



**FIBER TO THE
PEOPLE**

FTTx PRODUCT SOLUTION GUIDE

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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.

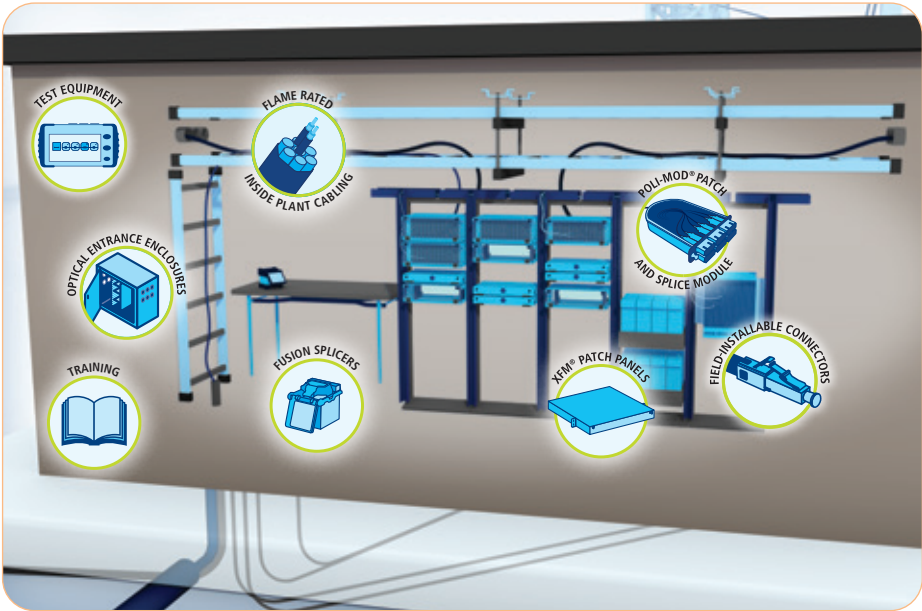
This guide walks through some typical FTTx network solutions from the headend to “x” – for whatever you are taking fiber to, highlighting some of the typical passive AFL products that can be used for your network to bring FIBER TO THE PEOPLE™.



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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



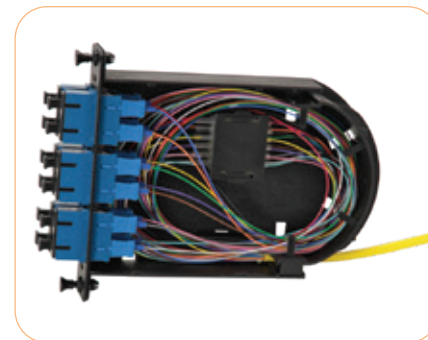
XFM 4RU Patch Panel

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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

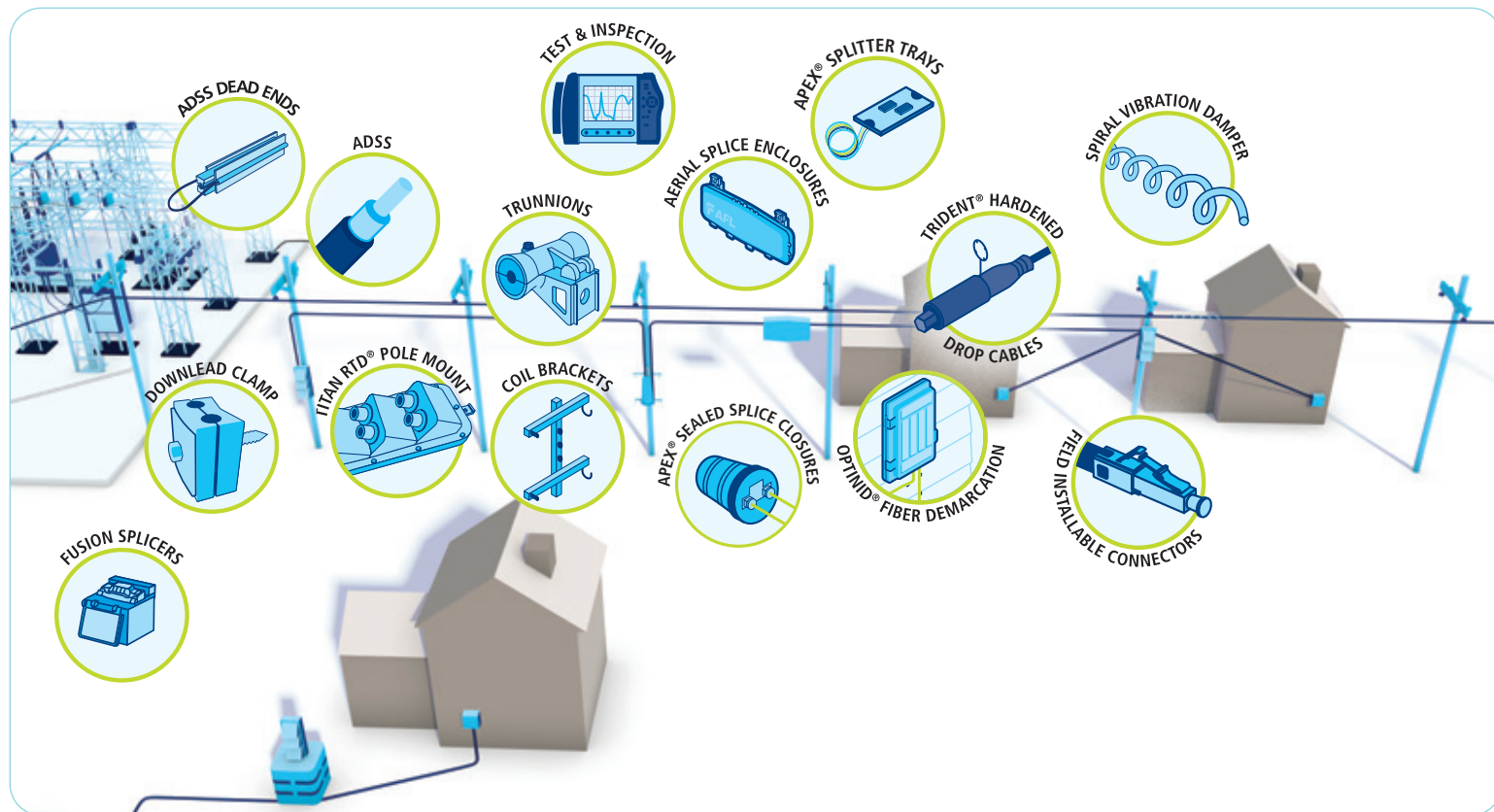
SC	24	WME04FS-USCSM-024120	WME04FS-ASCSM-024120
	48	WME04FH-USFSM-048140	WME04FH-ASFSM-048140
LC	24	WME04FS-UDLSM-024120	WME04FS-ADLSM-024120
	48	WME04FH-UDLSM-048140	WME04FH-ADLSM-048140

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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

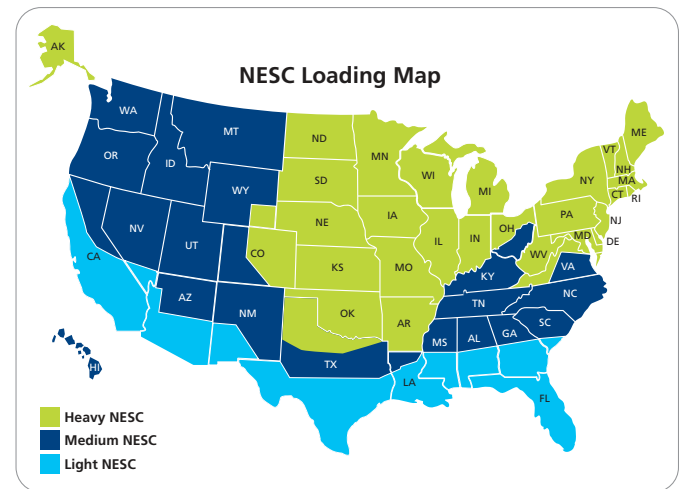
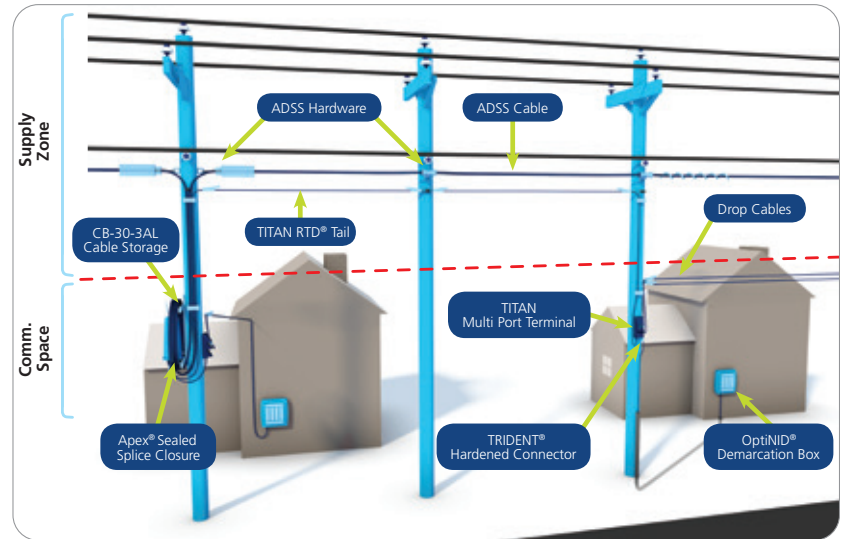
ADSS fiber cables can provide advantages over traditional strand and lash fiber networks in many cases. Some of these advantages to ADSS cables include:

- 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	SPIRAL VIBRATION DAMPER
12	AE0129W520AA4	0.382	ADESE380/400C	ATGN376/419	AGC468468D	AVD327/461
24	AE0249W520AA4					
48	AE0489W520AA4					
72	AE0729O620A08	0.484	ADESE482/510C	ATGN475/525	AGC562562D	AVD462/563
96	AE0969O620A08					
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

* 288F option is only capable of 800 ft max spans for NESC Light

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	DEAD END	TANGENT TRUNNION	DOWNLEAD CLAMP	SPIRAL VIBRATION DAMPER
12	AE0129W520EA3	0.390	ADESE380/400C	ATGN376/419	AGC468468D	AVD327/461
24	AE0249W520EA3					
48	AE0489W520EA3					
72	AE0729O620EA1	0.492	ADESE482/510C	ATGN475/525	AGC562562D	AVD462/563
96	AE0969O620EA1					
144	AE1449O620EA1					
288*	AE2889OC20EA3	0.736	ADESE693/737C	ATGN726/775	AGC750750D	AVD564/770

Design Package 3 – High Strength

NESC SPAN MAXIMUM (@ 1.0% INITIAL SAG) FEET		
LIGHT	MEDIUM	HEAVY
1050*	900	600

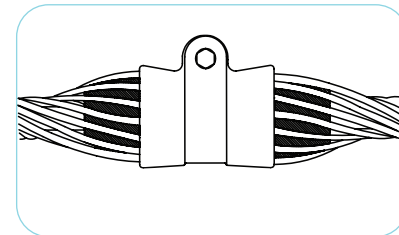
* 288F option is only capable of 975 ft max spans for NESC Light

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	DEAD END	TANGENT TRUNNION**	DOWNLEAD CLAMP	SPIRAL VIBRATION DAMPER
12	AE0129W521EB3	0.472	ADESE452/481C	ATGN420/474	AGC562562D	AVD462/563
24	AE0249W521EB3					
48	AE0489W521EB3					
72	AE0729O621EB5	0.575	ADESE543/577C	ATGN526/575	AGC656656D	AVD564/770
96	AE0969O621EB5					
144	AE1449O621EB5					
288	AE2889OC11BB2	0.835	ADEME835/889C	ATGN826/875	AGC849849D	AVD771/876

** Other tangent hardware may 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	AE0129W521EB3	0.472	ASU462/476
24	AE0249W521EB3		
48	AE0489W521EB3		
72	AE0729O621EB5	0.575	ASU574/598
96	AE0969O621EB5		
144	AE1449O621EB5		
288	AE2889OC11BB2	0.835	ASU815/845

ADSS Suspensions

Design Package 1 – Light Strength

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	ADSS SUSPENSION UNIT
12	AE0129W520AA4	0.382	ASN376/419
24	AE0249W520AA4		
48	AE0489W520AA4		
72	AE0729O620A08	0.484	ASN475/525
96	AE0969O620A08		
144	AE1449O620A08		
288	AE2889OC20EA0	0.732	ASN726/775

Design Package 2 – Medium Strength

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	ADSS SUSPENSION UNIT
12	AE0129W520EA3	0.390	ASN376/419
24	AE0249W520EA3		
48	AE0489W520EA3		
72	AE0729O620EA1	0.492	ASN475/525
96	AE0969O620EA1		
144	AE1449O620EA1		
288	AE2889OC20EA3	0.736	ASN726/775

Design Package 3 – High Strength

FIBER COUNT	PART NUMBER	DIAMETER (IN.)	ADSS SUSPENSION UNIT
12	AE0129W521EB3	0.472	ASN420/474
24	AE0249W521EB3		
48	AE0489W521EB3		
72	AE0729O621EB5	0.575	ASN526/575
96	AE0969O621EB5		
144	AE1449O621EB5		
288	AE2889OC11BB2	0.835	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

Multi-Round Drop Bushing Inserts

Designed for tangent applications, the Multi-Round Drop Bushing Insert supports up to four of the Titan and Trident ADSS cables and is placed inside AFL's Tangent Trunnion Assembly. The Full Assembly includes the trunnion housing, trunnion bushing and multi-round drop bushing insert. This assembly is rated for 100 lbs of slip. A sub-assembly of the tangent trunnion bushing and the Multi-Round Drop Bushing Insert without the metal trunnion housing is also available.

AFL also offers a Multi-Drop Pigtail to be used in conjunction with the Multi-Round Drop Bushing Insert to act as a mid-span aerial spacer. This keeps the four drop cables grouped together so that they are not hanging freely relative to each other in the middle of the span.



Multi-Round Drop Bushing Insert (MDBI-346)



Tangent Assembly with MDBI-346 (ATGNMD346-4)



Tangent Trunnion Bushing with Multi-Round Drop Bushing Insert (ATMDB-346)



Multi-Drop Pigtail (top) and Multi-Drop Pigtail with Bushing Insert and Drop Cables (bottom)

Ordering Information

AFL NO.	DESCRIPTION
MDBI-346	ADSS Multi-Round Drop Bushing Insert
ATMDB-346	Tangent Trunnion Bushing + Multi-Round Drop Bushing Insert (MDBI-346)
ATGNMD346-4	Full Tangent Trunnion Assembly — Trunnion Housing + Trunnion Bushing + Multi-Round Drop Bushing Insert
ATGN960/1045	Tangent Trunnion Assembly without Multi Drop Bushing
2470225	Tangent Trunnion Bushing
MDMSC-346	Multi-Drop Pigtail + Multi-Round Drop Bushing Insert
MDPT-1045	Multi-Drop Pigtail for ADSS and Flat Drop Cables

Flat Drop Bushing Inserts

AFL recommends the ADSS Tangent Trunnion Assembly with the Flat Drop Bushing Insert for hanging Titan and Trident flat drop cables in tangent application. This bushing allows for up to four flat drop cables to be placed into one tangent trunnion assembly and is rated for 100 lbs. of slip. For proper mid-span aerial spacing, the Multi-Drop Pigtail can be used with the Multi-Flat Drop Bushing Insert.



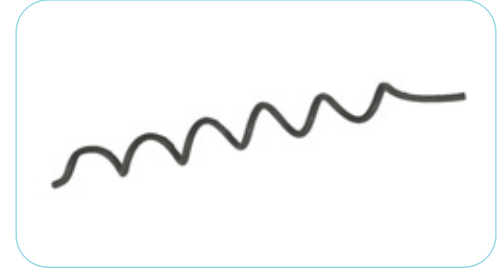
Multi-Flat Drop Bushing Insert
(MDBI-4F)



Tangent Assembly with
MDBI-4F (ATGN960/1045)



Multi-Flat Drop Bushing Insert (left) and Tangent
Trunnion Bushing (right)



Multi-Drop Pigtail

Ordering Information

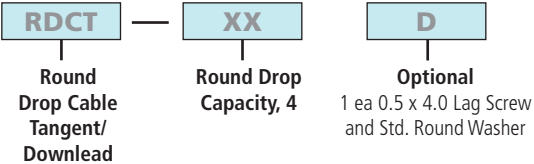
AFL NO.	DESCRIPTION
MDBI-4F	Multi-Flat Drop Bushing Insert
ATGN960/1045	ADSS Tangent Trunnion Assembly
MDPT-1045	Multi-Drop Pigtail
247022S	Tangent Trunnion Bushing

Round Drop Cable Tangent

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

Ordering Information

AFL NO.	ROUND DROP CAPACITY	HARDWARE INCLUDED
RDCT-4	Up to 4	—
RDCT-4D	Up to 4	Lag screw hardware kit

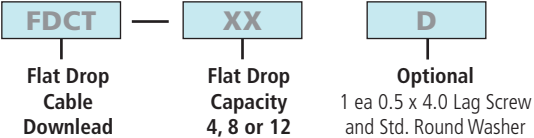


Flat Drop Cable Tangent

The Flat Drop Cable Tangent accessory provides a means of suspending the flat drop cable 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



Mini-Stringing Bracket for ADSS Cable

Mini Brackets are used for short and medium spans of ADSS fiber optic cable as well as Aerial Drop cables. Mini Brackets are sized to fit specific ADSS diameters. Standard Mini Brackets are employed with fitted bushings to provide a good support/groove fit and to prevent the support from damaging the cable. The bolted supports are supplied with aluminum captive bolts to simplify installation with no loose parts.

Ordering Information

PART NUMBER	MAX LINE ANGLE	NESC SPAN MAXIMUM (FEET)		
		HEAVY	MEDIUM	LIGHT
AMBB256	17°	150	275	550
AMBB307	17°	220	400	675
AMBB424	17°	275	450	600
AMBB484-535	17°	275	400	525
AMBB484-535	17°	350	550	675



Mini-Stringing Bracket (AMSB307)

Mini Formed Wire Tangent Support (FTS)

Formed Wire Tangent Supports (FTS) are used with ADSS Mini-Span® 323 and Mini-Span® 383 for short span applications. Tangent supports provide a method of attaching AFL's smallest ADSS Mini-Span designs with excellent unbalanced load capability and bend relief support. This product is designed to connect directly to J-hooks on wood poles for an economical solution.

Ordering Information

PART NUMBER	MAX LINE ANGLE	NESC SPAN MAXIMUM (FEET)		
		HEAVY	MEDIUM	LIGHT
ATS321/330	20°	175	300	500
ATS371/383	20°	180	300	450



ATS 321/330
ATS 371/383

Drop Dead Ends for ADSS Cable

Drop Dead Ends are designed for use either flat or round drop cables.

Flat Drop Dead End

PART NUMBER*	CABLE DIAMETER (IN.)
ADEL4F309/341	0.309" - 0.341"

Round Drop Dead End

PART NUMBER*	CABLE DIAMETER (IN.)
ADED326/365	0.326" - 0.365"

* To order with Drop Dead End with Single-Drop Thimble Eye, add suffix "TE" to Part Number.



Drop Dead End shown with Single-Drop Thimble Eye

Multi-Drop Thimble for ADSS Drop Dead Ends

The Multi-Drop Thimble Eye is used to anchor aerial round drop cables to the distribution structure. The uniform radial slots can accommodate up to four formed wire dead ends per thimble eye and support tensioning up to 90 degrees from the installation hardware. This is particularly useful when double deadending is required.

Ordering Information

PART NUMBER
MDTE4-S

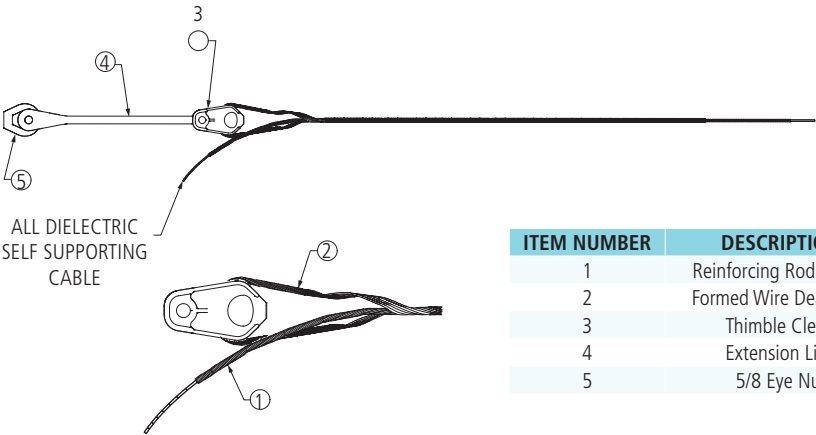


Formed Wire Dead Ends for ADSS Cable

Contact AFL at 1-800-235-3423 for a part number applicable to your cable.



Semi-Limited Tension Formed Wire Dead End



ITEM NUMBER	DESCRIPTION	MATERIAL
1	Reinforcing Rods (SRR)	Galvanized Steel
2	Formed Wire Dead-End	Galvanized Steel
3	Thimble Clevis	Galvanized Steel
4	Extension Link	Galvanized Steel
5	5/8 Eye Nut	Galvanized Steel

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 26](#)). 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 X-2 and X-2S Sealed Splice Closures	AX-BR30
Mounting Bracket for Apex X-3 and X-3H Sealed Splice Closures	AX-BR33

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



Coil Bracket holds excess ADSS 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

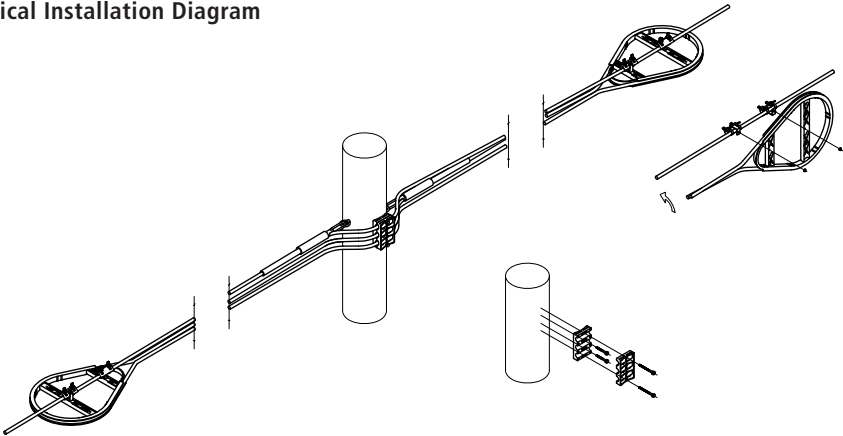
PARAMETER	FOSP-ADSS-12	FOSP-ADSS-17
Nominal Channel Width	0.625"	1.00"
Minimum Bend Diameter	12"	17.5"

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.



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.

LM-Series OSP MicroCore® Cable

Physical and Mechanical Data

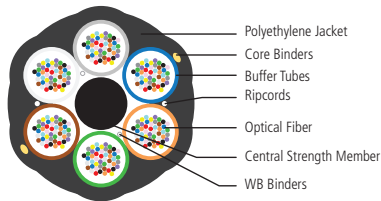
LM-SERIES AFL NO.*	FIBER COUNT	FIBERS/ NUMBER OF TUBES**	DIAMETER	MIN. MICRODUCT INNER DIAMETER	WEIGHT	MAXIMUM TENSILE LOAD		MINIMUM BEND RADIUS	
			INCHES (MM)	INCHES (MM)	LBS/1000FT (KG/KM)	INSTALLATION	OPERATION	INSTALLATION	OPERATION
LM012xC6101NS	12	12/1 (5 fillers)	0.31 (7.9)	0.39 (10.0)	31 (46)	300 (1334)	90 (400)	6.5 (16)	5 (12)
LM024xC6101NS	24	12/2 (4 fillers)	0.31 (7.9)	0.39 (10.0)	32 (48)	300 (1334)	90 (400)	6.5 (16)	5 (12)
LM048xC6101NS	48	12/4 (2 fillers)	0.31 (7.9)	0.39 (10.0)	33 (49)	300 (1334)	90 (400)	6.5 (16)	5 (12)
LM072xC6101NS	72	12/6	0.31 (7.9)	0.39 (10.0)	34 (51)	300 (1334)	90 (400)	6.5 (16)	5 (12)
LM096xO6101NS	96	24/4 (2 fillers)	0.31 (7.9)	0.39 (10.0)	34 (51)	300 (1334)	90 (400)	6.5 (16)	5 (12)
LM144xO6101NS	144	24/6	0.31 (7.9)	0.39 (10.0)	36 (53)	300 (1334)	90 (400)	6.5 (16)	5 (12)
LM288xR6101NS	288	48/6	0.41 (10.4)	0.51 (13.0)	63 (93)	300 (1334)	90 (400)	8.5 (21)	6.5 (16)
LM432xOI301NS	432	24/18	0.50 (12.6)	0.63 (16.0)	87 (130)	300 (1334)	90 (400)	10 (26)	7.5 (19)

* Replace "x" in AFL number with Fiber Identifier in the Fiber Specifications table below.

** Fibers are arranged in 12-fiber sets identified by colored binder threads. For fiber identification details, [click here](#).

Optical Fiber Options

FIBER TYPE	"X"	STANDARD	MODE FIELD DIAMETER	ATTENUATION	
				1300 nm	1550 nm
250 µm Single-mode	9	ITU-T G.652D / 657.A1	9.2 µm nominal	0.35	0.25
Corning 250 µm SMF-28 Ultra	AZ	ITU-T G.652D / 657.A1	9.2 µm nominal	0.35	0.25



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LM200-Series OSP MicroCore® Cable

Physical and Mechanical Data

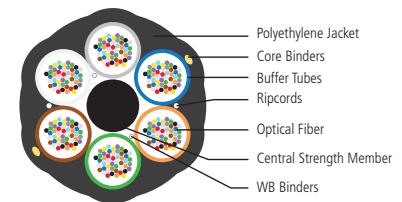
LM-SERIES AFL NO.*	FIBER COUNT	FIBERS/ NUMBER OF TUBES**	DIAMETER		MIN. MICRODUCT INNER DIAMETER	WEIGHT LBS/1000FT (KG/KM)	MAXIMUM TENSILE LOAD LBS (N)		MINIMUM BEND RADIUS INCHES (CM)	
			INCHES (MM)		INCHES (MM)		INSTALLATION	OPERATION	INSTALLATION	OPERATION
LM024xO6101NS	24	24/1 (5 fillers)	0.248 (6.3)		0.315 (8)	21 (31)	200 (890)	60 (267)	5 (13)	4 (10)
LM048xO6101NS	48	24/2 (4 fillers)	0.248 (6.3)		0.315 (8)	22 (33)	200 (890)	60 (267)	5 (13)	4 (10)
LM072xO6101NS	72	24/3 (3 fillers)	0.248 (6.3)		0.315 (8)	23 (34)	200 (890)	60 (267)	5 (13)	4 (10)
LM096xO6101NS	96	24/4 (2 fillers)	0.248 (6.3)		0.315 (8)	24 (36)	200 (890)	60 (267)	5 (13)	4 (10)
LM144xO6101NS	144	24/6	0.248 (6.3)		0.315 (8)	26 (39)	200 (890)	60 (267)	5 (13)	4 (10)
LM288xR6101NS	288	48/6	0.319 (8.1)		0.394 (10)	43 (65)	300 (1334)	90 (400)	6.5 (17)	5 (13)
LM432xT6101NS	432	72/6	0.409 (10.4)		0.512 (13)	70 (104)	300 (1334)	90 (400)	8.5 (21)	6.5 (16)

* "x" denotes fiber type. See optical fiber specification table to complete AFL part number.

** Fibers are arranged in 12-fiber sets identified by colored binder threads. For fiber identification details, [click here](#).

Optical Fiber Options

FIBER TYPE	"X"	STANDARD	MODE FIELD DIAMETER	ATTENUATION	
				1300 nm	1550 nm
200 µm Single-mode	BC	ITU-T G.652.D / 657.A1	9.2 µm nominal	0.35	0.25
Corning 200 µm Single-mode	BA	ITU-T G.652.D / 657.A1	9.2 µm nominal	0.35	0.25



LMHD OSP MicroCore® Cable

Physical and Mechanical Data

LMHD-SERIES AFL NO.*	FIBER COUNT	FIBERS/ NUMBER OF TUBES**	DIAMETER INCHES (MM)	MIN. MICRODUCT INNER DIAMETER INCHES (MM)	WEIGHT LBS/1000FT (KG/KM)	MAXIMUM TENSILE LOAD LBS (N)		MINIMUM BEND RADIUS INCHES (CM)	
						INSTALLATION	OPERATION	INSTALLATION	OPERATION
LM012xC6201#1	12	12/1 (5 fillers)	0.40 (10.1)	0.512 (13)	53 (78)	600 (2670)	180 (801)	8 (20)	6 (15)
LM024xC6201#1	24	12/2 (4 fillers)	0.40 (10.1)	0.512 (13)	53 (79)	600 (2670)	180 (801)	8 (20)	6 (15)
LM048xC6201#1	48	12/4 (2 fillers)	0.40 (10.1)	0.512 (13)	54 (81)	600 (2670)	180 (801)	8 (20)	6 (15)
LM072xC6201#1	72	12/6	0.40 (10.1)	0.512 (13)	56 (83)	600 (2670)	180 (801)	8 (20)	6 (15)
LM096xO6201#1	96	24/4 (2 fillers)	0.40 (10.1)	0.512 (13)	56 (83)	600 (2670)	180 (801)	8 (20)	6 (15)
LM144xO6201#1	144	24/6	0.40 (10.1)	0.512 (13)	57 (85)	600 (2670)	180 (801)	8 (20)	6 (15)
LM288xR6201#1	288	48/6	0.49 (12.4)	0.630 (16)	86 (129)	600 (2670)	180 (801)	10 (25)	7.5 (19)
LM432xOI201#1	432	24/18	0.58 (14.6)	0.787 (20)	117 (174)	600 (2670)	180 (801)	12 (30)	9 (22)

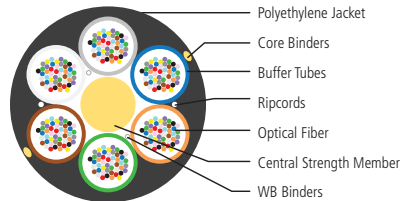
* Replace # with "N" for all-dielectric cable or "T" for toneable option.

"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

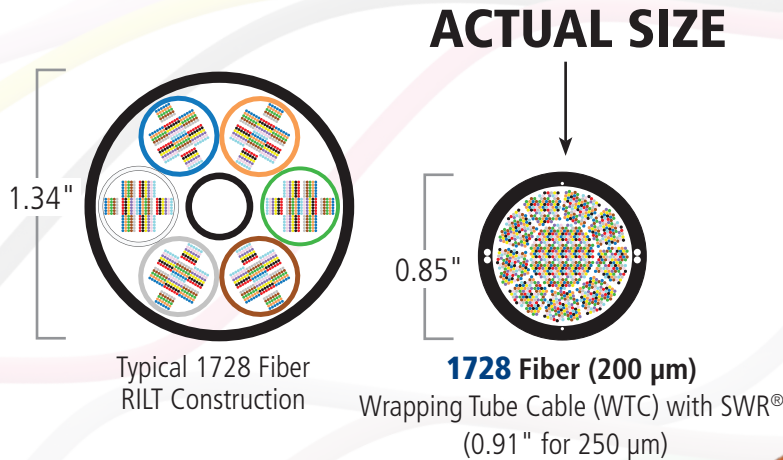
FIBER TYPE	"X"	STANDARD	MODE FIELD DIAMETER	ATTENUATION	
				1300 nm	1550 nm
Single-mode	9	ITU-T G.652D / 657.A1	9.2 µm nominal	0.35	0.25
Corning SMF-28 Ultra	AZ	ITU-T G.652D / 657.A1	9.2 µm nominal	0.35	0.25



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

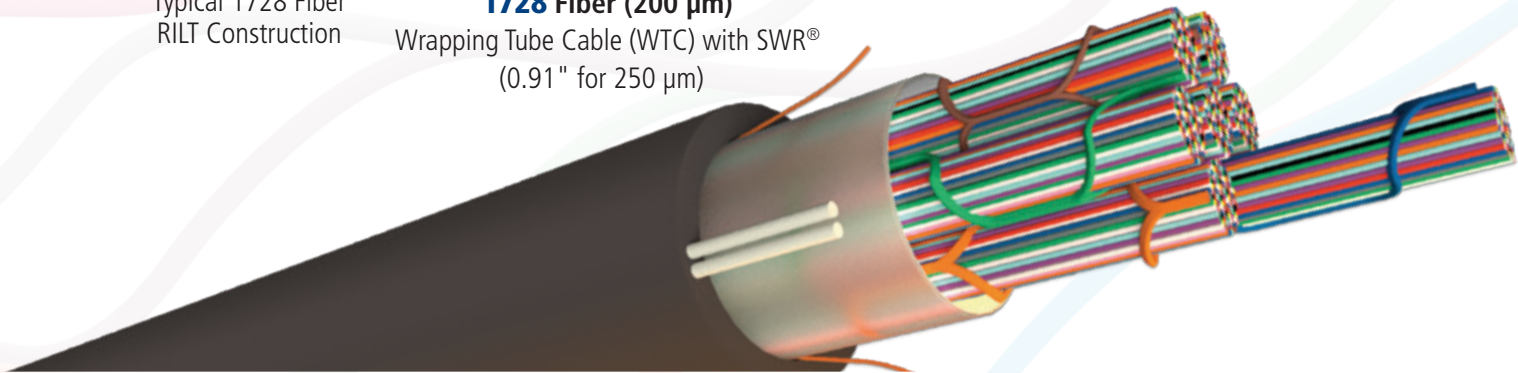
Ultra-high density outside plant cable designed specifically for fiber-to-the-home (FTTH) or access markets. It is compliant with the latest issue of the outside plant cable standard, Telcordia GR-20. With an ultra-high density and a new ribbon technology called SpiderWeb Ribbon, WTC provides the smallest cable diameter and lowest weight, high-fiber count ribbon cable in the industry. Using 250 μm fiber, fiber counts are available from 144 fibers to 1728 fibers in dielectric or double jacket single armor. Using 200 μm fiber, fiber counts are available from 1728 fibers to 6912 fibers in dielectric only.



Non-Ribbon Ribbon – The technology packed into our patented rollable SpiderWeb Ribbon gives easy access to every fiber and allows for quick ribbon splicing.

Smaller Diameter – Reduce your storage and shipping cost while maintaining the high fiber count necessary for the install. The revolutionary Wrapping Tube Cable is up to 73% lighter than today's ribbon cables.

High Density – Pack up to 51% more fibers into the diameter of Wrapping Tube Cable than today's ribbon cable.



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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	0.43 (11.0)	61 (90)	607 (2700)	8.7 (221)	182 (810)	6.5 (165)
LWSE-288-9-C-288-1-00N1D	288	1 X 288F	0.47 (12.0)	71 (105)	607 (2700)	9.5 (242)	182 (810)	7.1 (181)
LWSE-432-9-C-72-6-00N1D	432	6 X 72F	0.53 (13.5)	91 (135)	607 (2700)	10.6 (270)	182 (810)	8.0 (203)
LWSE-576-9-C-72-8-00N1D	576	8 X 72F	0.59 (15.0)	111 (165)	607 (2700)	11.8 (300)	182 (810)	8.9 (226)
LWSE-864-9-C-72-12-00N1D	864	12 X 72F	0.69 (17.5)	145 (215)	607 (2700)	13.8 (351)	182 (810)	10.3 (262)
LWSE-144-K-C-144-1-00N1D	144	1 X 144F	0.43 (11.0)	61 (90)	607 (2700)	8.7 (221)	182 (810)	6.5 (165)
LWSE-288-K-C-288-1-00N1D	288	1 X 288F	0.47 (12.0)	71 (105)	607 (2700)	9.5 (242)	182 (810)	7.1 (181)
LWSE-432-K-C-72-6-00N1D	432	6 X 72F	0.53 (13.5)	91 (135)	607 (2700)	10.6 (270)	182 (810)	8.0 (203)
LWSE-576-K-C-72-8-00N1D	576	8 X 72F	0.59 (15.0)	111 (165)	607 (2700)	11.8 (300)	182 (810)	8.9 (226)
LWSE-864-K-C-72-12-00N1D	864	12 X 72F	0.69 (17.5)	145 (215)	607 (2700)	13.8 (351)	182 (810)	10.3 (262)
LWSE-1152-K-C-144-8-00N1D	1152	8 X 144F	0.73 (18.5)	161 (240)	607 (2700)	14.6 (371)	182 (810)	10.9 (277)
LWSE-1728-K-C-144-12-00N1D	1728	12 X 144F	0.91 (23.0)	242 (360)	607 (2700)	18.1 (460)	182 (810)	13.6 (346)

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)	12.6 (320)	182 (810)	9.5 (242)
LWSE-288-9-C-288-1-10S1D	288	1 X 288F	0.69 (17.5)	172 (255)	607 (2700)	13.8 (351)	182 (810)	10.3 (262)
LWSE-432-9-C-72-6-10S1D	432	6 X 72F	0.75 (19.0)	202 (300)	607 (2700)	15.0 (381)	182 (810)	11.2 (285)
LWSE-576-9-C-72-8-10S1D	576	8 X 72F	0.81 (20.5)	235 (350)	607 (2700)	16.1 (409)	182 (810)	12.1 (307)
LWSE-864-9-C-72-12-10S1D	864	12 X 72F	0.91 (23.0)	286 (425)	607 (2700)	18.1 (460)	182 (810)	13.6 (346)
LWSE-1728-K-C-144-12-10S1D	1728*	12 X 144F	1.14 (29.0)	410 (610)	607 (2700)	22.8 (579)	182 (810)	17.1 (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

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Apex® Sealed Splice Closure

AFL's Apex® sealed splice closures are used for underground applications and in pole-mount applications typically using a coil bracket (CB-30-3AL and AX-BR33).

The Apex X-3, 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-3H	X-3	X-2	X-2S
Splice Capacity – Single, Mass (SWR®), Mass (Standard)	Single NA, 6912, 1728	864, 5148, 1296	432, 3456, 864	216, 1728, 432
Splice Tray Capacity	6	6	6	6
Cable Diameter, Single Port, in. (mm)	0.40" - 1.38" (10.16 - 35.052)	0.40" - 1.38" (10.16 - 35.052)	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	0.20" – 0.39" (5.0 - 9.9) or flat drop
Dimensions – (L x D) in. (cm)	32.0 x 14 (81.3 x 35.6)	32.0" x 14.0" (81.3 x 35.6)	25.0" x 12.0" (64 x 30)	20.0" x 12.0" (51 x 30)
Weight, No Trays – lbs (kg)	30 (13.6)	30 (13.6)	25 (11.3)	22 (10)
Application	Handhole, Aerial, Pole/Wall, Direct Bury	Direct Bury, Handhole, Aerial, Pole/Wall	Direct Bury, Handhole, Aerial, Pole/Wall	Direct Bury, Handhole, Aerial, Pole/Wall



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Apex® Sealed Splice Closures

Apex X-3, the largest and newest in AFL's family of splice closures, has a maximum capacity of 5,184 fibers, when using 200 µm SpiderWeb Ribbon® (SWR®). The X-3 complements the X-2 and X-2S models, which have maximum capacities of and 3,456 and 1,728 fibers, respectively, when using 200 µm SWR. With its wedge-based sealing system, the cable strain relief allows a cable to be installed into the closure and sealed in seconds, reducing overall installation time.

Refer to the [Apex X-3H](#), [Apex X-3](#), [Apex X-2](#) and [Apex X-2S](#) specification sheets for more information.

Ordering Information

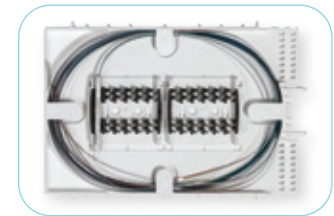
AX	—	2	—	B	—	L	—	0	—	2	—	6	—	B
APEX CLOSURES		CLOSURE SIZE		BASKET TYPE		TRAY TYPE		NUMBER OF TRAYS		CABLE STRAIN RELIEF HARDWARE KITS		NUMBER OF GROUND LUGS		INNER BASKET
		2 = X-2 Size 2S = X-2S Size 3 = X-3 Size 3H = X-3H Size		B = Basket sized for X-2, X-2S, X-3 or X-3H		X = No preinstalled tray L = Tray Loaded with splice modules for X-2 or X-2S L = Square Tray Loaded with splice modules for X-3 or X-3H		Choose: 0 to 6 For X-3H, choose 0 OR 8		Choose: 0 to 6		Choose: 0 to 6		X = No Inner Basket B = Include Inner Basket (X-2 or X-3 models only)

Apex® Splitter Trays

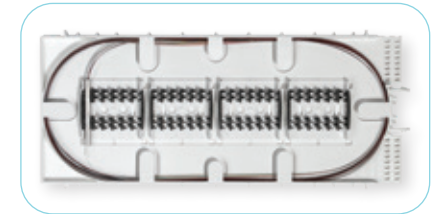
Passive optical splitters, or PLCs (Planar Lightwave Circuits), can be provided preinstalled into the Apex X-2S and Apex X-2 splice trays. PLCs can either be installed and splice within the same tray, or provided with a separate dedicated tray for splicing, with fibers routed between trays using protective 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

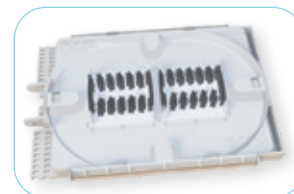
DESCRIPTION	TRAY CAPACITY		AFL NO.
	SINGLE	MASS	
SPLICE TRAYS AND SPLICE MODULES			
X-2S Tray Loaded with One Splice Module	18	72	AX-TRAY-2S-1
X-2S Tray Fully Loaded with Two Splice Modules (288 fibers per tray only recommended for rollable ribbon, e.g. AFL SWR)	36	288	AX-TRAY-2S-2
Additional splice 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.

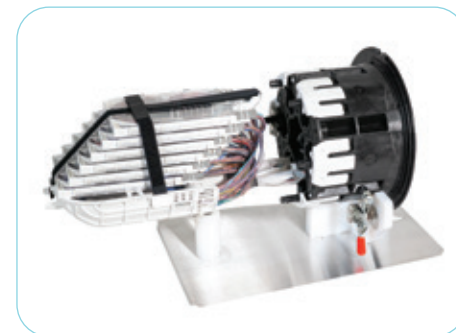
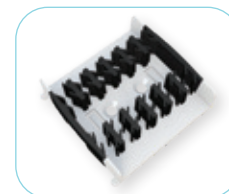
DESCRIPTION	AFL NO.
SLACK STORAGE BASKET	
Replacement slack storage basket tabs – Pack of 25	AX-KIT-BTAB-25

DESCRIPTION	AFL NO.
INSTALLATION ACCESSORIES AND KITS	
X-2S and X-2 Pole/wall mount kit	AX-BR30
X-2S and X-2 Single Cable Strain Relief/Cable Attachment Unit (CAU) Kit	AX-KIT-CBLSTRN
X-2S and X-2 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
X-2 and X-2S Inner Base Gel Replacement Kit	AX-KIT-GEL-2
X-2S Dome Replacement Kit	AX-KIT-DOME-2S

For additional Apex Accessories, [see page 33](#).



Apex X-2S Splice Tray and Splice Module



Apex X-2S Mounted on Installation Stand

Ordering Information

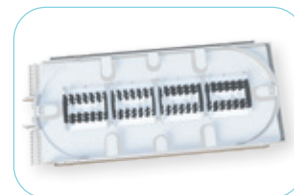
DESCRIPTION	TRAY CAPACITY		AFL NO.
	SINGLE	MASS	
SPLICE TRAYS AND SPLICE MODULES			
X-2 Tray Loaded with Two Splice Modules	36	144	AX-TRAY-2-2
X-2 Tray Fully Loaded with Four Splice Modules (576 fibers per tray only recommended for rollable ribbon, e.g. AFL SWR)	72	576	AX-TRAY-2-4
Additional splice module (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

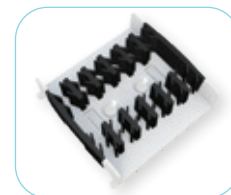
DESCRIPTION	AFL NO.
SLACK STORAGE BASKET	
Clear segmented basket for X-2. Can be used in combination with the basket cover	AX-KIT-SBASKET-2
Replacement slack storage basket tabs – Pack of 25	AX-KIT-BTAB-25

DESCRIPTION	AFL NO.
INSTALLATION ACCESSORIES AND KITS	
X-2S and X-2 Pole/wall mount kit	AX-BR30
X-2S and X-2 Single Cable Strain Relief/Cable Attachment Unit (CAU) Kit	AX-KIT-CBLSTRN
X-2S and X-2 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
X-2 and X-2S Inner Base Gel Replacement Kit	AX-KIT-GEL-2
X-2 Dome Replacement Kit	AX-KIT-DOME-2

For additional Apex Accessories, [see page 33](#).



Apex X-2 Splice Tray



Apex X-2 Splice Module



Clear Segmented Basket



Replacement Slack Storage Basket

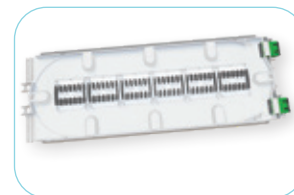
Ordering Information

DESCRIPTION	TRAY CAPACITY		AFL NO.
	SINGLE	MASS	
SPLICE TRAYS AND SPLICE MODULES			
X-3 Tray Fully Loaded with Six (6) Splice Modules (864 fibers per tray only recommended for rollable ribbon, e.g. AFL SWR)	108 triple stacked 144 quad stacked	864	AX-TRAY-3-S-6
Additional splice module (18 single fusion double/quad stacked, 12 mass fusion double stacked, 6 mechanical) Pack of 20	—	—	AX-TRAY-MOD-20
X-3 Square Tray Empty	—	—	AX-TRAY-3-S-E

* 864 fibers per tray with mass fusion (5184 total closure capacity) only recommended for 200 µm type rollable ribbon.
For 250 µm, cut capacity in half with single-stacking.

DESCRIPTION	AFL NO.
INSTALLATION ACCESSORIES AND KITS	
X-3 and X-3H Pole/wall mount kit	AX-BR33
X-3 and X-3H Single Cable Strain Relief/Cable Attachment Unit (CAU) Kit	AX-KIT-CBLSTRN-3
X-3 and X-3H Multi-Drop Cable Entry Kit (fits up to 4 cables 0.20" to 0.39" in diameter or flat drop cable)	AX-KIT-DROP-4-3
X-3 and X-3H Dome to Base O-Ring Replacement Kit	AX-KIT-ORING-3
X-3 and X-3H Dome-to-Base Locking Ring Clamp Replacement Kit	AX-KIT-CLAMP-3
X-3 and X-3H Wedge Replacement Kit	AX-KIT-WEDGE-3
Apex Universal Installation Stand	AX-KIT-U-STAND
X-3 and X-3H Inner Base Gel Replacement Kit	AX-KIT-GEL-3
X-3 and X-3H Dome Replacement Kit	AX-KIT-DOME-3

For additional Apex Accessories, [see page 33](#).



Apex X-3 Splice Tray



Apex X-3 Splice Module

Apex® X-3H Accessories

Ordering Information

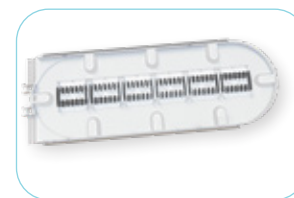
DESCRIPTION	TRAY CAPACITY	AFL NO.
	MASS	
SPLICE TRAYS AND SPLICE MODULES		
X-3H Tray Fully Loaded with Six (6) Splice Modules (864 fibers per tray only recommended for rollable ribbon, e.g. AFL SWR)	864**	AX-TRAY-3-R-6
Additional splice module (18 single fusion triple stacked, 12 mass fusion double stacked, 6 mechanical) – Pack of 20	–	AX-TRAY-MOD-20
X-3H Round Tray Empty	–	AX-TRAY-3-R-E
FP-40 40 mm Single Fiber Slim Protection Sleeve	–	S018262
FP-60 60 mm Single Fiber Slim Protection Sleeve	–	S018263

* 864 fibers per tray with mass fusion (6912 total closure capacity) only recommended for 200 µm type rollable ribbon. For 250 µm, cut capacity in half with single-stacking.

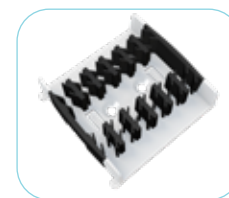
** When using AFL's Slim Protection Sleeves

DESCRIPTION	AFL NO.
INSTALLATION ACCESSORIES AND KITS	
X-3 and X-3H Pole/wall mount kit	AX-BR33
X-3 and X-3H Single Cable Strain Relief/Cable Attachment Unit (CAU) Kit	AX-KIT-CBLSTRN-3
X-3 and X-3H Multi-Drop Cable Entry Kit (fits up to 4 cables 0.20" to 0.39" in diameter or flat drop cable)	AX-KIT-DROP-4-3
X-3 and X-3H Dome to Base O-Ring Replacement Kit	AX-KIT-ORING-3
X-3 and X-3H Dome-to-Base Locking Ring Clamp Replacement Kit	AX-KIT-CLAMP-3
X-3 and X-3H Wedge Replacement Kit	AX-KIT-WEDGE-3
Apex Universal Installation Stand	AX-KIT-U-STAND
X-3 and X-3H Inner Base Gel Replacement Kit	AX-KIT-GEL-3
X-3 and X-3H Dome Replacement Kit	AX-KIT-DOME-3

For additional Apex Accessories, [see page 33](#).



Apex X-3H Splice Tray



Apex X-3H Splice Module

Accessories for Apex® Models X-2, X-2S, X-3 and X-3H

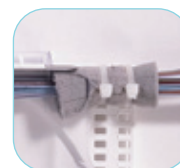
Ordering Information

DESCRIPTION	AFL NO.
INSTALLATION ACCESSORIES AND KITS	
Aerial strand mount hanger kit	AX-KIT-AERIAL-1
X-2S and X-2 Pole/wall mount kit	AX-BR30
Adjustable Aerial Strand Mount Hanger kit	AX-KIT-AERIAL-ADJ
ADSS Aerial hanger brackets	AX-KIT-AERIAL-ADSS
1/4" Colored Mesh Transition Tubing, 250' Spool	AX-KIT-TUBE-014-XX*
Apex O-Ring Grease, Pack of 10	AX-KIT-GREASE-10
Apex Universal Installation Stand	AX-KIT-U-STAND
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
Apex Cable Bonding Kit (Bonds armored cable sheath to ground) – Pack of 10	AX-KIT-GROUND-10
Apex Advanced Fiber Retention System (AFRS) Kit 1 – Used for Ribbon Cable (Flat Matrix, SWR, Tubed, Central Core). Kit includes: Mesh Basket Adapter (2 ea.), Mesh Housing (2 ea.), Mesh Insert (24 ea.), V-Clips (12 ea.), and Clean Cut Gray Mesh (13 ft.).	AX-KIT-AFRSRBN
Apex AFRS Kit 2 – Used for Loose Tube Cable. Kit includes: V-Clip (24 ea.) and Retention Pads (6 sheets of 8 pads)	AX-KIT-AFRSLT
Apex AFRS Kit 3 – V-Clip bulk kit. Includes: V-Clips (120 ea.) and Mesh Inserts (120 ea.)	AX-KIT-AFRSVC-120
Apex AFRS Kit 4 – Mesh bulk kit. Includes: Clean Cut Gray Mesh (100 ft.)	AX-KIT-AFRSMESH-100FT
Apex AFRS Kit 5 – Mesh Housing bulk kit. Includes: Mesh Basket Adapter (10 ea.) and Mesh Housing (10 ea.)	AX-KIT-AFRSAH-10
Apex AFRS Kit 6 – Mesh Basket Adapter bulk kit. Includes: Mesh Basket Adapter (10 ea.)	AX-KIT-AFRSA-10
Apex Restoration Kit, 1000' (Apex X-2S is in Restoration Kit)	AX-2S-B-L-4-4-4-X-1R1000F

* 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



Mesh Transition Tubing



Foam Retention



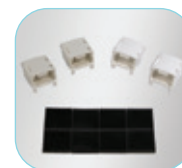
Silicone Spiral Wrap



Universal Installation Stand



AFRS Kit 1



AFRS Kit 2

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

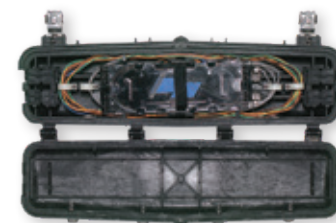
FA000108 is used to attach the weathertight closures to a formed wire dead end.



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

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.



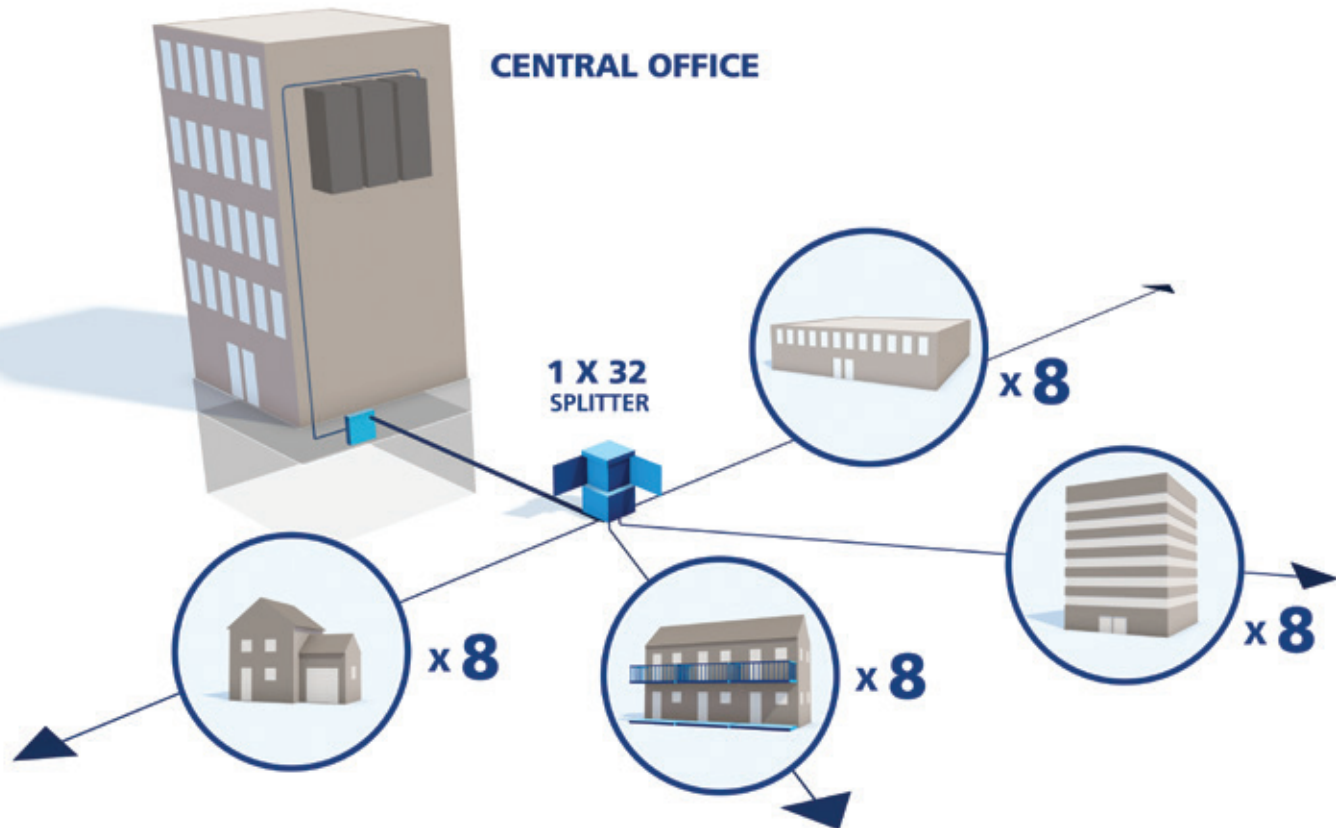
Ordering Information

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

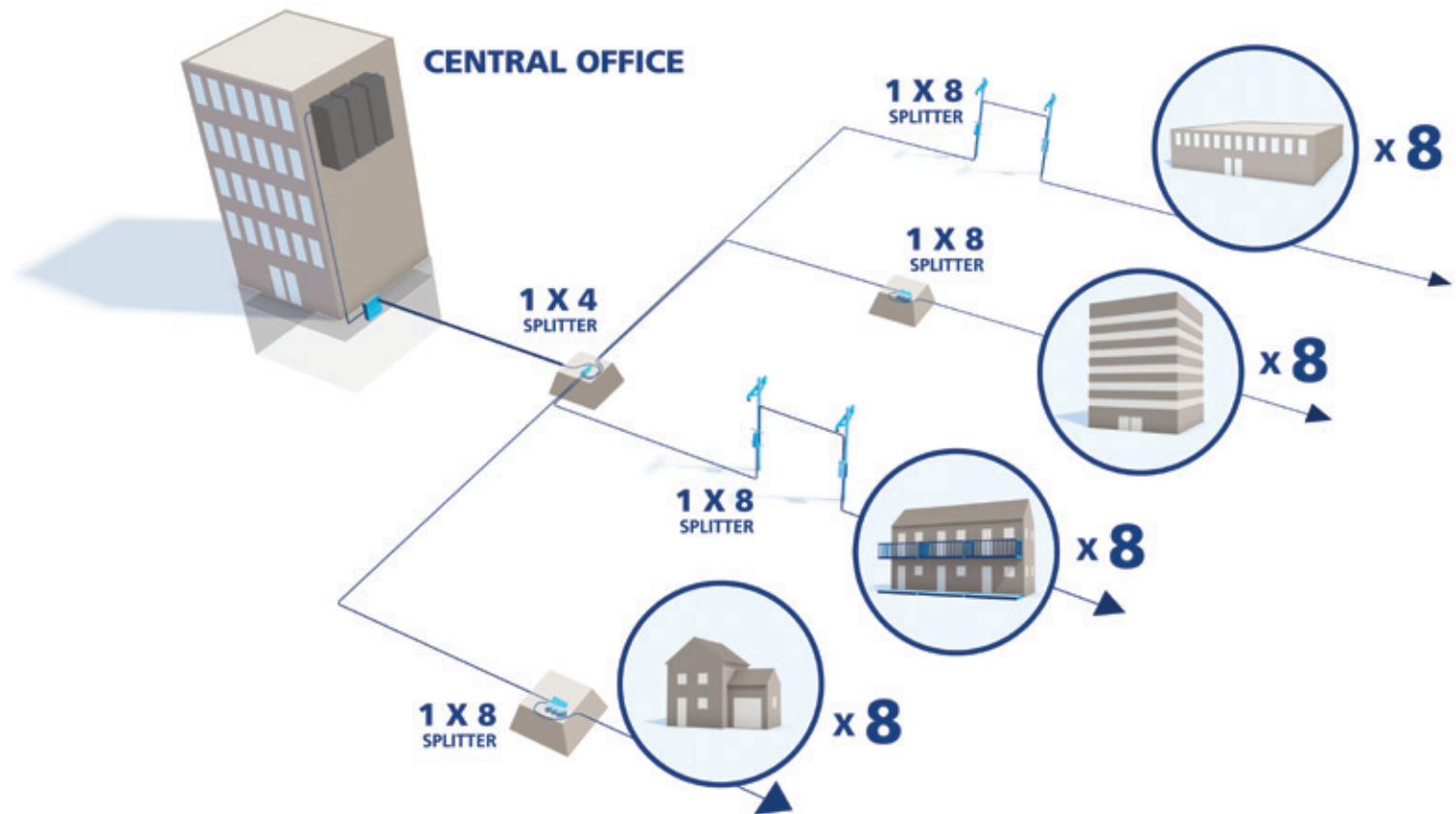
Ordering Information

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

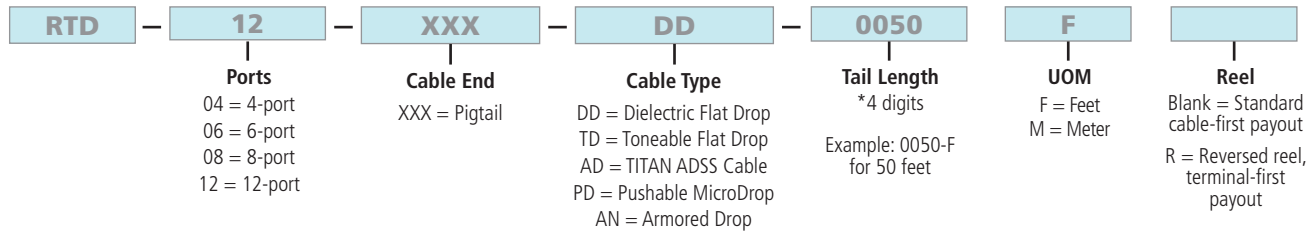
Multiport Terminals

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)

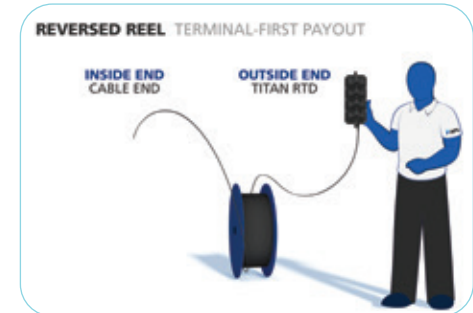
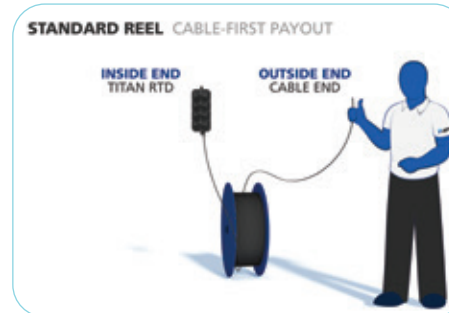


Ordering Information



Common Multiport Tail Length Distribution:

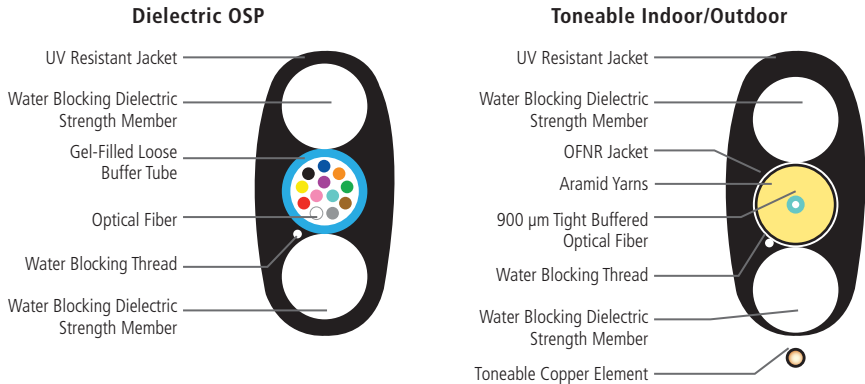
100 ft, 200 ft, 500 ft, 750 ft, 1000 ft, 1500 ft, 2000 ft, 2500 ft



[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

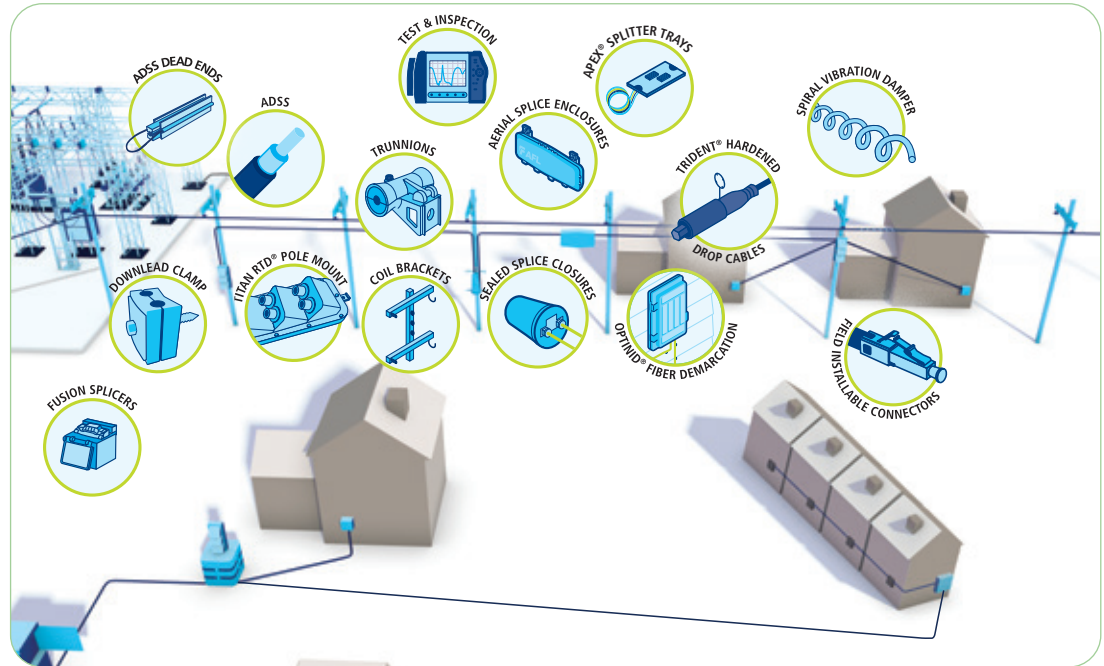
Common Drop Length Distribution:

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 CT16 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.



FASTConnect SC Connector



CT16 Cleaver



CT50 Cleaver

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), 0.25 dB (maximum) MM: 0.10 dB (average), 0.25 dB (maximum)
Return Loss	SM: ≤ -65 dB (APC), ≤ -55 dB (UPC) MM: ≤ -35 dB (PC)
Operating Temperature	-40°C to +75°C

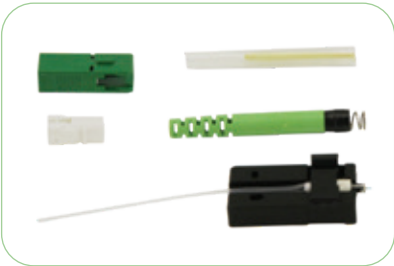


Splicing a FUSEConnect ST Connector

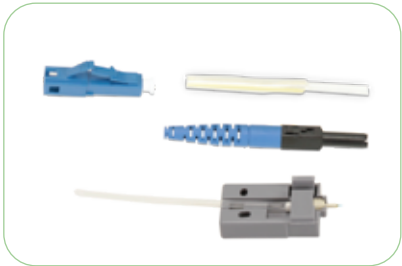
Ordering Information

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
---------------------------	-------------------

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

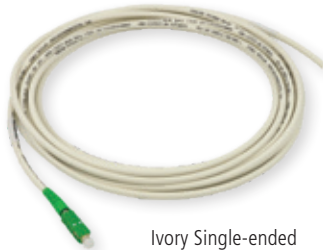
Pigtail Assemblies

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



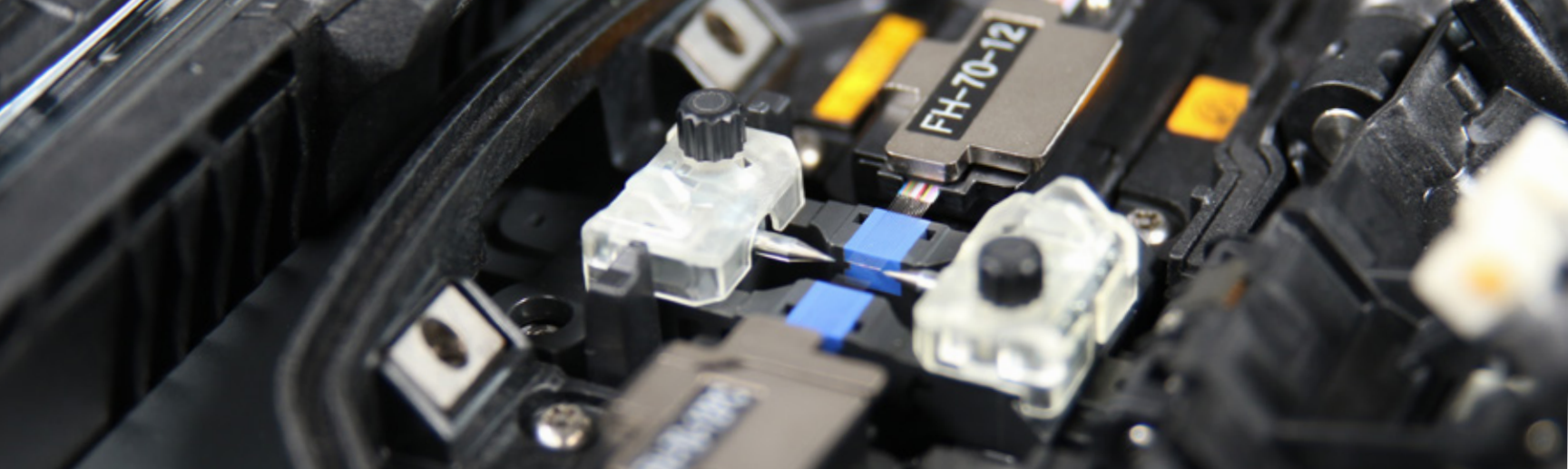
Black Double-ended

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

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



 Bluetooth®

* [See page 58](#) for Recommended Accessories for the 90S+ Fusion Splicer



In Work Tray

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
Applicable Protection Sleeve	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

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 58](#) for Recommended Accessories for the 90R Fusion Splicer



 **Bluetooth®**



Wind Protector Open

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
	Altitude	Operate : 0 to 95% RH non-condensing Storage : 0 to 95% RH non-condensing
AC Adaptor	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
	Reference Guide	Heater lid: open/close
		Heater clamp: open/close
	Electrode	Video and PDF file stored in splicer
		Replaceable without tool

NEW! 45S Cladding Alignment Fusion Splicer

Ordering Information

DESCRIPTION	AFL NO.
45S Fusion Splicer – includes: CT-50 cleaver, SS-05 single fiber stripper, 1 pair each FH-70-250 and FH-70-900 fiber holders, SP-04 set plates, ELCT2-16B Spare Electrodes (Pair), ADC-21 AC Adapter, BTR-17 Battery Pack (installed), ACC-09 Power Cord, USB-01 USB Cable, AP-02 Alcohol Container, WT-10 work tray, ST-03 carrying case strap, TS-03 tripod screw, CC-45 Transit Case, 1 year factory warranty, and instruction manual downloaded from splicer	S018318
45S Fusion Splicer Kit (without cleaver) – includes: SS-05 single fiber stripper, 1 pair each FH-70-250 and FH-70-900 fiber holders, SP-04 set plates, ELCT2-16B Spare Electrodes (Pair), ADC-21 AC Adapter, BTR-17 Battery Pack (installed), ACC-09 Power Cord, USB-01 USB Cable, AP-02 Alcohol Container, WT-10 work tray, ST-03 carrying case strap, TS-03 tripod screw, CC-45 Transit Case, 1 year factory warranty, and instruction manual downloaded from splicer	S018319
One Year Extended Warranty	S012996
Two Year Extended Warranty	S013000



* [See page 58](#) for Recommended Accessories for the 45S Fusion Splicer

DESCRIPTION	AFL NO.
Cleavers AND STRIPPERS	
CT-50 Fiber Cleaver	S017030
CT-16 Fiber Cleaver	S018330
SS-05 Dual Fiber Stripper	S018327
Fiber Holders	
CLAMP-S35B Loose Buffer Sheath Clamp	S018333
FH-70-250 (250 µm single fiber)	S017111
FH-70-200 (200 µm single fiber)	S017711
FH-70-900 Fiber Holders (900 µm single fiber)	S017113
FH-60-LT900 (900 µm loose buffer tube)	S015181
FUSEConnect® Accessories	
FH-FC-20 (900 µm within 2.0 mm sheathing) (each)	S014696
FH-FC-30 (900 µm within 3.0 mm sheathing) (pair)	S014695
FH-FC-900 (900 µm cable) (each)	S014697
CLAMP-FC-2000 (pair)	S014705
CLAMP-FC-3000 (pair)	S014704

DESCRIPTION	AFL NO.
Power Supply Options	
BTR-17 Battery Pack	S018324
ADC-21 AC Adapter	S018168
ACC-09 Power Cord	S014390
Miscellaneous	
WT-10 Work Tray	S018336
TS-03 Tripod Screw	S017524
ST-03 Carrying Case and Work Tray Strap	S017549
CLAMP-DC-12 drop cable clamp on work tray	S017550
ELCT2-16B Electrodes	S017103
CC-45 Transit Case	S018326
Splicer V-Groove Cleaning Kit	S014397
USB-01 USB Cable	S014777
SP-04 Fiber Holder Set Plates	S018332
AD-16A Adapter Plate (CT-50 and CT-16 up to 900 µm)	S018328
Portable Tripod Workstation (see web listing for more detail)	S014773

NEW! 45S Cladding Alignment Fusion Splicer

Specifications

PARAMETER		VALUE
Fiber Alignment Method		Active cladding alignment
Fiber Count Can Be Spliced		Single fiber
Applicable Fiber	Fiber Type	Single-mode optical fiber
	Cladding Dia.	Multimode optical fiber
Applicable Coating	Sheath Clamp	Approx. 125 μm
	Fiber Holder	Coating diameter: Max. 3,000 μm Cleave length: 5 to 16 mm * ¹
		Coating diameter: 160 μm – 3,000 μm based on available fiber holder options Cleave length: Approx. 10 mm
Fiber Splice Performance	Splice Loss * ²	ITU-T G.652: Avg. 0.03dB
		ITU-T G.651: Avg. 0.01dB
		ITU-T G.653: Avg. 0.05dB
		ITU-T G.655: Avg. 0.05dB
		ITU-T G.657: Avg. 0.03dB
	Splicing Time * ³	SM FAST mode: Avg. 6 to 7 sec.
		SM AUTO mode: Avg. 8 to 10 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 * ⁴	60 mm mode: Avg. 15 to 22 sec. 60 mm slim mode: Avg. 15 to 17sec.
Fiber Tensile Test Force		Approx. 2.0 N
Electrode Life * ⁵		Approx. 6,000 splices
Physical Description	Dimensions W	Approx. 131 mm without projection
	Dimensions D	Approx. 123 mm without projection
	Dimensions H	Approx. 121 mm without projection
	Weight	Approx. 1.4 kg including battery
Environmental Condition	Temperature	Operate : -10 to 50oC Storage : -40 to 80oC
	Humidity	Operate : 0 to 95% non-condensing Storage : 0 to 95% non-condensing
	Altitude	Max. 5,000 m
	AC Adaptor	Input Output

PARAMETER		VALUE
Battery Pack	Type	Rechargeable Lithium Ion
	Output	Approx. DC14.4V / 3,190mAh
	Capacity * ⁶	60 mm heat mode: Approx. 200 splice & heat cycles
		60 mm slim heat mode: Approx. 230 splice & heat cycles
		Operate: -10 to 50°C
	Temperature	Recharge : 0 to 40°C
		Short term storage of 30 days: -20 to 50°C
Long term storage: -20 to 30°C		
Display	Battery Life * ⁷	Approx. 500 recharge cycles
	LCD Monitor	TFT 4.95 inches with touch screen
	Magnification	Approx. 132 to 300X
Illumination	V-Grooves	LED lamp
Interface	PC	USB2.0 MINI B type
	External Led Lamp	USB 2.0 A type
		Approx. DC5V, 500mA
Data Storage	Wireless * ⁸	Bluetooth® 5.2
	Splice Mode	100 splice modes
	Heat Mode	30 heat modes
	Splice Result	20,000 splices
	Splice Image	100 images
Screw Hole For Tripod		1/4-20UNC
Other Features	Automatic Functions	Fusion control
		Blade management and control
		Splice start
	Reference Guide	Heater start
		PDF file stored on splicer
	Sheath Clamp	Open with/without wind protector
		Close when setting fiber
	Electrode	Easy sleeve positioning design
PC Software	Tool-less replacement	
		Splicer firmware update via internet
		Parameter Upload and download

Accessories for the 90S, 90S+, 90R and 45S Series Fusion Splicers

DESCRIPTION	FOR USE WITH SPLICER MODEL	AFL NO.
CLEAVERS AND STRIPPERS		
CT16 Cleaver	90S, 90S+, 45S	S018330
CT50 Cleaver	90S, 90S+, 90R, 45S	S017030
SS-05 Dual fiber stripper	45S	S018327
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, 90S+, 90R, 45S	S017111
FH-70-900 (900 µm jacketed fiber)	90S, 90S+, 90R, 45S	S017113
FH-60-LT900 (Loose buffer 900 µm fiber)	90S, 90S+, 90R, 45S	S015181
FH-70-160 (160 µm coated fiber)	90S, 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 (pitch conversion holder for 200 µm loose fibers)	90R	S017464
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, 90S+, 90R, 45S	S014696
FH-FC-30 (900 µm within 3.0 mm sheathing) (pair)	90S, 90S+, 90R, 45S	S014695
FH-FC-900 (900 µm cable) (each)	90S, 90S+, 90R, 45S	S014697
CLAMP-FC-2000 (pair)	90S, 90S+, 90R, 45S	S014705
CLAMP-FC-3000 (pair)	90S, 90S+, 45S	S014704

DESCRIPTION	FOR USE WITH SPLICER MODEL	AFL NO.
POWER SUPPLY OPTIONS AND EQUIPMENT		
ADC-20 AC Adapter	90S, 90S+, 90R	S017513
ACC-14 AC Power Cord	90S, 90S+, 90R	S014536
BTR-15 Battery	90S, 90S+, 90R	S017512
DCC-20 Power Cord (connects AC Adapter to cigarette lighter socket)	90S, 90S+, 90R	S017527
DCC-21 Power Cord (connects AC Adapter to power source via alligator clips)	90S, 90S+, 90R	S017528
DCA-03 DC Adapter (Connect AC Adaptor without battery)	90S, 90S+	S017526
MISCELLANEOUS		
SS03 Single fiber stripper (3 hole)	90S, 90S+, 90R	S017098
SS01 Single fiber stripper (1 hole)	90S, 90S+, 90R	S017099
ELCT2-16B Electrodes	90S, 90S+, 90R, 45S	S017103
USB-01 Cable	90S, 90S+, 45S	S014777
Splicer V-Groove Cleaning Kit	90S, 90S+, 45S	S014397
SP-03 Fiber Holder Set Plates	90S	S017518
Portable Tripod Workstation (see specification sheet)	90S, 90S+, 90R	S014773
ASW-02 Splicing Workstation (see specification sheet)	90S, 90S+, 90R	S010532
WT-09R Work Tray Right	90S, 90S+, 90R	S017515
WT-09L Work Tray Left	90S, 90S+, 90R	S017516
JP-09 Work Tray J-Plate	90S, 90S+, 90R	S017517
JP-10 J-Plate (Cooling tray attaches to splicer)	90S, 90S+, 90R	S017522
JP-10-FC J-Plate with Fiber Clamps	90S, 90S+, 90R	S017523
TS-03 Tripod Screw (90 Series)	90S, 90S+, 90R	S017524
ST-02 Fusion Splicer Strap	90S, 90S+, 90R	S017525

Accessories for the 90S, 90S+, 90R and 45S Series Fusion Splicers (cont.)

DESCRIPTION	FOR USE WITH SPLICER MODEL	AFL NO.
Miscellaneous (cont.)		
CLAMP-DC-12 (Drop cable clamp for work tray)	90S, 90S+, 90R	S017550
CC-39 Transit Case	90S, 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]* where:

[MOD]	FS200 FLEXSCAN OTDR CONFIGURATION
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
303	1310/1550/1625 Pt-to-Pt and PON Verification and 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
FTTH-PRO	Includes: BAS Kit, 150 m SC/APC & LC/APC Fiber Rings, FOCIS Flex, SC/APC & LC/APC bulkhead and ferrule adapters, SC & LC One-Click Cleaners, Port Saver, FlexReports Advanced, soft or hard carry case (FS200-303/304 only)
BIPM	Includes: PRO kit plus OFI-BIPMe
MPO	Includes: FlexScan plus MFS Multi-Fiber Switch, MPO launch cable, OTDR-to-Switch patch cord, OTDR-to-Switch USB cable, FlexReports AdvancedMFS Multi-Fiber Switch, MPO launch cable, OTDR-to-Switch patch cord, OTDR-to-Switch USB cable, FlexReports Advanced

[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)

[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	VNM	Vietnamese

[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
Absent	N/A in Basic kits	SC/UE2	FR-SMF-150-USC-UE2
USC/USC	FR-SMF-150-USC-USC	ASC/UFC	FR-SMF-150-ASC-UFC
USC/UFC	FR-SMF-150-USC-UFC	ASC/ULC	FR-SMF-150-ASC-ULC
USC/ULC	FR-SMF-150-USC-ULC	ASC/UST	FR-SMF-150-ASC-UST
USC/UST	FR-SMF-150-USC-UST	ASC/ASC	FR-SMF-150-ASC-ASC
USC/ASC	FR-SMF-150-USC-ASC	ASC/AFC	FR-SMF-150-ASC-AFC
USC/AFC	FR-SMF-150-USC-AFC	ASC/ALC	FR-SMF-150-ASC-ALC
USC/ALC	FR-SMF-150-USC-ALC	ASC/AE2	FR-SMF-150-ASC-AE2

[TIP] *	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

* For additional FOCIS Flex adapter tips, see [FOCIS Flex specification 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

Optical Fiber Identifiers

Ordering Information

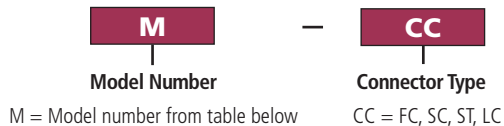
DESCRIPTION	AFL NO.
BI Enhanced Optical Fiber Identifier with integrated Optical Power Meter. The kit includes one 2.5 mm Universal Power Meter Port Adapter, BIPM-00-25.	OFI-BIPMe
OPTIONAL OFI-BIPM ADAPTERS (ORDERED SEPARATELY)	
OFI-BIPM 2.5 mm Universal Power Meter Port Adapter	BIPM-00-25
OFI-BIPM SC Power Meter Port Adapter	BIPM-00-SC
OFI-BIPM FC Power Meter Port Adapter	BIPM-00-FC
OFI-BIPM ST Power Meter Port Adapter	BIPM-00-ST
OFI-BIPM LC Power Meter Port Adapter	BIPM-00-LC



OFI-BIPMe

Optical Loss Test Kits

Ordering Information – Part Number/Connector Specification



Example: SMLP5-5-SC => (SMLP5-5 Test Kit with SC adapters)

Test kits include light source, power meter, protective rubber boots, AA batteries, adapter caps and carry case.

MODEL	POWER METER	LIGHT SOURCE	FIBER TYPE	LOSS MEASUREMENTS (NM)					DYNAMIC RANGE (DB)	TRM® 2.0 PC REPORTING
				850	1300	1310	1490	1550		
SLP5-6	OPM5-3D	OLS2-DUAL	SM			◆		◆	70 ^b	◆
SLP5-FTTH	OPM5-4D	OLS7-FTTH	SM			◆	◆	◆	45 ^b	◆
SMLP5-5	OPM5-2D	OLS4	MM SM	◆	◆	◆		◆	40 @ 850/1300 nm ^a 60 @ 1310/1550 nm ^b	◆

Notes:

a. On 62.5/125 µm multimode fiber.

b. On 9/125 µm single-mode fiber.



SMLP5-5 Kit

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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



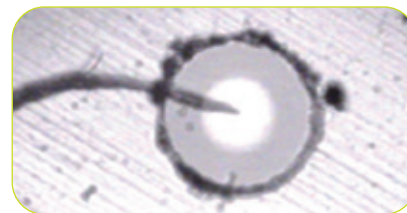


Don't Scrub Your Data

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](https://learn.AFLglobal.com) (learn.AFLglobal.com) 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



Fiber Optic Cleaning

One-Click® Cleaners

Ordering Information

DESCRIPTION	AFL NO.
One-Click® Cleaner SC Pro (775+ cleans)	8500-05-PRO-SC
One-Click Cleaner LC Pro (775+ cleans)	8500-05-PRO-LC
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



SC PRO



LC PRO



MU/LC



SC/ST/FC



D-LC



Ultra 2.5



MPO

FCP2 Easy-Access Cleaning Kits

Ordering Information

DESCRIPTION	AFL NO.
FCP2 Field Portable Duffle Bag Cleaning Kit Includes: FCC2 Fiber Connector Cleaner and Preparation Fluid (can), FCC3 Debris Destroyer® Fiber Cleaning Pen, WFW FiberWipes™, Cletop-S Type B with White Tape, One-Click® Cleaners (SC, ST, FC, MU/LC) and Field Portable Duffle Bag	FCP2-10-0900
Refill for Cleaning Kit (No Carry Case). Includes: One-Click Cleaners (SC, ST, FC, MU/LC) , FCC2 cleaning fluid, FCC3 Debris Destroyer, FiberWipes and Cletop SB.	FCPR-10-0900



FCP2-10-0900



F AFL

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PEOPLE**

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