catch on the ADSS. The Temporary grip for ADSS is a high strength aluminum body designed to hold 2,500 pounds or 50% of MRCL of the cable. Tapered wedges are machined specifically to the cable diameter.

Ordering Information



Underground Cable

For underground applications or aerial strand and lash applications, the following fiber cables can be used.

LMHD OSP MicroCore® Cable

Physical and Mechanical Data

LMHD-SERIES AFL NO.*	FIBER COUNT	FIBERS/ NUMBER OF TUBES**	DIAMETER	MIN. MICRODUCT INNER DIAMETER	WEIGHT	MAXIMUM TENSILE LOAD		MINIMUM BEND RADIUS	
			INCHES (MM)	INCHES (MM)	LBS/1000FT (KG/KM)	INSTALLATION	OPERATION	INSTALLATION	OPERATION
LM012xC6201#1	12	12/1 (5 fillers)	0.359 (9.1)	0.512 (13)	42 (64)	600 (2670)	180 (801)	7.5 (19)	5.5 (14)
LM024xC6201#1	24	12/2 (4 fillers)	0.359 (9.1)	0.512 (13)	43 (65)	600 (2670)	180 (801)	7.5 (19)	5.5 (14)
LM048xC6201#1	48	12/4 (2 fillers)	0.359 (9.1)	0.512 (13)	44 (67)	600 (2670)	180 (801)	7.5 (19)	5.5 (14)
LM072xC6201#1	72	12/6	0.359 (9.1)	0.512 (13)	45 (69)	600 (2670)	180 (801)	7.5 (19)	5.5 (14)
LM096xO6201#1	96	24/4 (2 fillers)	0.390 (9.9)	0.512 (13)	52 (79)	600 (2670)	180 (801)	8 (20)	6 (15)
LM144xO6201#1	144	24/6	0.390 (9.9)	0.512 (13)	57 (85)	600 (2670)	180 (801)	8 (20)	6 (15)
LM288xR6201#1	288	48/6	0.481 (12.2)	0.630 (16)	82 (125)	600 (2670)	180 (801)	10 (25)	7.5 (19)
LM432xOI201#1	432	24/18	0.567 (14.4)	0.787 (20)	112 (167)	600 (2670)	180 (801)	11.5 (29)	9 (22)

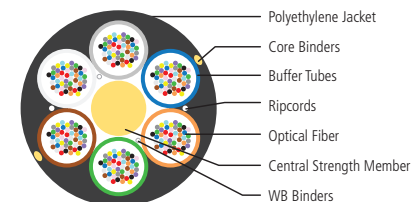
* Replace # with "N" for all-dielectric cable or "T" for toneable option.

"x" denotes fiber type. See Optical Fibers Options table below.

** Fibers are arranged in 12-fiber sets. Each set is identified by colored binder threads.

Optical Fiber Options

FIBER TYPE	"X"	STANDARD	MODE FIELD DIAMETER	ATTENUATION	
				1300 nm	1550 nm
Single-mode	9	ITU-T G.652D / 657.A1	9.2 µm nominal	0.35	0.25
Corning SMF-28 Ultra	AZ	ITU-T G.652D / 657.A1	9.2 µm nominal	0.35	0.25



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Wrapping Tube Cable with SpiderWeb Ribbon® (SWR®) Technology

Mechanical Data—Non-Armored

DESCRIPTION	FIBER COUNT	BINDER UNIT	NOMINAL DIAMETER	WEIGHT LBS/1,000 FT (KG/KM)	SHORT TERM / INSTALLATION		LONG TERM / STORAGE /STATIC	
			INCHES (MM)		MAX TENSILE LOAD LBS (N)	MIN BEND RADIUS INCHES (MM)	MAX TENSILE LOAD LBS (N)	MIN BEND RADIUS INCHES (MM)
LWSE-144-9-C-144-1-00N1D	144	1 X 144F	0.41 (10.5)	57 (85)	607 (2700)	9 (229)	182 (810)	6 (158)
LWSE-288-9-C-72-4-00N1D	288	4 X 72F	0.47 (12.0)	71 (105)	607 (2700)	10 (254)	182 (810)	7 (180)
LWSE-432-9-C-72-6-00N1D	432	6 X 72F	0.53 (13.5)	91 (135)	607 (2700)	11 (270)	182 (810)	8 (203)
LWSE-576-9-C-72-8-00N1D	576	8 X 72F	0.59 (15.0)	111 (165)	607 (2700)	12 (300)	182 (810)	9 (225)
LWSE-864-9-C-72-12-00N1D	864	12 X 72F	0.69 (17.5)	145 (215)	607 (2700)	14 (350)	182 (810)	11 (279)
LWSE-1152-K-C-144-8-00N1D	1152	8 X 144F	0.73 (18.5)	161 (240)	607 (2700)	15 (370)	182 (810)	11 (279)
LWSE-1728-K-C-144-12-00N1D	1728	12 X 144F	0.91 (23.0)	242 (360)	607 (2700)	18 (460)	182 (810)	14 (345)
LWSE-3456-K-C-144-24-00N1D	3456	24 X 144F	1.20 (30.5)	403 (600)	607 (2700)	24 (610)	182 (810)	18 (458)

Mechanical Data—OSP Armored

DESCRIPTION	FIBER COUNT	BINDER UNIT	NOMINAL DIAMETER	WEIGHT LBS/1,000 FT (KG/KM)	SHORT TERM / INSTALLATION		LONG TERM / STORAGE /STATIC	
			INCHES (MM)		MAX TENSILE LOAD LBS (N)	MIN BEND RADIUS INCHES (MM)	MAX TENSILE LOAD LBS (N)	MIN BEND RADIUS INCHES (MM)
LWSE-144-9-C-144-1-10S1D	144	1 X 144F	0.63 (16.0)	148 (220)	607 (2700)	13 (320)	182 (810)	10 (254)
LWSE-288-9-C-72-4-10S1D	288	4 X 72F	0.69 (17.5)	172 (255)	607 (2700)	14 (350)	182 (810)	11 (279)
LWSE-432-9-C-72-6-10S1D	432	6 X 72F	0.75 (19.0)	202 (300)	607 (2700)	15 (380)	182 (810)	11 (285)
LWSE-576-9-C-72-8-10S1D	576	8 X 72F	0.81 (20.5)	235 (350)	607 (2700)	16 (410)	182 (810)	12 (308)
LWSE-864-9-C-72-12-10S1D	864	12 X 72F	0.91 (23.0)	286 (425)	607 (2700)	18 (460)	182 (810)	14 (345)
LWSE-1728-K-C-144-12-10S1D	1728*	12 X 144F	1.14 (29.0)	410 (610)	607 (2700)	23 (580)	182 (810)	17 (435)

* NOTE: Modified temperature performance

Optical Fiber

FIBER COUNT	FIBER DESIGNATOR	MFD	MAXIMUM ATTENUATION (CABLED) dB/km		
			1310 NM	1383 NM	1550 NM
144, 288, 432, 576, 864	9 (ITU-T G.652D/G.657.A1)	9.2 ± 0.4 μm	≤0.40	≤0.40	≤0.30
1152, 1728, 3456	K (ITU-T G.652D/G.657.A1)	8.6 ± 0.4 μm	≤0.40	≤0.40	≤0.30

Sealed (Underground and Pole Mount)

AFL's new Apex™ sealed splice closures are used for underground applications and in pole-mount applications typically using a coil bracket (CB-30-3AL).

The Apex X-2 and X-2S are sealed splice closures designed for protecting optical fiber splices in both above- or below-grade applications in a butt configuration. Cables are sealed by a unique wedge system spaced evenly around the circumference of the closure's base. Each cable seal is opened by a press-to-release lever and sealing is completed by actuating a single screw for each cable. Each cable is sealed individually, ensuring original craftsmanship when cables may be added at a later date. Up to 6 splice trays are attached and hinge off a central organizer. A plastic slack storage basket resides underneath the trays with ample tie down points for managing tube and fiber slack.



Apex Sealed Splice Closure Summary Specifications

DESCRIPTION	MODEL	
	X-2	X-2S
Splice Capacity – Single, Mass (SWR®), Mass (Standard)	432, 3456, 864	216, 1728, 432
Splice Tray Capacity	6	6
Cable Diameter, Single Port, in. (mm)	0.40" – 1.10" (10.0 – 28.0)	0.40" – 1.10" (10.0 – 28.0)
Cable Diameter, Multi-Drop Kit, in. (mm)	0.20" – 0.39" (5.0 - 9.9) or flat drop	0.20" – 0.39" (5.0 - 9.9) or flat drop
Dimensions – (L x D) in. (cm)	25.0" x 12.0" (64 x 30)	20.0" x 12.0" (51 x 30)
Weight, No Trays – lbs (kg)	25 (11.3)	22 (10)
Application	Direct Bury, Handhole, Aerial, Pole/Wall	Direct Bury, Handhole, Aerial, Pole/Wall



Apex™ Sealed Splice Closures

The Apex X-2 is capable of up to 432 single fusion, 864 mass fusion with standard ribbon, or 3,456 using 200 µm mass fusion with rollable ribbon fiber types (such as AFL's SpiderWeb Ribbon® (SWR®)). If using 250 µm fiber, 1,728 fibers is the maximum fiber count.

The Apex X-2S is capable of up to 216 single fusion, 432 mass fusion with standard ribbon, or 1,728 using 200 µm mass fusion with rollable ribbon fiber types (SWR). If using 250 µm fiber, 864 fibers is the maximum fiber count.

Refer to the [Apex X-2](#) and [Apex X-2S](#) specification sheets for more information.

Ordering Information – X-2

AX	2	B	L	0	2	6	B
APEX CLOSURES	CLOSURE SIZE	BASKET TYPE	TRAY TYPE	NUMBER OF TRAYS	CABLE STRAIN RELIEF HARDWARE KITS	NUMBER OF GROUND LUGS	INNER BASKET
	2 = X-2 Size	B = X-2 Sized Basket	X = No preinstalled tray L = X-2 Tray Loaded with splice modules E = X-2 Tray empty	0 1 6	2 4 6	0 2 6	X = No Inner Basket B = Include Inner Basket

Ordering Information – X-2S

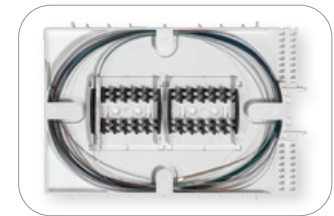
AX	2	B	L	0	2	6	X
APEX CLOSURES	CLOSURE SIZE	BASKET TYPE	TRAY TYPE	NUMBER OF TRAYS	CABLE STRAIN RELIEF HARDWARE KITS	NUMBER OF GROUND LUGS	INNER BASKET
	2S = X-2S Size	B = X-2S Sized Basket	X = No preinstalled tray L = X-2S Tray Loaded with splice modules E = X-2S Tray empty	0 1 6	2 4 6	0 2 6	X = No Inner Basket

Apex™ Splitter Trays

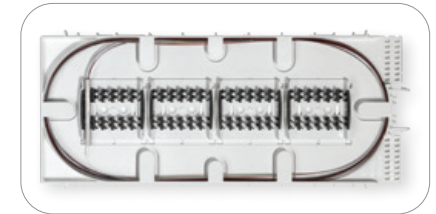
Passive optical splitters, or PLCs (Planar Lightwave Circuits), can be provided preinstalled into the Apex X-2S and Apex X-2 splice trays. PLCs can either be installed and splice within the same tray, or provided with a separate dedicated tray for splicing, with fibers routed between trays using protective tubing. A third option provides one additional tray to separate input and output fiber splicing.

Ordering Information

DESCRIPTION	SPLIT RATIO	AFL NO.
APEX X-2S		
X-2S Tray with Two Splice Modules, (1) 1x4 PLC Splitter	1x4	AX-TRAY-2S-14-1
X-2S Tray with Two Splice Modules, (1) 1x8 PLC Splitter	1x8	AX-TRAY-2S-18-1
X-2S Tray with Two Splice Modules, (1) 1x16 PLC Splitter	1x16	AX-TRAY-2S-116-1
X-2S Tray with Two Splice Modules, (1) 1x32 PLC Splitter	1x32	AX-TRAY-2S-132-1
X-2S Tray with (1) 1x4 PLC Splitter and Separate Splicing Tray with Two Splice Modules	1x4	AX-TRAY-2S-14-2
X-2S Tray with (1) 1x8 PLC Splitter and Separate Splicing Tray with Two Splice Modules	1x8	AX-TRAY-2S-18-2
X-2S Tray with (1) 1x16 PLC Splitter and Separate Splicing Tray with Two Splice Modules	1x16	AX-TRAY-2S-116-2
X-2S Tray with (1) 1x32 PLC Splitter and Separate Splicing Tray with Two Splice Modules	1x32	AX-TRAY-2S-132-2
X-2S Tray with (1) 1x4 PLC Splitter and 2 Separate Splicing Trays with Two Splice Modules each	1x4	AX-TRAY-2S-14-3
X-2S Tray with (1) 1x8 PLC Splitter and 2 Separate Splicing Trays with Two Splice Modules each	1x8	AX-TRAY-2S-18-3
X-2S Tray with (1) 1x16 PLC Splitter and 2 Separate Splicing Trays with Two Splice Modules each	1x16	AX-TRAY-2S-116-3
X-2S Tray with (1) 1x32 PLC Splitter and 2 Separate Splicing Trays with Two Splice Modules each	1x32	AX-TRAY-2S-132-3
APEX X-2		
X-2 Tray with Four Splice Modules, (1) 1x4 PLC Splitter	1x4	AX-TRAY-2-14-1
X-2 Tray with Four Splice Modules, (1) 1x8 PLC Splitter	1x8	AX-TRAY-2-18-1
X-2 Tray with Four Splice Modules, (1) 1x16 PLC Splitter	1x16	AX-TRAY-2-116-1
X-2 Tray with Four Splice Modules, (1) 1x32 PLC Splitter	1x32	AX-TRAY-2-132-1
X-2 Tray with (1) 1x4 PLC Splitter and Separate Splicing Tray with Four Splice Modules	1x4	AX-TRAY-2-14-2
X-2 Tray with (1) 1x8 PLC Splitter and Separate Splicing Tray with Four Splice Modules	1x8	AX-TRAY-2-18-2
X-2 Tray with (1) 1x16 PLC Splitter and Separate Splicing Tray with Four Splice Modules	1x16	AX-TRAY-2-116-2
X-2 Tray with (1) 1x32 PLC Splitter and Separate Splicing Tray with Four Splice Modules	1x32	AX-TRAY-2-132-2
X-2 Tray with (1) 1x4 PLC Splitter and 2 Separate Splicing Trays with Four Splice Modules each	1x4	AX-TRAY-2-14-3
X-2 Tray with (1) 1x8 PLC Splitter and 2 Separate Splicing Trays with Four Splice Modules each	1x8	AX-TRAY-2-18-3
X-2 Tray with (1) 1x16 PLC Splitter and 2 Separate Splicing Trays with Four Splice Modules each	1x16	AX-TRAY-2-116-3
X-2 Tray with (1) 1x32 PLC Splitter and 2 Separate Splicing Trays with Four Splice Modules each	1x32	AX-TRAY-2-132-3



Apex X-2S Splitter Tray



Apex X-2 Splitter Tray

Ordering Information

DESCRIPTION	TRAY CAPACITY		AFL NO.
	SINGLE	MASS	
SPLICE TRAYS AND SPLICE MODULES			
X-2S Tray Loaded with One Splice Module	18	72	AX-TRAY-2S-1
X-2S Tray Fully Loaded with Two Splice Modules (288 fibers per tray only recommended for rollable ribbon, e.g. AFL SWR)	36	288	AX-TRAY-2S-2
Additional splice module (18 single fusion triple stacked, 12 mass fusion double stacked, 6 mechanical) – Pack of 20	–	–	AX-TRAY-MOD-20
X-2S Tray Empty	–	–	AX-TRAY-2S-E

* 288 fibers per tray with mass fusion double-stacking 1728 total closure capacity) only recommended for 200 um type rollable ribbon. For 250 um, cut capacity in half with single-stacking.

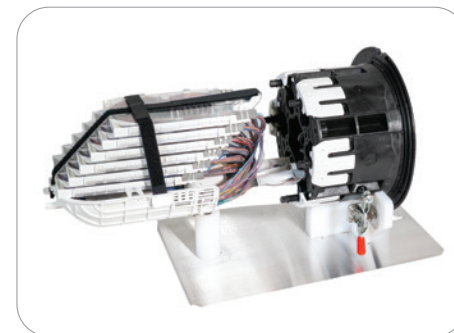
DESCRIPTION	AFL NO.
SLACK STORAGE BASKET	
Replacement slack storage basket tabs – Pack of 25	AX-KIT-BTAB-25

DESCRIPTION	AFL NO.
INSTALLATION ACCESSORIES AND KITS	
Aerial strand mount hanger kit	AX-KIT-AERIAL-1
Pole/wall mount kit	AX-BR30
1/4" Colored Mesh Transition Tubing, 250' Spool	AX-KIT-TUBE-014-XX*
Single Cable Strain Relief/Attachment Kit	AX-KIT-CBLSTRN
Multi-Drop Cable Entry Kit	AX-KIT-DROP-4
(fits up to 4 cables 0.20" to 0.39" in diameter or flat drop cable)	
X-2 and X-2S Dome to Base O-Ring Replacement Kit	AX-KIT-ORING-2
X-2 and X-2S Dome to Base Locking Ring Clamp Replacement Kit	AX-KIT-CLAMP-2
X-2 and X-2S Wedge Replacement Kit	AX-KIT-WEDGE-2
X-2 and X-2S Installation Stand	FC104649
Apex X-2 and X-2S Inner Base Gel Replacement Kit	AX-KIT-GEL-2
Apex X-2S Dome Replacement Kit	AX-KIT-DOME-2S
WTC-SWR® Bundle Splice Tray Retention Kit - Includes 25 foam grommets for retaining SWR bundles to splice trays	HW000406
Silicone Spiral Wrap, 5.5 Foot Length	FC001657
Velcro, 75 Foot Length Roll – For securing SWR bundles in the slack basket	FC001759

* Replace "XX" with any of the following for colors per the TIA-598 color code – BL, OR, GR, BR, SL, WH, RD, BK, YL, VI, RS or AQ



Apex X-2S Splice Tray and Splice Module



Apex X-2S Mounted on Installation Stand

Ordering Information

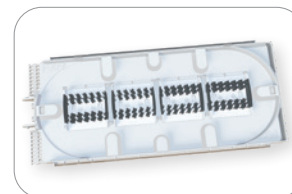
DESCRIPTION	TRAY CAPACITY		AFL NO.
	SINGLE	MASS	
SPLICE TRAYS AND SPLICE MODULES			
X-2 Tray Loaded with Two Splice Modules	36	144	AX-TRAY-2-2
X-2 Tray Fully Loaded with Four Splice Modules (576 fibers per tray only recommended for rollable ribbon, e.g. AFL SWR)	72	576	AX-TRAY-2-4
Additional splice module (18 single fusion triple stacked, 12 mass fusion double stacked, 6 mechanical) – Pack of 20	-	-	AX-TRAY-MOD-20
X-2 Tray Empty	-	-	AX-TRAY-2-E

* 576 fibers per tray with mass fusion double-stacking (3456 total closure capacity) only recommended for 200 µm type rollable ribbon. For 250 µm, cut capacity in half with single-stacking

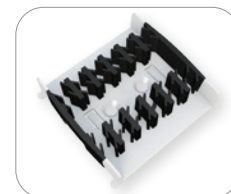
DESCRIPTION	AFL NO.
SLACK STORAGE BASKET	
Clear segmented basket for X-2. Can be used in combination with the basket cover	AX-KIT-SBASKET-2
Replacement slack storage basket tabs – Pack of 25	AX-KIT-BTAB-25

DESCRIPTION	AFL NO.
INSTALLATION ACCESSORIES AND KITS	
Aerial strand mount hanger kit	AX-KIT-AERIAL-1
Pole/wall mount kit	AX-BR30
1/4" Colored Mesh Transition Tubing, 250' Spool	AX-KIT-TUBE-014-XX*
Single Cable Strain Relief/Attachment Kit	AX-KIT-CBLSTRN
Multi-Drop Cable Entry Kit (fits up to 4 cables 0.20" to 0.39" in diameter or flat drop cable)	AX-KIT-DROP-4
X-2 and X-2S Dome to Base O-Ring Replacement Kit	AX-KIT-ORING-2
X-2 and X-2S Dome to Base Locking Ring Clamp Replacement Kit	AX-KIT-CLAMP-2
X-2 and X-2S Wedge Replacement Kit	AX-KIT-WEDGE-2
X-2 and X-2S Installation Stand	FC104649
Apex X-2 and X-2S Inner Base Gel Replacement Kit	AX-KIT-GEL-2
Apex X-2 Dome Replacement Kit	AX-KIT-DOME-2
WTC-SWR Bundle Splice Tray Retention Kit - Includes 25 foam grommets for retaining SWR bundles to splice trays	HW000406
Silicone Spiral Wrap, 5.5 Foot Length	FC001657
Velcro, 75 Foot Length Roll – For securing SWR bundles in the slack basket	FC001759

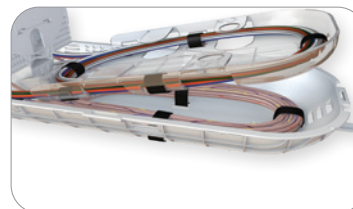
* Replace "XX" with any of the following for colors per the TIA-598 color code – BL, OR, GR, BR, SL, WH, RD, BK, YL, VI, RS or AQ



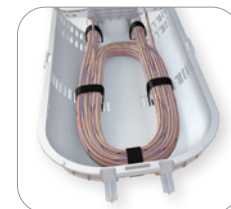
Apex X-2 Splice Tray



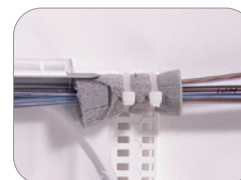
Apex X-2 Splice Module



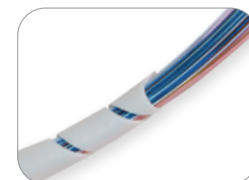
Clear Segmented Basket



Replacement Slack Storage Basket



Foam Grommets



Silicone Spiral Wrap

Aerial (On Strand)

AFL aerial weathertight closures are used in aerial, in-line applications. For ADSS, the closure is mounted onto the dead end. For strand and lash cables, the closure is mounted to the strand.

Aerial Closure Summary Specifications

PARAMETER	LG-410-U-0	LG-420-U-0	LG-500-U-0	LG-600-U-0
Splice Capacity (Max.) - Single, Mass, Mechanical	144, 432, 36	12, 48, 12	144, 432, 36	384, 1152, 96
Splice Tray Capacity - Single, Mass	4, 2	n/a, n/a	4, 2	12, 8, 8
Cable Ports	4-8	4-6	4-8	6 (3 per end)
Cable Entrance	In-line, Butt	In-line (taut sheath)	In-line, Butt	In-line, Butt
Cable Sizes (O.D.)	4 @ 0.3-0.82"	4 @ 0.3-0.82"	4 @ 0.3-0.82"	6 @ 0.44 - 1.0"
	Up to 8 with Dual Grommet Kits 4 @ 0.27-0.53" 4 @ 0.38-0.70"	Up to 6 with Dual Grommet Kits 2 @ 0.27-0.53" 2 @ 0.38-0.70"	Up to 8 with Dual Grommet Kits 4 @ 0.27-0.53" 4 @ 0.38-0.70"	Up to 12 with Dual Grommet Kits 6 @ 0.4-0.6" 6 @ 0.7-0.9"
CLOSURE TEST ^{1, 2}				
Cable Retention (100 lbs.)	Passed	Passed	Passed	Passed
Impact Resistance (0-40 °C)	Passed	Passed	Passed	Passed
Chemical Resistance	Passed	Passed	Passed	Passed
Cable Flexing	Passed	Passed	Passed	Passed
Dust (Weather Tightness)	Passed	Passed	Passed	Passed
Driving Rain	Passed	Passed	Passed	Passed
Rodent Test	Passed	Passed	Passed	Passed
Dimensions	36.00 x 8.00 x 4.00	36.00 x 8.00 x 4.00	27.00 x 8.25 x 4.00	27.00 x 11.25 x 7.50
(L x W x D) in. (cm)	(91.44 x 20.32 x 10.16)	(91.44 x 20.32 x 10.16)	(68.58 x 20.96 x 10.16)	(68.58 x 28.58 x 19.05)
Weight lbs. (kg)	8.5 (3.86)	8.5 (3.86)	6.4 (2.90)	18 (8.16)

Note 1: Tested to Telcordia GR-771-Core and Aerial Strand requirements

Note 2: Not all Telcordia tests are listed due to space constraints; All closures are designed and tested to appropriate aerial test requirements

ADSS Strand Mounting

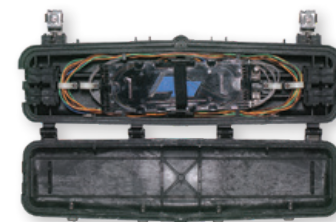
FA000108 is used to attach the weathertight closures to a formed wire dead end.



LG-500

Ordering Information

DESCRIPTION	MODEL NO.	AFL NO.
LG-500 Aerial Weathertight Fiber Optic Splice Closure—Stores 144 single fusion or 432 mass fusion, includes (4) cable kits for sealing/retention and (2) ground terminals with removable bond, and hanger brackets. Not included: Splice Trays or Cable Grounding Kits	LG-500-U-0	FC000026
LL-2400 Single Splice Tray—Stores (24) single fusion splices. Maximum of 4 trays in the LG-500.	LL-2400	91710-06
LL-2448 Universal Splice Tray—Stores (24) single fusion or (4) mass fusion splices (48 F), *Mechanical. Maximum of 3 trays in the LG-500.	LL-2448	911289-00-02
LL-4848 Mass Splice Tray—Stores (12) mass fusion splices (144 F). Maximum of 3 trays in the LG-500.	LL-4848	911437-00-02
LL-2448-48S Single Splice Tray—Stores (48) single fusion splices. Maximum of 3 trays in the LG-500.	LL-2448-48S	FA000045
Small Single Grommet Kit (10 pc grommet only) (Min 0.38" - Max 0.82")	Small Single Grommet Kit (10)	911496-00-00
Small Dual Grommet Kit—Includes: (2) small dual grommets and hardware (Min 0.27" - Max 0.53" and Min 0.38" - Max 0.70")	Small Dual Grommet Kit	911386-00-01
Small Dual Grommet Kit (10 pc grommet only) (Min 0.27" - Max 0.53" and Min 0.38" - Max 0.70")	Small Dual Grommet Kit (10)	911495-00-00



* See [Aerial Accessories specification sheet](#).
See [Splice Tray specification sheet](#).

LG-500-FTTx

The LightGuard® (LG) 500 FTTx Aerial Weathertight Fiber Optic Splice Closure is designed for small count fiber splicing (up to 32 single or 48 mass) in a butt or in-line configuration. Utilized in aerial applications, the LG-500-FTTx is ideal for FTTx access networks by providing cable entry and connectivity for up to 12 drop cables and 16 connections, requiring only a common can wrench for installation.

Ordering Information

DESCRIPTION	MODEL NO.	AFL NO.
LG-500-FTTx Aerial Weathertight Fiber Optic Splice Closure—Stores 32 single fusion or 48 mass fusion, includes (4) cable kits for sealing/retention and (2) ground terminals with removable bond, (1) splice tray, and hanger brackets. Not included: Cable Grounding Kits, SC/APC Adapters	LG-500-FTTx	FC000899
LL-2425 Single Splice Tray—Stores (32) single fusion splices. Maximum of 1 tray in the LG-500-FTTx.	LL-2425	FC000053
Small Single Grommet Kit of (10 pc grommet only) (Min 0.38" - Max 0.82")	Small Single Grommet Kit (10)	911496-00-00
Small Dual Grommet Kit—Includes: (2) small dual grommets and hardware (Min 0.27" - Max 0.53" and Min 0.38" - Max 0.70")	Small Dual Grommet Kit	911386-00-01
Small Dual Grommet Kit (10 pc grommet only) (Min 0.27" - Max 0.53" and Min 0.38" - Max 0.70")	Small Dual Grommet Kit (10)	911495-00-00
Small 6-Port Drop Cable Kit—2 grommets with tie wrap and foam tape. Allows six cable entries (Min 0.20" - Max 0.37" and flat drop)	Small 6 Port Drop Kit	FC000573
Adjustable Aerial Hanger Kit Bracket Kit (included with closure)	Adjustable Hanger LG-400/500/600	911497-00-00
Extended Offset Aerial Hanger Kit LG-400/500/600	Offset Hanger LG-400/500/600	91990-00

LG-600

Ordering Information

DESCRIPTION	MODEL NO.	AFL NO.
LG-600 Aerial Weathertight Fiber Optic Splice Closure—Stores 384 single fusion or 1152 mass fusion, includes (4) cable kits for sealing/retention and (2) ground terminals with removable bond and hanger brackets. Not included: Splice Trays or Cable Grounding Kits	LG-600-U-0	FC000029
LL-2400 Single Splice Tray—Stores (24) single fusion splices. Maximum of 12 trays in the LG-600.	LL-2400	91710-06
LL-2448 Universal Splice Tray—Stores (24) single fusion or (4) mass fusion splices (48 F). Maximum of 8 trays in the LG-600, *Mechanical	LL-2448	911289-00-02
LL-4848 Mass Splice Tray—Stores (12) mass fusion splices (144 F). Maximum of 8 trays in the LG-600	LL-4848	911437-00-02
LL-2448-48S Single Splice Tray—Stores (48) single fusion splices. Maximum of 8 trays in the LG-600	LL-2448-48S	FA000045
Large Single Grommet Kit with retention hardware (Min 0.44" - Max 1.00")	Large Single Grommet Kit	FC000623
Large Single Grommet Kit (10 pc grommet only) (Min 0.44" - Max 1.00")	Large Single Grommet Kit (10)	91918-00
Large Dual Grommet Expansion Kit—Includes: (2) Dual grommets and hardware (Min 0.40" - Max 0.70" and Min 0.60" - Max 0.90")	Large Dual Grommet Kit	911406-00-00
Large 6 Port Drop Cable Kit—2 Grommets with retention bracket. Allows six cable entries (Min 0.23" - Max 0.48" and flat drop)	Large 6 Port Drop Kit	FC000352
Adjustable Aerial Hanger Kit Bracket Kit (included with closure)	Adjustable Hanger LG-400/500/600	911497-00-00

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LG-600-FTTx

The LightGuard (LG) 600 FTTx/32 Aerial Weathertight Fiber Optic Splice Closure is designed for small count fiber splicing (up to 96 single or 288 mass) in a butt or in-line configuration. Utilized in aerial applications, the LG-600-FTTx/32 is ideal for accommodating up to 24 drop cables and 32 connections with AFL's slim LGX® 118 adapter plate by placing 16 simplex adapters at each end of the inner security enclosure. Additionally, the closure can house 1x4, 1x8, 1x16, or 1x32 PLC splitter combinations and requires only a common can wrench for installation.



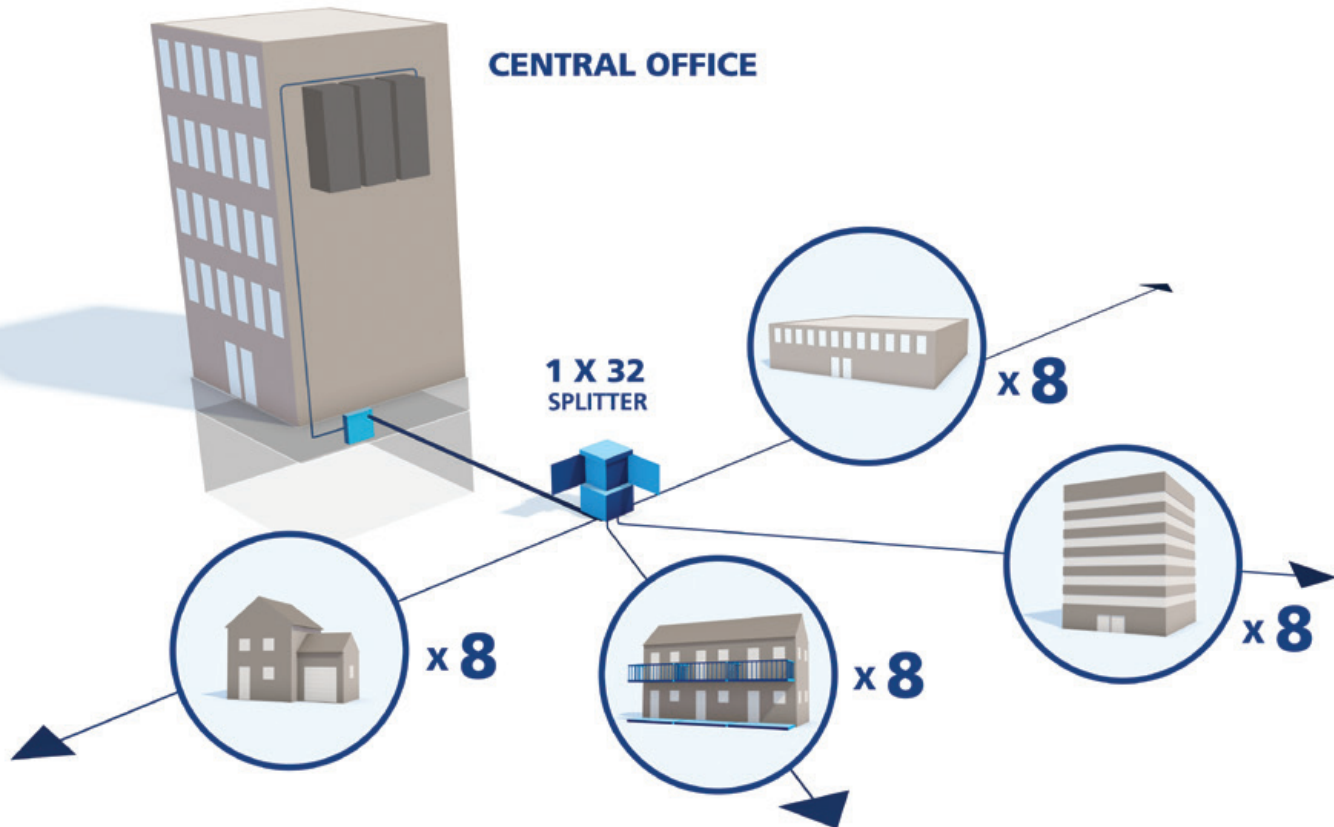
Ordering Information

DESCRIPTION	MODEL NO.	AFL NO.
LG-600-FTTx/32 Aerial Weathertight Fiber Optic Splice Closure—Stores 96 single fusion or 288 mass fusion, includes (6) cable kits for sealing/retention and (2) ground terminals with removable bond, splice tray and hanger brackets. Not included: Cable Grounding Kits	LG-600-FTTx/32	FC000806
LL-2450 Single Splice Tray—Stores (12) single fusion splices. Maximum of 2 trays in the LG-600-FTTx/32.	LL-2450	91957-00
LL-4850 Mass Splice Tray—Stores (8) mass fusion splices (96 F). Maximum of 2 trays in the LG-600-FTTx/32.	LL-4850	91958-00
LL-1248 Universal Splice Tray—Stores (12) single fusion splices or (8) mass fusion splices (96 F), *Mechanical. Maximum of 2 trays in the LG-600-FTTx/32.	LL-1248	91121-00-00
Large Single Grommet Kit with retention hardware (Min 0.44" - Max 1.00")	Large Single Grommet Kit	FC000623
Large Single Grommet Kit of (10 pc grommet only) (Min 0.44" - Max 1.00")	Large Single Grommet Kit (10)	91918-00
Large Dual Grommet Expansion Kit—Includes: (2) Dual grommets and hardware (Min 0.40" - Max 0.70" and Min 0.60" - Max 0.90")	Large Dual Grommet Kit	911406-00-00
Large 6 Port Drop Cable Kit 2 Grommets with retention bracket—Allows six cable entries (Min 0.23" - Max 0.48" and flat drop)	Large 6 Port Drop Kit	FC000352
Adjustable Aerial Hanger Kit Bracket Kit (included with closure)	Adjustable Hanger LG-400/500/600	911497-00-00

* [See Aerial Accessories specification sheet.](#)
[See Splice Tray specification sheet.](#)

SPLITTING

Centralized Split



Exterior Distribution Cabinets

IDEAA® Cabinets

Specifications

THROUGH PORTS	HEIGHT	WIDTH	DEPTH	SPLITTER CAPACITY	INPUT/PASS
Up to 288 Fiber	38"	20"	20"	9	24
432 Fiber	46"	20"	20"	14-15	24 (48 available)
576 and 864	48"	42.5"	20"	28	144

Ordering Information

DESCRIPTION	AFL NO.
PAD MOUNT WITH SKIRT AND 100 FOOT TAILS	
IDEAA Exterior Distribution Cabinet - 72 Pad, 1 x 72 Fiber Distribution Cable (Loose Tube), 1 x 24 Fiber Input Cable (Loose Tube)	EA000307
IDEAA Exterior Distribution Cabinet - 144 Pad, 1 x 144 Fiber Distribution Cable (Loose Tube), 1 x 24 Fiber Input Cable (Loose Tube)	EA000304
IDEAA Exterior Distribution Cabinet - 216 Pad, 1 x 216 Fiber Distribution Cable (Loose Tube), 1 x 24 Fiber Input Cable (Loose Tube)	EA000305
IDEAA Exterior Distribution Cabinet - 288 Pad, 1 x 288 Fiber Distribution Cable (Loose Tube), 1 x 24 Fiber Input Cable (Loose Tube)	EA000301
IDEAA Exterior Distribution Cabinet - 432 Pad, 2 x 216 Fiber Distribution Cable (Loose Tube), 1 x 24 Fiber Input Cable (Loose Tube)	EA000321
IDEAA Exterior Distribution Cabinet - 864 Pad, 2 x 432 Fiber Distribution Cable (Wrapping Tube Cable (WTC), with SpiderWeb Ribbon®), 1 x 144 Fiber Input Cable (Wrapping Tube Cable (WTC), with SpiderWeb Ribbon®)	EA000590
PAD MOUNT WITH SKIRT AND 100 FOOT TAILS	
IDEAA Exterior Distribution Cabinet - 144 Pole, 1 x 144 Fiber Distribution Cable (Loose Tube), 1 x 24 Fiber Input Cable (Loose Tube)	EA000314
IDEAA Exterior Distribution Cabinet - 288 Pole, 1 x 288 Fiber Distribution Cable (Loose Tube), 1 x 24 Fiber Input Cable (Loose Tube)	EA000302
IDEAA Exterior Distribution Cabinet - 432 Pole, 2 x 216 Fiber Distribution Cable (Loose Tube), 1 x 24 Fiber Input Cable (Loose Tube)	EA000322



IDEAA® Splitter Modules

Specifications

PARAMETER	VALUE				
	1X4	1X8	1X16	1X32	1X64
Wavelength Range (nm)	1280 - 1650				
Typical Insertion Loss (dB)	6.7	9.8	12.9	16.6	19.8
Max Insertion Loss (dB)	7.4	10.5	14	17.5	21
Max IL Uniformity (dB)	1	1	1.5	2	2.2
Return Loss (dB)	≥55				
Directivity (dB)	≥55				
Max PDL (dB)	0.3				

IDEAA Exterior Distribution Enclosures

Specifications

PARAMETER	VALUE
Material - Housing	16 Gauge Aluminum
Dimensions (H x W x D) in.	20.5 x 11.25 x 8.75
Weight	15 lbs.
Coating	Electrostatically applied powder paint
Covers	Standard - molded-in snap finger and 3/8 in. hex head fastener

Ordering Information

DESCRIPTION	AFL NO.
Exterior Distribution Enclosure – Splice Version – Includes 96 distribution pigtails, 12 feeder pigtails and 5 LL-4808 splice trays	EA000378
Exterior Distribution Enclosure – Stub Version – Includes 50 ft. 96-fiber loose tube distribution cable stub and 50 ft. 12-fiber loose tube feeder cable stub	EA000379
Channell Pedestal Mounting Kit	EA000384
Emerson Pedestal Mounting Kit	EA000385

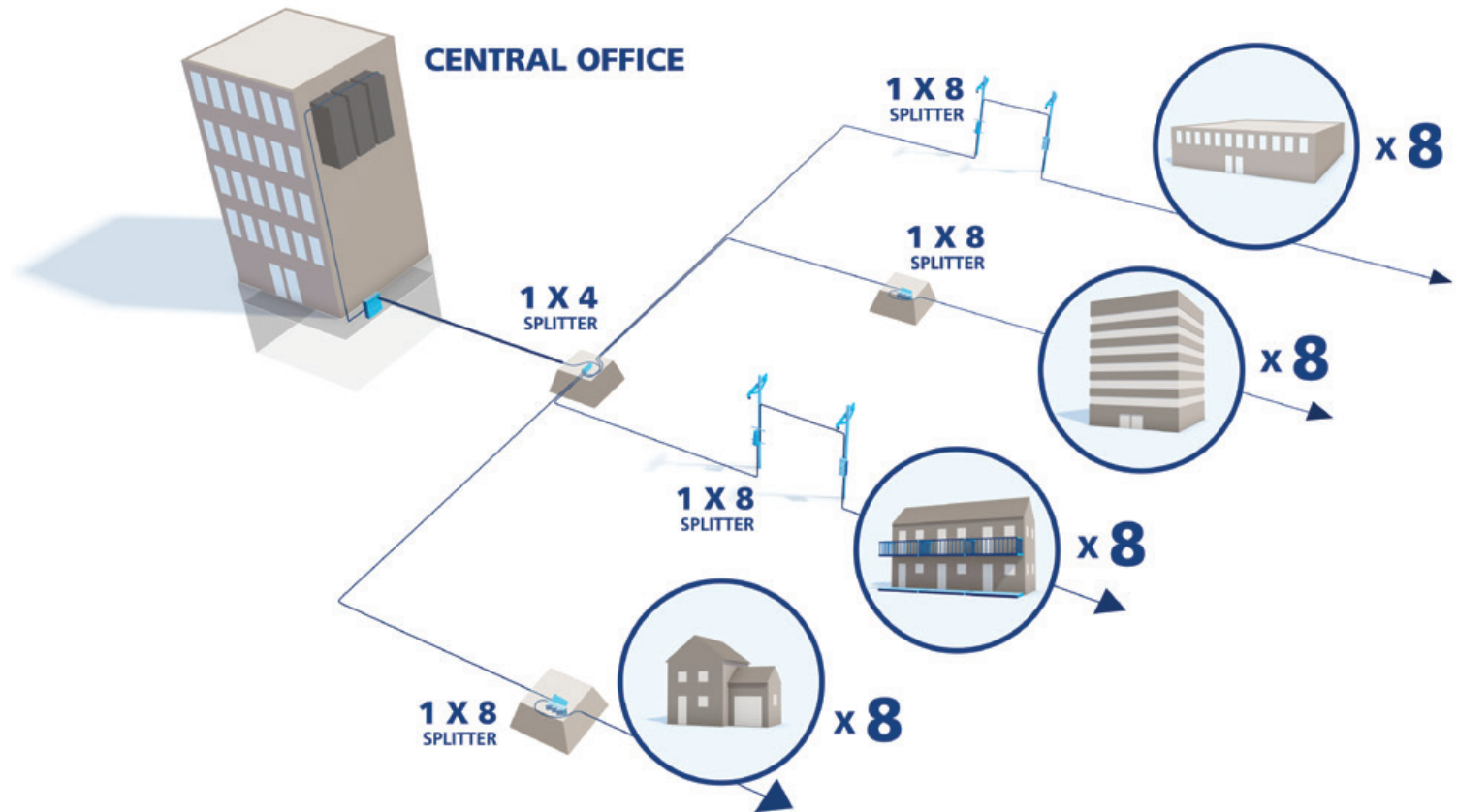
Ordering Information

DESCRIPTION	AFL NO.
IDEAA Module, SC, 1X32	EA000102
IDEAA Module, SC OUTPUT, LC INPUT, DUAL 1x16	EA000583
IDEAA Module, SC, 1X16	EA000103
IDEAA Module, SC, 1X8	EA000104
IDEAA Module, SC, 1X4	EA000105
IDEAA Module, LC, 2X32	EA000547
IDEAA Module, MTP, 3X96	EA000101



IDEAA Splitter Module and Exterior Distribution Enclosure in Pedestal

Distributed Split



NETWORK ACCESS POINT

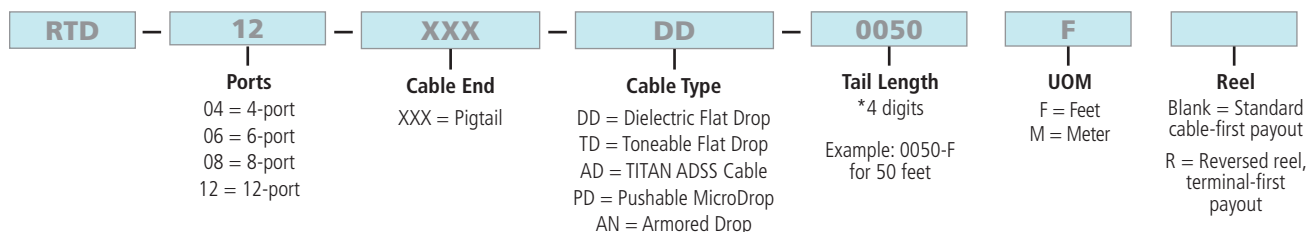
Multiport Terminals

Specifications

PARAMETER	NO. OF PORTS	VALUE
Dimensions (L x W x H)	4- and 6-port	12.4" x 4.9" x 3.0" (315 mm x 125 mm x 76 mm)
	8- and 12-port	15.5" x 6.1" x 3.8" (394 mm x 195 mm x 96 mm)
Weight	4- and 6-port	1.5 lb (0.7 kg)
	8- and 12-port	2.5 lb (1.1 kg)

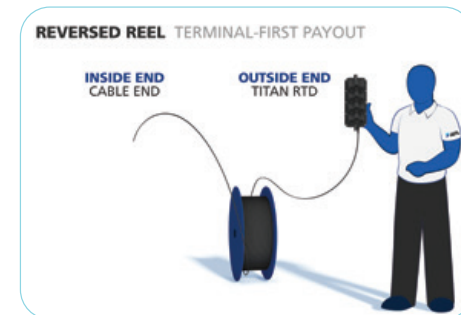
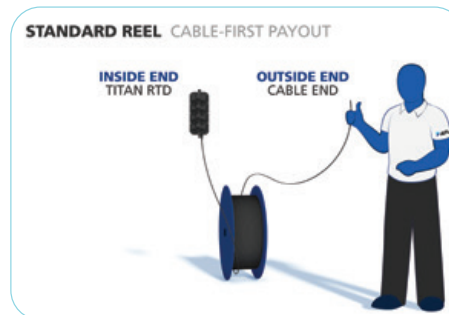


Ordering Information



Common Multiport Tail Length Distribution:

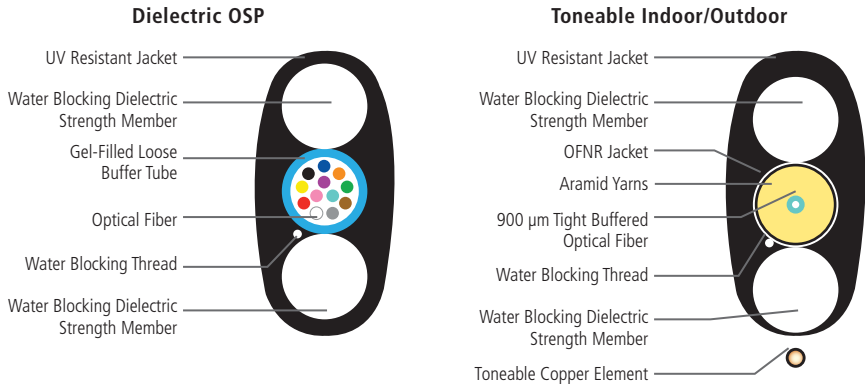
100 ft, 200 ft, 500 ft, 750 ft, 1000 ft, 1500 ft, 2000 ft, 2500 ft



[Back to Table of Contents](#)

Hardened Drops

Cable Components



Specifications

PARAMETER	VALUE
Insertion Loss, Maximum	0.50 dB
Insertion Loss, Typical	0.15 dB
Reflection	≤ -65 dB
Operating Temperature	-40°C to +75°C
Retention Force	25 lbs (111 N)
Dust Cap Pulling Eye Tension	100 lbs (444 N)*

*One fiber only. Two or four fiber drops should not be pulled by the dust cap pulling eye.

Ordering Information

TASC

Outside End Connector

XXX = No connector
TASC = Trident
ASC = Angle SC

XXX

Inside End Connector

XXX = No connector
TASC = Trident
ASC = Angle SC

TD

Cable Type

DD = Dielectric Flat Drop
TD = Toneable Flat Drop
KTD = Toneable Indoor/Outdoor Flat Drop
KDD = Dielectric Indoor/Outdoor Flat Drop
AN = Armored Drop
PD = Pushable MicroDrop

001

Fiber Count

001
002
004

Q

Fiber Type

Q = Single-mode
ITU-T G.652.D

Z = Single-mode
ITU-T G.657.A2 BIF
(for I/O flat drop)

0100

Cable Length

*4 digits
Example: 0100F
for 100 feet

F

UOM

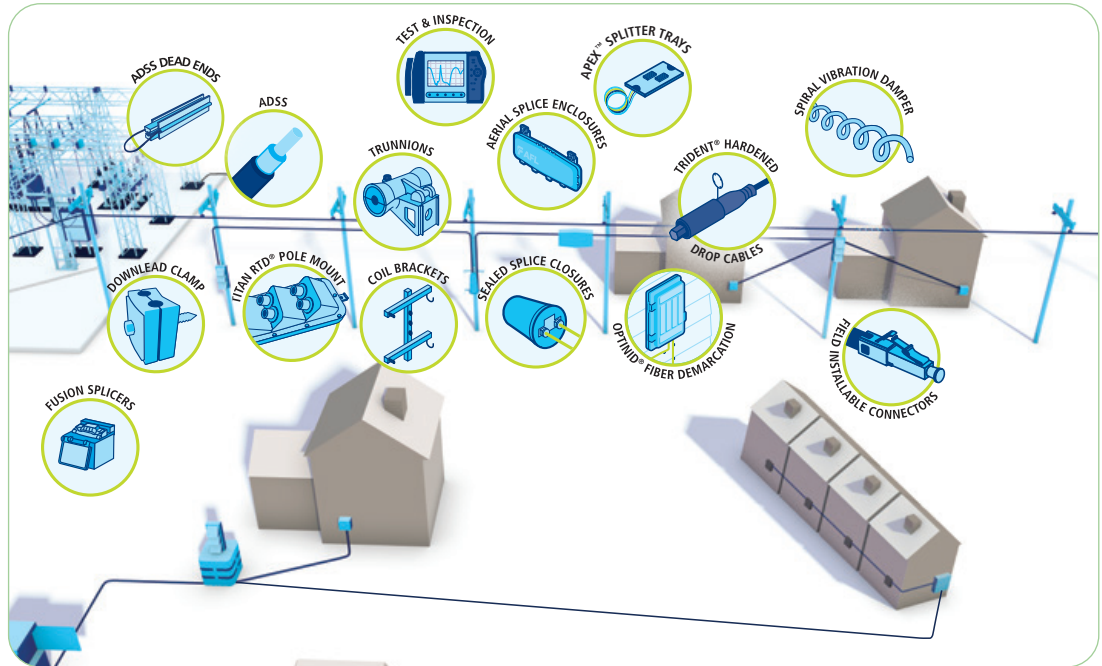
F = Feet
M = Meter

Common Drop Length Distribution:

100 ft, 250 ft, 350 ft, 500 ft, 750 ft, 1000 ft, 1200 ft, 1500 ft

PREMISE AND MULTI-DWELLING UNITS (MDU)

For FTTH deployments, fiber may be deployed to a single-family residence or some type of multi-dwelling unit. AFL offers a wide variety of demarcation boxes to meet these varying application requirements. Connectors and pre-terminated cables are often used here to connect fiber to the end-point.



Demarcation

OptiNID® Duo Enclosure

Houses up to 4 SC connections.



Ordering Information

O	A	A	X	A	1	X	P	S	S	P	P
OptiNID Duo		Base		Adapter		900 µm Pigtail Kit		Splice Holder		Left Entry Port	Right Entry Port
O = OptiNID Duo		A = Base with two U-Shaped drop-in grommets B = Base with two holes for various entry options		X = No Adapter A = SC/APC Simplex B = SC/UPC Simplex L = LC/UPC Duplex N = LC/APC Duplex		X = No Pigtail A = SC/APC B = SC/UPC L = LC/UPC N = LC/APC		X = No Splice Holder S = Splice Holder		A = Heyco compression fitting for 0.095" to 0.29" round cable B = Heyco compression fitting for 0.170" to 0.45" round cable D = PVC conduit fitting for 3/4" conduit G = Rubber grommet K = Heyco compression fitting for 0.26" to 0.545" round cable L = Heyco compression fitting for 2 round cables up to 0.15" M = Heyco compression fitting for flat drop cable N = PVC conduit fitting for 1/2" conduit U = U-shaped grommet for U-shaped grommet base	
	Cover Logo		Lockscrew		Adapter Quantity		Grounding Plate		Security/Splice Cover		
	A = Standard AFL logo Contact AFL for custom logo options		X = No lockscrew (standard) 1 = 3/8" Hex lockscrew		1-4		X = No Grounding P = 2-Lug Grounding Plate		X = No Cover S = Security/Splice Cover K = Security/Splice Cover with pin-in-hex security screw		

NOTE: Options A-N available with the two-hole entry option only

Field-Installable Connectors

Choosing between a mechanical connector and a fusion spliced connector throughout the network can be a big decision. AFL has both capabilities; below is a summary comparison. Each project is different, and both are proven solutions for connectorization.

The FASTConnect® connector uses a mechanical splice and the FUSEConnect® connector uses a fusion splice.

Comparison at-a-Glance

	FASTConnect	FUSEConnect
Installation time	Fastest	Fast
Optical performance	Good	Best
Skill level	Novice	Moderate
Re-enterable/re-usable	Re-enterable	No
Power required for installation	No	Yes
Costs	Least expensive	Low cost
Special tools required	No	Requires fusion splicer
All tools required	Fiber stripper	Fiber stripper
	Kevlar scissors	Kevlar scissors
	Fiber cleaning fluid	Fiber cleaning fluid
	Lint-free wipes	Lint-free wipes
	Permanent marker	Permanent marker
	Precision fiber cleaver	Precision fiber cleaver
		Fusion splicer
		Cord splitter tool*

*Required only for certain connectors

	FASTConnect	FUSEConnect
Optical performance	IL max: < 0.5 dB RL max: ≥ 50 dB	IL max: < 0.3 dB RL max: ≥ 65 dB
Installation time	1-2 minutes	2-3 minutes
Skill level	Novice	Moderate
Tools required	Common fiber tools and fiber cleaver	Common fiber tools, fiber cleaver and fusion splicer

	FASTConnect	FUSEConnect
Optical performance		✓
Installation time	✓	
Skill level	✓	
Tool cost	✓	
Connector cost	✓	
Re-enterable	✓	
Reliability		✓

FASTConnect® Field-Installable Connectors

Specifications

PARAMETER	TYPE	VALUE
Insertion Loss:	Single-mode - UPC	Average: 0.2 dB, Maximum: 0.5 dB
	Single-mode - APC	Average: 0.3 dB, Maximum: 0.6 dB
	Multimode - PC	Average: 0.1 dB, Maximum: 0.5 dB
Return Loss at Room Temperature:	Single-mode - UPC	Average: -50 dB, Maximum: -45 dB
	Single-mode - APC	Average: -55 dB, Maximum: -50 dB
	Multimode	Average: -25 dB, Maximum: -20 dB
Operating Temperature		-40°C to +75°C

Ordering Information

FIBER TYPE	HOUSING COLOR	CABLE SIZE	AFL NO.	
			PACKAGE OF 6	PACKAGE OF 100
FASTCONNECT SC				
Single-mode, UPC	Blue	900 μm	FAST-SC-SM-6	FAST-SC-SM-100
Single-mode, APC	Green	900 μm	FAST-SC-SMAU-6	FAST-SC-SMAU-100
Single-mode, APC	Green	4.8 mm	FAST-SC48-SMAU-6	FAST-SC48-SMAU-100
FASTCONNECT LC				
Single-mode, UPC	Blue	900 μm	FAST-LC-SM-6	FAST-LC-SM-100

FASTConnect® Universal Tool Kit

Ordering Information

DESCRIPTION	AFL NO.
FASTConnect High Precision Tool Kit with CT50 Cleaver	CS001201
FASTConnect High Precision Tool Kit without cleaver	CS001201-NC
FASTConnect High Precision Tool Kit with CT08 Cleaver	CS010975

Tool Kits include:

Cleaver, FAST SC Assembly Tool, FAST LC Assembly Tool, 3 mm Cable Clamp, 2 mm Cable Clamp, 0.25/0.9 mm Cable Clamp, Fiber Stripper, Kevlar Scissors, Fiber Preparation Fluid, Lint-free Cloth Wipes, Marker Pen, Installation Instructions, Strip Length Template and a Carrying Case.



CT08 Cleaver



CT50 Cleaver



FASTConnect SC Connector

FUSEConnect® Splice-on Connectors

Specifications

PARAMETER	VALUE
Connector Type	SC, LC, FC, ST
Cable Type	900 μm, 2 mm, 3 mm, 4.8 mm (SC only)
Polish	APC, UPC, PC
Insertion Loss	SM: 0.15 dB (average), 0.3 dB (maximum) MM: 0.10 dB (average), 0.3 dB (maximum)
Return Loss	SM: ≤ -65 dB (APC), ≤ -55 dB (UPC) MM: ≤ -35 dB (PC)
Operating Temperature	-40°C to +75°C

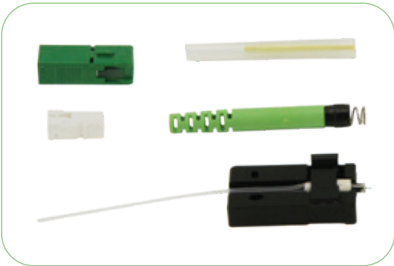


Splicing a FUSEConnect ST Connector

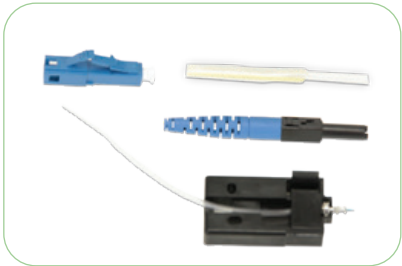
Ordering Information

CONNECTOR TYPE	BOOT TYPE	AFL NO.*
		UPC SM (BLUE)
SC	900 μm	FUSE-SC9SMU-6
	3 mm	FUSE-SC3SMU-6
	4.8 mm	FUSE-SC48SMU-6
LC	900 μm	FUSE-LC9SMU-6
	2 mm	FUSE-LC2SMU-6

* AFL NO. is for one pack of 6 pieces



FUSEConnect SC Kit



FUSEConnect LC Kit

FUSEConnect® Universal Tool Kit

Ordering Information

DESCRIPTION	AFL NO.
FUSEConnect Tool Kit (includes items below)	FUSE-TL-KT
Tool Case	CS001202
Fiber Stripper	CS001205
Kevlar Scissors	C095257
Lint-Free Wipes	FM000413
Fiber Preparation Fluid	FPF1-00-0900
Permanent Marker	C015830
Cord Splitter Tool	FUSE-ST-TL
FUSEConnect Accessory Kit	FUSE-AC-KT

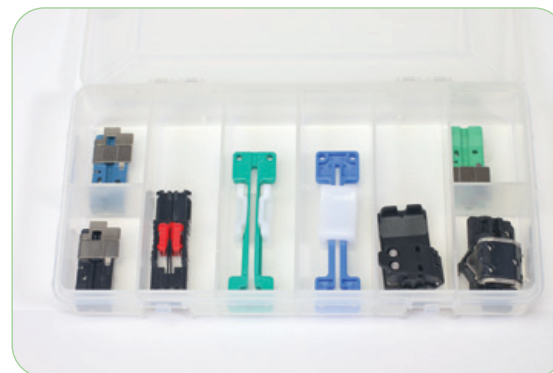
FUSEConnect Accessory Kit (includes items below)	FUSE-AC-KT
Utility Storage Box	CS012351
Clamp for holding 3 mm Simplex Cordage	S014704
Clamp for holding 2 mm Simplex Cordage	S014705
250 µm / 900 µm Fiber Clamp	CS004442
3 mm FUSEConnect Fiber Holder	S014695
2 mm FUSEConnect Fiber Holder	S014696
900 µm FUSEConnect Fiber Holder	S014697
CLAMP-S70D Sheath Clamp	S015862
CLAMP-S31S Sheath Clamp	S017101

Cord Splitter Tool	FUSE-ST-TL
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Legacy Splicer Accessories (Required for Fanout Splicing)	
CLAMP-S21B Sheath Clamp	S016853
CLAMP-S60D Sheath Clamp	S014750



FUSEConnect Tool Kit Contents



FUSEConnect Accessory Kit

Cable Assemblies

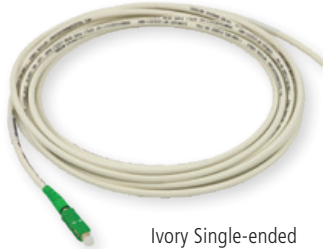
Pigtail Assemblies

When splicing connectors at the demarcation box (NID) and more space is available to maintain a splice sleeve, a pigtail can be used.

Ordering Information

POLISH	FIBER TYPE	CONNECTOR INTERFACE AFL NO.		
		SC	ST	LC
900 μm TIGHT-BUFFERED PIGTAIL KITS, 3 METER, 12-FIBER				
APC	SMF	C223312-0003	—	CS002951-0003
UPC	SMF	C223492-0003	CS003979-0003	CS001037-0003
PC	62.5 μm	CS000386-0003	CS002150-0003	CS002067-0003
PC	50 μm	CS001373-0003	CS002136-0003	CS002081-0003
PC	50 μm LO	CS003056-0003	CS003980-0003	CS003058-0003

Drop Cable Assemblies



Ivory Single-ended



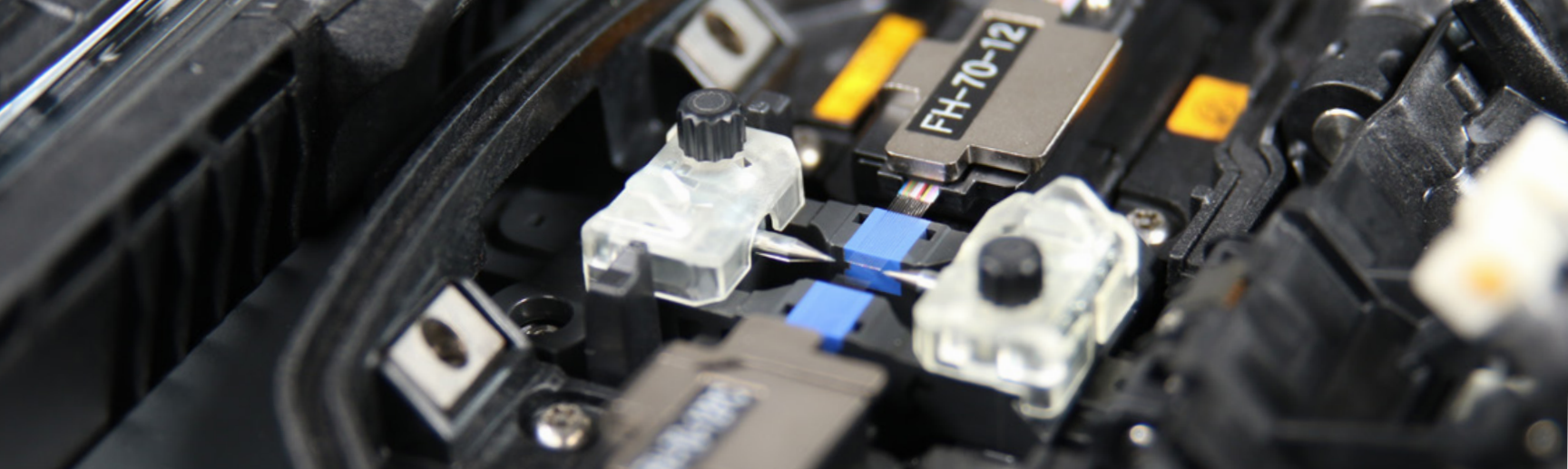
Black Double-ended

Specifications

INSERTION LOSS		RETURN LOSS		FIBER TYPE	MAX. ATTENUATION		NOMINAL DIAMETER INCHES (MM)		TENSION LBS (N)		BENDING RADIUS INCHES (MM)	
MAX.	TYP.	MAX.	TYP.		1310 NM	1550 NM			INSTALLATION	LONG TERM	INSTALLATION	LONG TERM
0.25 dB	0.15 dB	-65 dB	-68 dB	Bend Insensitive G.657.B3	0.5 dB/km	0.5 dB/km	0.11 in. (3.0 mm)	0.19 in. (4.8 mm)	100 lbs. (450 N)	30 lbs. (150 N)	0.2 in. (5 mm)	0.2 in. (5 mm)

Ordering Information

ASC		KR	001	X	0010	FT	BLACK
Connector End A	Connector End B	Cable Type	Fiber Count	Fiber Type	Cable Length	Unit of Measure	Color
ASC = Angle SC USC = Ultra SC	ASC = Angle SC USC = Ultra SC Blank = Single Ended	K48R = Indoor/Outdoor 4.8 mm KR = Indoor/Outdoor 3.0 mm	001 = 1	X = Bend Insensitive G.657.B3		Blank = Meters FT = Feet	Ivory Black



FUSION SPLICERS

AFL proudly supplies and services the premier fusion splicing product line offered in North America through our parent company, Fujikura's fusion splicing solutions. Fujikura's pioneering spirit and keen focus on exceptional quality over the past three decades have established Fujikura as the leader in fusion splicing technology and product value.

AFL operates the only authorized repair facility for Fujikura splicing products in the U.S. AFL technicians are fully trained in repair and adjustment procedures in strict accordance with Fujikura specifications. When you choose a Fujikura splicing solution, AFL provides 24/7 technical support as well as complimentary on-site training with every splicer purchased.

90S Fusion Splicers

Specifications

PARAMETER		VALUE
Fiber Alignment Method		Active core alignment
Fiber Count Can Be Spliced		Single fiber
Applicable Fiber	Fiber Type	Single mode optical fiber
	Cladding Dia.	Multi mode optical fiber 80 to 150 µm
Applicable Coating	Sheath Clamp	Coating dia. : Max. 3,000 µm Cleave length : 5 to 16 mm
Fiber Splice Performance	Splice Loss	ITU-T G.652 : Avg. 0.02 dB
		ITU-T G.651 : Avg. 0.01 dB
		ITU-T G.653 : Avg. 0.04 dB
		ITU-T G.654 : Avg. 0.04 dB
		ITU-T G.655 : Avg. 0.04 dB
		ITU-T G.657 : Avg. 0.02 dB
	Splice Time	SM FAST mode : Avg. 8 to 10 sec.
		SM AUTO mode : Avg. 11 to 13 sec.
		AUTO mode : Avg. 14 to 16 sec.
Applicable Protection Sleeve	Sleeve Type	Heat-shrinkable sleeve
	Sleeve Length	Max. 66 mm
	Sleeve Dia.	Max. 6.0 mm before shrinking
Sleeve Heat Performance	Heat Time	60 mm slim mode : Avg. 9 to 10 sec. 60 mm mode : Avg. 13 to 15 sec.
Fiber Tensile Test Force		Approx. 2.0 N
Electrode Life		Approx. 5,000 splices
Physical Description	Dimensions W	Approx. 170 mm without projection
	Dimensions D	Approx. 173 mm without projection
	Dimensions H	Approx. 150 mm without projection
	Weight	Approx. 2.8 kg including battery
Environmental Condition	Temperature	Operate : -10 to 50°C Storage : -40 to 80°C
	Humidity	Operate : 0 to 95% RH non-condensing Storage : 0 to 95% RH non-condensing
	Altitude	Max. 5,000 m
AC Adaptor	Input	AC100 to 240 V, 50/60 Hz, Max. 1.5 A

PARAMETER		VALUE
Battery Pack	Type	Rechargeable Lithium Ion
	Output	Approx. DC14.4V / 6,380 mAh
	Capacity	Approx. 300 splice and heat cycles
	Temperature	Recharge : 0 to 30°C Storage : -20 to 30°C
	Battery Life	Approx. 500 recharge cycles
	Recharge Time	Approx. 5 – 8 hours from empty
Display	LCD Monitor	TFT 5 inches with touch screen
	Magnification	200 to 320x
Illumination	V-Grooves	LED lamp
Interface	PC	USB2.0 Mini B type
	External Led Lamp	USB2.0 A type, Approx. DC5V, 500 mA
	Ribbon Stripper	Mini DIN 6 pin, DC12V, Max. 1A
	Wireless	Bluetooth 4.1 LE
Data Storage	Splice Mode	100 splice modes
	Heat Mode	30 heat modes
	Splice Result	20,000 splices
	Splice Image	100 images
Screw Hole For Tripod		1/4-20 UNC
Other Features	Automatic Functions	Splice mode select by fiber type analysis
		Discharge power calibration
		Wind protector: open/close
		Sheath clamp: open
		Heater lid: open/close
	Heater clamp: open/close	
	Reference Guide	Video and PDF file stored in splicer
	Sheath Clamp	Easy sleeve positioning clamp
	Electrode	Replaceable without tool

90S Fusion Splicers

Ordering Information

DESCRIPTION	AFL NO.
90S Fusion Splicer (machine only) – includes: ADC-20 AC Adapter, ACC-14 AC Cord, BTR-15 Battery, ELCT2-16B Spare Electrodes (pair), Sheath Clamps, SP-03 Fiber Holder Set Plates, USB-01 Cable, Alcohol Dispenser, Screwdriver, Splicer Carrying Strap, Quick Reference Guide, TS-03 Tripod Screw, Work Tray J-Plate, SS03 single fiber stripper and CC39 Transit Case with Carrying Strap	S017519
90S Fusion Splicer Kit (with cleaver) – includes: CT50 Cleaver, ADC-20 AC Adapter, ACC-14 AC Cord, BTR-15 Battery, ELCT2-16B Spare Electrodes (pair), Sheath Clamps, SP-03 Fiber Holder Set Plates, USB-01 Cable, Alcohol Dispenser, Screwdriver, Splicer Carrying Strap, Quick Reference Guide, TS-03 Tripod Screw, Work Tray J-Plate, SS03 single fiber stripper and CC39 Transit Case with Carrying Strap	S017521
90S Fusion Splicer without Bluetooth (machine only) – includes: ADC-20 AC Adapter, BTR-15 Battery, ACC-14 AC Cord, ELCT2-16B Spare Electrodes (pair), Sheath Clamps, SP-03 Fiber Holder Set Plates, USB-01 Cable, Alcohol Dispenser, Screwdriver, Splicer Carrying Strap, Quick Reference Guide, TS-03 Tripod Screw, Work Tray J-Plate, S03 Single Fiber Stripper and CC39 Transit Case with Carrying Strap	S017520
One Year Extended Warranty	S012996
Two Year Extended Warranty	S013000

* See [page 43](#) for Recommended Products for the 90S Fusion Splicer



 Bluetooth®



In Work Tray

90R Fusion Splicers

Specifications

PARAMETER		VALUE
Fiber Alignment Method		Self cladding alignment with melting surface tension
Fiber Count Can Be Spliced		Up to 16 fiber ribbon
Applicable Fiber	Fiber Type	Single-mode optical fiber Multimode optical fiber
	Cladding Dia.	Approx. 125 µm
Applicable Coating	Sheath Clamp	Coating shape : Refer to options Cleave length : 10mm
Fiber Splice Performance	Splice Loss	ITU-T G.652 : Avg. 0.05 dB
		ITU-T G.651 : Avg. 0.02 dB
		ITU-T G.653 : Avg. 0.08 dB
		ITU-T G.655 : Avg. 0.08 dB
		ITU-T G.657 : Avg. 0.05 dB
	Splice Time	SM FAST mode : Avg. 14 to 15 sec. SM AUTO mode : Avg. 19 to 20 sec.
Applicable Protection Sleeve	Sleeve Type	Heat-shrinkable sleeve
	Sleeve Length	Max. 66 mm
	Sleeve Dia.	Max. 6.0 mm before shrinking
Sleeve Heat Performance	Heat Time	40 mm FP-05 mode : Avg. 38 to 40 sec. 40 mm FP-04T mode : Avg. 17 to 19 sec.
Fiber Tensile Test Force		Single 60 mm mode: Avg. 13 to 15 sec.
Electrode Life		Approx. 2.0 N
Physical Description	Dimensions W	Approx. 1,500 splices
	Dimensions D	Approx. 170 mm without projection
	Dimensions H	Approx. 173 mm without projection
	Weight	Approx. 150 mm without projection
Environmental Condition	Temperature	Approx. 2.6 kg including battery
		Operate : -10 to 50°C
	Humidity	Storage : -40 to 80°C
		Operate : 0 to 95% RH non-condensing
AC Adaptor	Altitude	Storage : 0 to 95% RH non-condensing
	Input	Max. 3,700 m AC100 to 240 V, 50/60 Hz, Max. 1.5 A

PARAMETER		VALUE
Battery Pack	Type	Rechargeable Lithium Ion
	Output	Approx. DC14.4V / 6,380 mAh
	Capacity	Approx. 165 splice and heat cycles
	Temperature	Recharge : 0 to 30°C Storage : -20 to 30°C
	Battery Life	Approx. 500 recharge cycles
	Recharge Time	Approx. 5 – 8 hours from empty
Display	LCD Monitor	TFT 5 inches with touch screen
	Magnification	Approx. 20X : 12 Ribbon to 60X : Single
Illumination	V-Grooves	LED lamp
Interface	PC	USB 2.0 Mini B type
	External Led Lamp	USB 2.0 A type, Approx. DC5V, 500 mA
	Ribbon Stripper	Mini DIN 6 pin, DC12V, Max. 1A
	Wireless	Bluetooth 4.1 LE
Data Storage	Splice Mode	100 splice modes
	Heat Mode	30 heat modes
	Splice Result	10,000 splices
	Splice Image	100 images
Screw Hole For Tripod		1/4-20 UNC
Other Features	Automatic Functions	Splice mode select by fiber type analysis
		Discharge power calibration
		Wind protector: open/close
		Sheath clamp: open
		Heater lid: open/close
		Heater clamp: open/close
	Reference Guide	Video and PDF file stored in splicer
	Electrode	Replaceable without tool

90R Fusion Splicers

Ordering Information

DESCRIPTION	AFL NO.
90R Fusion Splicer (machine only) – includes: BTR-15 Battery, ADC-20 AC Adapter, ACC-14 AC Cord, ELCT2-16B Spare Electrodes (pair) with spare V-Grooves (VG12-01), FH-70-12 Fiber Holder, USB Cable, Alcohol Dispenser, Splicer Carrying Strap, Quick Reference Guide, TS-03 Tripod Screw, Video Instruction Manual, Work Tray and CC-39 Transit Case with Carrying Strap	S017509
90R Fusion Splicer Kit (with cleaver & thermal stripper) – includes: BTR-15 Battery, CT50 Cleaver, RS03 Stripper, ADC-20 AC Adapter, ACC-14 AC Cord, ELCT2-16B Spare Electrodes (pair) with spare V-Grooves (VG12-01), FH-70-12 Fiber Holder, USB Cable, Alcohol Dispenser, Splicer Carrying Strap, Quick Reference Guide, TS-03 Tripod Screw, Video Instruction Manual and CC-39 Transit Case with Carrying Strap	S017511
90R Fusion Splicer without Bluetooth (machine only) – includes: BTR-15 Battery, ADC-20 AC Adapter, ACC-14 AC Cord, ELCT2-16B Spare Electrodes (pair) with spare V-Grooves (VG12-01), FH-70-12 Fiber Holder, USB Cable, Alcohol Dispenser, Splicer Carrying Strap, Quick Reference Guide, TS-03 Tripod Screw, Video Instruction Manual and CC-39 Transit Case with Carrying Strap	S017540
90R Fusion Splicer Kit without Bluetooth (with cleaver & thermal stripper) – includes: BTR-15 Battery, CT50 Cleaver, RS01 Stripper, ADC-20 AC Adapter, ACC-14 AC Cord, ELCT2-16B Spare Electrodes (pair) with spare V-Grooves (VG12-01), FH-70-12 Fiber Holder, USB Cable, Alcohol Dispenser, Splicer Carrying Strap, Quick Reference Guide, TS-03 Tripod Screw, Video Instruction Manual and CC-39 Transit Case with Carrying Strap	S017510
One Year Extended Warranty	S012996
Two Year Extended Warranty	S013000

* See [page 43](#) for Recommended Products for the 90R Fusion Splicer



 Bluetooth®



Wind Protector Open

41S Fusion Splicers

Specifications

PARAMETER	VALUE
Model	41S
Applicable Fibers	Single-mode (G.652 & G.657), Multimode (G.651), DSF (G.653), NZDS (G.655)
Cladding Diameter	125 µm
Coating Diameter	250 µm up to 3 mm
Fiber Cleave Length	5 mm to 16 mm
Typical Average Splice Loss	0.03 dB (SM), 0.01 dB (MM), 0.05 dB (DS) and 0.05 dB (NZDS)
Splicing Time	Typical 6 sec with SM
Arc Calibration Method	Automatic, real-time and by using results of previous splice when in AUTO mode, manual arc calibration function available
Splicing Modes	Total 100 splice modes
Splice Loss Estimate	Determined with cladding or core alignment based on method selected by the user
Storage of Splice Result	10,000 splice results
Fiber Display	5 inch TFT color LCD with X or Y view or both X and Y view simultaneously
Magnification	200X for single-camera view and 132X magnification for dual-camera view
Viewing Method	2 axis CMOS camera
Operating Condition	Altitude: 0 to 5,000 m above sea level, -10° to +50° C, Humidity: 0 to 95% RH, non-dew
Mechanical Proof Test	1.96 N
Tube Heater	30 heating modes
Tube Heating Time	Typical 25 sec with FP-60 (60 mm) sleeve
Protection Sleeve Length	60 mm, 40 mm, micro
Splice/Heat Cycles with Battery	Typical 200 cycles with BTR-11A
Electrode Life	5,000 splices
Power Supply	Auto select from 100 V to 240 V with AC adapter, 14.8 V DC with installed battery
Terminals	USB 2.0
Wind Protection	Maximum wind velocity of 15 m/s. (34 mph)
Dimensions	131 x 201 x 79 (mm)
Weight	1,300 g (2.85 lbs) with battery



Ordering Information

DESCRIPTION	AFL NO.
Fujikura 41S Fusion Splicer – includes: Fujikura 41S Fusion Splicer, S31A Sheath clamps (installed), FH-70-250 Fiber Holders (pair), FH-70-900 Fiber Holders (pair), SP-31 Set Plates, ADC-19A AC Adapter, BTR-11A Battery Pack (installed), ACC-09 Power Cord, ELCT2-16B Spare Electrodes (pair), Screwdriver, Operation Manual on CD, Quick Reference Guide, SS-03 Single Fiber Stripper and CC-36 Transit Case	S017090
Fujikura 41S Fusion Splicer Kit with CT50 Cleaver – includes: Fujikura 41S Fusion Splicer, CT50 Cleaver, S31A Sheath clamps (installed), FH-70-250 Fiber Holders (pair), FH-70-900 Fiber Holders (pair), SP-31 Set Plates, ADC-19A AC Adapter, BTR-11A Battery Pack (installed), ACC-09 Power Cord, ELCT2-16B Spare Electrodes (pair), Screwdriver, Operation Manual on CD, Quick Reference Guide, SS-03 Single Fiber Stripper and CC-36 Transit Case	S017091
One Year Extended Warranty	S012996
Two Year Extended Warranty	S013000

* [See page 43](#) for Recommended Products for the 41S Fusion Splicer

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Accessories for the 90S, 90R and 41S Fusion Splicers

DESCRIPTION	FOR USE WITH SPLICER MODEL	AFL NO.
Cleavers and Strippers		
CT08 Cleaver	90S, 41S	S017004
CT50 Cleaver	90S, 90R, 41S	S017030
RS01 Thermal Stripper	90R	S016815
RS02 Thermal Stripper	90R	S016816
RS03 Thermal Stripper	90R	S016817
Fiber Holders (pair)		
FH-70-250 (250 µm coated fiber)	90S, 90R, 41S	S017111
FH-70-900 (900 µm jacketed fiber)	90S, 90R, 41S	S017113
FH-60-LT900 (Loose buffer 900 µm fiber)	90S, 90R, 41S	S015181
FH-70-160 (160 µm coated fiber)	90S	S017095
FH-70-2	90R	S017114
FH-70-4	90R	S017115
FH-70-6	90R	S017116
FH-70-8	90R	S017117
FH-70-10	90R	S017118
FH-70-12	90R	S017119
FH-70-12PC	90R	S017464
(pitch conversion holder for 200 µm loose fibers)		
FH-70-12-200 (200 µm pitch ribbons)	90R	S017681
FH-70-16	90R	S017533
FUSEConnect® Accessories		
FH-FC-20 (900 µm within 2.0 mm sheathing) (each)	90S, 90R, 41S	S014696
FH-FC-30 (900 µm within 3.0 mm sheathing) (pair)	90S, 90R, 41S	S014695
FH-FC-900 (900 µm cable) (each)	90S, 90R, 41S	S014697
CLAMP-FC-2000 (pair)	90S, 90R, 41S	S014705
CLAMP-FC-3000 (pair)	90S, 41S	S014704
Power Supply Options and Equipment		
BTR-11A Battery Pack	41S	S017354
ADC-19A AC Adapter	41S	S017104
ACC-09 Power Cord	41S	S014390
ADC-20 AC Adapter	90S, 90R	S017513
ACC-14 AC Power Cord	90S, 90R	S014536
BTR-15 Battery	90S, 90R	S017512
DCC-20 Power Cord	90S, 90R	S017527
(connects AC Adapter to cigarette lighter socket)		

Power Supply Options and Equipment (cont.)		
DCC-21 Power Cord	90S, 90R	S017528
(connects AC Adapter to power source via alligator clips)		
DCA-03 DC Adapter (Connect AC Adaptor without battery)	90S	S017526
Miscellaneous		
SS03 Single fiber stripper (3 hole)	90S, 90R, 41S	S017098
SS01 Single fiber stripper (1 hole)	90S, 90R, 41S	S017099
ELCT2-16B Electrodes	90S, 90R, 41S	S017103
USB-01 Cable	90S, 41S	S014777
Splicer V-Groove Cleaning Kit	90S, 41S	S014397
SP-31 Set Plate (pair)	41S	S017106
CC-36 Transit Case	41S	S017105
CLAMP-S31A Sheath Clamps	41S	S017100
CLAMP-S31B Sheath Clamps for loose buffer 900 µm	41S	S017101
CC-36 Transit Case	41S	S017105
SP-03 Fiber Holder Set Plates	90S	S017518
Portable Tripod Workstation (see specification sheet)	90S, 90R	S014773
ASW-02 Splicing Workstation (see specification sheet)	90S, 90R	S010532
WT-09R Work Tray Right	90S, 90R	S017515
WT-09L Work Tray Left	90S, 90R	S017516
JP-09 Work Tray J-Plate	90S, 90R	S017517
JP-10 J-Plate (Cooling tray attaches to splicer)	90S, 90R	S017522
JP-10-FC J-Plate with Fiber Clamps	90S, 90R	S017523
TS-03 Tripod Screw (90 Series)	90S, 90R	S017524
ST-02 Fusion Splicer Strap	90S, 90R	S017525
CLAMP-DC-12 (Drop cable clamp for work tray)	90S, 90R	S017550
CC-39 Transit Case	90S, 90R	S017514
FST-12 Fiber Separation Tool	90R	S014012
FAT-04 Fiber Arrangement Tool	90R	S010212
RT-02 Fiber Arrangement Tool	90R	S017465
VG12-01 12 fiber V-groove	90R	S017548
VG12-01-200 12 fiber V-groove (200 µm pitch ribbons)	90R	S017680
VG04-01 4 fiber V-groove	90R	S017551
VG08-01 Spare 8 fiber V-grooves	90R	S017508
VG16-01 16 fiber V-groove	90R	S017552
FAA-03A Ribbon Forming Adhesive (4 oz. bottle)	90R	S008720
FAA-03A Ribbon Forming Adhesive (0.5 liter bottle)		S008622

NETWORK TEST AND INSPECTION

All fiber networks require optical testing and inspection for network verification and troubleshooting. AFL designs test and inspection tools that are easy to use and provide quick results, without complicated training requirements.

AFL has a complete range of fast, easy-to-use tools that inspect and clean fiber end-faces. Using these tools consistently eliminates the #1 cause of network outages – dirty connectors.

FlexScan® FS200 Optical Time Domain Reflectometers (OTDRs)

FlexScan OTDRs are pocket-sized and performance packed. They enable both novice and expert technicians to quickly and reliably troubleshoot optical networks or fully characterize newly installed or repaired networks. FlexScan's SmartAuto® mode uses multi-pulse OTDR scans to quickly and accurately detect, locate, identify and measure network components and faults with just the push of a button. Results may be viewed as traditional OTDR traces or with LinkMap® color-coded icons which clearly identify detected events and their pass/fail status. FlexScan OTDRs weigh less than a pound and feature integrated OLS, OPM, VFL, Bluetooth® and PC-based TRM® 3.0 Test Results Manager reporting software.

Users can significantly reduce multi-fiber test times using FS200-300/304 Flexpress® fast tests plus FlexScan MPO switch control.



FlexScan FS200 SM OTDR

Recommended FlexScan Configuration:
FS200-304-BIPM-P1-W1-A-SC-ENG-US-ACS/ASC-ASC



FlexScan FS200 PRO OTDR Kit

FlexScan® FS200 Optical Time Domain Reflectometers (OTDRs)

Ordering Information

FS200-[MOD]-[KIT]-[PW]-[C]-[LNG]-[AC]-[FR]-[TIP]ª where:

[MOD]	FS200 FLEXSCAN OTDR CONFIGURATION
50	1550 nm only Troubleshooting OTDR
60	1650 nm filtered Live PON Troubleshooting OTDR
100	1310/1550 nm Verification & Troubleshooting OTDR
300	1310/1550 Pt-to-Pt & PON Verification & Troubleshooting OTDR
304	1310/1550/1650 Pt-to-Pt & PON Verification & Troubleshooting OTDR

[KIT]	FS200 FLEXSCAN KIT CONFIGURATION
BAS	Basic kit with soft case, TRM 2.0 Basic, USB cable
PLUS	Adds 150 m Fiber Ring, One-Click cleaner, TRM 2.0 Advanced
PRO	Adds Fiber Ring, One-Click cleaner, TRM 2.0 Advanced, FOCIS Flex
BIPM	BIPM Complete kit adds OFI-BIPM to PRO kit
MPO	Multi-fiber kit includes FlexScan plus MPO Switch, MPO launch cable, OTDR-to-Switch patch cord, OTDR-to-Switch USB cable

[PW]	POWER METER / WIRELESS OPTION
P0-W0	No Source, Power Meter, or Bluetooth/WiFi (FS200-50/60/100 only)
P0-W1	No Source or Power Meter; Includes Bluetooth/WiFi (FS200-300/304 only)
P1-W0	No Bluetooth/WiFi (-304 only); Includes Source, Power Meter
P1-W1	Includes Source, Power Meter, Bluetooth/WiFi (all models except -50)
P1-W1H	Includes Source, Power Meter, Bluetooth/WiFi, hard carry case (all models except -50)

[C]	OTDR / SOURCE CONNECTOR TYPE
A	APC (recommended)
U	UPC

[LNG]	LANGUAGE	DNK	Danish	NOR	Norwegian
ENG	English	FIN	Finnish	POL	Polish
CHS	Chinese Simp.	FRA	French	POR	Portuguese
CHT	Chinese Trad.	ITA	Italian	SPA	Spanish
CZE	Czech	JPN	Japanese	TUR	Turkish
DEU	German	KOR	Korean		

[AC]	DESTINATION COUNTRY	AC PLUGS
US	USA	2-pin, US
EU	European Union	2-pin, EU
UK	United Kingdom	2-pin, UK
CN	China, Australia	2-pin, SAA

[FR]	150 M SMF FIBER RING	[FR]	150 M SMF FIBER RING
Blank	N/A in Basic kits	ASC/ST	FR1-SM-150-ASC-ST
SC/SC	FR1-SM-150-SC-SC	ASC/ASC	FR1-SM-150-ASC-ASC
SC/FC	FR1-SM-150-SC-FC	ASC/AFC	FR1-SM-150-ASC-AFC
SC/LC	FR1-SM-150-SC-LC	ASC/ALC	FR1-SM-150-ASC-ALC
SC/ST	FR1-SM-150-SC-ST	ALC/ALC	FR1-SM-150-ALC-ALC
SC/ASC	FR1-SM-150-SC-ASC	FC/FC	FR1-SM-150-FC-FC
SC/AFC	FR1-SM-150-SC-AFC	FC/ST	FR1-SM-150-FC-ST
SC/ALC	FR1-SM-150-SC-ALC	FC/LC	FR1-SM-150-FC-LC
LC/LC	FR1-SM-150-LC-LC	FC/AFC	FR1-SM-150-FC-AFC
LC/ASC	FR1-SM-150-LC-ASC	AFC/AFC	FR1-SM-150-AFC-AFC
LC/ALC	FR1-SM-150-LC-ALC	ASC-AE2000	FR1-SM-150-ASC-AE2000
ASC/FC	FR1-SM-150-ASC-FC	SC-E2000	FR1-SM-150-SC-E2000

[TIP]ª	FOCIS FLEX TIPS & CLEANING (PRO ONLY)
Blank	Option not available in Basic & PLUS kits
SC	SC-UPC bulkhead tip, 2.5 mm UPC ferrule tip, 2.5 mm cleaning
FC	FC-UPC bulkhead tip, 2.5 mm UPC ferrule tip, 2.5 mm cleaning
LC	LC-UPC bulkhead tip, 1.25 mm UPC ferrule tip, 1.25 mm cleaning
ASC	SC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm cleaning
AFC	FC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm cleaning
ALC	LC-APC bulkhead tip, 1.25 mm APC ferrule tip, 1.25 mm cleaning

ª For additional FOCIS Flex adapter tips, see [FOCIS Flex spec sheet](#).

FOCIS Flex

End-face inspection scope

Ordering Information

DESCRIPTION	AFL NO.
FOCIS Flex Kit, soft carry case / holster, USB cable, AC charger, TRM 2.0 reporting software, reference guide, no tips	FOCIS-FLX-P4XN
FOCIS Flex Kit, soft carry case / holster, USB cable, AC charger, TRM 2.0 reporting software, reference guide, 2 user-selected UPC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner	FOCIS-FLX-P4XU
FOCIS Flex Kit, soft carry case / holster, USB cable, AC charger, TRM 2.0 reporting software, reference guide, 2 user-selected APC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner	FOCIS-FLX-P4XA



FOCIS Flex Adapter Tips

DESCRIPTION	AFL NO.
SC-UPC bulkhead adapter tip	FFLX-01-SC
FC-UPC bulkhead adapter tip	FFLX-01-FC
ST-UPC bulkhead adapter tip	FFLX-01-ST
LC-UPC bulkhead adapter tip	FFLX-01-LC
Universal 2.5 mm, UPC ferrule adapter tip	FFLX-01-U25
Universal 1.25 mm, UPC ferrule adapter tip	FFLX-01-U125
SC-APC bulkhead adapter tip	FFLX-4S-ASC
FC-APC bulkhead adapter tip	FFLX-4S-AFC
LC-APC bulkhead adapter tip	FFLX-4S-ALC
Universal 2.5 mm, APC ferrule adapter tip	FFLX-01-A25
Universal 1.25 mm, APC ferrule adapter tip	FFLX-01-A125



SC/UPC bulkhead



LC/UPC bulkhead



Universal 2.5 mm,
UPC ferrule



Universal 12.5 mm,
APC ferrule



SC/APC bulkhead,
quad-slotted



LC/APC bulkhead,
quad-slotted, with internal prism

Ordering Information

Ordering Information



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Test Results Manager TRM® 2.0/3.0 Software

TRM 2.0/3.0 Basic Software Features

- Generate professional acceptance reports including:
 - OTDR traces
 - Certification loss results/OPM loss results
 - Connector end-face images from FOCIS Flex, FOCIS WiFi PRO and DFS1
 - Connector pass/fail results from FOCIS Flex
- Create certification results and apply Pass/Fail criteria
- Organize test results and document networks to reduce maintenance cost
- Powerful OTDR Batch editing to increase productivity
- Supports Telcordia (GR-196 v1.1, SR-4731 issue 1 & 2) .SOR file formats
- Languages Supported
 - English, Chinese, French, German, Italian, Japanese, Polish, Portuguese, Russian, Spanish & Turkish

Ordering Information

TRM 2.0 Basic software is included with M-Series, C-Series, OFL-Series, FlexTester and FlexScan OTDRs and OPM5 (may be installed in up to 5 PCs). Users may download a full working version of TRM 2.0 (Basic plus Advanced features) and try it for 30 days. Once the evaluation period ends, users must purchase and install a TRM 2.0 Basic or Advanced software license to continue to use TRM. To order the TRM 2.0 software, contact your AFL Sales representative or AFL Customer Support. The TRM 2.0 Basic and Advanced software part numbers are listed below.

DESCRIPTION	AFL NO.
TRM 2.0 Basic Software (OTDR Trace/OLTS Viewer, Batch Editor and Reports)	TRM-00-0900PR
TRM 2.0 Advanced Software (Basic TRM plus Advanced Features and Reports)	TRM-00-0910PR
TRM 2.0 Upgrade from Basic to Advanced Software	TRM-00-0920PR

TRM 2.0/3.0 Advanced Software Features

- Macro/Microbend detection capabilities
 - Identify excess insertion loss due to poor installation and fiber handling
 - Detect insertion loss difference between wavelengths (≥ 0.2 dB)
- Bi-directional trace analysis
 - Averages end-to-end and event loss measurements using results from both directions
 - Bi-directional trace information in the Event table
 - Reverse direction test data for each event
- Comprehensive Reports for Macrobend/Microbend and Bi-directional Trace Analysis
- Export .SOR file contents to .CSV format





Don't Scrub Your Data

The connectors entrusted to carry the critical information that passes through your network deserve far more than a wipe on a t-shirt. Don't risk losing the critical information that passes through your network every day by inspecting and cleaning fiber incorrectly. A one micron diameter speck of dust obscures 1% of a 10 micron fiber core, resulting in about 0.06 dB of additional optical return loss. AFL's industry-leading cleaning and inspection solutions enable optimal data center performance levels and minimal service disruptions.

Visit our [Resource Hub](#) to read the "[New Does Not Equal Clean](#)" blog for more reasons why cleaning is important to keep your networks running in optimal condition.

85% OF ALL **NETWORK FAILURES**
ARE DUE TO
DIRTY CONNECTORS



Cleaning

One-Click® Cleaners

Ordering Information

DESCRIPTION	AFL NO.
One-Click Cleaner SC, ST, FC (500+ cleans)	8500-05-0001MZ
One-Click Cleaner MU/LC (500+ cleans)	8500-05-0002MZ
One-Click Cleaner ODC, outdoor connector (500+ cleans)	8500-05-0004MZ
One-Click Cleaner Mini-100 SC, ST, FC (100+ cleans)	8500-05-0005MZ
One-Click Cleaner Mini-100 MU/LC (100+ cleans)	8500-05-0006MZ
One-Click Cleaner Mini-500 SC, ST, FC (500+ cleans)	8500-05-0009MZ
One-Click Cleaner Mini-500 MU/LC (500+ cleans)	8500-05-0010MZ
One-Click Ultra Cleaner 2.5 (enlarged cleaning) SC, ST, FC (500+ cleans)	8500-05-0007MZ
One-Click Cleaner D-LC, Duplex LC (2 x 500+ cleans)	8500-05-0008MZ
One-Click Cleaner MPO (500+ cleans)	8500-05-0030MZ
One-Click Cleaner MPO-16 (500+ cleans)	8500-05-0013MZ
One-Click Cleaner MT-RJ (500+ cleans)	8500-05-0031MZ



Mini-100 SC, ST, FC



Mini-100 MU/LC



Mini-500 SC, ST, FC



Mini-500 MU/LC



MU/LC



SC/ST/FC



D-LC



Ultra 2.5



MPO

FCP3 Easy-Access Cleaning Kits

Ordering Information

DESCRIPTION	AFL NO.
Basic Easy-Access Cleaning Kit. Includes: FCC2 Fiber Connector Cleaner and Preparation Fluid (can), FCC3 Debris Destroyer Fiber Optic Cleaning Pen, CCTS-12 (for 1.25 mm ferrule) and CCTS-25 (for 2.5 mm ferrule) Connector Cleaning Tips, Cletop-S Type B with White Tape, One-Click Cleaners (SC, LC/MU, Ultra 2.5, MPO/MTP), Soft Carry Case	FCP3-00-0900
Enterprise Easy-Access Cleaning Kit Includes: FCC2 Fiber Connector Cleaner and Preparation Fluid (can), FCC3 Debris Destroyer Fiber Optic Cleaning Pen, CCTS-12 (for 1.25 mm ferrule) and CCTS-25 (for 2.5 mm ferrule) Connector Cleaning Tips, Cletop-S Type B with White Tape, One-Click Cleaners (Duplex LC, LC/MU, Ultra 2.5, MPO/MTP), Soft Carry Case	FCP3-00-0901



FCP3-00-0900



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