## e/fir



Enterprise Blown Fiber Solutions
MicroDuct Systems | eABF Cables | Connectivity OSP MicroCore ${ }^{\circledR}$ Cables | Test \& Inspection | Fusion Splicers

Founded in 1984, AFL is an international manufacturer providing end-to-end solutions to the energy, service provider, enterprise, hyperscale and industrial markets as well as several emerging markets.

AFL's products are in use in over 130 countries and include fiber optic cable and hardware, transmission and substation accessories, outside plant equipment, connectivity, test and inspection equipment, and fusion splicing systems.

AFL also offers a wide variety of services supporting data center, enterprise, wireless and outside plant applications.

Headquartered in Spartanburg, SC, AFL has operations in the U.S., Mexico, Canada, Europe, Asia and Australia, and is a wholly owned subsidiary of Fujikura Ltd. of Japan.

AFL is dedicated to bringing our customers
a quality product as well as delivering superior value.

## dura•line

Dura-Line is the premier provider of innovative pathway solutions for global and communications and infrastructure needs.

As a leading global manufacturer and distributor of communication and energy infrastructure products and systems, Dura-Line sets the industry standard in its approach to solution-based development of products for conduit, MicroDucts and accessories.

Dura-Line's products are designed to provide both protection and ease of installation of communication networks, power cables and pressure pipe for a wide variety of markets, including telecommunications, enterprise networking and transportation.

Acquired by Orbia in 2014, Dura-Line has 20 manufacturing facilities located throughout the U.S., Canada, India, Oman and Europe.

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## eABF ${ }^{\oplus}$ Solutions

## eABF Cable

At the heart of the eABF solution is the cable and the duct. The eABF cable has been designed to offer exceptional air-jetting qualities yet rugged enough to comply with Telcordia's GR-409 Premise Cabling standard and NEC Riser and Plenum flame ratings even outside of the MicroDuct. As a result, the cable can be deployed once exiting the pathway without the need for additional costly furcation tubing as required by other less robust alternatives. The cable is available in fiber counts from six through 144 with all fiber types including SMF, OM2, OM3 and OM4, and employs bend-insensitive fiber technology.

## eABF MicroDuct

The eABF pathway system is comprised of Enterprise FuturePath ${ }^{\circledR}$ MicroDuct products engineered and produced by Dura-Line, the premier communications-oriented fiber optic duct system. The eABF duct options include indoor/outdoor riser, plenum, low-smoke zero halogen (LSZH) and HDPE product lines. All eABF ducts incorporate low-contact ribbed inner surface and ultralow friction Silicore ${ }^{\circledR}$. The eABF FuturePath MicroDuct comes in tube counts from two through 24.

## System

AFL and Dura-Line have joined together to produce a high-performance blown fiber optic cabling system with applications across a broad spectrum of networking configurations. The solution, eABF (Enterprise Blown Fiber) cabling system is engineered to offer a reliable, easy-to-install optical fiber network communications infrastructure that has one of the highest fiber density solutions in the blown fiber market. The eABF solution has all the key elements that, when combined, yield a state-of-the-art and highly flexible "living" communications pathway.


## 

- AFL eABF Cables
- Dura-Line Enterprise FuturePath MicroDuct
- AFL Connectivity
- AFL Test Equipment and Fusion Splicers
- ACE Lifetime* Warranty
- Design, BOM and SOW Support
- Contractor Training and Project Management
*Lifetime is defined as the System Design Lifetime which is 25 years.
dura•line


## eABF Solutions

## CABLES



## Enterprise Blown Cable (6-144 fibers)

Specifically designed for air-jetting applications through MicroDuct pathways. The proprietary high-drag, light-weight design yields a cable that performs well during installation and yet offers a very robust and compact package for direct routing through congested point-of-termination cable management locations. These cables are GR-409 compliant and come in OFNP and OFNR ratings.

## MICRODUCT SYSTEMS



## Enterprise FuturePath

Enterprise FuturePath is available in many sizes and configurations including riser, plenum and LSZH. MicroDuct sizes include 12.7 mm and 8.5 mm to accommodate your fiber requirements. Configurations from single MicroDucts to 24 pathways allow for rapid deployment of fiber today with permanent pathways in place for future growth.

## OSP FuturePath

OSP FuturePath is available in many sizes and configurations for outside plant network installations. The same broad range of MicroDuct options found in the Enterprise products plus a large range of inner duct sizes are available. All FuturePath products come in armored and non-armored designs.

## CONNECTIVITY AND TEST EQUIPMENT



Poli-MOD ${ }^{\circledR}$ Patch and Splice Module
The Poli-MOD is an innovative patch and splice module which allows for increased densities in an incremental growth platform. Based on the LGX 118 footprint, this product is capable of supporting up to 144 patch and splices in a standard 4 U panel, resulting in 1296 patch and splices within a seven foot rack (38RU).


## Field-Installable Connectors

FASTConnect ${ }^{\circledR}$ : Factory pre-polished, field-installable connectors that completely eliminate the need for hand polishing in the field.
FUSEConnect ${ }^{\oplus}$ : With a factory pre-polished ferrule, its innovative field-termination process eliminates polishing, adhesives and crimping in the field, minimizing the potential for operator error and expensive connector scrap.


## Test, Inspection and Cleaning Equipment

AFL's test, inspection and cleaning products consistently meet and exceed customer needs. AFL delivers exceptional fiber optic test equipment and outstanding service. Our ISO 9001:2008 certification and quality practices ensure you receive excellent products and documentation.


## Fusion Splicing Equipment

AFL offers an extensive lineup of fusion splicers for field splicing applications. From the world's smallest fusion splicer to the world's first fully ruggedized splicer, Fujikura has been the pioneer in fusion splicing technology since 1979. Current generation field models offer unmatched speed, ruggedness and reliability.

## 25-Year Warranty on End-to-End Fiber Optic Systems

## ACE Program 25-Year Warranty

Standards-based, 25-year performance warranty written around performance standards to give your customers peace of mind for the 25 -year design life of their fiber installation.

## eABF ${ }^{\circledR}$ Solutions

## Lifetime Warranty on End-to-End Fiber Optic Systems

As the first telecommunications company to offer a lifetime warranty* on end-to-end fiber optic systems including eABF systems, AFL partners with system integrators that possess the same quality of workmanship as we do. We carefully select partners that are as stringent about quality workmanship as we are at AFL. Plus, we are continually building our network of AFL Certified Expert (ACE) Installers that design and install AFL systems.

As an ACE Installer, you will be confident in designing and installing an AFL system that
 will fit the needs of your customers, as well as give them the peace of mind that a lifetime warranty offers. This, coupled with AFL's excellent technical support and the best products and solutions in the industry, will truly differentiate you from your competition.

AFL offers each ACE Installer extensive hands-on training that will help you understand the products we manufacture better, as well as develop your fiber optic knowledge and installation practices. After the training is complete, you will have all the necessary tools to design and install a completely warranted AFL system.

Learn more about the ACE program at www.aflglobal.com/Resources/AFL-Certified-Expert-Installers-Program.aspx.

## ACE Program Highlights

- Cutting-edge technology - develop a better understanding of fiber technology ensuring you remain ahead of your competition
- Single-source fiber supplier - one company to go to for all of your fiber and technical support needs
- Standards-based, 25 -year performance warranty written around performance standards to give your customers peace of mind for the 25 -year design life of their fiber installation
- ANSI/TIA-568-C.0, Generic Telecommunications Cabling for Customer Premises
- ANSIITIA-568-C.3, Optical Fiber Cabling Components Standard
- Fiber training, design and support - become more proficient in designing, installing and testing a fiber system
- BICSI credits - AFL's ACE training programs are BICSI-certified and qualify for BICSI continuing education credits (CEC)
- Engineering support - an engineer on call to help you better understand any technical issues so you can find the solution that best fits your customers needs and applications
- Marketing incentives - gain access to the power behind the AFL brand, including links on our website promoting you as an ACE Installer
- Rebate program - Earn rebates based on AFL product purchases from an authorized distributor
*Lifetime is defined as the System Design Lifetime which is 25 years.


FuturePath Family of MicroDuct Products

## Applications

- Campus settings
- Military
- Hospitals
- Industrial
- Government


## Enterprise FuturePath Family

MicroTechnology is a forward-thinking, future-oriented technology that you can put in place today. As network infrastructure demands continue to grow, it becomes more important to better utilize the available space in your existing duct systems. Dura-Line MicroDucts and FuturePath allow for controlled growth of your network infrastructure, meeting bandwidth requirements as needed. With the multiple pathways in FuturePath, as your network grows, you will have available pathways without additional construction costs.
FuturePath is available in many sizes and configurations to suit your network installation needs. Manufacturing materials available are HDPE, riser, LSHF, plenum and armored. MicroDuct sizes include 12.7 mm and 8.5 mm to accomodate your fiber requirements. Configurations from single MicroDucts to 24 pathways will allow for rapid deployment of fiber today with permanent pathways in place for future growth.
A comprehensive line of Micro Accessories is available to complete your network. With our Enterprise End-to-End Solutions, Dura-Line offers micro couplers, cross-connect cabinets, splice closures, optical termination hardware and tools.

## Versatile

With so many different styles, configurations and sizes of FuturePath available, there is virtually no fiber optic project that could not benefit from the use of FuturePath in both reducing initial construction costs and future proofing the network. FuturePath can be used in every facet of the network build, and by utilizing the different versions it can easily be installed in almost any scenario.

## Expansion

With its many configurations, FuturePath can be utilized for expanding your network infrastructure, whether new or retrofit. MicroDuct(s) within FuturePath can be left open to accept a fiber optic cable in the future, for a cost effective way to add bandwidth. Crowded easements, both aerial and buried, can benefit from FuturePath for network expansion while requiring minimal space and disruption. When it comes to expanding your network, minimize expenditures and maximize capacity with FuturePath.

## Features

- HDPE, riser, LSHF, plenum and armored options available
- 12.7 mm and 8.5 mm MicroDuct sizes
- Fiber counts up to 144
- Configurations include 24-way, 19-way, 12-way, 7 -way, 4 -way, 3 -way or 2 -way or single MicroDucts
- SILICORE ${ }^{\text {TM }}$ and SuperSILICORE ${ }^{\text {Tw }}$ Super Slick Permanent Linings allow for higher speed cable jetting and longer cable installs
- Internal ribs-reduced friction for longer, faster cable installs
- Lightweight and flexible


Heat builds and lubricant dissipates causing direct contact between cable and MicroDuct wall. Installation friction increases causing damage where the cable contacts the MicroDuct.

## Enterprise FuturePath Family (cont.)

## SILICORE ${ }^{\text {™ }}$ and SuperSILICORE ${ }^{\text {m }}$

SILICORE or SuperSILICORE are co-extruded on the inside of our tough, durable, FuturePath microducts creating a super slick permanent lining. SILICORE and SuperSILICORE lined ducts allow for higher speed cable jetting and longer cable pulls. The permanent pathway remains for future repairs, replacements or upgrades.

## Features-SILICORE ${ }^{\text {m }}$

- Standard on Riser, Plenum and LSZH products
- Permanent-remains unchanged for life of MicroDuct
- Easier and faster cable installations
- Compatible with any cable jacket
- Identifiable by it's bright white jacket


## Features-SuperSILICORE ${ }^{\text {m }}$

- Standard on all HDPE/OSP products
- Super slippery interior lining
- Permanent-remains unchanged for life of MicroDuct
- Easiest, fastest and farthest cable installs
- Lowest co-efficient of friction
- Compatible with any cable jacket
- Identifiable by it's bright yellow jacket


Cable remains in contact with
SILICORE or SuperSILICORE.
No burn through. Low coefficient of friction. Easier and longer installations.


Low Coefficient of Friction

## Enterprise FuturePath MicroDuct System

FuturePath is available in many sizes and configurations to suit your network installation needs. Manufacturing materials are HDPE, riser, LSHF, plenum and armored. MicroDuct sizes include 12.7 mm and 8.5 mm to accomodate your fiber requirements. Configurations from single MicroDucts to 24 pathways will allow for rapid deployment of fiber today with permanent pathways in place for future growth.

## Configurations


eABF® ${ }^{\circledR}$ SOLUTIONS

## Enterprise FuturePath MicroDuct System—12.7 mm/10 mm

## MicroDuct Specifications



FuturePath 7-Way Configuration


Outside Dimensions: Height x Width
Outside Diameter: Used to Calculate Fill Ratios

| PARAMETER | VALUE |
| :--- | :--- |
| OD | $12.7 \mathrm{~mm} \pm 0.10\left(0.500^{\prime} \pm 0.004^{\prime \prime}\right)$ |
| Wall Min. | $1.30 \mathrm{~mm}\left(0.051^{\prime \prime}\right)$ |
| Wall Max. | $1.40 \mathrm{~mm}\left(0.055^{\prime \prime}\right)$ |
| ID Min. | $9.80 \mathrm{~mm}\left(0.386^{\prime \prime}\right)$ |
| Materials | HDPE, Riser, Plenum, LSHF, Armored |
| Fiber Count | $24,36,48,72,96,144$ strand MicroCable SM, MM |
| Shipping Length (in feet per reel) | $1,000 \quad 2,500 \quad 5,000 \quad 6,000 ;$ Custom lengths available |

FuturePath Mechanical Specifications

| PARAMETER | CONFIGURATION |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 2-WAY | 3-WAY | 4-WAY | 7-WAY |
| Outside Dimensions HxW (inches) | 0.60/1.10 | 1.08/1.14 | 1.14/1.35 | 1.51/1.64 |
| Outside Dimensions HxW (mm) | 15.3/28.0 | 27.4/29.1 | 29.1/34.3 | 38.4/41.8 |
| Outside Diameter (inches) | 1.10 | 1.22 | 1.35 | 1.64 |
| Outside Diameter (mm) | 28.0 | 31.0 | 34.3 | 41.8 |
| Over-Sheath Thickness | 0.050" | 0.070" | 0.070" | 0.070" |
| HDPE Over-Sheath Color | Orange | Orange | Orange | Orange |
| Rated Over-Sheath Color | Natural | Natural | Natural | Natural |
| MicroDuct Color | Natural | Natural | Natural | Natural |
| HDPE Locate Wire (optional) | 20 ga . | 20 ga . | 20 ga . | 20 ga . |
| Rated Locate Wire | No | No | No | No |
| Ripcords | 2 | 2 | 2 | 2 |
| Bend Radius Supported | $6 "$ | $11 "$ | 12 " | 15" |
| Bend Radius Un-Supported | 12 " | 22" | $24 "$ | 30 " |

## Ordering Information

| DESCRIPTION | DURA-LINE NO. |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1000 FT | 2500 FT | 3250 FT | 5000 FT | 6000 FT |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} \mathrm{1}$-way HDPE |  |  |  |  |  |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 2$-way HDPE | 10008852 | 10008853 | - | 10008854 | - |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 3$-way HDPE | 10008855 | 10008856 | - | 10008857 | - |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 4$-way HDPE | 10004748 | 10008858 | - | 10007545 | - |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 7$-way HDPE | 10004811 | 10008859 | - | - | 10004813 |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 1$-way Riser | 10008757 | - | - | - | - |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm}$ 2-way Riser | 10004589 | 10008951 | - | 10008952 | - |
| 12.7 mm x 10 mm 3-way Riser | 10004604 | 10008953 | - | 10008954 | - |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 4$-way Riser | 10004606 | 10008955 | - | 10008956 | - |
| 12.7 mm x 10 mm 7 -way Riser | 10004608 | 10004609 | - | - | 10004610 |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} \mathrm{1-way} \mathrm{LSHF}$ |  |  |  |  |  |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm}$ 2-way LSHF | 10008889 | 10008890 | - | 10008891 | - |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 3$-way LSHF | 10008892 | 10008893 | - | 10008894 | - |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 4$-way LSHF | 10008895 | 10008896 | - | 10008897 | - |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 7$-way LSHF | 10008898 | 10008899 | - | - | 10008900 |
| $12.7 \mathrm{~mm} \times 10.2 \mathrm{~mm} \mathrm{1}$-way Plenum | 10007408 | - | - | - | - |
| $12.7 \mathrm{~mm} \times 10.2 \mathrm{~mm} 2$-way Plenum | 10008946 | - | - | - | - |
| $12.7 \mathrm{~mm} \times 10.2 \mathrm{~mm} 3$-way Plenum | 10008947 | - | - | - | - |
| $12.7 \mathrm{~mm} \times 10.2 \mathrm{~mm} 4$-way Plenum | 10008948 | - | - | - | - |
| $12.7 \mathrm{~mm} \times 10.2 \mathrm{~mm} 7$-way Plenum | 10008949 | - | - | - | - |
| $12.7 \mathrm{~mm} \times 10 \mathrm{~mm} 4$-way Armored | - | - | - | 10004891 | - |
| 12.7 mm x 10 mm 7 -way Armored | - | - | 10003729 | - | - |

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## Enterprise FuturePath MicroDuct System— $8.5 \mathrm{~mm} / 6 \mathrm{~mm}$



FuturePath 24-Way Configuration
MicroDuct Specifications

| PARAMETER | VALUE |
| :--- | :--- |
| OD | $8.5 \mathrm{~mm} \pm 0.10\left(0.335^{\prime \prime} \pm 0.004^{\prime \prime}\right)$ |
| Wall Min. | $1.14 \mathrm{~mm}\left(0.045^{\prime \prime}\right)$ |
| Wall Max. | $1.24 \mathrm{~mm}\left(0.049^{\prime \prime}\right)$ |
| ID Min. | $5.92 \mathrm{~mm}\left(0.233^{\prime \prime}\right)$ |
| Materials | HDPE, Riser, Plenum, LSHF, Armored |
| Fiber Count | $6,12,24,48,72,96$ strand MicroCable SM, MM |
| Shipping Length (in feet per reel) | 1,000 |
|  | 2,500 |
|  | 4,000 |
|  | 5,000 |
|  | 6,000 |
|  | Custom lengths available |



Outside Dimensions: Height x Width
Outside Diameter: Used to Calculate Fill Ratios

FuturePath Mechanical Specifications

| PARAMETER | CONFIGURATION |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2-WAY | 3-WAY | 4-WAY | 7-WAY | 12-WAY | 19-WAY | 24-WAY |
| Outside Dimensions HxW (inches) | 0.44/0.77 | 0.75/0.79 | 0.79/0.93 | 1.04/1.13 | 1.33/1.46 | 1.62/1.80 | 1.62/2.13 |
| Outside Dimensions HxW (mm) | 11.2/19.7 | 19.0/20.2 | 20.2/23.7 | 26.4/28.7 | 33.8/37.2 | 41.1/45.7 | 41.1/54.2 |
| Outside Diameter (inches) | 0.77 | 0.85 | 0.93 | 1.13 | 1.48 | 1.80 | 2.13 |
| Outside Diameter (mm) | 19.7 | 21.5 | 23.7 | 28.7 | 37.7 | 45.7 | 54.2 |
| Over-Sheath Thickness | 0.050" | 0.060" | 0.060" | 0.060" | 0.060" | 0.060" | 0.060" |
| HDPE Over-Sheath Color | Orange | Orange | Orange | Orange | Orange | Orange | Orange |
| Rated Over-Sheath Color | Natural | Natural | Natural | Natural | Natural | Natural | Natural |
| MicroDuct | Natural | Natural | Natural | Natural | Natural | Natural | Natural |
| HDPE Locate Wire (optional) | 20 ga . | 20 ga . | 20 ga . | 20 ga . | 20 ga . | 20 ga . | 20 ga . |
| Rated Locate Wire | No | No | No | No | No | No | No |
| Ripcords | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Bend Radius Supported | 5" | 8" | 8" | 11" | 14 " | 16 " | 16 " |
| Bend Radius Un-Supported | 10" | $16 "$ | 16" | 22 " | 28 " | 32 " | 32 " |

eABF ${ }^{\circledR}$ SOLUTIONS

## Enterprise FuturePath MicroDuct System—8.5 mm/6 mm (cont.)

## Ordering Information

| DESCRIPTION | DURA-LINE NO. |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1000 FT | 2500 FT | 4000 FT | 5000 FT | 6000 FT |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 1$-way HDPE | 10005861 | - | - | - | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 2-way HDPE | 10004625 | 10008884 | - | 10004624 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 3$-way HDPE | 10004654 | 10008885 | - | 10008886 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 4$-way HDPE | 10004655 | 10004656 | - | 10008887 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 7$-way HDPE | 10004659 | 10004874 | - | - | 10008888 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 12$-way HDPE | 10004662 | 10004663 | - | - | 10004664 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 19-way HDPE | 10004665 | 10008882 | - | - | 10006770 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 24-way HDPE | 10004668 | 10008883 | - | - | 10004669 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 1$-way Riser | 10008758 | - | - | - | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 2-way Riser | 10004866 | 10004586 | - | 10008986 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 3$-way Riser | 10008987 | 10008988 | - | 10008989 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 4$-way Riser | 10004591 | 10004867 | - | 10008990 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 7$-way Riser | 10004592 | 10008992 | - | - | 10004594 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 12-way Riser | 10004596 | 10008979 | - | - | 10008980 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 19-way Riser | 10004599 | 10008981 | - | - | 10008982 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 24-way Riser | 10004601 | 10008984 | - | - | 10008985 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 1$-way LSHF |  |  |  |  |  |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 2-way LSHF | 10008934 | 10008935 | - | 10008936 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 3$-way LSHF | 10008937 | 10008938 | - | 10008939 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 4$-way LSHF | 10008940 | 10008941 | - | 10008942 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 7$-way LSHF | 10008943 | 10008944 | - | - | 10008945 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 12-way LSHF | 10008925 | 10008926 | - | - | 10008927 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 19-way LSHF | 10008928 | 10008929 | - | - | 10008930 |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 24-way LSHF | 10008931 | 10008932 | - | - | 10008933 |
| $8.5 \mathrm{~mm} \times 6.7 \mathrm{~mm} 1$-way Plenum | 10008755 | - | - | 10008755 | - |
| $8.5 \mathrm{~mm} \times 6.7 \mathrm{~mm}$ 2-way Plenum | 10004851 | 10010091 | - | 10010093 | - |
| $8.5 \mathrm{~mm} \times 6.7 \mathrm{~mm} 3$-way Plenum | 10008950 | 10010095 | - | 10010096 | - |
| $8.5 \mathrm{~mm} \times 6.7 \mathrm{~mm} 4$-way Plenum | 10004853 | 10010092 | - | 10010094 | - |
| $8.5 \mathrm{~mm} \times 6.7 \mathrm{~mm} 7$-way Plenum | 10004856 | 10010097 | - | 10010098 | - |
| $8.5 \mathrm{~mm} \times 6.7 \mathrm{~mm} 12$-way Plenum | 10004857 | 10010099 | - | 10010100 | - |
| $8.5 \mathrm{~mm} \times 6.7 \mathrm{~mm}$ 19-way Plenum | 10004858 | 10010101 | - | 10010102 | - |
| $8.5 \mathrm{~mm} \times 6.7 \mathrm{~mm} 24$-way Plenum | 10004859 | 10010103 | - | 10010104 | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 4$-way Armored | - | - | 10004888 | - | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm} 7$-way Armored | - | - | 10004889 | - | - |
| $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ 19-way Armored | - | - | 10004890 | - | - |

## MicroDuct Distribution Box



The MicroDuct Distribution Box or MDB is a convenient indoor junction box where multiple MicroDucts can be joined together. For example, this would be used to drop a tube to an adjacent floor, while allowing other MicroDucts to pass thru to the next MDB. The box is available in two basic sizes as noted below, and is a NEMA 12, continuous hinge wall mount type box. The box is used in conjunction with the ETA and DETA enclosure connectors.

## Ordering Information

| DURA-LINE <br> NO. | CONFIGURATION | DESCRIPTION |
| :---: | :---: | :--- |
| 20002884 | $16 \times 14 \times 8$ NEMA 12 | Box 16x14×8 NEMA 12 JIC 1 Door Continuous Hinge Wall Mount <br> - MDB |
| 20003021 | $20 \times 20 \times 7$ NEMA 12 | Box 20×20×7 NEMA 12 JIC 1 Door Continuous Hinge Wall Mount <br> $-M D B$ |



## MicroDuct Organizer

The MicroDuct organizer is designed for neat and orderly termination of MicroDucts. It requires only a minimum amount of space to mount and is a modular system. For the first 1-8 MicroDucts, order one Mounting Plate (includes base bracket) and one Mounting Bracket. For additional expansion (9 or more MicroDucts), only the Mounting Brackets are required.

## Ordering Information

| $\begin{gathered} \text { DURA-LINE } \\ \text { NO. } \\ \hline \end{gathered}$ | DESCRIPTION |
| :---: | :---: |
| 20002120 | 8.5 mm MicroDuct Wall Mounting Plate (includes wall plate, base bracket and 3 screws; top mounting bracket not included) |
| 20001719 | 8.5 mm MicroDuct Mounting Bracket with 3 screws (each bracket secures a row of 8 MicroDucts, with 3 screws) |
| 20002121 | 12.7 mm MicroDuct Wall Mounting Plate (includes wall plate, base bracket and 3 screws; top mounting bracket not included) |
| 20001929 | 12.7 mm MicroDuct Mounting Bracket with 3 screws (each bracket secures a row of 8 MicroDucts, with 3 screws) |



## Features

- MDS (Micro Duct Distribution System) designed for Data Center and indoor DAS applications
- The MDS can be used for managing all forms of duct up to 2.5" OD
- The MDS can be used as a breakout box for routing large count cables into an OCEF
- Scalable-the MDS can be deployed as a single unit or stacked and attached back to back for larger jobs
- The MDS can be used as a termination point as well as a pass through
- Unique angular design allows for gentle sweeps to enhance fiber blowing
- Can be mounted to the wall or overhead ladder rack


## MDS Enclosure

Wall-Mounted Distribution Enclosure specially designed for MicroDuct cable routing. Completely customizable to accept multiple cables or duct. The Micro Duct Distribution System (MDS) Enclosure is highly versatile to accommodate and optimize the distribution and termination of air-blown cable and duct as well as traditional fiber optic cable. The first of its kind, it optimizes the splicing and distribution of microduct systems in one enclosure, which eliminates extra parts and reduces the amount of room needed to distribute individual ducts.

- When mounting the unit on ladder rack, it can be positioned to make optimal use of its ports
- The mounting brackets work on 12", 18", and 24" ladder rack
- The MDS can be mounted above or below the ladder rack
- Duct mounting options include the use of cord grips, hose clamps, or tie wraps
- The MDS will accept splice trays
- The rectangular front ports accept an industry standard LGX 118 adapter plate or cassette
- The closure features captive/non-captive openings
- Cabinet has a knock out feed through for when stacking


## Dimensions



## MDS Enclosure

## Ordering Information



| ACCESSORIES |  |  |  |
| :---: | :---: | :---: | :---: |
| 20003852 | Hose Clamp $0.5^{\prime \prime}-1.25^{\prime \prime}$ | EA |  |
| 20003858 | $\begin{aligned} & \text { HOSE CLAMP } \\ & 1.25^{\prime \prime}-2.25 " ~ \end{aligned}$ | EA |  |
| 20003853 | CABLE TIE <br> $15 " 50$ lb UV Black | EA | - |
| 20003854 | MDS REPLACEMENT SCREW 10/32 x 1/4" Panhead Black | EA |  |
| 20003855 | MDS LADDER BRACKET SCREW 10/32 x 5/16" Panhead Back | EA |  |
| 20003856 | MDS WALL MOUNT SCREW, 1" | EA |  |
| 20003857 | MDS 2.5 MM WEB GROMMET | EA |  |



Couplers, End Caps and Plugs


Bulkhead Fitting


Gas Block Connector


MicroDuct Round Cutter


MicroDuct Straight Cutter


Ratchet Cutter

## Accessories

A comprehensive line of Micro Accessories are available to complete your network. With our Enterprise End-to-End Solutions, we offer Micro Couplers, Cross-Connect Cabinets, Splice Closures, Optical Termination Hardware and Tools.

## Ordering Information-Accessories

| PRODUCT TYPE | DESCRIPTION | DURA-LINE NO. |
| :---: | :---: | :---: |
| COUPLERS |  |  |
| $12.7 \mathrm{~mm} \times 12.7 \mathrm{~mm}$ | Straight Coupler | 20001832 |
| $8.5 \mathrm{~mm} \times 8.5 \mathrm{~mm}$ | Straight Coupler | 20001834 |
| TRANSITIONS |  |  |
| $8.5 \mathrm{~mm} \times 8 \mathrm{~mm}$ | Reducer Coupler | 20001884 |
| $8.5 \mathrm{~mm} \times 5 \mathrm{~mm}$ | Reducer Coupler | 20001883 |
| $8 \mathrm{~mm} \times 5 \mathrm{~mm}$ | Reducer Coupler | 20003016 |
| $10 \mathrm{~mm} \times 8.5 \mathrm{~mm}$ | Reducer Coupler | 20001881 |
| END CAPS |  |  |
| 12.7 mm | End Cap | 20001482 |
| 8.5 mm | End Cap | 20001819 |
| PLUGS |  |  |
| 12.7 mm | End Plug | 20002828 |
| 8.5 mm | End Plug (for HDPE and Riser Only) | 20001523 |
| BULKHEAD FITTINGS |  |  |
| 12.7 mm | 12.7 mm Bulkhead Connector with Lock Ring | 20003017 |
| 8.5 mm | 8.5 mm Bulkhead Connector with Lock Ring | 20001712 |
| GAS BLOCK CONNECTORS |  |  |
| 8.5 mm | 8.5/6 mm Gas Block Connector for cable 3.3-4.0 mm | 20002104 |
| 12.7 mm | 12.7/10 mmm Gas Block Connector for cable $5 \mathrm{~mm}-8 \mathrm{~mm}$ | 20003363 |
| TOOLS |  |  |
| Cutter 8-19 mm | MicroDuct Straight Cutter 8-19 mm OD | 20001856 |
| Cutter Round | Round MicroDuct Cutter | 20005284 |
| Cutter Ratchet | 2 in. Ratchet Cutter | 20001803 |
| Cutter Ratchet 1-1/2" | 1-1/2" Ratchet Cutter | 20001923 |
| Slitter | Slitter Longitudinal | 20001937 |
| Slitter | Longitudinal Sheath Slitter | 20003768 |
| Unlocking Tool | Tool MicroDuct Coupler Collet Unlocking Tool | 20001866 |
| CLOSE-DOWN ASSEMBLY |  |  |
| 8.5 mm | 8.5 mm Close-Down Assembly Kit | 20004981 |



Longitudinal Sheath Slitter


Close-Down Assembly

## Accessories (cont.)

## Ordering Information-Connectors

| PRODUCT TYPE | DESCRIPTION | DURA-LINE NO. |
| :---: | :---: | :---: |
| FUTUREPATH ENCLOSURE CONNECTORS |  |  |
| 8.5/6 X 1 | Enterprise - FuturePath Enclosure Connector D $8.5 \mathrm{~mm} \times 1$ | 20003048 |
| 8.5/6 X 2 | Enterprise - FuturePath Enclosure Connector D $8.5 \mathrm{~mm} \times 2$ | 20001915 |
| 8.5/6 X 3 | Enterprise - FuturePath Enclosure Connector D $8.5 \mathrm{~mm} \times 3$ | 20003049 |
| 8.5/6 X 4 | Enterprise - FuturePath Enclosure Connector D $8.5 \mathrm{~mm} \times 4$ | 20001916 |
| 8.5/6 X 7 | Enterprise - FuturePath Enclosure Connector D $8.5 \mathrm{~mm} \times 7$ | 20001917 |
| 8.5/6 X 12 | Enterprise - FuturePath Enclosure Connector D $8.5 \mathrm{~mm} \times 12$ | 20001918 |
| 8.5/6 X 19 | Enterprise - FuturePath Enclosure Connector D $8.5 \mathrm{~mm} \times 19$ | 20001919 |
| 8.5/6 X 24 | Enterprise - FuturePath Enclosure Connector D $8.5 \mathrm{~mm} \times 24$ | 20001920 |
| 12.7/10 $\times 1$ | Enterprise - FuturePath Enclosure Connector D $12.7 \mathrm{~mm} \times 1$ | 20003050 |
| 12.7/10 X 2 | Enterprise - FuturePath Enclosure Connector D $12.7 \mathrm{~mm} \times 2$ | 20003051 |
| 12.7/10 $\times 3$ | Enterprise - FuturePath Enclosure Connector D $12.7 \mathrm{~mm} \times 3$ | 20003052 |
| 12.7/10 $\times 4$ | Enterprise - FuturePath Enclosure Connector D $12.7 \mathrm{~mm} \times 4$ | 20003053 |
| 12.7/10 $\times 7$ | Enterprise - FuturePath Enclosure Connector D $12.7 \mathrm{~mm} \times 7$ | 20003054 |



FuturePath Enclosure Connector


## Applications

- Designed for Data Center Interconnect
- Horizontal Distribution
- Backbone Distribution
- Low-cost fiber upgrade migration strategies


## Enterprise Blown Fiber (eABF®) Cable

eABF cables are designed by AFL to offer the most rugged and reliable enterprise-based blown fiber solution in the market today. The patent pending cable design combines a light-weight, high-drag jacketing system that allows the cable to be blown long distances. The cable series also features additional attributes that set this product above and beyond traditional blown fiber cables. These enhanced features include mechanical strengthening that permits the cable to comply with industry-standard premise interconnect specifications. In addition, the eABF cable series feature flame-resistance characteristics which result in stand-alone riser and plenum rated options suitable for routing outside of the micro-duct system. Because of these mechanical, environmental and optical qualifications, eABF cables can also be installed in third-party, flame-rated duct and pathway systems.

## Features

- Contains water-blocking components for additional fiber protection from accidental water exposure
- Can be installed in eABF duct or third-party rated duct systems
- Complete range of single-mode and multimode fibers to support 10G, 40G and 100G Ethernet architectures
- Aramid-strengthened cable core for robust tensile load bearing capabilities
- OD compatible with 6 mm ID Micro-ducts for higher density fiber pathway solutions
- 96-Fiber count fits into $8.5 \mathrm{~mm} \times 6 \mathrm{~mm}$ Micro-duct for up to 2,304 fibers per 24-way Dura-Line FuturePath Duct


## Specifications-eABF Optical Fiber

| FIBER TYPE | $\begin{gathered} \text { ISO } \\ \text { DESIGNATION } \end{gathered}$ | MAXIMUM ATTENUATION (dB/km) |  |  |  | OVERFILL LAUNCH MIN. BANDWIDTH (MHz-km) |  | $\begin{gathered} \text { EMBC } \\ \text { (MHz-km) } \end{gathered}$ | GIGABIT ETHERNET MAX. LINK DISTANCE (Meters) |  | 10 GIGABIT ETHERNET MAX. LINK DISTANCE (Meters) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 850 nm | 1300 nm | 1310 nm | 1550 nm | 850 nm | 1300 nm |  | 850 nm | 1300 nm | 850 nm | 1300 nm |
| 62.5/125 | OM1 | 3.5 | 1.2 | N/A | N/A | 200 | 600 | N/A | 300 | 550 | 32 | N/A |
| 50/125 | OM2 BIF | 3.5 | 1.2 | N/A | N/A | 500 | 500 | N/A | 600 | 600 | 82 | N/A |
| 50/125 | OM3 BIF | 3.0 | 1.2 | N/A | N/A | 1500 | 500 | 2000 | 1000 | 550 | 300 | N/A |
| 50/125 | OM4 BIF | 3.0 | 1.2 | N/A | N/A | 3500 | 550 | 4700 | 1040 | 550 | 550 | N/A |
| SM | $\begin{aligned} & \text { OS2 (G.652D/ } \\ & \text { G.657.A1) } \\ & \hline \end{aligned}$ | N/A | N/A | 0.4 | 0.4 | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

BIF = Bend Insensitive Fiber

## Estimated Installation Distances

| OD/ID | DISTANCE (FT) |
| :---: | :---: |
| V-20 Install Distance-eABF 3.6 mm (6-24 Fibers) |  |
| $8.5 \times 6$ | 3,000 |
| V-20 Install Distance-eABF 3.8 mm (48 Fibers) |  |
| $8.5 \times 6$ |  |
| 2,500 |  |
| V-20 Install Distance-eABF 4.5 mm (72-96 Fibers) |  |
| $8.5 \times 6$ |  |

## Enterprise Blown Fiber (eABF) Cable (cont.)

## Mechanical Data—Riser (OFNR)



## Enterprise Blown Fiber (eABF) Cable (cont.)

## Mechanical Data-Plenum (OFNP)

| DURA-LINE NO. | DESCRIPTION | PRODUCTTYPE | FIBER COUNT | NOMINAL DIAMETER <br> INCHES (MM) | WEIGHTLBS/1,000 FT(KG/KM) | MAXIMUM TENSILE LOAD |  | MINIMUM BEND RADIUS |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | SHORT TERM LBS (N) |  | SHORT TERM INCHES MM) | LONG TERM INCHES (MM) |
| 20002973 | MicroCable Plenum ENT-A SM-6 | SMF | 6 | 0.14 (3.6) | 6.4 (9.5) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002974 | MicroCable Plenum ENT-A SM-12 | SMF | 12 | 0.14 (3.6) | 6.7 (10.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002975 | MicroCable Plenum ENT-A SM-24 | SMF | 24 | 0.14 (3.6) | 7.4 (11.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20001451 | MicroCable Plenum ENT-A SM-48 | SMF | 48 | 0.15 (3.8) | 9.4 (14.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20003337 | MicroCable Plenum ENT-A SM-72 | SMF | 72 | 0.18 (4.5) | 15.0 (22.3) | 22 (100) | 7 (30) | 3.6 (90) | 1.8 (45) |
| 20003629 | MicroCable Plenum SMF-72 $200 \mu \mathrm{~m}$ | SMF $200 \mu \mathrm{~m}$ | 72 | 0.15 (3.8) | 11.0 (16.4) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20003631 | MicroCable Plenum ENT-A SM-96 | SMF $200 \mu \mathrm{~m}$ | 96 | 0.18 (4.5) | 16.0 (23.8) | 22 (100) | 7 (30) | 3.6 (90) | 1.8 (45) |
| 20002976 | MicroCable Plenum ENT-A M1-6 | OM1 (62.5/125) | 6 | 0.14 (3.6) | 6.4 (9.5) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002977 | MicroCable Plenum ENT-A OM1-12 | OM1 (62.5/125) | 12 | 0.14 (3.6) | 6.7 (10.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002978 | MicroCable Plenum ENT-A OM1-24 | OM1 (62.5/125) | 24 | 0.14 (3.6) | 7.4 (11.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002979 | MicroCable Plenum ENT-A OM1-48 | OM1 (62.5/125) | 48 | 0.15 (3.8) | 9.4 (14.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20003338 | MicroCable Plenum ENT-A OM1-72 | OM1 (62.5/125) | 72 | 0.18 (4.5) | 15.0 (22.3) | 22 (100) | 7 (30) | 3.6 (90) | 1.8 (45) |
| 20002980 | MicroCable Plenum ENT-A OM2-6 | OM2 (50/125) | 6 | 0.14 (3.6) | 6.4 (9.5) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002981 | MicroCable Plenum ENT-A OM2-12 | OM2 (50/125) | 12 | 0.14 (3.6) | 6.7 (10.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002982 | MicroCable Plenum ENT-A OM2-24 | OM2 (50/125) | 24 | 0.14 (3.6) | 7.4 (11.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002983 | MicroCable Plenum ENT-A OM2-48 | OM2 (50/125) | 48 | 0.15 (3.8) | 9.4 (14.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20003339 | MicroCable Plenum ENT-A OM2-72 | OM2 (50/125) | 72 | 0.18 (4.5) | 15.0 (22.3) | 22 (100) | 7 (30) | 3.6 (90) | 1.8 (45) |
| 20002984 | MicroCable Plenum ENT-A OM3-6 | OM3 (50/125) | 6 | 0.14 (3.6) | 6.4 (9.5) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002985 | MicroCable Plenum ENT-A OM3-12 | OM3 (50/125) | 12 | 0.14 (3.6) | 6.7 (10.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002986 | MicroCable Plenum ENT-A OM3-24 | OM3 (50/125) | 24 | 0.14 (3.6) | 7.4 (11.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002987 | MicroCable Plenum ENT-A OM3-48 | OM3 (50/125) | 48 | 0.15 (3.8) | 9.4 (14.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20003340 | MicroCable Plenum ENT-A OM3-72 | OM3 (50/125) | 72 | 0.18 (4.5) | 15.0 (22.3) | 22 (100) | 7 (30) | 3.6 (90) | 1.8 (45) |
| 20002988 | MicroCable Plenum ENT-A OM4-6 | OM4 (50/125) | 6 | 0.14 (3.6) | 6.4 (9.5) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002989 | MicroCable Plenum ENT-A OM4-12 | OM4 (50/125) | 12 | 0.14 (3.6) | 6.7 (10.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002990 | MicroCable Plenum ENT-A OM4-24 | OM4 (50/125) | 24 | 0.14 (3.6) | 7.4 (11.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20002919 | MicroCable Plenum ENT-A OM4-48 | OM4 (50/125) | 48 | 0.15 (3.8) | 9.4 (14.0) | 22 (100) | 7 (30) | 1.2 (30) | 0.8 (20) |
| 20003341 | MicroCable Plenum ENT-A OM4-72 | OM4 (50/125) | 72 | 0.18 (4.5) | 15.0 (22.3) | 22 (100) | 7 (30) | 3.6 (90) | 1.8 (45) |

## Qualifications

| GOVERNING BODY | STANDARD CODE | COMPONENT |
| :---: | :---: | :---: |
| Telcordia | GR-409-CORE | Fiber Optic Cable |
| RoHS | $2015 / 863$ | Fiber Optic Cable |
| UL | 1666 (OFNR) | Riser Cables |
| NEC | 2005 Art 770.51 (B) | Riser Cables |
| NFPA | 262 OFNP | Plenum Cables |

## Temperature Specifications

| TEMPERATURE RANGE |  |
| :---: | :---: |
| INSTALLATION | $0^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |
| OPERATING* | $0^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |
| STORAGE | $-40^{\circ} \mathrm{C}$ to $+75^{\circ} \mathrm{C}$ |

*Not intended for outside plant access during operational use.

## Contact AFL for packaging details or any further questions.



## Features

- 24, 48, 72 and 144 fiber options increase design flexibility without increasing space or installation time (labor costs) requirements
- Riser and Plenum options for use in riser or plenum pathway environments (outside of micro-duct)
- Contains water-blocking components for additional fiber protection from accidental water exposure
- Innovative fiber-ribbon bonding allows for higher density cable than traditional flat, fiber-ribbon
- SpiderWeb Ribbon technology reduces cable diameter to improve pathway space and cooling channel efficiencies
- Cable can be routed within cable management pathways (outside of micro-duct)
- OM3, OM4 and single-mode optical fiber options which support easy migration to IEEE 802.3ba 40GbE and 100GbE applications
- Optimized for high-density terminations for excellent integration with MPO-based and mass-fusion spliced connectivity solutions
- Environment-safe materials reduces concern for handling of cables
- Cables can be de-installed and reused to meet LEED-design guidelines for green building initiatives


## eABF ${ }^{\oplus}$ SWR ${ }^{\circledR}$ Enterprise Air-Jetted Fiber Cable

The AFL eABF SWR (SpiderWeb Ribbon ${ }^{\circledR}$ ) is a new innovation that combines the best of ribbon fiber mass-fusion functionality and single fiber-bundle packing density to enterprise fiber optic structured cabling materials. The SWR fiber bundle used in this version of the eABF air-jetted fiber optic cable allows for the design of round, high-fiber density geometry yet offers the installer the ability to quickly and efficiently install MPO multi-fiber connectors or mass-fusion splicing without having to sort out and arrange individual fibers. In addition, because of SWR fiber binding system, the individual optical fibers can be easily separated and terminated as single fiber units.

The eABF SWR cable meets the interconnect standards of Telcordia GR-409 and is rated to meet NFPA/NEC flame-safety requirements as a stand-alone cable yet can be jetted thousands of feet in the Dura-Line FuturePath MicroDuct pathway system.

## SWR Technology



## eABF ${ }^{\circledR}$ SWR ${ }^{\circledR}$ Enterprise Air-Jetted Fiber Cable

## Ordering Information and Mechanical Data

| DURA-LINE NO. | DESCRIPTION | FIBER TYPE | FIBER COUNT | NOMINAL DIAMETER | WEIGHT <br> LBS/KFT <br> (KG/KM) | MAX. TENSILE LOAD LBS (N) |  | MIN. BEND RADIUS INCHES (MM) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | INCHES <br> (MM) |  | SHORT TERM | LONG TERM | $\begin{gathered} \text { SHORT } \\ \text { TERM } \end{gathered}$ | $\begin{aligned} & \text { LONG } \\ & \text { TERM } \end{aligned}$ |
| PLENUM |  |  |  |  |  |  |  |  |  |
| 20003524 | MicroCable SWR Plenum ENT-A SMF-SWR-12 | SMF-SWR | 12 | 0.14 (3.5) | 7.4 (11.0) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003525 | MicroCable SWR Plenum ENT-A OM3-SWR-12 | OM3-SWR | 12 | 0.14 (3.5) | 7.4 (11.0) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003526 | MicroCable SWR Plenum ENT-A OM4-SWR-12 | OM4-SWR | 12 | 0.14 (3.5) | 7.4 (11.0) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003374 | MicroCable SWR Plenum ENT-A SMF-SWR-24 | SMF-SWR | 24 | 0.14 (3.5) | 8.7 (12.9) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003375 | MicroCable SWR Plenum ENT-A OM3-SWR-24 | OM3-SWR | 24 | 0.14 (3.5) | 8.7 (12.9) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003376 | MicroCable SWR Plenum ENT-A OM4-SWR-24 | OM4-SWR | 24 | 0.14 (3.5) | 8.7 (12.9) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003306 | MicroCable SWR Plenum ENT-A SMF-SWR-48 | SMF-SWR | 48 | 0.16 (4.0) | 12 (17.9) | 22 (100) | 7 (30) | 2.5 (60) | 1.5 (35) |
| 20003307 | MicroCable SWR Plenum ENT-A OM3-SWR-48 | OM3-SWR | 48 | 0.16 (4.0) | 12 (17.9) | 22 (100) | 7 (30) | 2.5 (60) | 1.5 (35) |
| 20003308 | MicroCable SWR Plenum ENT-A OM4-SWR-48 | OM4-SWR | 48 | 0.16 (4.0) | 12 (17.9) | 22 (100) | 7 (30) | 2.5 (60) | 1.5 (35) |
| 20005465 | MicroCable Plenum ENT-SWR SM-144 $200 \mu \mathrm{~m}$ | SMF-SWR $200 \mu \mathrm{~m}$ | 144 | 0.28 (7.2) | 42 (62.5) | 22 (100) | 7 (30) | 7 (160) | 4 (80) |
| RISER |  |  |  |  |  |  |  |  |  |
| 20003521 | MicroCable SWR Riser ENT-A SMF-SWR-12 | SMF-SWR | 12 | 0.14 (3.5) | 7.4 (11.0) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003522 | MicroCable SWR Riser ENT-A OM3-SWR-12 | OM3-SWR | 12 | 0.14 (3.5) | 7.4 (11.0) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003523 | MicroCable SWR Riser ENT-A OM4-SWR-12 | OM4-SWR | 12 | 0.14 (3.5) | 7.4 (11.0) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003425 | MicroCable Riser ENT-SWR SM-24 | SMF-SWR | 24 | 0.14 (3.5) | 8.7 (12.9) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003424 | MicroCable Riser ENT-SWR OM3-24 | OM3-SWR | 24 | 0.14 (3.5) | 8.7 (12.9) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003428 | MicroCable Riser ENT-SWR OM4-24 | OM4-SWR | 24 | 0.14 (3.5) | 8.7 (12.9) | 22 (100) | 7 (30) | 2.0 (56) | 1.5 (35) |
| 20003303 | MicroCable Riser ENT-SWR SM-48 | SMF-SWR | 48 | 0.16 (4.0) | 11 (16.4) | 22 (100) | 7 (30) | 2.5 (60) | 1.5 (35) |
| 20003304 | MicroCable Riser ENT-SWR OM3-48 | OM3-SWR | 48 | 0.16 (4.0) | 11 (16.4) | 22 (100) | 7 (30) | 2.5 (60) | 1.5 (35) |
| 20003305 | MicroCable Riser ENT-SWR OM4-48 | OM4-SWR | 48 | 0.16 (4.0) | 11 (16.4) | 22 (100) | 7 (30) | 2.5 (60) | 1.5 (35) |
| 20003446 | MicroCable SWR Riser ENT-A OM3-SWR-72 | OM3-SWR | 72 | 0.18 (4.5) | 16 (23.8) | 22 (100) | 7 (30) | 2.7 (67) | 1.8 (45) |
| 20003447 | MicroCable SWR Riser ENT-A OM4-SWR-72 | OM4-SWR | 72 | 0.18 (4.5) | 16 (23.8) | 22 (100) | 7 (30) | 2.7 (67) | 1.8 (45) |
| 20003448 | MicroCable SWR Riser ENT-4 SMF-SWR-72 | SMF-SWR | 72 | 0.18 (4.5) | 16 (23.8) | 22 (100) | 7 (30) | 2.7 (67) | 1.8 (45) |
| 20003882 | MicroCable Riser ENT-SWR SM-144 | SMF-SWR | 144 | 0.28 (7.2) | 30 (44.6) | 22 (100) | 7 (30) | 7 (160) | 4 (80) |

Optical Specifications

| FIBER TYPE | MAXIMUM ATTENUATION (dB/km) |  |  |  | OVERFILL LAUNCH MIN. BANDWIDTH (MHz•km) |  | $\underset{(\mathrm{MHz} \cdot \mathrm{~km})}{\mathrm{EMBC}_{2}}$ | GIGABIT ETHERNET MIN. LINK DISTANCE (Meters) |  | 10 GIGABIT ETHERNET MIN. LINK DISTANCE (Meters) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 850 nm | 1300 nm | 1310 nm | 1550 nm | 850 nm | 1300 nm |  | 850 nm | 1300 nm | 850 nm | 1300 nm |
| OM3 | 3.0 | 1.2 | N/A | N/A | 1500 | 500 | 2000 | 1000 | 550 | 300 | N/A |
| OM4 | 3.0 | 1.2 | N/A | N/A | 3500 | 550 | 4700 | 1040 | 550 | 550 | N/A |
| OS2 | N/A | N/A | 0.5 | 0.5 | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

## Qualifications

| GOVERNING BODY | STANDARD CODE | COMPONENT |
| :---: | :---: | :---: |
| Telcordia | GR-409-CORE | Fiber Optic Cable |
| RoHS | $2015 / 863$ | Fiber Optic Cable |
| UL | 1666 (ONFR) | Riser Cables |
| NEC | 2005 Art 770.51 (B) | Riser Cables |
| NFPA | 262 OFNP | Plenum Cables |

## Temperature Specifications

| TEMPERATURE RANGE |  |
| :---: | :---: |
| INSTALLATION | $0^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |
| OPERATING | $0^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |
| STORAGE | $-40^{\circ} \mathrm{C}$ to $+75^{\circ} \mathrm{C}$ |

*Not intended for outside plant access during operational use.

## Contact AFL for further details.



Example with OM3 and single-mode fibers

## Applications

- Designed for Data Center Interconnect
- Horizontal Distribution
- Vertical Distribution
- Inter and Intra-building optical circuits
- Low-cost fiber upgrade migration strategies


## Hybrid Enterprise Blown Fiber (eABF『) Cable with Various Fiber Combinations

eABF cables are designed by AFL to offer the most rugged and reliable enterprise-based blown fiber solution in the market today. The patent pending cable design combines a light-weight, high-drag jacketing system that allows the cable to be blown long distances. The cable series also features additional attributes that set this product above and beyond traditional blown fiber cables. These enhanced features include mechanical strengthening that permits the cable to comply with industrystandard premise interconnect specifications. In addition, the eABF cable series feature flameresistance characteristics which result in stand-alone riser rated options suitable for routing outside of the micro-duct system. Because of these mechanical, environmental and optical qualifications, eABF cables can also be installed in third-party flame-rated duct and pathway systems.

## Features

- Flame-resistant cable jacket makes it suitable for routing outside of the micro-duct system
- Complete range of single-mode and multimode fibers to support 10G, 40G and 100G Ethernet architectures
- Aramid-strengthened cable core for robust tensile load bearing capabilities
- OD compatible with 6 mm ID Micro-ducts for higher density fiber pathway solutions
- Contains water-blocking components for additional fiber protection from accidental water exposure


## Specifications - eABF Optical Fiber

| FIBER TYPE | ISO <br> DESIGNATION | MAXIMUM ATTENUATION (DB/KM) |  |  | OVERFILL LAUNCH MIN. BANDWIDTH (MHZ-KM) |  | $\begin{gathered} \text { EMBC } \\ \text { (MHZ-KM) } \end{gathered}$ | GIGABIT ETHERNET MIN. LINK DISTANCE (METERS) |  | 10 GIGABIT ETHERNET MIN. LINK DISTANCE (METERS) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 850 NM | 1300 NM | 1550 NM | 850 NM | 1300 NM |  | 850 NM | 1300 NM | 850 NM | 1300 NM |
| 50/125 | OM3 | 3.5 | 1.2 | N/A | 1500 | 500 | 2000 | 1000 | 550 | 300 | N/A |
| SM | OS2 | N/A | 0.4 | 0.4 | N/A | N/A | N/A | N/A | 5000 | N/A | 10000 |

## Estimated Installation Distances

| OD/ID | AIR (FT/905) |
| :--- | :---: |
| $8.5 \times 6$, V-20 Install Distance-eABF 3.8 mm (6-24 Fibers) | $2,300 / 24$ |
| $8.5 \times 6$, V-20 Install Distance-eABF 3.8 mm (48 Fibers) | $2000 / 19$ |

## Standard eABF Cable Packaging

| PACKAGE TYPE | STD P-U (FT) | PACKAGE WEIGHT |  |
| :---: | :---: | :---: | :---: |
|  |  | WEIGHT REEL | REEL + FULL LENGTH P-U |
| $30 \times 15 \times 12$ | 15,000 | 34 (15.5) | 208 (311) |
| Reel-in-Box | 1,000 | 10 (4.5) | 23 (34) |

## Ordering Information

Many additional Hybrid variations and combinations of eABF cable available. Contact AFL or Dura-Line for additional configurations.

## Qualifications

| GOVERNING BODY | STANDARD CODE | COMPONENT |
| :---: | :---: | :---: |
| Telcordia | GR-409-CORE | Fiber Optic Cable |
| RoHS | $2015 / 863$ | Fiber Optic Cable |
| UL | 1666 (OFNR) | Riser Cables |
| NEC | 2005 Art 770.51 (B) | Riser Cables |
| NFPA | 262 OFNP | Plenum Cables |

## Temperature Specifications

| TEMPERATURE RANGE |  |
| :---: | :---: |
| INSTALLATION | $0^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |
| OPERATING* | $0^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |
| STORAGE | $-40^{\circ} \mathrm{C}$ to $+75^{\circ} \mathrm{C}$ |

*Not intended for outside plant access during operational use.

Contact AFL for further details.


## LM-Series OSP MicroCore ${ }^{\circledR}$ Cable

AFL OSP MicroCore® cable series (LM-Series) is designed for outside plant installation in microduct conduit systems. The foundation of the design is the multi-fiber-set, gel-filled buffer tube construction. The kink-resistant buffer tube contains multiple 12 -fiber sets of color-coded fibers. Each set within the buffer tube is grouped using dual color-coded binder threads. The dry-blocked core is made up of SZ-stranded buffer tubes around a central strength member. The low-friction, high-strength overall jacketing system protects the cable-core while providing an optimized cable package supporting high-speed, long-distance jetting performance. The unique, high-fiber density geometry yields a cable construction that can accommodate up to 432 fibers and can be blown into microducts ranging in inside diameters from 10 mm to 16 mm .

## Features

- 12 up to $432250 \mu \mathrm{~m}$ fibers
- Low-friction outer jacket designed for air-blown installations
- Robust, kink-resistant buffer tubes reduce time and handling issues associated with enclosure build-outs
- 300lb installation tensile load rating
- OD compatible with 10 mm to 16 mm inside diameter microducts


## Applications

- Long-haul, middle-mile and metro-loop
- Campus inter-building backbone distribution
- Low-cost fiber upgrade migration strategies


## Cable Components



## LM-Series OSP MicroCore ${ }^{\circledR}$ Cable

## Physical and Mechanical Data

| LM-SERIES AFL NO.* | FIBER COUNT | FIBERS/ NUMBER OF TUBES** | $\begin{array}{\|c\|} \hline \text { DIAMETER } \\ \hline \text { INCHES (MM) } \end{array}$ | MIN. MICRODUCT INNER DIAMETER <br> INCHES (MM) | WEIGHTLBS/1000FT(KG/KM) | MAXIMUM TENSILE LOADLBS (N) |  | MINIMUM BEND RADIUS INCHES (CM) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | 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) |
| LM096x06101NS | 96 | 24/4 (2 fillers) | 0.31 (7.9) | 0.39 (10.0) | 34 (51) | 300 (1334) | 90 (400) | 6.5 (16) | 5 (12) |
| LM144x06101NS | 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) |
| LM432x0l301NS | 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 |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |

## Standard Packaging Details

| FIBER <br> COUNT | REEL DIMENSIONS <br> (FLANGE X WIDTH) | STANDARD REEL <br> LENGTH | TYPICAL TOTAL <br> WEIGHT |
| :---: | :---: | :---: | :---: |
| $12-144$ | $48 \times 36 \mathrm{in}$. | $20,000 \mathrm{ft}(6,096 \mathrm{~m})$ | $950 \mathrm{lbs}(430 \mathrm{~kg})$ |
| 288 | $58 \times 38 \mathrm{in}$. | $20,000 \mathrm{ft}(6,096 \mathrm{~m})$ | $1,800 \mathrm{lbs}(816 \mathrm{~kg})$ |
| 432 | $66 \times 42 \mathrm{in}$. | $20,000 \mathrm{ft}(6,096 \mathrm{~m})$ | $2,450 \mathrm{lbs}(1,111 \mathrm{~kg})$ |

## Recommended Products

| DESCRIPTION | AFL NO. |
| :---: | :---: |
| Apex ${ }^{\circledR}$ X-2 Sealed Splice Closure | Refer to spec sheet for AFL No. |
| Apex ${ }^{\circledR}$ X-2S Sealed Splice Closure | Refer to spec sheet for AFL No. |
| FUSEConnect ${ }^{\oplus}$ MPO Splice-on Connectors | Refer to spec sheet for AFL No. |
| FUSEConnect ${ }^{\text {® }}$ Field-installable Splice-on Connectors | Refer to spec sheet for AFL No. |
| LMHD-Series OSP MicroCore ${ }^{\text {® }}$ Cable | Refer to spec sheet for AFL No. |
| Poli-MOD ${ }^{\text {® Patch }}$ and Splice Module | Refer to spec sheet for AFL No. |

Temperature Specifications

| TEMPERATURE RANGE |  |
| :---: | :---: |
| OPERATION | $-30^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |
| STORAGE | $-30^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |
| INSTALLATION | $-10^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ |

## Qualifications

| GOVERNING BODY | STANDARD CODE | COMPONENT |
| :---: | :---: | :---: |
| ANSI/ICEA | S-122-744 | Cable |
| TIA | $598-\mathrm{D}$ | Fiber |

## Contact AFL for further details.

## LM200-Series OSP MicroCore ${ }^{\circledR}$ Cable

The product design integrates $200 \mu \mathrm{~m}$ buffered single-mode fiber which allows for reduced diameter cables compared to traditional OSP micro-cables. The foundation of the design is the multi-fiber-set, gel-filled buffer tube construction. The kink-resistant buffer tube contains multiple 12 -fiber sets of color-coded fibers. Each set within the buffer tube is grouped using dual color-coded binder threads. The dry-blocked core is made up of six buffer tubes SZ-stranded around a central strength member. The low-friction, high-strength overall jacketing system protects the cable-core while providing an optimized cable package supporting high-speed, long-distance jetting performance. The LM200-Series is the right choice for use in bundled micro-duct pathways allowing for future, incremental cable additions as network circuits and bandwidth requirements increase.

## Features

- 24 to 432 fibers
- Robust, kink-resistant buffer tubes reduce time and handling issues associated with enclosure build-outs
- Low-friction jacketing system allows for longer jetting distances
- Designed for use in bundled micro-duct pathways allowing for future, optical circuit additions


## Applications

- Long-haul, Local Loop FTTx, Campus Backbone connections for 10G, 40G, and 100G network transmission speeds
- Air-jetted into bundled micro-ducts
- Congested pathway over-ride installations


## Cable Components



## LM200-Series OSP MicroCore ${ }^{\circledR}$ Cable

## Physical and Mechanical Data

| $\begin{aligned} & \text { LM200-SERIES } \\ & \text { AFL NO.* } \end{aligned}$ | FIBER COUNT | FIBERS/ <br> NUMBER OF TUBES** | $\begin{array}{\|c\|} \hline \text { DIAMETER } \\ \hline \text { INCHES (MM) } \end{array}$ | MIN. MICRODUCT INNER DIAMETER <br> INCHES (MM) | WEIGHTLBS/1000FT(KG/KM) | MAXIMUM TENSILE LOAD LBS (N) |  | MINIMUM BEND RADIUS INCHES (CM) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | INSTALLATION | OPERATION | INSTALLATION | OPERATION |
| LM024x06101NS | 24 | 24/1 (5 fillers) | 0.248 (6.3) | 0.315 (8) | 21 (31) | 200 (890) | 60 (267) | 5 (13) | 4 (10) |
| LM048x06101NS | 48 | 24/2 (4 fillers) | 0.248 (6.3) | 0.315 (8) | 22 (33) | 200 (890) | 60 (267) | 5 (13) | 4 (10) |
| LM072x06101NS | 72 | 24/3 (3 fillers) | 0.248 (6.3) | 0.315 (8) | 23 (34) | 200 (890) | 60 (267) | 5 (13) | 4 (10) |
| LM096x06101NS | 96 | 24/4 (2 fillers) | 0.248 (6.3) | 0.315 (8) | 24 (36) | 200 (890) | 60 (267) | 5 (13) | 4 (10) |
| LM144x06101NS | 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 Specifications

| FIBER TYPE | "X" | STANDARD | MODE FIELD DIAMETER | ATTENUATION |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\mathbf{1 3 0 0} \mathbf{n m}$ | $\mathbf{1 5 5 0} \mathbf{n m}$ |
| $200 \mu \mathrm{~m}$ Single-mode | BC | ITU-T G.652.D / 657.A1 | $9.2 \mu \mathrm{~m}$ nominal | 0.35 | 0.25 |
| Corning $200 \mu \mathrm{~m}$ Single-mode | BA | ITU-T G.652.D / $657 . \mathrm{A} 1$ | $9.2 \mu \mathrm{~m}$ nominal | 0.35 | 0.25 |

## Standard Packaging Details

| FIBER COUNT | REEL DIMENSIONS <br> (Flange $\mathbf{x}$ Width) | STANDARD REEL <br> LENGTH | REEL WEIGHT | TYPICAL TOTAL <br> WEIGHT |
| :---: | :---: | :---: | :---: | :---: |
| $24-288$ | $48 \times 36 \mathrm{in}$. | $19,000 \mathrm{ft}(5,791 \mathrm{~m})$ | $140 \mathrm{lbs}(64 \mathrm{~kg})$ | $1,100 \mathrm{lbs}(500 \mathrm{~kg})$ |
| 432 | $58 \times 38 \mathrm{in}$. | $19,000 \mathrm{ft}(5,791 \mathrm{~m})$ | $435 \mathrm{lbs}(197 \mathrm{~kg})$ | $1,900 \mathrm{lbs}(862 \mathrm{~kg})$ |

## Recommended Products

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| Apex $^{\circledR}$ X-2 Sealed Splice Closure | Refer to spec sheet for AFL No. |
| Apex $^{\circledR}$ X-2S Sealed Splice Closure | Refer to spec sheet for AFL No. |
| Poli-MOD® Patch and Splice Module | Refer to spec sheet for AFL No. |
| FUSEConnect ${ }^{\circledR}$ MPO Splice-on Connectors | Refer to spec sheet for AFL No. |
| FUSEConnect ${ }^{\circledR}$ Field-installable Splice-on Connectors | Refer to spec sheet for AFL No. |

## Qualifications

| GOVERNING BODY | STANDARD CODE | COMPONENT |
| :---: | :---: | :---: |
| ANSI/ICEA | S-122-744 | Cable |
| TIA | $598-D$ | Fiber |

## Contact AFL for further details.

Optical Connectivity

## Connector Specifications

| PARAMETER | CONNECTOR |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | SC |  | FC |  | ST |  | LC |  | MTP |  | MT-RJ |  | MU |  |
| Single-mode Assemblies |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Image |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Ultra | Angle | Ultra | Angle | Ultra | Angle | Ultra | Angle | Flat | Angle | Ultra | Angle | Ultra | Angle |
| Insertion loss (dB) <br> Maximum Typical | $\begin{aligned} & 0.3 \\ & 0.15 \\ & \hline \end{aligned}$ | $\begin{aligned} & 0.3 \\ & 0.2 \end{aligned}$ | $\begin{aligned} & 0.3 \\ & 0.25 \end{aligned}$ | $\begin{aligned} & 0.3 \\ & 0.2 \end{aligned}$ | $\begin{aligned} & 0.3 \\ & 0.15 \\ & \hline \end{aligned}$ | — | $\begin{aligned} & 0.3 \\ & 0.15 \\ & \hline \end{aligned}$ | $\begin{aligned} & 0.3 \\ & 0.15 \\ & \hline \end{aligned}$ | - | $\begin{aligned} & 0.75 \\ & 0.35 \end{aligned}$ | $\begin{aligned} & 0.5 \\ & 0.25 \end{aligned}$ | - | $\begin{aligned} & 0.3 \\ & 0.2 \end{aligned}$ | - |
| Return Loss (dB) Minimum | $-55 \mathrm{~dB}$ | -65 dB | -55 dB | -65 dB | -55 dB | - | -55 dB | -65 dB | - | -55 dB | -35 dB | - | -55 dB | - |
| Temp Range ( ${ }^{\circ} \mathrm{C}$ ) | -40 to +85 |  | -40 to +85 |  | -40 to +85 |  | -40 to +85 |  | $-40 \text { to }+75$ |  | -40 to +75 |  | -40 to +85 |  |
| Durability Cycles | 500 |  | 500 |  | 500 |  | 500 |  | 200 |  | 200 |  | 500 |  |


| Multimode Assemblies |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Insertion loss (dB) <br> Maximum Typical | $\begin{array}{l\|l} 0.5 & - \\ 0.25 & - \end{array}$ | $\begin{array}{l\|l} 0.5 & - \\ 0.25 & - \end{array}$ | $\begin{array}{ll} 0.5 & - \\ 0.25 & - \end{array}$ | $\begin{array}{l\|l} 0.3 & - \\ 0.25 & - \end{array}$ | $\begin{array}{l\|l} 0.75 & - \\ 0.35 & - \end{array}$ | $\begin{array}{l\|l} 0.5 & - \\ 0.25 & - \end{array}$ | $\begin{array}{l\|l} 0.5 & - \\ 0.25 & - \end{array}$ |
| Return Loss (dB) Minimum | -30 dB - | -30 dB - | -30 dB - | -30 dB - | -20 dB - | -20 dB - | -30 dB |
| Temp Range ( ${ }^{\circ} \mathrm{C}$ ) | -40 to +85 | -40 to +85 | -40 to +85 | -40 to +85 | -40 to +75 | -40 to +75 | -40 to +85 |
| Durability Cycles | 500 | 500 | 500 | 500 | 200 | 200 | 500 |
| Cable Options | Simplex/Duplex $900 \mu \mathrm{~m}$ 1.6 mm 2.0 mm 2.4 mm 3.0 mm | $\begin{aligned} & \text { Simplex/Duplex } \\ & 900 \mu \mathrm{~m} \\ & 1.6 \mathrm{~mm} \\ & 2.0 \mathrm{~mm} \\ & 2.4 \mathrm{~mm} \\ & 3.0 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & \text { Simplex/Duplex } \\ & 900 \mu \mathrm{~m} \\ & 1.6 \mathrm{~mm} \\ & 2.0 \mathrm{~mm} \\ & 2.4 \mathrm{~mm} \\ & 3.0 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & \text { Simplex/Duplex } \\ & 900 \mu \mathrm{~m} \\ & 1.6 \mathrm{~mm} \\ & 2.0 \mathrm{~mm} \end{aligned}$ | Bare Ribbon Jacketed Ribbon 8-12 Fiber Count | Bare Ribbon Jacketed Ribbon Dual Link Zipcord | $\begin{aligned} & 900 \mu \mathrm{~m} \\ & 2.0 \mathrm{~mm} \end{aligned}$ |
| Applications | Telephony CATV/Broadband Telco Backplanes LAN/WAN | Telephony CATV/Broadband Telco Backplanes LAN/WAN | Telephony CATV/Broadband Telco Backplanes LAN/WAN | Telephony CATV/Broadband Telco Backplanes LAN/WAN | Telephony CATV/Broadband Telco Backplanes LAN/WAN | Telephony CATV/Broadband Telco Backplanes LAN/WAN | Telephony CATV/Broadband Telco Backplanes LAN/WAN |



## Simplex Cable Assemblies

Simplex cable assemblies are offered with a variety of combinations. Connectors include SC, FC, ST and $\mathrm{LC} .3 .0 \mathrm{~mm}, 2.0 \mathrm{~mm}, 1.6 \mathrm{~mm}$ and $900 \mu \mathrm{~m}$ simplex cables in riser and plenum are available.

## Features

- $3.0 \mathrm{~mm}, 2.0 \mathrm{~mm}, 1.6 \mathrm{~mm}$, and $900 \mu \mathrm{~m}$ cable diameter available
- Riser, Plenum and LSZH rated cables available


## Applications

- Building interconnections (campus LAN)
- Trunking lines direct to telecommunications closet
- Fiber patch panels within communications closets
- Links between electronic equipment and fiber patch panels


## Cable Components



## Ordering Information



## Single-mode

ASC = Angle SC AFC = Angle FC
ALC = Angle LC
USC = Ultra SC
UFC $=\mathrm{U}$ Itra FC
UST = Ultra ST
ULC = Ultra LC

Multimode
PSC = SC MM
PFC $=$ FC MM
PLC = LC MM
PST = ST MM


Connector End B

## Single-mode

ASC = Angle SC
AFC = Angle FC
ALC = Angle LC
USC = UItra SC
UFC $=$ Ultra FC
UST = Ultra ST
ULC $=$ U $\operatorname{ltra} \mathrm{LC}$ XXX = No connector

Multimode
PSC = SC MM
PFC $=F C$ MM
PLC $=\mathrm{LC}$ MM
PST = ST MM XXX = No connector


Fiber Count
$001=1$
RS $=3.0 \mathrm{~mm}$ Riser
PS $=3.0 \mathrm{~mm}$ Plenum
$\mathrm{KR}=3.0 \mathrm{~mm} \mathrm{I} / 0$ Riser
$\mathrm{RT}=2.0 \mathrm{~mm}$ Riser
$\mathrm{PT}=2.0 \mathrm{~mm}$ Plenum
RM $=1.6 \mathrm{~mm}$ Riser
PM $=1.6 \mathrm{~mm}$ Plenum
$\mathrm{JH}=900 \mu \mathrm{~m}$


Fiber Type
Q = Single-mode*
2 = Multimode 62.5/125 OM1
L = Multimode 50/125 OM3
$C=$ Multimode 50/125 OM4


Cable Length (meters)
$0010=10$ meters
(specify length)

NOTES: * All Single-mode cable assemblies use the ITU G.657.A1 standard.

## Qualifications

| GOVERNING BODY | STANDARD CODE | COMPONENT |
| :--- | :--- | :--- |
| Telcordia | GR-409 | Cable |
|  | GR-326 | Connectors |
| RoHS | Compliant | Cable |
| ITU | G.652.D, G.657.A1 | Single-mode optical fiber only |



## Duplex Cable Assemblies

Zipcord cables are used to meet the requirements for two-fiber cable assemblies, utilizing SC, FC, ST and LC connectors.

## Features

- Flexible, 2-fiber design
- Riser, Plenum and LSZH* rated cables available (*contact AFL)


## Applications

- Private networks
- Data centers
- High-density applications
- Interconnect and cross-connect
- Premise installations


## Cable Components

Zipcord


## Qualifications

| GOVERNING BODY | STANDARD CODE | COMPONENT |
| :--- | :--- | :--- |
| Telcordia | GR-409 | Cable |
|  | GR-326 | Connectors |
| RoHS | Compliant | Cable |
| ITU | G.652.D, G.657.A1 | Single-mode optical fiber only |

## Contact AFL for further details.

## Ordering Information

| UST |
| :---: |
| Connector End A |

## Single-mode

AFC = Angle FC
UFC = Ultra FC *
UST $=$ Ultra ST
ADL = Angled LC Duplex
ASF = Angled SC Duplex
USF = Ultra SC Duplex
UDL = Ultra LC Duplex

## Multimode

PFC = FC MM
PST = ST MM J
PSF = SC Duplex MM
PDL = LC Duplex MM


| RZ | 002 |
| :---: | :---: |
| Cable Type |  |
| Zipcord <br> RZ $=3.0 \mathrm{~mm}$ Riser $\mathrm{PZ}=3.0 \mathrm{~mm}$ Plenum R2OZ $=2.0 \mathrm{~mm}$ Riser P20Z $=2.0 \mathrm{~mm}$ Plenum $\mathrm{R} 162=1.6 \mathrm{~mm}$ Riser P16Z $=1.6 \mathrm{~mm}$ Plenum | $002=2$ |



Cable Length (meters)
XXXX (specify length)
$0010=10$ meters

NOTES:

1. Refer to Connector Specifications page.

* Single connector options, quantity two per end. Duplex connectors are assembled with removable clip.
** All Single-mode cable assemblies use the
ITU G.652.D/G.657.A1 standard.
*     *         * LC Connectors available on 2.0 mm Zipcord cable.


## LC Uniboot Cable Assemblies

AFL's LC Uniboot cable assemblies offer a more compact design when compared to traditional duplex zipcord assemblies. These assemblies contain two LC connectors encased in a common housing with one boot, terminated on a single, round, two-fiber cable. Utilizing AFL's DUAL-Link 2.0 and 2.4 mm premise cable, LC Uniboot assemblies condense the cable management to half the space used by regular zipcord assemblies. AFL's LC Uniboot cable assemblies offer the best solution for high-density applications.

## Features

- LC Uniboot connector uses a single housing and single boot and is field-reversible for polarity
- 2.0 and 2.4 mm DUAL-Link cable


## Applications

- Private networks
- Data centers
- High density applications
- Interconnect and cross-connect
- Premise installations


## Specifications

| PARAMETER | VALUE |
| :--- | :--- |
| Insertion Loss (typical) | $0.15 \mathrm{~dB}(\mathrm{SM} / \mathrm{MM})$ |
| Return Loss (typical) | $-55 \mathrm{~dB}(\mathrm{SM}),-30 \mathrm{~dB}(\mathrm{MM})$ |
| Durability | 500 cycles |
| Operating Temperature | $0^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |
| Ferrule | Zirconia |

## Ordering Information

2.0 mm Plenum DUAL-Link Cable Assemblies

| FIBER TYPE | AFL NO. |
| :--- | :--- |
| Single-mode | CS011378-XXXX |
| Multimode 62.5/125 (OM1) | CS011381-XXXX |
| Multimode 50/125 (OM3) | CS010640-XXXX |
| Multimode 50/125 (OM4) | CS011386-XXXX |

XXXX = Length (meters)
Example: $0010=10$
2.4 mm Plenum DUAL-Link Cable Assemblies

| FIBER TYPE | AFL NO. |
| :--- | :--- |
| Single-mode | CS011389-XXXX |
| Multimode 62.5/125 (OM1) | CS011394-XXXX |
| Multimode 50/125 (OM3) | CS011397-XXXX |
| Multimode 50/125 (OM4) | CS011400-XXXX |

## Qualifications

| GOVERNING BODY | STANDARD CODE | COMPONENT |
| :---: | :---: | :---: |
| Telcordia | GR-326 | Connectors <br> Cable |
| EIA/TIA | $604-10 \mathrm{~A}($ FOCIS 10 ) | Connectors |
| RoHS |  | Cable |

## Contact AFL for further details.

## Multi-Fiber Cable Assemblies

Multi-fiber cable assemblies provide safe and cost effective installation for many applications. These assemblies help eliminate labor-intensive field termination, yet guarantee reliable performance. These assemblies feature a unified construction for easy fiber identification and rapid installation.

## Features

- 4-144 fibers with aramid yarn reinforcement for rugged protection
- Available with $900 \mu \mathrm{~m}$ tight buffered fibers or sub-unitized design with twelve $250 \mu \mathrm{~m}$ fibers per tube
- Highly flexible for ease of routing
- Riser, Plenum and LSZH rated cables available
- Pre-installed pulling eye kits available on certain products


## Applications

- Headend termination to a fiber "backbone"
- Termination of fiber rack systems
- Multi-floor deployment where select fibers are used at each floor
- Intrabuilding "backbones"
- Data center systems


## Specifications

|  | SINGLE-MODE ASSEMBLIES |  |  |  | MULTIMODE ASSEMBLIES |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | LC |  | SC |  | LC | SC |
|  | ULTRARAMETER | ANGLED | ULTRA | ANGLED |  |  |
| Insertion Loss (Typical dB)*** | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| Insertion Loss (Maximum dB) | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 0.5 |
| Return Loss (Typical dB)*** | -60 | -70 | -60 | -70 | -35 | -35 |
| Return Loss (Minimum dB) | -55 | -65 | -55 | -65 | -30 | -30 |

[^0]
## Multi-Fiber Cable Assemblies

## Ordering Information

| ASC | ASC | RC | 012 | Q | 0010 | NN |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |
| Connector End A | Connector End B | Cable Type | Fiber Count | Fiber Type Ca | Cable Length (meters) |  |
| Single-mode | Single-mode | $R C=$ Riser ( $C P C$ ) | $004=4$ | $\mathrm{Q}=$ Single-mode | XXXX (specify length) |  |
| ASC = Angle SC | ASC = Angle SC | $\mathrm{PC}=$ Plenum (CPC) | $006=6$ | ITU G.652D/ | $0010=10$ meters |  |
| AFC $=$ Angle FC | AFC $=$ Angle FC | $\mathrm{PL}=$ Plenum MicroCore ${ }^{\circledR}$ | $012=12$ | G.657.A1 |  |  |
| USC $=$ Ultra SC | USC = Ultra SC |  | $024=24$ | 2 = Multimode | Leg Diame |  |
| UFC = Ultra FC | UFC = Ultra FC |  | $036=36$ | 62.5/125 $\mu \mathrm{m}$ OM1 | $11 \quad N=900 \mu \mathrm{~m}$ End | XX End B |
| UST $=$ Ultra ST | UST $=$ Ultra ST |  | $048=48$ | L = Multimode | $\mathrm{NN}=900 \mu \mathrm{~m}$ E | nd B |
| ULC = Ultra LC | ULC $=$ Ultra LC |  | $072=72$ | $\text { 50/125 } \mu \mathrm{m} \mathrm{OM3}$ | F = Furcated En | XX End $B$ |
| UDL = Ultra LC Duplex | XXX = No connector |  | $\begin{aligned} & 096=96 \\ & 144=144 \end{aligned}$ | C= Multimode | $\mathrm{FF}=$ Furcated E $\mathrm{FN}=$ Furcated E | and B / $900 \mu \mathrm{~m}$ End B |
| Multimode | Multimode |  |  | $50 / 125 \mu \mathrm{~m} \mathrm{OM4}$ | NF $=900 \mu \mathrm{~m}$ End | Furcated Ends B |
| PSC = SC MM | PSC = SC MM |  |  |  |  |  |
| PFC $=$ FC MM | $\mathrm{PFC}=\mathrm{FC} M M$ |  |  |  |  |  |
| PLC = LC MM | PLC = LC MM |  |  |  |  |  |
| PST = ST MM | PST = ST MM |  |  |  |  |  |
| PDL $=$ LC Duplex MM* | XXX = No connector |  |  | NOTES: <br> 1. Refer to Connector Specifications page. <br> 2. Duplex SC and LC available |  |  |
| PSF $=$ SC Duplex MM* |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

Temperature Specifications
Temperature Range $\quad-40^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$

## Contact AFL for further details.



MPO Cable Assemblies


MPO Fanout Cable Assemblies

## MPO Cable Assemblies

MPO cable assemblies provide a high performance plug-and-play solution for premise installations where space is a premium. Used to interconnect panels or cassettes, the small diameter MicroCore ${ }^{\circledR}$ cable construction reduces the required pathway space and provides a flexible outer jacket in both single-mode and multimode configurations. Multiple breakout options are also available including LC, SC, ST, or FC single fiber connectors.

## Features

- High density, plug and play fiber optic interconnects
- Pre-terminated cable assemblies eliminate field termination time and guarantee optical performance
- Available with a wide variety of cable and connector options
- Standard and low loss connectors
- Single-mode and laser-optimized multimode fiber available
- Pulling eye option available upon request


## Specifications

| PARAMETER | SINGLE-MODE ASSEMBLIES |  |  |  |  |  | MULTIMODE <br> ASSEMBLIES |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | LC |  | SC |  | MPO | LC | SC | MPO <br> (LOW Loss) |  |  |  |
|  | ULTRA | ANGLED | ULTRA | ANGLED | ANGLED |  | 0.15 | 0.15 |  |  |  |
| Insertion Loss <br> (Typical dB)*** | 0.15 | 0.15 | 0.15 | 0.15 | 0.35 | 0.15 |  |  |  |  |  |
| Insertion Loss <br> (Maximum dB) | 0.3 | 0.3 | 0.3 | 0.3 | 0.75 | 0.5 | 0.5 | 0.2 |  |  |  |
| Return Loss <br> (Typical dB)*** | -60 | -70 | -60 | -70 | -65 | -35 | -35 | -30 |  |  |  |
| Return Loss <br> (Minimum dB) | -55 | -65 | -55 | -65 | -55 | -30 | -30 | -20 |  |  |  |
| Operation <br> Temperature | $0^{\circ} \mathrm{C}$ to $70^{\circ} \mathrm{C}$ |  |  |  |  |  |  |  |  |  |  |
| Durability Cycles | 500 | 500 | 500 | 500 | 200 | 500 | 500 | 200 |  |  |  |

[^1]
## Applications

- Data center systems wiring
- MPO-MPO or MPO-Fanouts
- Headend termination to a fiber "backbone"
- Termination of fiber rack systems
- Multi-floor deployment
- Intrabuilding "backbones"


## MPO Cable Assemblies

## Ordering Information

## MPO-MPO Assemblies

(Female MPOs on both ends - no pins)
(Polarity: Key Up/Key Up, Straight Through)

| FIBER COUNT | FIBER TYPE | PULLING EYE | AFL NO. |
| :---: | :---: | :---: | :---: |
| 12 | Single-mode, Single Jacket | No | CS017463-XXXX |
| 12 | Single-mode | No | CS009980-XXXX |
| 12 | Single-mode | Yes | CS009981-XXXX |
| 24 | Single-mode | No | CS009984-XXXX |
| 24 | Single-mode | Yes | CS009985-XXXX |
| 72 | Single-mode | No | CS009996-XXXX |
| 72 | Single-mode | Yes | CS009997-XXXX |
| 12 | $50 \mu \mathrm{~m}$ 10gig 300 (OM3), Single Jacket | No | CS003695-XXXX |
| 12 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | No | CS010649-XXXX |
| 12 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | Yes | CS010650-XXXX |
| 24 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | No | CS003700-XXXX |
| 24 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | Yes | CS009912-XXXX |
| 72 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | No | CS003720-XXXX |
| 72 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | Yes | CS010016-XXXX |
| 12 | $\begin{aligned} & 50 \mu \mathrm{~m} 10 \mathrm{gig} 550 \\ & \text { (OM4), Single Jacket } \end{aligned}$ | No | CS013364-XXXX |
| 12 | $50 \mu \mathrm{~m}$ 10gig 550 (0M4) | No | CS008420-XXXX |
| 12 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (0M4) | Yes | CS010165-XXXX |
| 24 | $50 \mu \mathrm{~m}$ 10gig 550 (0M4) | No | CS010100-XXXX |
| 24 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (0M4) | Yes | CS010066-XXXX |
| 72 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (0M4) | No | CS010101-XXXX |
| 72 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (0M4) | Yes | CS010067-XXXX |

MPO Fanout Assemblies (Male MPOs — Duplex Connectors)

| FIBER COUNT | FIBER TYPE | PULLING EYE | AFL NO. |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | MALE MPO-LC DUPLEX | MALE MPO-SC DUPLEX |
| 12 | Single-mode | No | CS009521-XXXX | CS010020-XXXX |
| 12 | Single-mode | Yes | CS0010017-XXXX | CS010021-XXXX |
| 24 | Single-mode | No | CS003796-XXXX | CS010022-XXXX |
| 24 | Single-mode | Yes | CS010018-XXXX | CS010023-XXXX |
| 72 | Single-mode | No | CS003811-XXXX | CS010024-XXXX |
| 72 | Single-mode | Yes | CS010019-XXXX | CS010025-XXXX |
| 12 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | No | CS011510-XXXX | CS010030-XXXX |
| 12 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | Yes | CS010027-XXXX | CS010031-XXXX |
| 24 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | No | CS003795-XXXX | CS010032-XXXX |
| 24 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (0M3) | Yes | CS010028-XXXX | CS010033-XXXX |
| 72 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (OM3) | No | CS003810-XXXX | CS010034-XXXX |
| 72 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 300$ (OM3) | Yes | CS010029-XXXX | CS010035-XXXX |
| 12 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (OM4) | No | CS009519-XXXX | CS010073-XXXX |
| 12 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (OM4) | Yes | CS010068-XXXX | CS010074-XXXX |
| 24 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (OM4) | No | CS010069-XXXX | CS010075-XXXX |
| 24 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (OM4) | Yes | CS010070-XXXX | CS010076-XXXX |
| 72 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (OM4) | No | CS010071-XXXX | CS010077-XXXX |
| 72 | $50 \mu \mathrm{~m} 10 \mathrm{gig} 550$ (OM4) | Yes | CS010072-XXXX | CS010078-XXXX |

NOTE: XXXX is length in meters.
Contact AFL Customer Service for additional polarity schemes available.

## Qualifications

| GOVERNING BODY | STANDARD CODE | COMPONENT |
| :---: | :---: | :---: |
| Telcordia | GR-326/GR-1435 <br> GR-409-CORE | Connectors <br> Cable |
| EIA/TIA | $568-A$ | Cable |

## Contact AFL for further details.

## Xpress Fiber Management ${ }^{\circledR}$ (XFM $^{\circledR}$ ) 1RU Patch Panel

The Xpress Fiber Management (XFM) 1U patch panel is a rack mountable interconnect point specifically designed to manage dense fiber applications. Based on the LGX ${ }^{\circledR}$ intermateability platform, the panel is fully compatible with AFL's XFM Optical Cassette, Passive Optical Coupler Modules, and Poli-MOD ${ }^{\circledR}$ solutions. This panel offers enhanced management of densities up to 72 fibers using MTP-LC XFM Optical Cassettes ( 24 fibers).

## Features

- Steel construction
- Textured black powder coat finish
- Universal WECO/TIA 19"/23" rack compatibility
- (3) LGX 118 adapter plate / module mounting positions
- Slide-out tray with relief cut-outs for simplified connector access
- Optional front door key lock for heightened protection of internal components


## Specifications

| DEPTH <br> (A) (inches) | WIDTH <br> (B) (inches) | HEIGHT <br> (C) (inches) | RACK <br> UNITS | CAPACITY | UNLOADED <br> WEIGHT |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 15.5 | 17 | 1.7 | 1 | (3) LGX 118 | 13 lbs. |

Ordering Information

| DESCRIPTION | MODEL NUMBER | AFL NO. |
| :--- | :--- | :--- |
| Xpress Fiber Management 1U Patch Panel, Black, Empty | XFM-1-U-B-0 | FM002711-BE |

## Accessories

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| Kit, Lock, for CON/CNS Panels | FM001318 |




## Xpress Fiber Management ${ }^{\circledR}$ (XFM) 2RU Patch Panel

The Xpress Fiber Management (XFM) 2U patch panel is a rack mountable interconnect point specifically designed to manage dense fiber applications. Based on the LGX® intermateability platform, the panel is fully compatible with AFL's XFM Optical Cassette, Passive Optical Coupler Modules, and Poli-MOD ${ }^{\circledR}$ solutions. This panel offers enhanced management of densities up to 144 fibers using MTP-LC XFM Optical Cassettes ( 24 fibers).


## Features

- Steel construction
- Textured black powder coat finish
- Universal WECO/TIA 19"/23" rack compatibility
- (6) LGX 118 adapter plate / module mounting positions
- Slide-out tray with relief cut-outs for simplified connector access
- Optional front door key lock for heightened protection of internal components


## Specifications

| DEPTH (A) <br> IN INCHES | WIDTH (B) <br> IN INCHES | HEIGHT (C) <br> IN INCHES | RACK <br> UNITS | CAPACITY | UNLOADED <br> WEIGHT |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 15.5 | 17 | 3.5 | 2 | $(6)$ LGX 118 | 15 lbs. |

## Ordering Information

| DESCRIPTION | MODEL NUMBER | AFL NO. |
| :--- | :--- | :--- |
| Xpress Fiber Management 2U Patch Panel, Black, Empty | XFM-2-U-B-0 | FM002712-BE |

## Accessories

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| Kit, Lock, for CON/CNS Panels | FM001318 |




## Xpress Fiber Management ${ }^{\circledR}$ (XFM ${ }^{\circledR}$ ) 4RU Patch Panel

The Xpress Fiber Management (XFM) 4RU patch panel is a rack mountable interconnect point specifically designed to manage dense fiber applications. Based on the LGX ${ }^{\circledR}$ intermateability platform, the panel is fully compatible with AFL's XFM Optical Cassette, Poli-MOD ${ }^{\circledR}$ and WDM solutions, offering enhanced management of densities up to 288F using MTP/MPO, single fiber, or patch and splice methodologies. Routing rings on the top and bottom of the front panel provide enhanced cable routing allowing cable assemblies to exit comfortably. This panel can be provisioned with a key lock at the time of order for secure environments.

## Features

- Aluminum construction
- Textured black powder coat finish
- Universal WECO/TIA 19"/23" rack compatibility
- (12) LGX 118 adapter plate / module mounting positions
- Mounting depth adjustable from flush to 8 " in 1 " increments


## Applications

- Data Centers
- Enterprise Networks
- Telecommunications Closets
- Central Offices / Headends


## Specifications

| DEPTH (A) IN INCHES | FRONT WIDTH (B) IN INCHES | REAR WIDTH (C) IN INCHES | HEIGHT (D) <br> IN INCHES | RACK UNITS | CAPACITY | UNLOADED WEIGHT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 15.5 | 17 | 15 | 7 | 4 | (12) LGX 118 | 9 lbs . |

## Ordering Information

| DESCRIPTION | MODEL NO. | AFL NO. |
| :--- | :--- | :--- |
| Xpress Fiber Management 4U Patch Panel, Black, Empty | XFM-4U-B-0 | FM001090-B |
| Xpress Fiber Management 4U Patch Panel, Black, Empty, Key Lock | XFM-4U-B-K | FM001218-B |



## XFM ${ }^{\circledR}$-28 Dual Access Module Panel

AFL's XFM-28 Dual Access Module Panel is designed to maximize module capacity via both front and rear access in just four rack units.

In applications where additional rack space is unavailable, the XFM-28 doubles the capacity of traditional 14 slot, front-access only 4RU panels, offering a total of 28 slots to accommodate modules ( 14 front / 14 rear). The panel is lightweight yet robust, with efficient cable management features for routing flexibility.

## Features

- Dual access via front and rear panel doors
- Aluminum construction
- Universal WECO/TIA 19"/23" rack compatibility
- (28) LGX ${ }^{\circledR} 118$ module mounting positions (14 front / 14 rear)
- Cable management features include side cable ports and full pass-thru underneath the main bulkhead compartment to allow cable routing from front to back within the panel without eliminating any module positions


## Specifications

| DEPTH | WIDTH | HEIGHT | RACK UNITS | CAPACITY | UNLOADED WEIGHT |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 21 in. | 17 in. | 7 in. | 4 | $(28)$ LGX 118 | 10 lbs. |

## Ordering Information

| DESCRIPTION | MODEL NO. | AFL NO. |
| :--- | :--- | :--- |
| XFM-28, Enclosure, 4RU, 19/23" | XFM-28 | FM004268 |




Features

- Metal Plate with Nylatches
- Polyurethane powder coated (white or black)
- LGX ${ }^{\circledR}$ compatible


## LightLink Adapter Plates

LightLink Adapter Plates add versatility to AFL's panel product line. Adapter plates are compatible with industry standard platforms allowing for easy upgrades to existing panels. Adapter Plates come preloaded with adapters and are available in 6, 8, 12 and 24 pack versions for single-fiber adapters. Higher fiber counts are achievable with multi-fiber adapters. Blank plates are also available for unused space in panels.

## Specifications



Ordering Information

| AFL NO. | ADAPTER TYPE | SIMPLEX/DUPLEX/ QUAD | ADAPTER COLOR | FIBER COUNT | PLATE HEIGHT | PLATE COLOR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| BLANK |  |  |  |  |  |  |
| FM003072 | BLANK | BLANK | NA | 0 | LGX (118) | BLACK |
| FM003462 | BLANK | BLANK | NA | 0 | LGX (118) | WHITE |
| FM000343 | BLANK | BLANK | NA | 0 | LGX (118) | SMOOTH BLACK |
| FM003434 | BLANK | BLANK | NA | 0 | LGX (170) | BLACK |
| FM003433 | BLANK | BLANK | NA | 0 | LGX (170) | WHITE |
| SC |  |  |  |  |  |  |
| FM003295 | SC | DUPLEX | AQUA | 12F | LGX (118) | BLACK |
| FM002272 | SC | DUPLEX | AQUA | 12F | LGX (118) | WHITE |
| FM003293 | SC | DUPLEX | BEIGE | 12F | LGX (118) | BLACK |
| FM002273 | SC | DUPLEX | BEIGE | 12F | LGX (118) | WHITE |
| FM003301 | SC | DUPLEX | BLACK | 12F | LGX (118) | BLACK |
| FM003297 | SC | DUPLEX | BLUE | 12 F | LGX (118) | BLACK |
| FM002271 | SC | DUPLEX | BLUE | 12F | LGX (118) | WHITE |
| FM002633 | SC | DUPLEX | GREEN | 12F | LGX (118) | BLACK |
| FM002634 | SC | DUPLEX | GREEN | 12F | LGX (118) | WHITE |
| FM000149 | SC | DUPLEX | BEIGE | 12 F | LGX (170) | WHITE |
| FM000148 | SC | DUPLEX | BEIGE | 12F | LGX (170) | BLACK |
| FM000144 | SC | DUPLEX | BLUE | 12F | LGX (170) | BLACK |
| FM000145 | SC | DUPLEX | BLUE | 12F | LGX (170) | WHITE |
| FM000152 | SC | DUPLEX | GREEN | 12F | LGX (170) | BLACK |
| FM000153 | SC | DUPLEX | GREEN | 12F | LGX (170) | WHITE |
| FM003287 | SC | DUPLEX | AQUA | 6F | LGX (118) | BLACK |
| FM003285 | SC | DUPLEX | BEIGE | 6F | LGX (118) | BLACK |
| FM003398 | SC | DUPLEX | BEIGE | 6F | LGX (118) | WHITE |
| FM003299 | SC | DUPLEX | BLACK | 6 F | LGX (118) | BLACK |
| FM003289 | SC | DUPLEX | BLUE | 6 F | LGX (118) | BLACK |
| FM003458 | SC | DUPLEX | BLUE | 6F | LGX (118) | WHITE |
| FM003283 | SC | DUPLEX | GREEN | 6F | LGX (118) | BLACK |
| FM000115 | SC | DUPLEX | GREEN | 6 F | LGX (118) | WHITE |

## LightLink Adapter Plates

Ordering Information (cont.)

| AFL NO. | ADAPTER TYPE | SIMPLEX/DUPLEX/ QUAD | ADAPTER COLOR | FIBER COUNT | PLATE HEIGHT | PLATE COLOR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC |  |  |  |  |  |  |
| FM003120 | SC | SIMPLEX | AQUA | 12F | LGX (118) | BLACK |
| FM003118 | SC | SIMPLEX | BEIGE | 12F | LGX (118) | BLACK |
| FM003242 | SC | SIMPLEX | BLACK | 12F | LGX (118) | BLACK |
| FM003122 | SC | SIMPLEX | BLUE | 12F | LGX (118) | BLACK |
| FM002842-TW | SC | SIMPLEX | BLUE | 12F | LGX (118) | WHITE |
| FM003116 | SC | SIMPLEX | GREEN | 12F | LGX (118) | BLACK |
| FM000800-TW | SC | SIMPLEX | GREEN | 12F | LGX (118) | WHITE |
| FM003411 | SC | SIMPLEX | BEIGE | 12F | LGX (170) | WHITE |
| FM003409 | SC | SIMPLEX | BLUE | 12F | LGX (170) | BLACK |
| FM003407 | SC | SIMPLEX | BLUE | 12F | LGX (170) | WHITE |
| FM003414 | SC | SIMPLEX | GREEN | 12F | LGX (170) | BLACK |
| FM003455 | SC | SIMPLEX | GREEN | 12F | LGX (170) | WHITE |
| FM003098 | SC | SIMPLEX | AQUA | 6 F | LGX (118) | BLACK |
| FM003096 | SC | SIMPLEX | BEIGE | 6 F | LGX (118) | BLACK |
| FM003403 | SC | SIMPLEX | BEIGE | 6F | LGX (118) | WHITE |
| FM003238 | SC | SIMPLEX | BLACK | 6F | LGX (118) | BLACK |
| FM003100 | SC | SIMPLEX | BLUE | 6F | LGX (118) | BLACK |
| FM003467 | SC | SIMPLEX | BLUE | 6F | LGX (118) | WHITE |
| FM003094 | SC | SIMPLEX | GREEN | 6F | LGX (118) | BLACK |
| FM000480 | SC | SIMPLEX | GREEN | 6F | LGX (118) | WHITE |
| FM000156 | SC | SIMPLEX | BLUE | 8F | LGX (118) | BLACK |
| FM003435 | SC | SIMPLEX | BLUE | 8F | LGX (118) | WHITE |
| FM002841 | SC | SIMPLEX | GREEN | 8F | LGX (118) | BLACK |
| FM000158 | SC | SIMPLEX | GREEN | 8F | LGX (118) | WHITE |
| LC |  |  |  |  |  |  |
| FM001004 | LC | DUPLEX | GREEN | 12F | LGX (118) | WHITE |
| FM001303 | LC | DUPLEX | AQUA | 12F | LGX (118) | WHITE |
| FM003108 | LC | DUPLEX | GREEN | 12F | LGX (118) | BLACK |
| FM003110 | LC | DUPLEX | BEIGE | 12F | LGX (118) | BLACK |
| FM003112 | LC | DUPLEX | AQUA | 12F | LGX (118) | BLACK |
| FM001185 | LC | QUAD | AQUA | 12F | LGX (118) | BLACK |
| FM000297 | LC | DUPLEX | BLUE | 12F | LGX (170) | WHITE |
| FM000298 | LC | DUPLEX | BLUE | 12F | LGX (170) | BLACK |
| FM000301 | LC | DUPLEX | GREEN | 12F | LGX (170) | WHITE |
| FM000302 | LC | DUPLEX | GREEN | 12F | LGX (170) | BLACK |
| FM000838 | LC | DUPLEX | BLUE | 24F | LGX (118) | WHITE |
| FM000851 | LC | DUPLEX | BEIGE | 24F | LGX (118) | WHITE |
| FM000853 | LC | DUPLEX | AQUA | 24F | LGX (118) | WHITE |
| FM003069 | LC | DUPLEX | GREEN | 24F | LGX (118) | WHITE |
| FM001184 | LC | QUAD | AQUA | 24F | LGX (118) | BLACK |
| FM000129 | LC | DUPLEX | BLUE | 24F | LGX (170) | WHITE |
| FM000130 | LC | DUPLEX | BLUE | 24F | LGX (170) | BLACK |
| FM000338 | LC | DUPLEX | GREEN | 24F | LGX (170) | WHITE |
| FM000339 | LC | DUPLEX | GREEN | 24F | LGX (170) | BLACK |
| FM000348 | LC | DUPLEX | BEIGE | 24F | LGX (170) | WHITE |
| FM000349 | LC | DUPLEX | BEIGE | 24F | LGX (170) | BLACK |
| FM000289 | LC | DUPLEX | BLUE | 6 F | LGX (118) | WHITE |
| FM000293 | LC | DUPLEX | GREEN | 6F | LGX (118) | WHITE |
| FM000294 | LC | DUPLEX | GREEN | 6F | LGX (118) | BLACK |
| FM003092 | LC | DUPLEX | BLUE | 6F | LGX (118) | BLACK |
| FM003429 | LC | DUPLEX | BEIGE | 6F | LGX (118) | WHITE |
| FM004252 | LC | DUPLEX | AQUA | 6 F | LGX (118) | BLACK |

Optical Connectivity

## LightLink Adapter Plates

## Ordering Information (cont.)

| AFL NO. | ADAPTER TYPE | SIMPLEX/DUPLEX/ QUAD | ADAPTER COLOR | FIBER COUNT | PLATE HEIGHT | PLATE COLOR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| LC |  |  |  |  |  |  |
| FM003240 | LC | DUPLEX | BLACK | 12F | LGX (118) | BLACK |
| FM003425 | LC | DUPLEX | BLUE | 12F | LGX (118) | WHITE |
| FM003465 | LC | DUPLEX | BLUE | 12F | LGX (118) | BLACK |
| FM003202 | LC | DUPLEX | GREEN | 24F | LGX (118) | BLACK |
| FM003204 | LC | DUPLEX | BEIGE | 24F | LGX (118) | BLACK |
| FM003206 | LC | DUPLEX | AQUA | 24F | LGX (118) | BLACK |
| FM003208 | LC | DUPLEX | BLUE | 24F | LGX (118) | BLACK |
| FM003244 | LC | DUPLEX | BLACK | 24F | LGX (118) | BLACK |
| ST |  |  |  |  |  |  |
| FM003126 | ST | SIMPLEX | METAL SM/MM | 12F | LGX (118) | BLACK |
| FM003456 | ST | SIMPLEX | METAL SM/MM | 12F | LGX (118) | WHITE |
| FM000286 | ST | SIMPLEX | METAL SM/MM | 12F | LGX (170) | BLACK |
| FM000285 | ST | SIMPLEX | METAL SM/MM | 12F | LGX (170) | WHITE |
| FM003104 | ST | SIMPLEX | METAL SM/MM | 6F | LGX (118) | BLACK |
| FM003422 | ST | SIMPLEX | METAL SM/MM | 6F | LGX (118) | WHITE |
| FM003102 | ST | SIMPLEX | METAL SM/MM | 6F | LGX (118) | BLACK |
| FM003441 | ST | SIMPLEX | METAL SM/MM | 8F | LGX (118) | BLACK |
| FM003439 | ST | SIMPLEX | METAL SM/MM | 8F | LGX (118) | WHITE |
| FC |  |  |  |  |  |  |
| FM000284 | FC | SIMPLEX | METAL | 12F | LGX (118) | BLACK |
| FM000283 | FC | SIMPLEX | METAL | 12F | LGX (118) | WHITE |
| FM003447 | FC | SIMPLEX | METAL | 12 F | LGX (170) | BLACK |
| FM003446 | FC | SIMPLEX | METAL | 12F | LGX (170) | WHITE |
| FM003420 | FC | SIMPLEX | METAL, GREEN DUST CAP | 6 F | LGX (118) | BLACK |
| FM003419 | FC | SIMPLEX | METAL, GREEN DUST CAP | 6F | LGX (118) | WHITE |
| FM003443 | FC | SIMPLEX | METAL | 8F | LGX (118) | BLACK |
| FM003442 | FC | SIMPLEX | METAL | 8F | LGX (118) | WHITE |
| MISC |  |  |  |  |  |  |
| FM003210 | HEYCO | SIMPLEX | BLACK | 12F | LGX (118) | BLACK |
| FM003430 | MTP | SIMPLEX | BLACK | 36F | LGX (118) | BLACK |
| FM003212 | HEYCO | SIMPLEX | BLACK | 6F | LGX (118) | BLACK |
| FM003437 | SC-ST HYBRID | SIMPLEX | BLUE-METAL | 6F | LGX (118) | WHITE |
| FM001606 | MTP | SIMPLEX | BLACK | 72F | LGX (118) | BLACK |
| FM003005 | MTP | SIMPLEX | BLACK | 96F | LGX (118) | BLACK |



12-Fiber SC/UPC Configuration


24-Fiber LC/UPC Configuration


DAS Poli-MOD


## Poli-MOD ${ }^{\circledR}$ Patch and Splice Module

AFL's new Poli-MOD is an innovative patch and splice module, which offers an inventive and effective means to accommodate up to 24 fiber interconnections in an industry-standard, single-slot LGX ${ }^{\circledR} 118$ footprint. The Poli-MOD offers a unique and robust way to secure cable without the need for time-wasting, tie-wrap alternatives. Additionally, the module leverages a creative snap-in splice sleeve cradle to securely manage both single and ribbon fiber arrangements. These features provide the capacity to outfit a standard 4RU rack-mount panel with up to 288 -fiber interconnections.

The Poli-MOD is also offered in an arrangement that supports the low loss budget requirements of Distributed Antenna System (DAS) networks. This is accomplished through the elimination of an interconnection point while providing a robust splicing environment for rack and wall-mount panel applications.

## Features

- 24-fiber interconnection capacity
- LGX 118 compatibility (single-slot module)
- Effective and time-saving cable mounting mechanism (no tie-wraps necessary)
- Inventive splice sleeve cradle
- Available in SC, LC, ST and FC connector arrangements
- Shuttered LC connectors for increased dust protection
- Organized fiber routing
- Fixed solution, no moving parts
- Multi-directional cable entry access
- DIN rail mountable (with DIN Mount Kit)


## Applications

- Telecommunications Closets
- Data Centers
- Customer Premise
- Local Area Networks
- Wide Area Networks
- Central Offices
- Hub Sites
- Cabinets
- Remote Terminals
- Distributed Antenna Systems (DAS)


## Poli-MOD ${ }^{\circledR}$ Patch and Splice Module

## Ordering Information

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

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.

## Adapter Color Codes

| FIBER AND POLISH TYPE | ADAPTER COLOR |
| :--- | :--- |
| Single-mode, APC (Angled Physical Contact) | Green |
| Single-mode, UPC (Ulltra Physical Contact) | Blue |
| Multimode OM1, PC (Physical Contact) | Beige |
| Multimode OM2, PC (Physical Contact) | Black |
| Multimode OM4, PC (Physical Contact) | Aqua |

Poli-MOD Kits/Accessories

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| Poli-MOD Cable Mounting Clip Kit | FM003053 |
| Poli-MOD Spiral Wrap Kit | FM003280 |
| Poli-MOD Splice Chip Kit with 24 Splice Sleeves | FM003711 |
| Fusion Splice Sleeve, FP-03, 40 mm | S000206 |
| Adapter Bracket for Mounting Single Poli-MOD, angled | FM000948-B |
| Adapter Bracket for Mounting Single Poli-MOD, flat | FM003589-B |
| Corning CCH and PCH 145 mm Adapter Bracket | FM001636 |
| DIN Mount Kit, LGX 118 | FM003394 |

## Dimensions




## Features

- No epoxy, no Polish
- Low insertion loss
- Fiber can be reinserted up to three times
- 4.8 mm (SC only) cordage compatibility
- VFI accessory to confirm proper installation


## Applications

- Premise/Enterprise Networks
- LAN/WAN Connections
- Patch Panels
- Equipment Termination
- FTTx Applications
- Field Repair/Replacement
- Equipment Test Leads


## FASTConnect ${ }^{\circledR}$ Field-Installable Connectors

FASTConnect are factory pre-polished, field-installable connectors that completely eliminate the need for hand polishing in the field. Proven mechanical splice technology ensuring precision fiber alignment, a factory pre-cleaved fiber stub and a proprietary index-matching gel combine to offer an immediate low loss termination to either single-mode or multimode optical fibers. FASTConnect are compatible with $250 \mu \mathrm{~m}$ and $900 \mu \mathrm{~m}$ optical fibers, as well as 4.8 mm (SC only) cordage.

All primary fiber types are supported, and each connector is color coded per industry standard requirements to aide in identification during and after installation. A factory-installed wedge clip (included with each connector) is removed and discarded upon completion of the termination. Incorporated into this device is an innovative, translucent wedge enabling the use of a common VFI to provide a "pass/fail" signal once physical contact is achieved.

## Specifications

| PARAMETER | TYPE | VALUE |
| :--- | :--- | :--- |
| Insertion Loss: | Single-mode - UPC |  |
|  | Average: 0.2 dB, Maximum: 0.5 dB |  |
|  | Multimode - PC | Average: 0.3 dB, Maximum: 0.6 dB |
| Return Loss at Room Temperature | Single-mode - UPC <br> Single-mode - APC <br> Multimode | Average: -50 dB, Maximum: -45 dB <br> Average: -55 dB, Maximum: -50 dB <br> Avage: -25 dB, Maximum: -20 dB |

## Ordering Information

| FIBER TYPE | HOUSING COLOR | $\begin{aligned} & \text { CABLE } \\ & \text { SIZE } \end{aligned}$ | AFL NO. |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | PACKAGE OF 6 | PACKAGE OF 100 |
| FASTCONNECT SC |  |  |  |  |
| Multimode 62.5/125 $\mu \mathrm{m}$, OM1 | Beige | $900 \mu \mathrm{~m}$ | FAST-SC-MM62.5-6 | FAST-SC-MM62.5-100 |
| Multimode 50/125 $\mu \mathrm{m}$, OM2 | Black |  | FAST-SC-MM50-6 | FAST-SC-MM50-100 |
| Multimode 50/125 $\mu \mathrm{m}$, OM3/OM4 compatible | Aqua |  | FAST-SC-MM50L-6 | FAST-SC-MM50L-100 |
| Single-mode, UPC | Blue |  | FAST-SC-SM-6 | FAST-SC-SM-100 |
| Single-mode, APC | Green |  | FAST-SC-SMAU-6 | FAST-SC-SMAU-100 |
| Single-mode, APC | Green | 4.8 mm | FAST-SC48-SMAU-6 | FAST-SC48-SMAU-100 |
| FASTCONNECT ST |  |  |  |  |
| Multimode 62.5/125 $\mu \mathrm{m}$, OM1 | Beige | $900 \mu \mathrm{~m}$ | FAST-ST-MM62.5-6 | FAST-ST-MM62.5-100 |
| Multimode 50/125 $\mu \mathrm{m}$, OM2 | Black |  | FAST-ST-MM50-6 | FAST-ST-MM50-100 |
| Multimode 50/125 $\mu \mathrm{m}$, OM3/0M4 compatible | Aqua |  | FAST-ST-MM50L-6 | FAST-ST-MM50L-100 |
| Single-mode, UPC | Blue |  | FAST-ST-SM-6 | FAST-ST-SM-100 |
| FASTCONNECT LC |  |  |  |  |
| Multimode 62.5/125 $\mu \mathrm{m}$, OM1 | Beige | $900 \mu \mathrm{~m}$ | FAST-LC-MM62.5-6 | FAST-LC-MM62.5-100 |
| Multimode 50/125 $\mu \mathrm{m}$, OM2 | Black |  | FAST-LC-MM50-6 | FAST-LC-MM50-100 |
| Multimode 50/125 $\mu \mathrm{m}$, OM3/OM4 compatible | Aqua |  | FAST-LC-MM50L-6 | FAST-LC-MM50L-100 |
| Single-mode, UPC | Blue |  | FAST-LC-SM-6 | FAST-LC-SM-100 |
| Single-mode, APC | Green |  | FAST-LC-SMAU-6 | FAST-LC-SMAU-100 |

## FASTConnect ${ }^{\circledR}$ Field-Installable Connectors

## Accessories

| DESCRIPTION |  | AFL NO. | AFL N0. |  |
| :--- | :--- | :--- | :--- | :--- |
| BOOT KITS FOR 2 MM AND 3 MM CORDAGE | COLOR | CABLE SIZE | PACK OF 6 | PACK OF 100 |
| 2 mm Boot Kit, SC/LC/ST | Black | 2 mm | FAST-BOOT-2MM-6 | FAST-BOOT-2MM-100 |
| 3 mm Boot Kit, SC/LC/ST | Black | 3 mm | FAST-B00T-3MM-6 | FAST-BOOT-3MM-100 |
| DUPLEX CLIPS | Transparent |  | CS010437-06 |  |
| LC Duplex Clip (LC only) |  | CS010437-100 |  |  |


| TOOL KITS | AFL NO. |
| :--- | :--- |
| FASTConnect High Precision Tool Kit with CT50 Cleaver | CS001201 |
| FASTConnect High Precision Tool Kit with CT16 Cleaver | CS010975 |
| VISUAL FAULT IDENTIFIERS AFL NO. <br> VFI4 visual fault identifier with 2.5 mm and 1.25 mm adapters VFI4-01-0900PR <br> 2.5 mm Universal for VFI port 2900-50-0013MR <br> 1.25 mm Universal for VFI port 2900-50-0012MR l |  |

## Qualifications

| GOVERNING BODY | STANDARD CODE |
| :---: | :---: |
| EIA/TIA | $568-$ C. 3 |
|  | 604 (FOCIS) |

## Temperature Specifications

| TEMPERATURE RANGE |  |
| :--- | :--- |
| Operating Temperature | $-40^{\circ} \mathrm{C}$ to $+75^{\circ} \mathrm{C}$ |

Operating Temperature $-40^{\circ} \mathrm{C}$ to $+75^{\circ} \mathrm{C}$

## Patents

| COUNTRY | PATENT NUMBER(S) |
| :---: | :---: |
|  | $5,963,699$ |
|  | $5,984,532$ |
| U.S. | $6,179,482$ |
|  | $7,003,208$ |
|  | $7,258,496$ |

## Contact AFL for further details.



Tool Kit Contents


CT16 Cleaver

## FASTConnect ${ }^{\circledR}$ Universal Tool Kit Now available with the CT50 or CT16 Cleaver!

The FASTConnect Universal Tool Kits provide all the necessary installation tools required for fiber preparation of $250 \mu \mathrm{~m}$ or $900 \mu \mathrm{~m}$ fibers, or $900 \mu \mathrm{~m}, 2 \mathrm{~mm}$ or 3 mm cordage for AFL's pre-polished FASTConnect. Featuring either the CT50 or CT16 fiber cleaver, the FASTConnect Universal Tool Kit contains all the industry standard termination tools required for fiber preparation. Additionally, the carrying case has adequate storage for extra FASTConnects for on-site convenience.

## Kit Features

- Industry standard fiber preparation tools
- Compact design, flexible yet rugged case
- Complete instructions provided


## Applications

- Premise environments
- LAN Fiber to the Desk environments
- Patch panel/wiring closets
- FTTx applications
- Quick repair/replacement areas


## 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 Assembly Tool, 3 mm Cable Clamp, 2 mm Cable Clamp, $0.25 / 0.9 \mathrm{~mm}$ Cable Clamp, Fiber Stripper, Kevlar Scissors, Fiber Preparation Fluid, Lint-free Cloth Wipes, Marker Pen, Installation Instructions, Strip Length Template and a Carrying Case.

## CT50 Cleaver Features

- Motorized blade rotation
- Bluetooth communication
- Shock resistant
- Simple one-step operation
- 60,000 cleave blade life
- Field serviceable


## CT16 Cleaver Features

- Dual fiber adapter plate for single or two fiber cleaving
- Ambidextrous operation available
- Field replaceable fiber clamp pads and cleaver blade
- Shock resistant for drops up to 30 " in any of six different orientations
- Compact form factor and tool-less blade rotations


FUSEConnect Connectors (SC, FC, LC, ST)


FUSEConnect in Fusion Splicer


## FUSEConnect ${ }^{\circledR}$ Fusion-Spliced, Field-Installable Connectors

AFL's FUSEConnect fusion-spliced, field installable connectors are uniquely designed and feature only four to five components. The factory pre-polished ferrule eliminates the need for polishing, adhesives, and crimping in the field, which minimizes the potential for operator error and expensive connector scrap.

FUSEConnect utilizes a fusion splicer to terminate the connector in the field, addressing return loss concerns present in analog optical networks. This advanced process yields true APC performance for SC/APC and LC/APC configurations. FUSEConnect is compatible with Fujikura fusion splicers and most other fiber holder-based fusion splicing platforms.

## Features

- Field installable
- No adhesives, crimping or polishing
- True APC performance
- Compatible with most fusion splicers


## Applications

- Connectorization in:
- RF-overlay FTTP networks
- Cable TV backbone networks
- Outside plant
- FTTD
- MDU FTTP Cabling
- Central office connector replacement
- Data center installation


## Specifications

| PARAMETER | VALUE |
| :--- | :--- |
| Connector Type | $\mathrm{SC}, \mathrm{LC}, \mathrm{FC}, \mathrm{ST}$ |
| Cable Type | $900 \mu \mathrm{~m}, 2 \mathrm{~mm}, 3 \mathrm{~mm}, 4.8 \mathrm{~mm}$ (SC only) |
| Polish | $\mathrm{APC}, \mathrm{UPC}, \mathrm{PC}$ |
| Insertion Loss | $\mathrm{SM}: 0.15 \mathrm{~dB}$ (average), 0.25 dB (maximum) / MM: 0.10 dB (average), 0.25 dB (maximum) |
| Return Loss | $\mathrm{SM}: \leq-65 \mathrm{~dB}$ (APC), $\leq-55 \mathrm{~dB}$ (UPC) / MM: $\leq-35 \mathrm{~dB} \mathrm{(PC)}$ |



FUSEConnect Kits—ST (blue), SC (green), LC (blue)


## FUSEConnect ${ }^{\circledR}$ Fusion-Spliced, Field-Installable Connectors

## Ordering Information

| CONNECTOR TYPE | BOOT TYPE | AFL NO.* |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | UPC SM (Blue) | APC SM (Green) | PC $62.5 \mu \mathrm{~m}$ MM (Beige) | PC $50 \mu \mathrm{~m}$ MM (Black) | PC $50 \mu \mathrm{~m}$ LOMMF (AQUA) ** |
| SC | $900 \mu \mathrm{~m}$ | FUSE-SC9SMU-6 | FUSE-SC9SMA-6 | FUSE-SC9M62-6 | FUSE-SC9M50-6 | FUSE-SC9M50L-6 |
|  | 3 mm | FUSE-SC3SMU-6 | FUSE-SC3SMA-6 | FUSE-SC3M62-6 | FUSE-SC3M50-6 | FUSE-SC3M50L-6 |
|  | 4.8 mm | - | FUSE-SC48SMA-6 | - | - | - |
| LC | $900 \mu \mathrm{~m}$ | FUSE-LC9SMU-6 | FUSE-LC9SMA-6 | FUSE-LC9M62-6 | FUSE-LC9M50-6 | FUSE-LC9M50L-6 |
|  | 2 mm | FUSE-LC2SMU-6 | FUSE-LC2SMA-6 | FUSE-LC2M62-6 | FUSE-LC2M50-6 | FUSE-LC2M50L-6 |
| FC | $900 \mu \mathrm{~m}$ | FUSE-FC9SMU-6 | FUSE-FC9SMA-6 | FUSE-FC9M62-6 | FUSE-FC9M50-6 | FUSE-FC9M50L-6 |
|  | 2 mm | FUSE-FC2SMU-6 | - | FUSE-FC2M62-6 | FUSE-FC2M50-6 | FUSE-FC2M50L-6 |
|  | 3 mm | FUSE-FC3SMU-6 | - | FUSE-FC3M62-6 | FUSE-FC3M50-6 | FUSE-FC3M50L-6 |
| ST | $900 \mu \mathrm{~m}$ | FUSE-ST9SMU-6 | - | FUSE-ST9M62-6 | FUSE-ST9M50-6 | FUSE-ST9M50L-6 |
|  | 2 mm | FUSE-ST2SMU-6 | - | FUSE-ST2M62-6 | FUSE-ST2M50-6 | FUSE-ST2M50L-6 |
|  | 3 mm | FUSE-ST3SMU-6 | - | FUSE-ST3M62-6 | FUSE-ST3M50-6 | FUSE-ST3M50L-6 |

* AFL NO. is for one pack of 6 pieces * * Laser Optimized MM Fiber (LOMMF) compatible with OM3 and OM4 fibers

Temperature Specifications

| TEMPERATURE RANGE |  |
| :--- | :--- |
| Operating Temperature | $-40^{\circ} \mathrm{C}$ to $+75^{\circ} \mathrm{C}$ |



FUSEConnect MPO Connectors, Cable


FUSEConnect MPO Connectors, Ribbon

## FUSEConnect ${ }^{\circledR}$ MPO Splice-On, Field-Installable Connectors with Heat Sleeve

AFL's FUSEConnect MPO splice-on, field-installable connectors are uniquely designed and feature just six components. The innovative factory pre-polished ferrule allows for a field-termination process that eliminates the need for polishing, adhesives and crimping in the field and minimizes the potential for operator error and expensive connector scrap. FUSEConnect MPO is part of the FUSEConnect splice-on connector family which includes SC, LC, ST and FC style connectors.

This updated design for the FUSEConnect MPO replaces the mechanical clamp splice protector with a heat protection sleeve utilizing the on-board splicer heater eliminating the need for a separate mechanical clamp tool. The connector is designed for use with the new RT-02 ribbonizing tool which does not require ribbonizing glue resulting in a cleaner termination process.

FUSEConnect MPO performs as an equivalent to the standard factory terminated MPO/MTP® assemblies. Designed to utilize standard ribbon, SpiderWeb Ribbon ${ }^{\circledR}$, or loose tube cable, this connector helps minimize the complexity involved in the termination of a multi-fiber connection, allowing for a reliable and repeatable termination in field applications. AFL offers a tool kit as well as a variety of accessories designed to meet all your installation needs for your FUSEConnect MPO application.

## Features

- Field installable splice-on connector
- Heat sleeve style splice protector
- Utilizes RT-02 ribbonizing tool for glueless termination process
- Only six components
- No adhesives, crimping or polishing
- Field MPO polarity customization
- Includes 3.0 mm round and flat ribbon boots in each pack


## Applications

- Connectorization in:
- RF-overlay FTTP networks
- Cable TV backbone networks
- Outside plant
- MDU FTTP Cabling
- Connector restoration in the field
- Data center installation
- Patch cord customization in the field


## Specifications

| PARAMETER | Single-mode (OS1) | VALUE |
| :--- | :--- | :--- |
| Insertion Loss | Average: $0.25 \mathrm{~dB} ;$ Max: 0.75 dB |  |
|  | Single-mode (OS1), Low Loss | Average: $0.10 \mathrm{~dB} ;$ Max: 0.35 dB |
|  | $62.5 / 125$ (OM1) | Average: $0.10 \mathrm{~dB} ;$ Max: 0.35 dB |
|  | $50 / 125$ (OM4) | Average: $0.10 \mathrm{~dB} ;$ Max: 0.35 dB |
|  | Single-mode (OS1) | $>65 \mathrm{~dB}$ |
|  | $62.5 / 125($ OM1) | $>30 \mathrm{~dB}$ |
|  | $50 / 125$ (OM4) | $>30 \mathrm{~dB}$ |

## FUSEConnect ${ }^{\circledR}$ MPO Splice-On, Field-Installable Connectors with Heat Sleeve

## Ordering Information

|  |  |  | CABLE SIZE |  |  |  |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: |
|  | AFL NO.* |  |  |  | POLISH | ROUND |
| FLAT | HOUSING |  |  |  |  |  |
| COLOR |  |  |  |  |  |  |

*Pack of 6 pieces

## Ordering Information - Accessories

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| TOOL KIT |  |
| FUSEConnect MPO Tool Kit | FUSEMPO-TL-KT |
| ACCESSORIES |  |
| FUSEConnect Stripping Tool ( $3.0 \mathrm{~mm}, 2.8 \mathrm{~mm}, 2.0 \mathrm{~mm}$ and 1.6 mm ) | FUSE-ST-TL |
| FUSEConnect MPO Heater Attachment Tool | FUSE-HT-TL |
| MPO Boot Kit for 3.8 mm diameter cable (Pack of 144) | FUSEMPO-BOOT-3.8MM-144 |
| MPO Boot Kit for Jacketed Ribbon (Pack of 6) | FUSEMPO-BOOT-JK-6 |

## Qualifications

| GOVERNING BODY | STANDARD CODE |
| :---: | :---: |
| TIA | $604-5-C$ |
| IEC | $61754-7$ |
| EIA/TIA | $568-$ C. 3 |
| FOCIS | FOCIS-5 |

## Contact AFL for further details.



## LightLink 580 Optical Splicing and Distribution Enclosure

The LightLink (LL) 580 Optical Splicing and Distribution Enclosure provides for organizing, splicing and interconnecting fibers in broadband, distribution and building entrance applications. The splice tray panel is equipped with LGX ${ }^{\circledR} 118$ footprint snaps so various types of connectors may be installed. The enclosure features a scratch resistant powder coated base and a fully gasketed hinged cover. The cover was designed so that it may be installed on either side of the enclosure where there are space restrictions. The internal interconnect tray and back-plate may be removed from the enclosure and brought to a splicing table to complete splicing, fiber routing and fiber management. The cable entry base has four interchangeable configurations to allow the installation of cable through a grommet system, or through pre-installed conduit couplings.

## Features

## Enclosure

- Independent cable strain-relief for flat drop cable and $2 \mathrm{~mm} / 3 \mathrm{~mm}$ drops
- Unique self-sealing grommet system
- Self-contained inner chassis frame with separate outer housing
- Dual telco can-wrench locking fasteners
- Hinged cover securable with standard padlock
- Internal, owner-accessible security screw
- Available with a variety of connector types and cable entrance choices


## Interconnect Splice Tray Kit

- Included: (2) Factory Pre-installed LL-7644 Universal Splice Tray with SC-UPC $900 \mu \mathrm{~m}$ pigtails for up to 72 connections. LC-UPC Duplex adapters may be installed for up to 144 LC connections with mass fusion.
- Interconnect Tray may be purchased with either SC-UPC adapters and pigtails preinstalled or LC-UPC Duplex adapters and pigtails pre-installed.


## Specifications

| PARAMETER | VALUE |
| :--- | :--- |
| Material - Housing | 16 Gauge Aluminum |
| Coating | Electrostatically applied powder paint |
| Color | Beige |
| Size (H x W x D in.) | $27.5^{\prime \prime} \times 13.0^{\prime \prime} \times 5.625^{\prime \prime}$ (total length: 33.5" L x 13") |
| Weight (lbs) | $15.2^{\prime \prime}$ |
| Adapters | (72) SC or (72) LC Duplex |
| Splice | (2) LL-7644 up to 120 single fused fibers or 24 mass fusion sleeves |
|  | (2) LL-4808 L-R up to 72 single fused fibers or 24 mass fusion sleeves |

Optical Connectivity

## LightLink 580 Optical Splicing and Distribution Enclosure

## Ordering Information

| DESCRIPTION | AFL NO. |
| :---: | :---: |
| LL-580 Enclosure Base (No Bottom Plate or LGX ${ }^{\text {® }}$ Tray) | FM002814 |
| Interconnect Trays |  |
| Kit, Splice/4x LGX® Interconnect Tray, with (2) LL-7644 Trays | FM002858-001 |
| Kit, Splice/4x LGX® Interconnect Tray, 24 SCU, with (2) LL-7644 Trays | FM002858-SCU |
| Kit, Splice/4x LGX® Interconnect Tray, 24 SCA, with (2) LL-7644 Trays | FM002858-SCA |
| Kit, Splice/4x LGX® Interconnect Tray, 24 LCU, with (2) LL-7644 Trays | FM002858-LCU |
| Splice Trays |  |
| LL-7644 Splice Tray used with LGX® Interconnect Tray | FA000044 |
| LL-4808 L-R Splice Tray used with LGX® Interconnect Tray | FA000037 |
| Plate Kits |  |
| Plate Kit (2-2 in. NPT and $2-1$ in. KO) | FM002653 |
| Plate Kit (2-Single Cable Grommets [L\&R] and 2 - Multiport Grommets [Center]) | FM001937 |
| Plate Kit ( $2-$ Single Cable Grommets [L\&R]) | FM003014 |
| Plate Kit ( $1-2$ in. NPT and 4-1 in. NPT) | FM001959 |
| Plate Kit (3-KO) | FM003023 |
| Grommet and NPT Kits |  |
| 1 in. NPT Kit ( $2-1$ in NPT Fittings and cable hardware to be used with FM002653) | FM003015 |
| 2 in. NPT Kit (2-2 in NPT Fittings and cable hardware to be used with FM003023) | FM003016 |
| Dual Cable Grommet Kit (2/kit) | 911386-00-01 |
| Accessories |  |
| Conduit Skirt | FM002895 |
| Pre-configured Base Enclosures and Interconnect Tray |  |
| LL-580, 24F SC/UPC Interconnect Kit, 24F SC/UPC Pigtail Kit, (2) LL-7644 Splice Trays, No Bottom Plate | FM003248 |
| LL-580, 48F SC/UPC Interconnect Kit, 48F SC/UPC Pigtail Kit, (2) LL-7644 Splice Trays, No Bottom Plate | FM003249 |
| LL-580, 72F SC/UPC Interconnect Kit, 72F SC/UPC Pigtail Kit, (2) LL-7644 Splice Trays, No Bottom Plate | FM003250 |
| LL-580, Interconnect Kit, No Adapter Plates, No Pigtail Kit, (2) LL-7644 Splice Trays, No Bottom Plate | FM003251 |



## Qualifications

| GOVERNING BODY | STANDARD CODE |
| :---: | :---: |
| NEMA | Type 3 |
| Telcordia | GR-2898 |

## Contact AFL for further details.

## LightLink 550 Optical Splicing and Distribution Enclosure

The LightLink (LL) 550 Optical Splicing and Distribution Enclosure provides for organizing, splicing and interconnecting fibers in broadband, distribution and building entrance applications. The splice tray panel is equipped with LGX ${ }^{\circledR} 118$ footprint snaps so various types of connectors may be installed. The enclosure features a scratch resistant powder coated base and a fully gasketed hinged cover. The internal interconnect tray and back-plate may be removed from the enclosure and brought to a splicing table to complete splicing, fiber routing and fiber management. The cable entry base allows for the installation of cable through a grommet system, and can be coupled to either a fixed 12 inch slack storage skirt or a telescoping 24 to 36 inch skirt.

## Features

Enclosure

- Independent cable strain-relief for flat drop cable and $2 \mathrm{~mm} / 3 \mathrm{~mm}$ drops
- Unique self-sealing grommet system
- Self-contained inner chassis frame with separate outer housing
- Dual telco can-wrench locking fasteners
- Hinged cover securable with standard padlock
- Internal, owner-accessible security screw
- Available with a variety of connector types and cable entrance choices


## Interconnect Splice Tray Kit

- Available with (2) Factory Pre-installed LL-4808 Universal Splice Trays with SC/APC or SC/UPC $900 \mu \mathrm{~m}$ pigtails for up to 48 connections.
- Interconnect Tray may be purchased separately to upgrade existing splice-only units to accept LGX-118 adapter plates.


## Specifications

| PARAMETER | VALUE |
| :--- | :--- |
| Material - Housing | 16 Gauge Aluminum |
| Coating | Electrostatically applied powder paint |
| Color | Beige |
| Size (H x W x D in.) | (H x W x D in.) $18^{\prime \prime} \times 9^{\prime \prime} \times 5.25^{\prime \prime}$ (total length 22" including mounting brackets) |
| Weight (lbs) | 7.5 |
| Adapters | Up to (48) SC |
| Splice | Connectorized: <br> Up to (2) LL-4808 L-R up to 72 single fused fibers or 24 mass fusion sleeves |
| Splice-only: <br> Up to (4) LL-4808 L-R up to 144 single fused fibers or 48 mass fusion sleeves |  |

## LightLink 550 Optical Splicing and Distribution Enclosure

## Ordering Information

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| Base Enclosures and Interconnect Tray |  |
| LL-550, 24F SC/APC Interconnect Kit, 24F SC/APC Pigtail Kit, (2) LL-4808 Splice Trays, 4 Grommet Bottom Plate | FM004181 |
| LL-550, 48F SC/APC Interconnect Kit, 48F SC/APC Pigtail Kit, (2) LL-4808 Splice Trays, 4 Grommet Bottom Plate | FM004182 |
| LL-550, Splice-only Security Cover, (2) LL-4808 Splice Trays, 4 Grommet Bottom Plate | FM004183 |
| LL-550, 24F SC/UPC Interconnect Kit, 24F SC/UPC Pigtail Kit, (2) LL-4808 Splice Trays, 4 Grommet Bottom Plate | FM004214 |
| LL-550, 48F SC/UPC Interconnect Kit, 48F SC/UPC Pigtail Kit, (2) LL-4808 Splice Trays, 4 Grommet Bottom Plate | FM004215 |
| LL-550 LGX-118 Interconnect Tray (for upgrading splice-only to accept LGX-118 adapter plates) | FM004216 |
| Splice Trays |  |
| LL-4808 L-R Splice Tray used with LGX ${ }^{\circledR}$ Interconnect Tray | FA000037 |
| Grommet and NPT Kits |  |
| 1 in. NPT Kit (2 - 1 in NPT Fittings and cable hardware to be used with FM004177) | FM003015 |
| 2 in. NPT Kit (2 - 2 in NPT Fittings and cable hardware to be used with FM004177) | $911386-00-01$ |
| Dual Cable Grommet Kit (2/kit) | FM004177 |
| Accessories | FM004072 |
| Fixed Conduit Skirt |  |
| Telescoping Skirt |  |



LL-550 Fixed Skirt


LL-550 Telescoping Skirt

## Qualifications

| GOVERNING BODY | STANDARD CODE |
| :---: | :---: |
| NEMA | Type 3 |
| Telcordia | GR-2898 |

## Contact AFL for further details.

Test \& Inspection

## FlexScan ${ }^{\circledR}$ FS200 Single-mode OTDR

## Pocket-sized, Performance-packed, User-friendly, and Affordable



## Features

- FleXpress ${ }^{\circledR}$ mode completes OTDR tests in $<5$ seconds
- Test up to 1:64 PON with 25 m PON dead zone
- Easy to understand LinkMap ${ }^{\circledR}$ results with pass/fail indications
- Single, dual or triple wavelength single-mode
- Single port for in- and out-of-service OTDR tests
- Integrated source, power meter, VFL (visual fault locator)
- Integrated MPO Switch control via USB
- Rugged, lightweight, hand-held for field use
- Available with field-replaceable Port Saver connector


## Applications

- PON or point-to-point network verification or troubleshooting
- OTDR testing plus insertion loss and power measurements
- Locate faults exceeding industry or user pass/fail thresholds
- Visually pinpoint location of macro-bends or breaks

AFL's FlexScan FS200 OTDR is an all-in-one solution for detecting, identifying, locating, and resolving single-mode optical network issues. It is designed for both novice and expert technicians working in a range of environments, from FTTH PON to point-to-point networks. It applies industry-standard or user-set pass/fail criteria and displays results using LinkMap color-coded icons to show the health of the network. FlexScans automate test setup, shorten test time, and simplify results interpretation improving efficiency and reducing costs.

All-in-one test capability: The FlexScan FS200 includes an integrated VFL, power meter, and light source. It can be easily paired to AFL's award-winning FOCIS family of inspection scopes, ensuring technicians have everything they need to locate and quickly resolve optical network issues.

Performance-packed: With SmartAuto multi-pulse acquisition, up to 37 dB dynamic range, and best-in-class 25 m PON dead zone, FlexScan FS200 PON OTDRs test FTTH PONs up to 1:64 while still detecting and measuring events only meters apart.

Fast! FleXpress mode completes dual-wavelength tests in $<5$ seconds $-10 x$ faster than conventional OTDRs! For multi-fiber testing, FS200s automatically control AFL's MFS Multi-Fiber Switch (12-fiber MPO switch) to further reduce multi-fiber test time.

Pocket-sized: At $3.5 \times 6 \times 1.75 \mathrm{in}$. ( $86 \times 160 \times 43 \mathrm{~mm}$ ) and less than one pound ( 0.4 kg ), FlexScan FS200 OTDRs truly fit in your pocket, yet still provide a large, bright indoor/outdoor touchscreen display, and all-day operation.

Multiple sharing and reporting options: Results can be stored internally, saved to a USB, and uploaded via USB cable, Bluetooth (via FlexApp) or Wi-Fi for real-time reporting using the included FlexReports Test Results Manager software.

Convenient cost-saving kits: Bundle the FlexScan FS200 with your choice of launch cable, FOCIS Flex connector inspection probe and tips, and/or AFL's universal optical fiber identifier (OFI-BIPMe) for significant cost-savings!

PON-optimized FTTH-PRO kits combine FS200-303/304 with a FOCIS Flex Inspection probe, 4 adapter tips, and launch cables for both SC/APC and LC/APC networks.

Field-replaceable Port Saver connector: With AFL's optional field-replaceable Port Saver, avoid expensive service repairs to replace connectors damaged due to poor cleaning practices and/or normal wear-and-tear.

## FlexScan ${ }^{\circledR}$ FS200 Single-mode OTDR



## Dramatically Reduces Test Time

In SmartAuto mode, FlexScan OTDRs automatically analyze and test the network using a variety of network-optimized settings to precisely locate, characterize and identify network events with one button push. Loss and reflectance are measured for connectors, splices, splitters and macro-bends. FlexScan even checks for live fiber and verifies OTDR launch quality before initiating a test.

FlexScan's FleXpress mode completes dual-wavelength tests in seconds, reducing test time by 10x compared to conventional OTDRs. For multi-fiber testing, FlexScan's automatically control AFL's MPO Switch, testing 12 fibers at the touch of a single button.

## Simplifies Network Troubleshooting

LinkMap with pass/fail enables even novice users to easily and accurately troubleshoot optical networks. LinkMap presents an icon-based view of the tested network clearly identifying fiber start, end, connectors, splices, PON splitters, and macro-bends.

A LinkMap summary provides end-to-end link length, loss and ORL. Loss and reflectance are displayed with clear pass/fail indications. Users can instantly toggle between LinkMap and Trace views.

## Connectivity

FlexScan OTDRs easily pair with AFL's ward-winning FOCIS ${ }^{\circledR}$ family of connector inspection probes for fast, easy single-fiber and/or multi-fiber connector end-face inspection.

FlexScan results can then be transferred via USB cable, Wi-Fi, or Bluetooth and the free FlexApp running on a mobile device for real-time reporting using the included FlexReports Test Results Manager PC-based software. This real-time monitoring can help avoid mistakes in the field that will require future truck rolls.

## OTDR, OLTS, and VFL Testing with a Single Tool

FlexScan optionally includes a Wave ID optical light source (OLS) and optical power meter (OPM). With Wave ID, the OPM auto-synchronizes to a single or multi-wavelength Wave ID optical signal transmitted by an AFL light source. The OPM reports detected wavelengths and measures power and loss at each wavelength, saving significant test time and eliminating setup errors.

The integrated VFL's eye-safe red laser enables users to visually pinpoint the location of macro-bends and fiber breaks often found in splice closures and fiber cabinets.

## FlexScan ${ }^{\circledR}$ FS200 Single-mode OTDR

FlexScan OTDRs are available with 1310/1550/1625, 1310/1550/1650, 1310/1550, and 1650 nm only wavelengths. The 1310 and 1550 nm versions are available with integrated optical light source (OLS), optical power meter (OPM), visual fault locator (VFL) and Bluetooth/Wi-Fi.

## Specifications ${ }^{\text {a }}$

| MODEL: FS200-XXX | -60 | -100 | -300 | -303 | -304 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OTDR |  |  |  |  |  |
| Emitter Type | Laser |  |  |  |  |
| Safety Class ${ }^{\text {b }}$ | Class I |  |  |  |  |
| Fiber Type | Single-mode |  |  |  |  |
| Wavelengths (nm) | 1650 | $\begin{aligned} & 1310 / \\ & 1550 \end{aligned}$ | $\begin{aligned} & 1310 / \\ & 1550 \end{aligned}$ | $\begin{aligned} & \mid 1310 / \\ & 1550 / \\ & 1625 \\ & \hline \end{aligned}$ | $\begin{array}{\|l\|} \hline 1310 / \\ 1550 / \\ 1650 \\ \hline \end{array}$ |
| Center $\boldsymbol{\lambda}$ Tolerance ${ }^{\text {c }}$ | 1310/1550/1650: $\pm 20 \mathrm{~nm} ; 1625+30 /-5 \mathrm{~nm}$ |  |  |  |  |
| Dynamic Range ${ }^{\text {d }}$ (dB) | 37 | 32/30 | 37/35 | 37/35/37 | 37/35/37 |
| Event Dead Zone ${ }^{\text {e }}$ (m) | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Atten. Dead Zone ${ }^{\text {f }}$ (m) | 3.5 | 3.6 | 3.5 | 3.5 | 3.5 |
| PON Dead Zone ${ }^{\mathrm{g}}$ (m) | 30 | N/A | 25/25 | 25/25/40 | 25/25/40 |
| Max Split Ratio | 1:64 (FS200-60/30x only); N/A (FS200-100) |  |  |  |  |
| Pulse Widths | $3,5,10,20,30,50,100,200,300,500 \mathrm{~ns}$; 1, 2, 3, $10 \mu \mathrm{~s} ; 20 \mu \mathrm{~s}$ (FS200-300/300/304 only) |  |  |  |  |
| Range Settings | 250 m to 240 km |  |  |  |  |
| Data Points | Up to 300,000 (Expert mode .SOR file) |  |  |  |  |
| Data Spacing | 5 cm to 16 m |  |  |  |  |
| Index of Refraction | 1.3000 to 1.7000 |  |  |  |  |
| Distance Uncertainty | $\pm(1+0.003 \% \mathrm{x}$ distance + data point spacing) m |  |  |  |  |
| Linearity ( $\mathrm{dB} / \mathrm{dB}$ ) | $\pm 0.05$ |  |  |  |  |
| Trace File Format | Telcordia SR-4731 Issue 2 compatible .SOR |  |  |  |  |
| Trace Storage Medium | 4 GB internal memory (> 5000 traces typical); External USB memory stick |  |  |  |  |
| Data Transfer to PC | USB cable or Bluetooth ${ }^{\circledR}$ (option) |  |  |  |  |
| OTDR Modes | SmartAuto, Expert, Real-time |  |  |  |  |
| FleXpress Fast Test | FS200-300/303/304 |  |  |  |  |
| Display Modes | LinkMap Summary, LinkMap Events, Trace |  |  |  |  |
| Refresh Rate | Up to 4 Hz (Real-time mode) |  |  |  |  |
| Live Fiber Protection | No OTDR damage with input power $\leq+15 \mathrm{dBm}$ for wavelength(s) in range 1260 to 1675 nm |  |  |  |  |
| Live Fiber Detection | Reports live fiber with input signal $\geq-35 \mathrm{dBm}$ for wavelength(s) in range 1260 to 1675 nm |  |  |  |  |
| PON Filter Isolation | $>50 \mathrm{~dB}$ for $1260 \mathrm{~nm} \leq$ wavelength $\leq 1600 \mathrm{~nm}$ |  |  |  |  |
| Live PON OTDR Test | 1625 or 1650 nm using filtered detector when interfering downstream power in range 1600-1675 nm <-38 dBm |  |  |  |  |

## Notes:

a. All specifications valid at $25^{\circ} \mathrm{C}$ unless otherwise specified.
b. FDA 21 CFR 1040.10 \& 1040.11, IEC 60825-1: 2014.
c. Using 10 ns pulse width.
d. $S N R=1$, longest range and pulse width, 3 -minute averaging.
e. Maximum distance between two points 1.5 dB down each side of a reflective peak caused by an event with reflectance $\leq-45 \mathrm{~dB}$ using 3 or 5 ns pulse.
f. Maximum distance from the start of a trace spike caused by an event with a -45 dB (or smaller) reflectance, to the point where the trace returns to and stays within $\pm 0.5 \mathrm{~dB}$ of backscatter. Test pulse width is 3 or 5 ns .
g. Recovery to within 0.5 dB of backscatter after $1: 16$ splitter ( $\leq 13 \mathrm{~dB}$ loss) using 50 ns pulse width.
h. Max temperature while charging is $+45^{\circ} \mathrm{C}$.

## FlexScan ${ }^{\circledR}$ FS200 Single-mode OTDR

## Ordering Information

All kits include a FlexScan FS200 with AC charger, battery, carry strap, SC/2.5 mm connector adapters, FlexReports, USB cable, and carry case. FS200-XXX-Basic, Plus, PRO, BIPM Kits Order Entry: FS200-[MOD]-[KIT]-[PW]-[C]-[CC]-[LNG]-[AC]-[FR]-[TIP] FS200-XXX-MPO Kits Order Entry: FS200-[MOD]-MPO-P1-W1-[C]-[LNG]-[AC]-[MPOC] FS200-303/304-FTTH PRO Kits Order Entry: FS200-[MOD]-FTTH-PRO-[CC]-[LNG]-[AC] where:

| [MOD] | FS200 FlexScan OTDR Configuration |
| :--- | :--- |
| $\mathbf{6 0}$ | 1650 nm filtered Live PON Troubleshooting OTDR |
| $\mathbf{1 0 0}$ | $1310 / 1550 \mathrm{~nm}$ Verification and Troubleshooting OTDR |
| $\mathbf{3 0 0}$ | $1310 / 1550$ Pt-to-Pt \& PON Verification and Troubleshooting OTDR |
| $\mathbf{3 0 3}$ | $1310 / 1550 / 1625$ Pt-to-Pt and PON Verification and Troubleshooting OTDR |
| $\mathbf{3 0 4}$ | $1310 / 1550 / 1650$ Pt-to-Pt and PON Verification and Troubleshooting OTDR |


| [KIT] | FS200 FlexScan Kit Configuration / Kit Contents |
| :--- | :--- |
| BAS | Includes: FS200, FlexReports Basic, USB cable a, soft case |
| PLUS | Includes: BAS Kit plus 150 m SMF Fiber Ring, One-Click Cleaner, upgrade to <br> FlexReports Advanced, soft or hard carry case |
| PRO | Includes: PLUS Kit plus FOCIS Flex with two user-selected adapter tips |
| FTTH- <br> PRO | Includes: BAS Kit, 150 m SC/APC \& LC/APC Fiber Rings, FOCIS Flex, SC/APC <br> \& LC/APC bulkhead and ferrule adapters, SC \& LC One-Click Cleaners, Port <br> 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- <br> Switch patch cord, OTDR-to-Switch USB cable, FlexReports Advanced |


| [PW] | Power Meter / Wireless Option |
| :--- | :--- |
| P0-W0 | No Source, Power Meter, or Bluetooth/WiFi (FS200-60/100 only) |
| P0-W1 b | No Source or Power Meter; Includes Bluetooth/WiFi (FS200-300/304 only) |
| P1-W0 | No Bluetooth/WiFi (-303/304 only); Includes Source, Power Meter |
| P1-W1 ${ }^{\text {b }}$ | Includes Source, Power Meter, Bluetooth/Wi-Fi |


| [C] | OTDR / Source Connector Type |
| :--- | :--- |
| A | APC (recommended) |
| U | UPC (available in all models except FS200-60) |


| $\left[\right.$ [CC ${ }^{\text {c }}$ | Carry Case Option (PLUS, PRO, FTTH-PRO, BIPM Kits) |
| :--- | :--- |
| S1 | Large soft case for FS200, fiber ring, FOCIS Flex, OFI-BIPMe, accessories |
| S2 | Medium soft case for FS200, fiber ring, FOCIS Flex, accessories |
| H1 | Hard carry case for FS200, fiber ring, FOCIS Flex, OFI-BIPMe, accessories |


| [LNG] | Language |
| :--- | :--- |
| ENG | English |
| CHS | Chinese Simplified |
| CHT | Chinese Traditional |
| CZE | Czech |
| DEU | German |
| DNK | Danish |
| FIN | Finnish |
| FRA | French |
| ITA | Italian |


| [LNG] | Language |
| :--- | :--- |
| JPN | Japanese |
| KOR | Korean |
| NOR | Norwegian |
| POL | Polish |
| POR | Portuguese |
| SPA | Spanish |
| TUR | Turkish |
| VNM | Vietnamese |


| [AC] | Destination Country | AC Plugs |
| :---: | :---: | :---: |
| US | USA | 2-pin, US |
| EU | European Union | 2-pin, EU |
| UK | United Kingdom | 3-pin, UK |
| CN | China, Australia | 2-pin, SAA |
| [FR] | 150 m SMF Fiber Ring |  |
| Absent | N/A in Basic Kits |  |
| USC/USC | FR-SMF-150-USC-USC |  |
| USC/UFC | FR-SMF-150-USC-UFC |  |
| USC/ULC | FR-SMF-150-USC-ULC |  |
| USC/UST | FR-SMF-150-USC-UST |  |
| USC/ASC | FR-SMF-150-USC-ASC |  |
| USC/AFC | FR-SMF-150-USC-AFC |  |
| USC/ALC | FR-SMF-150-USC-ALC |  |
| USC/UE2 | FR-SMF-150-USC-UE2 |  |
| ASC/UFC | FR-SMF-150-ASC-UFC |  |
| ASC/ULC | FR-SMF-150-ASC-ULC |  |
| ASC/UST | FR-SMF-150-ASC-UST |  |
| ASC/ASC | FR-SMF-150-ASC-ASC |  |
| ASC/AFC | FR-SMF-150-ASC-AFC |  |
| ASC/ALC | FR-SMF-150-ASC-ALC |  |
| ASC/AE2 | FR-SMF-150-ASC-AE2 |  |
| [TIP] | FOCIS Flex Tips and 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 |  |


| [MPOC] | MPO Launch Cable Network Connector |
| :--- | :--- |
| F | Female (unpinned) to Female (unpinned) |
| M | Female (unpinned) to Male (pinned) |

## Notes:

a. Results can be transferred from FlexScan OTDR to FlexReports using USB cable, or performed wirelessly (W1 option) after downloading free FlexApp. The FlexApp is available as a free download from 'Google play' or 'App Store'.
b. FlexScans equipped with Bluetooth option (W1) support Bluetooth transfer of results via FlexApp for remote reporting using FlexReports.
c. Basic Kit always ships with S2 (Medium Soft Case); MPO Kit always ships with MPOspecific soft case.

## FlexScan ${ }^{\circledR}$ FS200 Single-mode OTDR

## Ordering Information

## Accessories

| DESCRIPTION | AFL NO. |
| :---: | :---: |
| FlexScan wrist strap | 1400-05-0230PZ |
| FlexScan neck strap, 36" | 1400-05-0231PZ |
| AC charger 100-240 VAC to 5 VDC | 4050-00-0931PR |
| Soft carry case for FS200 kits with FOCIS Flex and Fiber Ring | 1400-01-0111PZ |
| Soft carry case for FS200 kits with FOCIS Flex, OFI-BIPMe and Fiber Ring | 1400-01-0128PZ |
| Hard carry case for FS200 kits with FOCIS Flex, OFI-BIPMe and Fiber Ring | 1400-01-0134PZ |
| Vehicle charger, 12VDC to 5VDC @2A | 4050-00-0033MR |
| Cable, USB-micro B, 5 pin, 6' | 6000-00-0031MR |
| 5 V USB charging cable ( 1.5 m ), type A to barrel ( $0.9 \times 3.2 \times 9 \mathrm{~mm}$ ) | 6000-00-0034PR |
| One-Clicks, fluid, wipes, etc. See www.AFLglobal.com | Cleaning Supplies |

## Field-Replaceable OTDR Connector (Optical Ferrule Port Saver)

Protect your OTDR ports from damage due to mating with dirty or damaged launch cables or patch cords or normal wear-and-tear. Equip your FlexScan FS200 with a field-replaceable connector, which installs in seconds and accepts AFL's tool-free interchangeable SC, LC, FC and ST connector adapters.

Replace damaged connectors in the field: When normal wear-and-tear or poor cleaning practices damage the port saver's end-face, replace it in seconds without having to return the OTDR to a service center for an expensive and time-consuming repair.

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| FlexScan-facing APC female to APC male field-replaceable Port Saver connector | 2900-58-0001MR |
| FlexScan-facing APC female to UPC male field-replaceable Port Saver connector | 2900-58-0002MR |
| FlexScan-facing UPC female to APC male field-replaceable Port Saver connector | 2900-58-0003MR |
| FlexScan-facing UPC female to UPC male field-replaceable Port Saver connector | 2900-58-0004MR |

## Connector Adapters

| CONNECTOR ADAPTER |  | AFL NO. |  |
| :--- | :--- | :--- | :--- |
|  | OTDR/OLS PORT | OPM PORT |  |
|  | $2900-50-0002 \mathrm{MR}$ | VFL PORT |  |
| ST | $2900-50-0003 \mathrm{MR}$ | $2900-52-0001 \mathrm{MR}$ |  |
| LC | $2900-50-0004 \mathrm{MR}$ | N/A |  |
| SC/APC | $2900-50-0006 \mathrm{MR}$ | $2900-52-0002 \mathrm{MR}$ |  |
| 2.5 mm Universal | $2900-50-0011 \mathrm{MR}$ | N/A |  |
| 1.25 mm Universal | N/A | 2900-52-0004MR |  |

## FlexScan ${ }^{\circledR}$ FS200 Single-mode OTDR

## Test Management and Reporting Software

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| FlexReports Advanced, one seat license on USB | RPTS-AD-USB-1 |
| FLexReports Advanced, one seat, Upgrade from TRM ${ }^{\circledR} 3$ Advanced on USB. Users must have TRM-3 Advanced license | RPTS-UP-TRM3-1 |
| FlexReports Basic, available for download on AFL Software Resources website | FlexReports Basic |
| FlexApp data transfer mobile App, available on Google Play and Apple App Storee | FlexApp |

## Recommended Products



## Qualifications

| CATEGORY | REGULATION/STANDARD | QUALIFICATION |
| :---: | :---: | :---: |
| CE Marking | EU | Compliant to relevant EU Directives on health, safety, and environmental protection, and certified with CE marking |
| Safety/EMC/EMI | IEC | Compliant to IEC 61010-1 for safety requirements for electrical equipment |
|  | EN | Compliant to EN 61010-1 for safety requirements for electrical equipment |
|  | IEC | Compliant to IEC 61326-1 for EMC requirements for electrical equipment |
|  | EN | Compliant to EN 61326-1 for EMC requirements for electrical equipment |
|  | EN | Compliant to EN 55011 for EMC requirements for industrial, scientific and medical equipment |
|  | Telcordia | Compliant to GR-196-CORE 4.5.1 for requirements on electromagnetic interference |
|  | FCC | Compliant to code of federal regulations FCC 47 CFR 15 on unlicensed transmissions |
|  | FDA | Compliant to code of federal regulations FDA 21 CFR 1040.10 and 1040.11 on laser products |
|  | IEC | Compliant to IEC 60825-1 for safety of laser products |
| RoHS | EU | Compliant to EU regulations Directive 2011/65/EU (RoHS 2) and Directive 2015/863 (RoHS 3) |
| Test Method | TIA | Compliant to TIA-568.3-D for test and measurement requirements for premises optical fiber cabling and components |
|  | IEC | Compliant to IEC 11801 for test and measurement requirements for optical fiber cabling for use within premises |
|  | AS/NZS | Compliant to AS/NZS 3080 for test and measurement requirements for optical fiber cabling for use within premises |
|  | TIA | Compliant to TIA-526-7 for test procedures for installed optical fiber cable plant |
|  | TIA | Compliant to TIA-526-14 for test procedures for installed optical fiber cable plant |
|  | IEC | Compliant to IEC 14763-3 for systems and methods for the inspection and testing of installed optical fiber cabling |
|  | AS/NZS | Compliant to AS/NZS 14763.3 for systems and methods for the inspection and testing of installed optical fiber cabling |
|  | IEC | Compliant to IEC 61280-4-1 for test procedures for installed optical fiber cable plant |
|  | IEC | Compliant to IEC 61280-4-2 for test procedures for installed optical fiber cable plant |
| Generic Requirement | Telcordia | Compliant to GR-196-CORE for generic requirements for OTDR-type equipment |
|  | Telcordia | Compliant to SR-4731 Issue 2 for OTDR data format |
|  | IEC | Compliant to IEC 61746-1 for requirements on calibration of OTDR |

Contact Sales@AFLglobal.com to schedule a demonstration or learn how to buy.
Visit www.AFLglobal.com/Test to learn more about FlexScan FS200 OTDR.
International Sales and Service Contact Information available at www.AFLglobal.com/Test/Contacts

# FOCIS Flex - Fiber Optic Connector Inspection System Easy, Fast, Compact, Tether-free 

U.S. Patent 9,217,688

## Features

- 1-button to auto-focus, center, capture, analyze, and save

- IEC, IPC, and user-defined pass/fail analysis
- Untethered, compact, hand-held inspection
- Use independently or pair with OTDR
- Save 10K results internally or share via WiFi or USB


## Applications

- Inspect connectors on patch cords or in bulkhead adapters
- Optical network installation, troubleshooting, and maintenance
- Inspect MPO/MTP multi-fiber connectors
- Assure critical fiber infrastructure performs properly
- Keep fiber connections working at optimal performance levels
- Verify proper connector cleaning practices are being used

FOCIS Flex makes connector inspection simple, fast, and convenient. With the press of a single button, FOCIS Flex auto-focuses, captures and centers the end-face image, applies Pass/Fail rules, displays image and Pass/Fail results, saves results internally and/or wirelessly transfers data to a paired FlexScan OTDR or a smart device. It is fast, small, and easy to use to enable $100 \%$ connector inspection.
Independent, untethered operation: With rechargeable battery and integrated display, FOCIS Flex can be used independently without requiring an external OTDR or display unit.

Optional pairing with FlexScan OTDR or smart devices: Captured images and Pass/Fail results can be immediately displayed and easily saved on either paired FlexScan OTDR or a smart device equipped with the AFL's free FOCIS Flex App. This capability enables inspection results to be included in reporting and archiving.

Save results internally or externally: FOCIS Flex internally stores up to 10,000 results using file-naming capabilities similar to those of the FlexScan OTDR. A micro-USB port supports fast upload of internally stored results to PC and ensures your FOCIS Flex software can be updated to the latest features and supported languages.

Wide range of adapter tips: Interchangeable adapter tips support connector inspection for a wide range of both single-fiber and multifiber patchcords and bulkhead-mounted connectors having either PC or APC polished end-faces.

Bundled kits for significant savings: FOCIS Flex is available in kits that include a Basic license for Test Result Manager (TRM ${ }^{\circledR}$ 3.0), user-selected adapter tips and cleaning supplies, and a soft carry case.

Easy reporting and archiving: Included Test Result Manager (TRM 3.0) provides data processing and reporting locally via a PC. The FOCIS Flex mobile App is available for free download from Google play or App Store for sharing data with smart devices.

# FOCIS Flex - Fiber Optic Connector Inspection System <br> Easy, Fast, Compact, Tether-free 



Pass/Fail results in seconds: With the press of a single button, FOCIS Flex auto-focuses, captures and centers the end-face image, applies Pass/Fail rules, displays image and Pass/Fail results. Captured Pass/Fai results are easily viewed in either Image or Table view.

Image view shows end-face image with Pass/Fail region overlay, failing scratches/ defects highlighted in red, and passing scratches/defects highlighted in green.

Table view shows analysis rule applied to determine Pass/Fail, analysis Zone IDs (A, B, C, D), scratch analysis results for each zone, and defect analysis results for each zone.

## Specifications ${ }^{\text {a }}$

| OPTICAL PERFORMANCE |  |
| :---: | :---: |
| Field of View (viewed on FOCIS Flex) | Live: $710 \times 860 \mu \mathrm{~m}$; <br> Captured, Zoomed Out: $560 \times 600 \mu \mathrm{~m}$; <br> Captured, Partially Zoomed In: $360 \times 390 \mu \mathrm{~m}$; <br> Captured, Fully Zoomed In: $180 \times 195 \mu \mathrm{~m}$ |
| Field of View (Viewed on a PC) | Stored, Zoomed Out: $700 \times 525 \mu \mathrm{~m}$; Stored, Fully Zoomed In: $240 \times 180 \mu \mathrm{~m}$ |
| Manual Detection Capability (minimum) | $0.25 \mu \mathrm{~m}$ |
| Auto Analysis Resolution | $<1.0 \mu \mathrm{~m}$ |
| Captured Image Size (Pixels) | $648 \times 480$ VGA; Images stored internally in three .JPG files, one at each FOV |
| OPERATING FEATURES |  |
| Focus | Auto-focus and manual focus |
| Centering | Auto-centering after capture |
| Pass/Fail Analysis | IEC 61300-3-35 (2015), IPC and user-defined criteria |
| Image Capture and File Storage Capacity | 10,000 files |
| File Format (Image and Pass/Fail Results) | jpg, gif |
| Bluetooth Characteristics | SPP to FlexScan and FlexTester OTDRs; IAP to iOS devices |
| USB Characteristics | USB 1.1 mass storage device |
| Supported Languages | English, Chinese Simplified, Chinese Traditional, Finnish, French, German, Italian, Japanese, Korean, Polish, Russian, Spanish, Turkish |
| PHYSICAL AND POWER CHARACTERISTICS |  |
| Display size, type, resolution | 2.4", TFT, $240 \times 320$ with brightness control |
| Battery Type | NiMH, user replaceable |
| Battery Operating Time (typical) | 8 hours (60 tests in 20 minutes each hour; auto-off enabled) |
| Recharge Time | <4.5 hours |
| Power Save Features | Auto-off (disabled, 2, 5, 10 minutes) |
| AC Charger voltage, frequency, current | $100-240 \mathrm{~V}, 50 / 60 \mathrm{~Hz}, 5 \mathrm{VDC}, 2 \mathrm{~A}$ |
| Size | $47 \times 37 \times 183 \mathrm{~mm}(1.8 \times 1.5 \times 7.2 \mathrm{in})$ |
| Weight | $240 \mathrm{~g}(0.5 \mathrm{lb})$ |
| ENVIRONMENTAL CHARACTERISTICS |  |
| Operating Temperature | 0 to $+50^{\circ} \mathrm{C}$ |
| Storage Temperature | -40 to $+70{ }^{\circ} \mathrm{C}$ |
| Relative Humidity | 95\%, non-condensing |
| Transit and shock | 2G vibration, 30G shock |

## Notes:

a. All specifications valid at $23^{\circ} \mathrm{C} \pm 2^{\circ} \mathrm{C}\left(73.4^{\circ} \mathrm{F} \pm 3.6^{\circ} \mathrm{F}\right)$.

## FOCIS Flex - Fiber Optic Connector Inspection System <br> Easy, Fast, Compact, Tether-free

## FlexScan OTDR PRO and BIPM Kits with FOCIS Flex

PRO Kits include the following items:

- FlexScan with accessories (AC charger, carry strap, SC/2.5 mm connector adapters, TRM ${ }^{\oplus} 3.0$ Advanced Test Results Manager, carry case)
- FOCIS Flex Fiber Optic Connector Inspection System with accessories (AC charger, USB cable, soft carry case/holster)
- Two user-selected adapter tips and one user-selected One-Click Cleaner
- 150 m Fiber Ring (launch cable) with user-specified connectors

Complete kits expand on PRO Kits by adding bend insensitive fiber identifier with optional power meter (OFI-BIPM).
See FlexScan data sheet for FlexScan PRO and Complete Kit ordering information.

FOCIS Flex Adapter Tips (Contact AFL for adapter tips for other connector types)

| 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 |
| FOCIS Flex adapter extension tube, straight, 46 mm | FFLX-01-EXTS46 |
| FOCIS Flex adapter extension tube, straight, 80 mm : | FFLX-01-EXTS80 |
| E2000 PC/UPC bulkhead adapter tip | FFLX-4S-E2K |
| E2000 APC bulkhead adapter tip | FFLX-4S-E2KA |
| Tip for SC/APC (OptiTap ${ }^{\text {® }}$ ) bulkhead adapter | FFLX-4S-OTA |
| Tip for OptiTip ${ }^{\circledR}$ APC ferrule and bulkhead adapter | DFS1-01-0013MR |
| MTP/PC ferrule \& bulkhead adapter extended tip kit (base plus MTP/PC front end tip) | DFS1-00-0037MR |
| MTP/PC and MTP/APC ferrule \& bulkhead adapter extended tip kit (base,MTP/PC, MTP/APC front end tips) | DFS1-00-0042MR |
| MTP/APC ferrule and bulkhead adapter extended tip kit (base plus MTP/APC front end tip) | DFS1-01-0010MR |

## Ordering Information

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| FOCIS Flex Kit, soft carry case/holster, USB cable, AC charger, TRM ${ }^{\circledast} 3.0$ reporting software, reference guide, no tips | FOCIS-FLX-P4XN |
| FOCIS Flex Kit, soft carry case/holster, USB cable, AC charger, TRM 3.0 reporting software, reference guide, 2 user-selected UPC adapter tips (ferrule and <br> bulkhead), user-selected One-Click cleaner | FOCIS-FLX-P4XU |
| FOCIS Flex Kit, soft carry case/holster, USB cable, AC charger, TRM 3.0 reporting software, reference guide, 2 user-selected APC adapter tips (ferrule and <br> bulkhead), user-selected One-Click cleaner | FOCIS-FLX-P4XA |
| FOCIS Flex Kit, soft carry case/holster, USB cable, AC charger, TRM 3.0 reporting software, reference guide, user-selected UPC adapter tips (ferrule and <br> bulkhead), 2 user-selected APC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner | FOCIS-FLX-P4XUA |

# FOCIS Flex - Fiber Optic Connector Inspection System <br> <br> Easy, Fast, Compact, Tether-free 

 <br> <br> Easy, Fast, Compact, Tether-free}
U.S. Patent 9,217,688

## Test Management and Reporting Software

| DESCRIPTION | AFL NO. |
| :--- | :--- | :--- |
| TRM 3.0 with Basic License, USB delivery (included with all FOCIS Flex kits) | TRM3-BASIC |
| TRM 3.0 upgrade from Basic to Advanced License, USB delivery | TRM3-UPGRADE |
| TRM 3.0 upgrade from Basic to Advanced License, email delivery | TRM3-UP-EMAIL |
| FOCIS Flex App (Google play or App Store) | Free Download |

## Recommended Products




Qualifications

| CATEGORY | REGULATION/STANDARD | QUALIFICATION |
| :--- | :--- | :--- |
| CE Marking | EU | Compliant to relevant EU Directives on health, safety, and environmental protection, and certified with CE marking |
|  | IEC | Compliant to IEC 61010-1 for safety requirements for electrical equipment |
|  | EN | Compliant to EN 61010-1 for safety requirements for electrical equipment |
|  | IEC | Compliant to IEC 61326-1 for EMC requirements for electrical equipment |
|  | EN | Compliant to EN 61326-1 for EMC requirements for electrical equipment |
|  | EN | Compliant to EN 55011 for EMC requirements for industrial, scientific and medical equipment |
|  | FCC | Compliant to code of federal regulations FCC 47 CFR 15 on unlicensed transmissions |
|  | FDA | Compliant to code of federal regulations FDA 21 CFR 1040.10 and 1040.11 on laser products |
|  | IEC | Compliant to IEC 60825-1 for safety of laser products |
| RoHS | EU | Compliant to EU regulations Directive 2011/65/EU (RoHS 2) and Directive 2015/863 (RoHS 3) |
| Test Method | IEC | Compliant to IEC 61300-3-35 for visual inspection of fiber optic connectors and fiber-stub transceivers |
|  | IPC | Compliant to IPC-8497-1 for cleaning methods and contamination assessment for optical assembly |

Contact Sales@AFLglobal.com to schedule a demonstration or learn how to buy.
Visit www.AFLglobal.com/Test to learn more about FOCIS Flex.
International Sales and Service Contact Information available at www.AFLglobal.com/Test/Contacts.

## Optical Loss Test Kits



SMLP5-5 Kit

## Features

- Rugged, dependable, and backed by industry-best 5-year warranty
- Wave ID tests up to three wavelengths simultaneously - slashing test time
- Field-swappable connector adapters for maximum flexibility
- Long battery life from globally available AA batteries


## Applications

- Certify multimode and single-mode links per TIA/EIA standards
- Passive Optical Networks (PON) testing
- Certification report generation with TRM ${ }^{\circledast} 2.0$ software
- Fiber identification for splicing and continuity checking

Optical Loss Test Sets (OLTS) provide the most accurate method for determining the total loss of a link. AFL's OLTS have been an industry favorite for over 30 years with more than 100,000 units shipped. Leading service providers and enterprise customers rely on AFL's OLTS for their ruggedness, reliability, and best-in-the-industry 5-year warranty.

An OLTS test is performed with a light source on one end of the fiber sending a continuous wave at specific wavelength(s) and a power meter on the opposite end measuring the light received. The loss measured is compared to the loss budget, which is usually calculated prior to installation, and reflects the industry standards used to ensure that the link can meet its application requirements.

OLTS are mainly used to certify multimode and single-mode links, test Passive Optical Networks (PONs), identify fibers before splicing, and to ensure network continuity.

Designed for use in outside plant environments: AFL OLTS are extremely rugged and withstand one-meter drops, have splash resistant controls that are easy to use with gloves on, and the field-swappable connector adapters provide flexibility and access for cleaning optical ports at time of test.

Test faster with fewer errors: AFL's Wave ID increases test speed by performing simultaneous multi-wavelength testing that cuts loss measurement time in half or more. AFL's automatic wavelength identification eliminates setup errors and simplifies coordination between users at opposite ends of fiber.

## Optical Loss Test Kits

## Specifications ${ }^{\text {a }}$

| OPTICAL SPECIFICATIONS - POWER METERS |  |  |  |
| :---: | :---: | :---: | :---: |
| MODEL | OPM5-4D | OPM5-3D, OPM4-3D | OPM5-2D |
| Calibrated Wavelengths | 850, 980, 1300, 1310, 1490, 1550, 1625 nm | 850, 1300, 1310, 1490, 1550, 1625 nm | 850, 1300, 1310, 1490, 1550 nm |
| Detector Type | Filtered InGaAs | InGaAs | Germanium (Ge) |
| Measurement Range | +26 to -50 dBm | +10 to -75 dBm | +6 to -60 dBm |
| Tone Detect Range | $\begin{gathered} +6 \text { to }-30 \mathrm{dBm} \\ +6 \text { to }-25 \mathrm{dBm} \text { for } 850 \mathrm{~nm} \end{gathered}$ | $\begin{aligned} & \quad+10 \text { to }-50 \mathrm{dBm} \\ & +10 \text { to }-45 \mathrm{dBm} \text { for } 850 \mathrm{~nm} \end{aligned}$ | $\begin{gathered} +6 \text { to }-50 \mathrm{dBm} \\ +6 \text { to }-45 \mathrm{dBm} \text { for } 850 \mathrm{~nm} \end{gathered}$ |
| Wavelength ID Range | $\begin{gathered} +6 \text { to }-30 \mathrm{dBm} \\ +6 \text { to }-25 \mathrm{dBm} \text { for } 850 \mathrm{~nm} \end{gathered}$ | $\begin{aligned} & \quad+10 \text { to }-50 \mathrm{dBm} \\ & +10 \text { to }-45 \mathrm{dBm} \text { for } 850 \mathrm{~nm} \end{aligned}$ | $\begin{gathered} +6 \text { to }-50 \mathrm{dBm} \\ +6 \text { to }-45 \mathrm{dBm} \text { for } 850 \mathrm{~nm} \end{gathered}$ |
| Accuracy | $\pm 0.1 \mathrm{~dB}$ (typical); $\pm 0.25 \mathrm{~dB}$ |  |  |
| Resolution | 0.01 dB |  |  |
| Measurement Units | $\mathrm{dB}, \mathrm{dBm}, \mu \mathrm{W}$ |  |  |

## OPTICAL SPECIFICATIONS: OLS7 MODELS



OPTICAL SPECIFICATIONS: OLS4, OLS2-DUAL \& OLS1-DUAL MODELS

| MODEL | OLS4 <br> (MM Optical Port) |  | OLS4 <br> (SM Optical Port) |  |  | DUAL <br> e Port) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Wavelength | $850 \pm 30 \mathrm{~nm}$ | $1300+30 /-20 \mathrm{~nm}$ | $1310 \pm 20 \mathrm{~nm}$ | $1550 \pm 20 \mathrm{~nm}$ | $1310 \pm 20 \mathrm{~nm}$ | $1550 \pm 20 \mathrm{~nm}$ |
| Spectral Width | 45 nm (typ) | 120 nm (typ) | 5 nm (max) | 5 nm (max) | 5 nm (max) |  |
| Emitter Type | LED |  | Laser |  |  | ser |
| Safety Class | Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03 |  |  |  |  |  |
| Output Power | $>-20 \mathrm{dBm}, 62.5 \mu \mathrm{~m}$ multimode ${ }^{\text {b }}$ |  | $0 \mathrm{dBm}, 9 \mu \mathrm{~m}$ single-mode |  | $0 \mathrm{dBm}, 9 \mu \mathrm{~m}$ single-mode ${ }^{\text {c }}$ |  |
| Output Stability | $\pm 0.1 \mathrm{~dB}$ over 8 hours (after 5 minutes warm-up) |  | $\pm 0.05 \mathrm{~dB}$ over 1 hour (after 15 minutes warm-up) <br> $\pm 0.1 \mathrm{~dB}$ over 8 hours (after 15 minutes warm-up) |  |  |  |
| Tone Output | N/A |  | 2 kHz |  | 270 Hz, $330 \mathrm{~Hz}, 1 \mathrm{kHz}, 2 \mathrm{kHz}$ |  |

GENERAL SPECIFICATIONS: ALL OPM AND OLS MODELS

| Available Adapters | SC FC, ST, LC |
| :--- | :---: |
| Power | 2 AA batteries |
| Operating Temperature | $-10^{\circ} \mathrm{C}$ to $50^{\circ} \mathrm{C}, 90 \% \mathrm{RH}$ (non-condensing) |
| Storage Temperature | $-30^{\circ} \mathrm{C}$ to $60^{\circ} \mathrm{C}, 90 \% \mathrm{RH}$ (non-condensing) |
| Size (H $\times$ W $\times \mathrm{D}$ ) | $14.0 \times 8.1 \times 3.8 \mathrm{~cm} \mathrm{(5.5} \mathrm{\times 3.2} \mathrm{\times 1.5} \mathrm{in)}$ |
| Weight | $0.29 \mathrm{~kg}(0.65 \mathrm{lb})$ |

## Notes:

a. All specifications valid at $25^{\circ} \mathrm{C}$ unless otherwise specified.
b. May be used to test 50 or $62.5 \mu \mathrm{~m}$ fiber with supplied mandrels.
c. Output power will be approximately 3 dB less if a $50 \mu \mathrm{~m}$ mandrel-wrapped jumper is used instead of a $62.5 \mu \mathrm{~m}$ mandrel-wrapped jumper.
d. Adjustable 2 dB .

## Optical Loss Test Kits

## Ordering Information

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

| AFL NO. | POWER METER | LIGHT SOURCE | FIBER <br> TYPE | LOSS MEASUREMENTS (nm) |  |  |  |  | DYNAMIC RANGE (dB) | TRM $^{\circledR}$ 2.0 PC REPORTING |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | 850 | 1300 | 1310 | 1490 | 1550 |  |  |
| SLP5-6 | OPM5-3D | OLS2-DUAL | SM |  |  | - |  | - | $70^{\text {b }}$ | $\checkmark$ |
| SLP5-FTTH | OPM5-4D | OLS7-FTTH | SM |  |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $45^{\text {b }}$ | $\checkmark$ |
| SMLP5-5 | OPM5-2D | OLS4 | $\begin{aligned} & \mathrm{MM} \\ & \mathrm{SM} \end{aligned}$ | $\checkmark$ | - | - |  | - | $\begin{aligned} & 40 @ 850 / 1300 \mathrm{~nm}^{\mathrm{a}} \\ & 60 @ 1310 / 1550 \mathrm{~nm}^{\text {b }} \end{aligned}$ | $\checkmark$ |

## Notes:

a. On $62.5 / 125 \mu \mathrm{~m}$ multimode fiber.
b. On 9/125 $\mu \mathrm{m}$ single-mode fiber.

## Part Number - Connector Specification



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

## Accessories

| DESCRIPTION | AFL NO. |
| :---: | :---: |
| LIGHT SOURCE CONNECTOR ADAPTERS |  |
| FC connector adapter | 2900-50-0002MR |
| SC cownector adapter | 2900-50-0003MR |
| ST connector adapter | 2900-50-0004MR |
| LC connector adapter | 2900-50-0006MR |
| POWER METER CONNECTOR ADAPTERS |  |
| FC connector adapter | 8800-00-0200 |
| SC connector adapter | 8800-00-0209 |
| ST connector adapter | 8800-00-0202 |
| LC connector adapter | 8800-00-0225 |
| MULTIMODE TEST CORDS (50/125 $\mu \mathrm{m}-2$ meters) |  |
| FC/FC | 8700-00-0093 |
| SC/ST | 8700-00-0064 |
| SC/SC | 8700-00-0065 |
| LC/LC | 8700-00-0082 |
| SINGLE-MODE TEST CORDS (9/125 $\mu \mathrm{m}-2$ meters) |  |
| FC/FC | 8700-00-0005 |
| FC/ST | 8700-00-0016 |
| ST/ST | 8700-00-0017 |
| SC/SC | 8700-00-0018 |
| FC/SC | 8700-00-0021 |
| SC/ST | 8700-00-0022 |
| SC/LC | 8700-00-0046 |
| FC/LC | 8700-00-0071 |
| LC/LC | 8700-00-0097 |


| DESCRIPTION |  |
| :--- | :--- |
| MATING ADAPTERS (Bulkheads) |  |
| FC/FC | $8400-00-0004 \mathrm{MR}$ |
| SC/SC | $8400-00-0045 \mathrm{MR}$ |
| ST/ST | $8400-00-0020$ |
| LC/LC | $8400-00-0075$ |
| CLEANING SUPPLIES | $8500-05-0001 \mathrm{MZ}$ |
| One-Click Cleaner SC/ST/FC | $8500-05-0002 \mathrm{MZ}$ |
| One-Click Cleaner LC | $8500-10-0016 \mathrm{MZ}$ |
| Cletop -SB Cassette Cleaner | $8500-10-00017 \mathrm{MZ}$ |
| Cletop -SB Refill Cartridge |  |

## Optical Loss Test Kits

## Test Management and Reporting Software

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| TRM $^{\circledR} 2.0$ with Basic License (OTDR Trace/OLTS Viewer, Batch Editor and Reports), USB delivery | TRM-00-0900PR |

## Recommended Products



## One-Click ${ }^{\circledR}$ Cleaners

- Patented single-action
- Variety of sizes and types
- Low cost per clean


## Qualifications

| CATEGORY | REGULATION/STANDARD | QUALIFICATION |
| :---: | :---: | :---: |
| CE Marking | EU | Compliant to relevant EU Directives on health, safety, and environmental protection, and certified with CE marking |
| Safety/EMC/EMI | IEC | Compliant to IEC 61010-1 for safety requirements for electrical equipment |
|  | EN | Compliant to EN 61010-1 for safety requirements for electrical equipment |
|  | IEC | Compliant to IEC 61326-1 for EMC requirements for electrical equipment |
|  | EN | Compliant to EN 61326-1 for EMC requirements for electrical equipment |
|  | EN | Compliant to EN 55011 for EMC requirements for industrial, scientific and medical equipment |
|  | FDA | Compliant to code of federal regulations FDA 21 CFR 1040.10 and 1040.11 on laser products |
|  | IEC | Compliant to IEC 60825-1 for safety of laser products |
| RoHS | EU | Compliant to EU regulations Directive 2011/65/EU (RoHS 2) and Directive 2015/863 (RoHS 3) |
| Test Method | TIA | Compliant to TIA-568.3-D for test and measurement requirements for premises optical fiber cabling and components* |
|  | IEC | Compliant to IEC 11801 for test and measurement requirements for optical fiber cabling for use within premises* |
|  | EN | Compliant to EN 50173 for test and measurement requirements for optical fiber cabling for use within premises* |
|  | AS/NZS | Compliant to AS/NZS 3080 for test and measurement requirements for optical fiber cabling for use within premises* |
|  | TIA | Compliant to TIA-526-7 for test procedures for installed optical fiber cable plant |
|  | TIA | Compliant to TIA-526-14 for test procedures for installed optical fiber cable plant* |
|  | IEC | Compliant to IEC 14763-3 for systems and methods for the inspection and testing of installed optical fiber cabling* |
|  | AS/NZS | Compliant to AS/NZS 14763.3 for systems and methods for the inspection and testing of installed optical fiber cabling* |
|  | IEC | Compliant to IEC 61280-4-1 for test procedures for installed optical fiber cable plant* |
|  | IEC | Compliant to IEC 61280-4-2 for test procedures for installed optical fiber cable plant |
| Generic Requirement | IEC | Compliant to IEC 61315 for requirements on calibration of fibre-optic power meters |

* A complementary encircled flux mode conditioner may be needed to comply with encircled flux launch conditions for testing multimode optical fiber cabling and components

Contact Sales@AFLglobal.com to schedule a demonstration or learn how to buy.
Visit www.AFLglobal.com/Test to learn more about OLTS kits.
International Sales and Service Contact Information available at www.AFLglobal.com/Test/Contacts

## VFI4 Visual Fault Identifiers



## Features

- Eye-safe Class 3R visible red laser source, 650 nm (High power version)
- Output power of 5.0 mW with 10 km range (High power version)
- Universal connector interface for quick connection
- 2.5 mm universal adapter (included) accepts FC, SC, ST, etc. connectors
- 1.25 mm universal adapter (included in High power version only) accepts LC and MU connectors
- Low power model - VFI4-L is available with output power of 1.0 mW with 4 km range


## Applications

- Identify and trace fibers during activation and installation
- Identify poorly mated connectors
- Verify AFL's FASTConnect ${ }^{\circledR}$ field-installable connector installation
- Find faults inside OTDR dead zones

A Visible Fault Identifier (VFI), also referred to as a Visual Fault Locator (VFL), is an essential tool for fiber installation and maintenance technicians.

AFL's compact VFI4 injects high-powered red-laser light to provide exceptional brightness and range for locating defects in single-mode and multimode fibers. The light generated by these units will escape from sharp bends and breaks in jacketed or bare fibers, as well as poorly mated connectors enabling technicians to quickly spot faults. The universal connector interface mates with many connector styles without needing an adapter.

Rugged and Compact: The rugged VFI4 is designed for the rigors of real-life field testing. It has a range of up to 10 km , fits on a keychain, and features extensions that protect the red-laser port. It has both CW and pulsating modes and is powered by a single AA battery for up to 30 hours of operation.

Installation and Activation: VFI4 is used for quick continuity checks, fiber tracing, splice verification, and Pass/Fail validation for mechanical connectors. VFI4 is also an excellent complement to any OTDR because it can locate faults inside the OTDR's dead zone.

Essential Troubleshooting Tool: The VFI4 highlights sharp bends, breaks, faulty connectors, and other defects that "leak" light. Other applications include end-to-end continuity checks, as well as identifying connectors in patch panels and fibers during splicing operations.

## VFI4 Visual Fault Identifiers

Specificationsa

| OPTICAL | VFI4 | VFI4-L |
| :--- | :---: | :---: |
| Emitter Type | Laser, Class III FDA 21 CFR <br> 1040.10 and 1040.11, <br> Class 3R IEC 60825-1:2014 | Laser, Class II FDA 21 CFR <br> 1040.10 and 1040.11, <br> Class 2 IEC 60825-1:2014 |
| Wavelength | $650 \mathrm{~nm} \pm 15 \mathrm{~nm}$ |  |
| Output Power | 5 mW maximum | 1 mW maximum |
| Modulation | 2 Hz or CW selected |  |

## Notes:

| GENERAL | VFI4 | VFI4-L |
| :---: | :---: | :---: |
| Adapter | 2.5 mm Universal, 1.25 mm Universal |  |
| Power | 1 AA battery, <30 hours (flash mode) | 1 AA battery, <50 hours (flash mode) |
| Operating Temperature | $-10^{\circ} \mathrm{C}$ to $50^{\circ} \mathrm{C}, 85 \%$ humidity non condensing |  |
| Storage Temperature | $-30^{\circ} \mathrm{C}$ to $60^{\circ} \mathrm{C}, 95 \%$ humidity non condensing |  |
| Size ( $\mathrm{H} \times \mathrm{W} \times \mathrm{D}$ ) | $7.9 \times 5.1 \times 2.2 \mathrm{~cm}(3.1 \times 2.0 \times 0.9 \mathrm{in})$ |  |
| Weight | $43 \mathrm{~g}(1.5 \mathrm{oz})$ |  |

a. All specifications valid at $25^{\circ} \mathrm{C}$ unless otherwise specified.

## Ordering Information

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| VFI4 visual fault identifier with 2.5 mm and 1.25 mm adapters | VFI4-01-0900PR |
| VFI4-L visual fault identifier with 2.5 mm adapter | VFI4-02-0900PR |

Adapters

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| 2.5 mm Universal for VFI port | 2900-50-0013MR |
| 1.25 mm Universal for VFI port | 2900-50-0012MR |

## Recommended Products



## Qualifications

| CATEGORY | REGULATION/STANDARD | QUALIFICATION |
| :--- | :---: | :--- |
| CE Marking | EU | Compliant to relevant EU Directives on health, safety, and environmental protection, and certified with CE marking |
| Safety/EMC/EMI | IEC | Compliant to IEC 61010-1 for safety requirements for electrical equipment |
|  | EN | Compliant to EN 61010-1 for safety requirements for electrical equipment |
|  | IEC | Compliant to IEC 61326-1 for EMC requirements for electrical equipment |
|  | EN | Compliant to EN 61326-1 for EMC requirements for electrical equipment |
|  | EN | Compliant to EN 55011 for EMC requirements for industrial, scientific and medical equipment |
|  | FDA | Compliant to code of federal regulations FDA 21 CFR 1040.10 and 1040.11 on laser products |
|  | RoHS | IEC |
|  | Compliant to IEC 60825-1 for safety of laser products |  |
|  | EU | Compliant to EU regulations Directive 2011/65/EU (RoHS 2) and Directive 2015/863 (RoHS 3) |

Contact Sales@AFLglobal.com to schedule a demonstration or learn how to buy.
Visit www.AFLglobal.com/Test to learn more about VFI4 Visual Fault Identifier.
International Sales and Service Contact Information available at www.AFLglobal.com/Test/Contacts.

## Fujikura 90S+ Fusion Splicer

The Fujikura 90S+ core alignment fusion splicer solves common problems seen in the fieldfrom splicing poor quality legacy fiber to automated equipment maintenance and upkeep. The Fujikura 90S+ can be use in multiple field splicing applications including bend-insensitive fibers in drop cables, long-haul terrestrial and submarine LEAF ${ }^{\circledR}$ fibers, loose buffer fiber, splice-on connectors, and the list goes on. The speed and accuracy of the 90S+ make it suitable for certain production and specialty environments where high output, tight packaging, and low loss requirements are required.

Regardless of your scenario, the Fujikura 90S+ is designed to keep you in the field with an extended battery life of 300 splice and heat cycles. With its multiple automated and easy-touse features, the 90S+ alleviates the need for traditional operation tasks such as frequent arc calibrations, cleaver blade rotations, cleaver usage tracking, and manual splicing operations. A redesigned work tray, cooling tray, and optional cable clamp make the 90S+ kit more versatile than its predecessors in adapting to varying work conditions and environments.

When splicing loose buffer fiber, additional sheath clamps are not needed. The standard universal sheath clamp now handles both loose and tight buffer fibers. The new Active Fusion Control (AFC) technology improves splice losses for fibers that possess a poor cleave angle. Combined with Active Blade Management between the splicer and cleaver, the Fujikura 90S+ contains a robust set of splicing features that will reduce the likelihood of poor splice installations or repairs.

## Features

- Cleaver tracking and upkeep with wireless communication
- Improved real-time arc control for fibers with poor cleave angles
- Automated wind protector, sheath clamps and splice operation
- Loose and tight buffer with same sheath clamp
- Lithium-ion battery with 300 splices/shrinks per charge
- PC software and 90S+ manual downloaded from splicer
- Multi-function transit case with integrated workstation


## Applications

- Distribution fiber repair
- Long-haul network installation
- Field termination with splice-on connectors
- Access network installation
- Fanout kits, pigtails and splice cassettes
- OSP cable installation and repair
- Optical modules - splitters, couplers, MUXs, EDFAs and attenuators


## Fujikura 90S+ Fusion Splicer

## Ordering Information

| DESCRIPTION |  | AFL NO. |
| :--- | :--- | :--- |
| 90S+ Fusion Splicer (machine only) | S017519 |  |
| 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, CC39 Transit Case with Carrying Strap and Two Year Warranty |  |  |
| 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, CC39 Transit Case with Carrying Strap and Two Year Warranty |  |  |
| 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, | S017521 |  |
| USB-01 Cable, Alcohol Dispenser, Screwdriver, Splicer Carrying Strap, Quick Reference Guide, TS-03 Tripod Screw, Work Tray J-Plate, |  |  |
| SS03 Single Fiber Stripper, CC39 Transit Case with Carrying Strap and Two Year Warranty |  |  |
| One Year Extended Warranty | Two Year Extended Warranty | S012996 |

## Recommended Products for the 90S+

| DESCRIPTION | AFL NO. |
| :---: | :---: |
| Cleavers |  |
| CT-16 Cleaver | S018330 |
| CT-50 Cleaver | S017030 |
| Fiber Holders (pair) |  |
| FH-70-250 ( $250 \mu \mathrm{~m}$ coated fiber) | S017111 |
| FH-70-900 (900 $\mu \mathrm{m}$ jacketed fiber) | S017113 |
| FH-70-160 (160 $\mu \mathrm{m}$ coated fiber) | S017095 |
| FH-70-200 (200 $\mu \mathrm{m}$ coated fiber) | S017711 |
| FH-60-LT900 (Loose buffer $900 \mu \mathrm{~m}$ fiber) | S015181 |
| FUSEConnect ${ }^{\oplus}$ Accessories |  |
| FH-FC-20 (900 $\mu \mathrm{m}$ within 2.0 mm sheathing) (each) | S014696 |
| FH-FC-30 (900 $\mu \mathrm{m}$ within 3.0 mm sheathing) (pair) | S014695 |
| FH-FC-900 (900 $\mu \mathrm{m}$ cable) (each) | S014697 |
| CLAMP-FC-2000 (pair) | S014705 |
| CLAMP-FC-3000 (single holder) | S014704 |
| Power Supply Options and Equipment |  |
| ADC-20 AC Adapter | S017513 |
| ACC-14 AC Power Cord | S014536 |
| BTR-15 Battery | S017512 |
| DCC-20 Power Cord (connects AC Adapter to cigarette lighter socket) | S017527 |
| DCC-21 Power Cord (connects AC Adapter to power source via alligator clips) | S017528 |


| DESCRIPTION | AFL NO. |
| :--- | :--- |
| Miscellaneous | S017098 |
| SS03 Single fiber stripper (3 hole) | S017099 |
| SS01 Single fiber stripper (1 hole) | S017103 |
| ELCT2-16B Electrodes | S017518 |
| SP-03 Fiber Holder Set Plates | S017696 |
| S90 Universal Sheath Clamps | S014773 |
| Portable Tripod Workstation (see product profile for more detail) | ASW-02 Splicing Workstation (see product profile for more detail) |
| S010532 |  |
| WT-09R Work Tray Right | S017515 |
| WT-09L Work Tray Left | S017516 |
| JP-09 Work Tray J-Plate | S017517 |
| JP-10 J-Plate (Cooling tray attaches to splicer) | S017522 |
| JP-10-FC J-Plate with Fiber Clamps | S017523 |
| TS-03 Tripod Screw (90 Series) | S017524 |
| ST-02 Fusion Splicer Strap | S017555 |
| CLAMP-DC-12 (Drop cable clamp for work tray) | S014777 |
| USB-01 Cable | S017514 |
| CC39 Transit Case | S014397 |
| Splicer V-Groove Cleaning Kit | S017549 |
| ST-03 Case and Work Tray Strap |  |

- Wider Holders
- Loose \& Tight Buffer options available



## Fujikura 90S+ Fusion Splicer

## Specifications

| PARAMETER |  | VALUE |
| :---: | :---: | :---: |
| Fiber Alignment Method |  | Active core alignment |
| Fiber Count Can Be Spliced |  | Single fiber |
| Applicable Fiber | Fiber Type | Single-mode optical fiber |
|  |  | Multimode optical fiber |
|  | Cladding Diameter | 80 to $150 \mu \mathrm{~m}$ |
| Applicable Coating | Sheath Clamp | Coating dia.: Max. 3,000 $\mu \mathrm{m}$ |
|  |  | 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 |
|  |  | SM FAST mode: Avg. 8 to 10 sec. |
|  | Splice Time | 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 $50^{\circ} \mathrm{C}$ |
|  |  | Storage: -40 to $80^{\circ} \mathrm{C}$ |
|  | 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 $240 \mathrm{~V}, 50 / 60 \mathrm{~Hz}$, Max. 1.5 A |
| Battery Pack | Type | Rechargeable Lithium Ion |
|  | Output | Approx. DC14.4V / 6,380 mAh |
|  | Capacity | Approx. 300 splice and heat cycles |
|  | Temperature | Recharge: 0 to $30^{\circ} \mathrm{C}$ |
|  |  | Storage: -20 to $30^{\circ} \mathrm{C}$ |
|  | 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 |



45S Standard Kit


## Fujikura 45S Fusion Splicer

The 45S cladding alignment fusion splicer is changing the way people splice fiber in small to mid-fiber count applications. This Fujikura splicer debuts a landmark improvement to the fusion splicing process with the ability to prepare and load both fibers simultaneously. The hand-held fiber coating stripper, the SS-05, is capable of stripping two $250 \mu \mathrm{~m}$ coated fibers in the same pass, along with the CT-16A cleaver adapter plate which can likewise accommodate two bare fibers for cleaving. After preparation, the 45 S patented sheath clamps enable loading both fibers simultaneously into the splicer with one fiber in each hand. The user can press down on the sheath clamp base to close it while positioning the fiber in the v-grooves. This enables onehanded operation.

Furthermore, the 45 S sheath clamps are mechanically linked to the wind protector, so after splicing is finished, opening the wind protector also opens both sheath clamps for quick sleeve positioning and transfer to the tube heater. The 45 S tube heater shrinks sleeves much faster than its predecessor with a nominal $\sim 20$ second heat time for 60 mm sleeves down from $\sim 26$ seconds. The simultaneous fiber preparation capability, automated sheath clamp opening, and a faster tube heater, combine to lower the overall fusion splicing cycle time by $\sim 30 \%$ or more.

The 455 continues to benefit the user experience with improvements to fiber placement, battery access, and machine ergonomics. Previously, when using sheath clamps, if the cleaved fiber was accidentally set past the electrode centerline, the machine would send an error and require manual intervention. The 45 S will now accept this mistake and reverse the fiber to correct position automatically. With a cube form factor, the 455 is easily transported and operated in space-constrained environments. The adjustable screen can alleviate glare from the sun and adjust with abnormal splicer positions confronted in challenging splice locations.
Backed by the best service team in the industry, the Fujikura 45S is the ideal splicer to use when portability, ruggedness, speed, and reliability are needed. If you'd like to see the 45 S capabilities first-hand, please contact us at 1-800-235-3423 to arrange a product demonstration at your earliest convenience.

## Applications

- 5G Small Cell Site
- FTTx drops and terminations
- MDF/IDF splices and terminations
- Rural fiber deployments and restorations


## Features

- Simultaneous fiber preparation with newly patented sheath clamp design
- Sheath clamps automatically opened with the wind protector
- Automatic fiber placement correction
- Active Fusion Control for arc optimization with every splice
- Active Blade Management for cleave quality monitoring and correction
- Easy-access battery, screen position adjustments, and ergonomic adaptations
- Fully ruggedized for shock, moisture and dust resistance


## Fujikura 45S Fusion Splicer

## Features



Simultaneous Fiber Loading


Sleeve Positioning


Work Tray with Neck Strap


CT-16A Adapter Plate on CT-50


Fiber stripper SS-05

## Ordering Information

| DESCRIPTION | AFL NO. |
| :--- | :--- | :--- |
| Fujikura 45S Standard Kit | SO18318 |
| 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 Adatter, 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 |  |
| Fujikura 45S Kit without Cleaver | SO18319 |
| 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 |  |
| One Year Extended Warranty | S012996 |
| Two Year Extended Warranty | S013000 |

## Recommended Accessories

| 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 $\mu \mathrm{m}$ single fiber) | S017111 |
| FH-70-200 ( $200 \mu \mathrm{~m}$ single fiber) | S017711 |
| FH-70-900 Fiber Holders (900 $\mu \mathrm{m}$ single fiber) | S017113 |
| FH-60-LT900 (900 $\mathrm{\mu m}$ loose buffer tube) | S015181 |
| FUSEConnect ${ }^{\oplus}$ Accessories |  |
| FH-FC-20 (900 $\mu \mathrm{m}$ within 2.0 mm sheathing) (each) | S014696 |
| FH-FC-30 ( $900 \mu \mathrm{~m}$ within 3.0 mm sheathing) (pair) | S014695 |
| FH-FC-900 (900 $\mu \mathrm{m}$ 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 um) | S018328 |
| Portable Tripod Workstation (see web listing for more detail) | S014773 |

## Fujikura 45S Fusion Splicer

## Specifications

| PARAMETER |  | VALUE |
| :---: | :---: | :---: |
| Fiber alignment method |  | Active cladding alignment |
| Fiber count can be spliced |  | Single fiber |
|  | Fiber type | Single-mode optical fiber |
| Applicable fiber | Fiber type | Multimode optical fiber |
|  | Cladding dia. | Approx. $125 \mu \mathrm{~m}$ |
|  | Sheath Clamp | Coating diameter: Max. 3,000 $\mu \mathrm{m}$ |
| Applicable coating | Sheath Clamp | Cleave length: 5 to $16 \mathrm{~mm}{ }^{* 1}$ |
| App | Fiber Holder | Coating diameter: $160 \mu \mathrm{~m}-3,000 \mu \mathrm{~m}$ based on available fiber holder options |
|  | Fiber Holder | Cleave length: Approx. 10 mm |
|  |  | ITU-T G.652: Avg. 0.03 dB |
|  |  | ITU-T G.651: Avg. 0.01 dB |
|  | Splice loss*2 | ITU-T G.653: Avg. 0.05 dB |
| Fiber splice performance |  | ITU-T G.655: Avg. 0.05 dB |
|  |  | ITU-T G.657: Avg. 0.03dB |
|  | Splicing time *3 | SM FAST mode: Avg. 6 to 7 sec . |
|  | Splicing time | SM AUTO mode: Avg. 8 to 10 sec . |
|  | Sleeve type | Heat shrinkable sleeve |
| Applicable protection sleeve | Sleeve length | Max. 66 mm |
|  | Sleeve dia. | Max. 6.0 mm before shrinking |
|  | Heat time *4 | 60 mm mode: Avg. 15 to 22 sec. |
|  | Heat time | 60 mm slim mode: Avg. 15 to 17 sec . |
| Fiber tensile test force |  | Approx. 2.0 N |
| Electrode life *5 |  | Approx. 6,000 splices |
|  | Dimensions W | Approx. 131 mm without projection |
| Physical description | Dimensions D | Approx. 123 mm without projection |
| Physical description | Dimensions H | Approx. 121 mm without projection |
|  | Weight | Approx. 1.4 kg including battery |
|  | Temperature | Operate : -10 to $50^{\circ} \mathrm{C}$ |
|  | Temperature | Storage : -40 to $80^{\circ} \mathrm{C}$ |
| Environmental condition | Humidity | Operate : 0 to 95\% non-condensing |
|  | Humidity | Storage : 0 to 95\% non-condensing |
|  | Altitude | Max. 5,000 m |
| AC adaptor | Input | AC100 to 240V, $50 / 60 \mathrm{~Hz}$, Max. 1A |
| AC adaptor | Output | Approx. DC 19V, Max. 2.1A |
|  | Type | Rechargeable Lithium Ion |
|  | Output | Approx. DC14.4V / 3,190mAh |
|  | Capacity *6 | 60 mm heat mode: Approx. 200 splice \& heat cycles |
|  | Capacity | 60 mm slim heat mode: Approx. 230 splice \& heat cycles |
| Battery pack |  | Operate: -10 to $50^{\circ} \mathrm{C}$ |
|  | Temperature | Recharge : 0 to $40^{\circ} \mathrm{C}$ |
|  | Temperature | Short term storage of 30 days: -20 to $50^{\circ} \mathrm{C}$ |
|  |  | Long term storage: -20 to $30^{\circ} \mathrm{C}$ |
|  | Battery life ${ }^{\text {* }}$ | Approx. 500 recharge cycles |
| Display | LCD monitor | TFT 4.95 inches with touch screen |
|  | Magnification | Approx. 132 to 300X |
| Illumination | V-grooves | LED lamp |
|  | PC | USB2.0 MINI B type |
| Interface | External LED lamp | USB 2.0 A type |
|  | External LED lamp | Approx. DC5V, 500 mA |
|  | Wireless *8 | Bluetooth ${ }^{\text {® }} 5.2$ |

## Fujikura 45S Fusion Splicer

## Specifications

| PARAMETER |  | VALUE |
| :---: | :---: | :---: |
| Data storage | Splice mode | 100 splice modes |
|  | Heat mode | 30 heat modes |
|  | Splice result | 20,000 splices |
|  | Fiber image | 100 images |
| Screw hole for tripod |  | 1/4-20UNC |
| Other features | Automatic functions | Fusion control |
|  |  | Blade management and control |
|  |  | Splice start |
|  |  | Heater start |
|  | Reference guide | PDF file stored on splicer |
|  | Sheath clamp | Open with/without wind protector |
|  |  | Close when setting fiber |
|  |  | Easy sleeve positioning design |
|  | Electrode | Tool-less replacement |
|  | PC Software | Splicer firmware update via internet |
|  |  | Parameter Upload and download |

## NOTES:

*1 Cleave length range depending on fiber type
$5-16 \mathrm{~mm}$ : $125 \mu \mathrm{~m}$ cladding dia. And $250 \mu \mathrm{~m}$ coating dia.
$10-16 \mathrm{~mm}: 125 \mu \mathrm{~m}$ cladding dia. And 400 or $900 \mu \mathrm{~m}$ coating dia.
*2 Measured with cut-back method relevant to ITU-T and IEC standard after splicing Fujikura identical fibers. The average splice loss changes depending on the environmental condition and fiber characteristics.
*3 Measured at room temperature. The definition of splice time is from the fiber image appearing on the LCD monitor to the estimated splice loss. The average splice time changes depending on the environmental conditions, fiber type, and fiber characteristics.
*4 Measured at room temperature with the AC adapter. The heat time is defined from the start beep sound to the finish beep sound. The average heat time changes depending on the environmental conditions, sleeve type, and battery pack condition. In addition, since the heating operation is constantly optimized, the average heating time changes depending on the usage conditions of the fusion splicer.
*5 The electrode life changes depending on the environmental conditions, fiber type, and splice modes used.
*6 Test Conditions
Splice and heat time: 1 minute cycle
Using the splicer power save settings, subject to our testing condition
Using a new battery
Room temperature
The battery capacity changes when testing in different conditions than above
*7 The battery capacity decreases to half after approx. 500 discharge and recharge cycles. The battery life is shortened further when using outside of the storage and operating temperature ranges, or if completely discharged when stored for an extended period without recharging.
*8 Bluetooth mark and logos are registered trademarks of Bluetooth SIG, Inc.

Optical Connectivity

## SpliceConnect with Tool Kit



AFL's SpliceConnect is a mechanical splice that provides an inexpensive, quick alternative to mating fibers. Using V-groove technology, this splice maintains physical contact between the fibers. An assembly tool is used to ensure the fibers are mated correctly, resulting in $<0.1 \mathrm{~dB}$ insertion loss (typical for single-mode). The SpliceConnect secures both fiber and coating independently with the U-shaped sleeve, enhancing the strength against fiber twist.

## Features

- Quick splicing time
- Minimal tools
- $250 \mu \mathrm{~m}$ and/or $900 \mu \mathrm{~m}$ fiber capabilities
- Both fiber and coating are secured independently


## Dimensions and Structure



Ordering Information

| DESCRIPTION | AFL NO. |
| :--- | :--- |
| SpliceConnect Mechanical Splices (Bag of 6) | CS004154 |
| SpliceConnect Mechanical Splice Tool Kit | CS004162 |
| Kit Includes: |  |
| SpliceConnect Mechanical Splicing Tool | CS004155 |
| Fiber Holder, $250 \mu \mathrm{~m} \times 2$ | CS004442 |
| Fiber Holder, $900 \mu \mathrm{~m} \times 2$ | CS004443 |
| Instruction Manual | CS004159 |
| Carrying Case | CS004161 |
| Template, Strip/Cleave Length | CS004573 |
| SpliceConnect Mechanical Splicing Tool | CS004155 |
| Fiber Holder, $250 \mu \mathrm{~m}$ | CS004442 |
| Fiber Holder, $900 \mu \mathrm{~m}$ | CS004443 |

## eABF Solutions

The eABF ${ }^{\circledR}$ (Enterprise air blown fiber) cabling system is engineered to offer a reliable, easy-to-install optical fiber network communications infrastructure that has one of the highest fiber density solutions in the blown fiber market. The eABF solution has several key elements that, when combined, yield a state-of-the-art and highly flexible "living" communications pathway as shown in the eABF solutions map on the right. Applications include campus settings, military, hospitals, industrial and government.

With its many configurations, the eABF solution can be utilized for expanding your network infrastructure, whether new or retrofit. MicroDuct(s) can be left open to accept a fiber optic cable in the future, for a cost effective way to add bandwidth. Crowded easements, both aerial and buried, can benefit from eABF for network expansion while requiring minimal space and disruption. When it comes to expanding your network, minimize expenditures and maximize capacity with the eABF solution from AFL and Dura-Line.



[^0]:    *** Typical values based on equal quality connectors.

[^1]:    *** Typical values based on equal quality connectors.

