FASTConnect® or FUSEConnect®—Which Should You Choose?

Tom Jeffers, Associate Product Manager, AFL

ABSTRACT

Field-installable connectors provide a convenient method for terminating fiber optic cable at remote job site locations. Traditional epoxy/polish connectors essentially took the entire factory installation process and brought it outside. Today, modern connector technology eliminates the need for hand polishing, providing a low-cost and error-proof method of installation.

This paper will provide a brief background on field-installable connectors and then discuss the advantages and disadvantages of mechanical and splice-on connectors.

INTRODUCTION

Generally speaking, there are three types of field-installable connectors on the market today:

Epoxy/polish—Assembled and tested at the installation site using factory termination process

Mechanical—Factory polished, pre-assembled connector with a mechanical grip internal to connector housing

Splice-on—Factory polished, pre-assembled connector with a fiber stub external to the connector housing

Epoxy/polish connectors have been used for many years and have the potential to offer great performance when installed properly by experienced technicians. However, the primary drawbacks of this connector type are that the installation results are heavily dependent on the skill level of the technician and the process is very time consuming.

AFL offers two types of field-installable connectors which have eliminated the uncertainty of hand-polished connectors—FASTConnect and FUSEConnect. These products use a factory pre-polished, pre-assembled connector, which significantly reduces installation and setup time and completely eliminates the need for hand polishing in the field.

Additionally, these connectors offer many benefits:

- No specialized training needed
- Requires no adhesives
- Eliminates crimping process
- Results in precise cable routings with no unwanted slack
- Reduces scrap
- Compatible with all industry-standard connectors

COMPARISON AT-A-GLANCE

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

*Required only for certain connectors

APPLICATIONS

- Field installations
- On-site repairs
- Connections at the desk
- Data center installation
- Patch panels

FASTCONNECT

FASTConnect field-installable connectors utilize mechanical splice technology to terminate a connector in the field. Proprietary V-groove technology, combined with index-matching gel, ensures precision fiber alignment and offers a low loss termination for either single-mode or multimode optical fibers.

FASTConnect products are available in SC, LC and ST versions (both UPC and APC) and can be installed very quickly without the use of specialized tools. Simply prep the incoming cable and insert it into the connector body, press the wedge clip and the FASTConnect is ready in minutes.

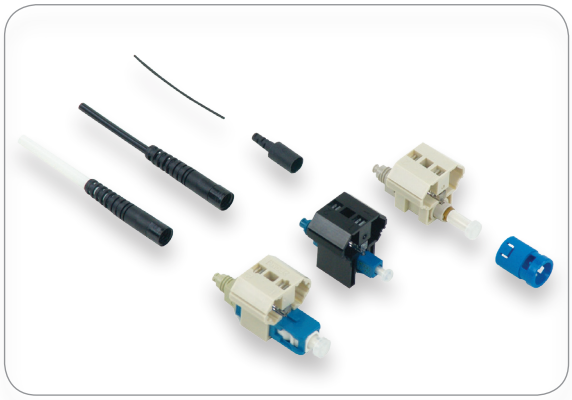
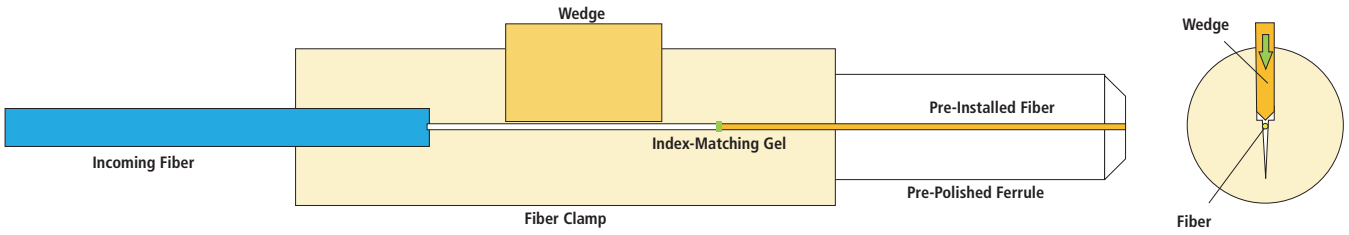
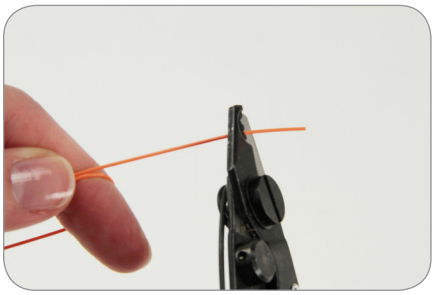


Figure 1—FASTConnect SC, LC and ST Connectors



FASTCONNECT INSTALLATION PROCEDURE



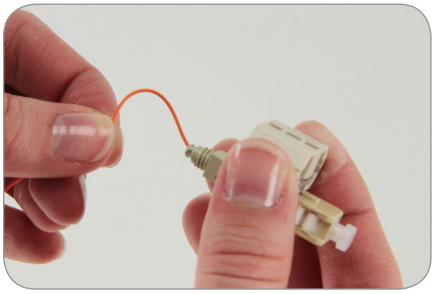
1—Strip fiber



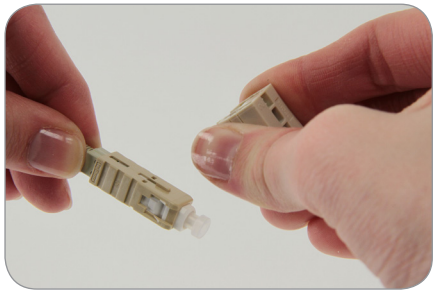
2—Clean fiber



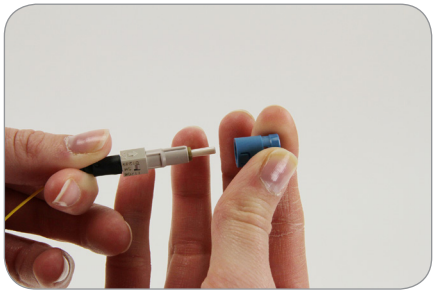
3—Cleave fiber



4—Insert fiber in connector



5—Remove wedge clip



6—Apply housing, boot and dust cap

FASTCONNECT OPTICAL PERFORMANCE

PARAMETER	CONNECTOR TYPE	VALUE
Insertion Loss (IL)	Single-mode (UPC)	Typical: 0.2 dB Maximum: 0.5 dB
	Single-mode (APC)	Typical: 0.3 dB Maximum: 0.6 dB
	Multimode	Typical: 0.1 dB Maximum: 0.5 dB
Return Loss (RL)	Single-mode	Typical: -55 dB Maximum: -50 dB
	Multimode	Typical: -25 dB Maximum: -20 dB
Operating Temperature	-40°C to +75°C	

FUSECONNECT

FUSEConnect field-installable connectors utilize a fusion splicer to terminate in the field. These products demonstrate performance comparable to factory assembled connectors.

Designed to work with industry standard fiber cleavers, the FUSEConnect is compatible with Fujikura fusion splicers as well as other fiber holder-based fusion splicing platforms. FUSEConnect products are available in SC, FC, LC and ST versions (both UPC and APC) and can be loaded into the splicer right out of the package. Simply prep the incoming cable and splice it onto the connector. Once splicing is complete, slide the fusion splice protection sleeve up onto the ferrule flange and shrink it down using the splicer's built-in heater.

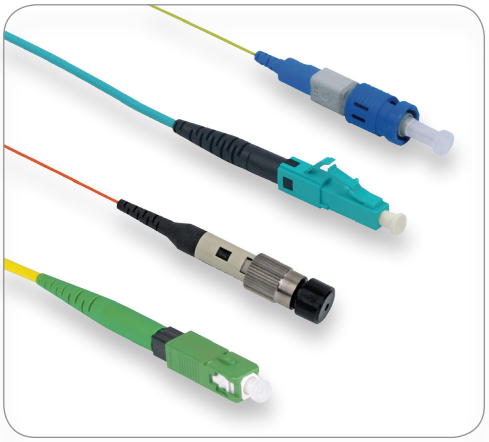
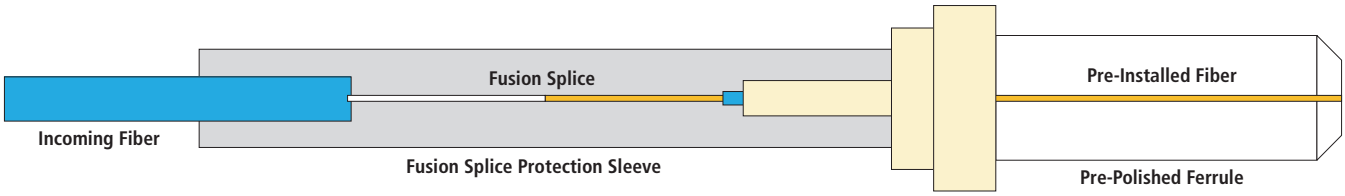
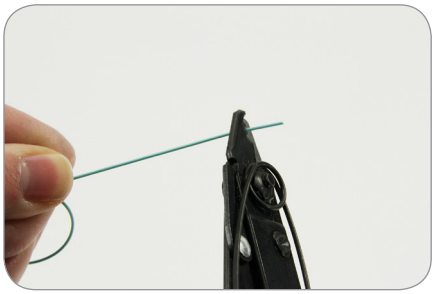


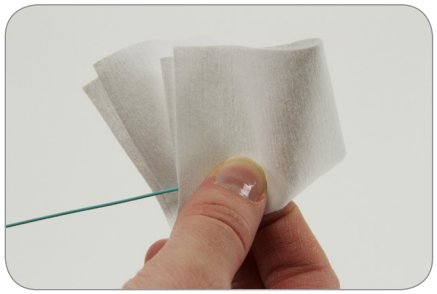
Figure 2—FUSEConnect SC, FC, LC and ST Connectors



FUSECONNECT INSTALLATION PROCEDURE



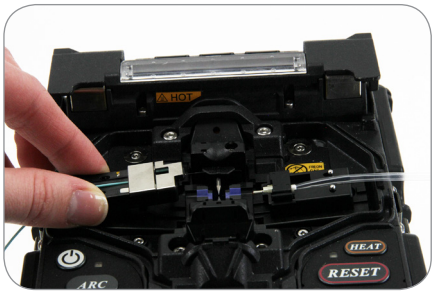
1—Strip fiber



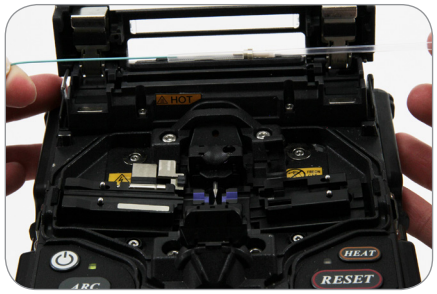
2—Clean fiber



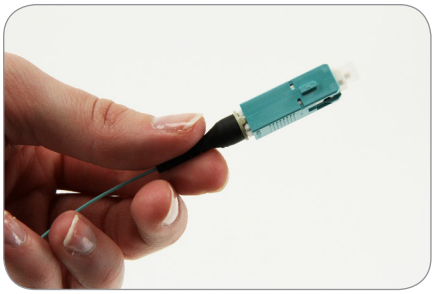
3—Cleave fiber



4—Splice



5—Heat protective sleeve



6—Apply housing, boot and dust cap

FUSECONNECT OPTICAL PERFORMANCE

PARAMETER	CONNECTOR TYPE	VALUE
Insertion Loss (IL)	Single-mode	Typical: 0.15 dB Maximum: 0.30 dB
	Multimode	Typical: 0.10 dB Maximum: 0.30 dB
Return Loss (RL)	Single-mode (APC)	Maximum: -65 dB
	Single-mode (UPC)	Maximum: -55 dB
	Multimode	Maximum: -35 dB
Operating Temperature	-40°C to +75°C	

SUMMARY

Field-installable connectors offer a cost-effective solution for a variety of applications. Modern technology has eliminated the hassle and variability of hand polishing, but there are still several factors that should be considered when choosing the right connector. While mechanical connectors offer a great option with minimal investment, splice-on connectors can sometimes be justified when optical performance and reliability are important considerations.

	FASTConnect	FUSEConnect
Optical performance	IL max: < 0.5 dB RL max: ≥ 55 dB	IL max: < 0.3 dB RL max: ≥ 65 dB
Installation time	1-2 minutes	2-3 minutes
Skill level	Novice	Moderate
Tools required	Common fiber tools and fiber cleaver	Common fiber tools, fiber cleaver and fusion splicer

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

AUTHOR

Tom Jeffers, PMP, is an associate product manager for AFL's Optical Connectivity and Apparatus (OCA) division. Prior to joining AFL, Tom spent ten years with Emerson Network Power Connectivity Solutions where he developed custom fiber optic products for the military, aerospace, and commercial markets. His experience includes project management, new product development, R&D, product management, manufacturing engineering, and testing.



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