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## Advanced Fiber Optic Connector Installation

### QUICK SUMMARY

Length: 48 hours, 52 hours with Fiber Optic Association CFOT certification

Hands-on Activities: **activities**, 70-75 %

Text/Field Reference: [Professional Fiber Optic Installation-v10](#), 494 pages, (© 2017)

Additional Texts: [PowerPoint Slides For Professional Fiber Optic Installation, v9](#) and [Certification And Troubleshooting Fiber Optic Networks](#)

History: continuous evolution since 1995

Developer and Presenter: **Eric R. Pearson, CFOS/T/C/S/I**

Benefits: reduced power loss, reduced installation cost, increased network reliability, certification, confidence

Who Should Attend: installers, installation supervisors, installation planners, network technicians, network designers

Additional Information: **contact us**

### BENEFITS

By attending Advanced Fiber Connector Installation, a five-day, hands on installation training program, you are able to install fiber optic cables, connectors, splices and achieve the three goals of installation. In addition, you develop advanced connector installation skills, so that you achieve consistent results when you start your fieldwork.

These three goals, minimum power loss, maximum reliability, and minimum cost, require knowledge of the specific procedures and compliance with the unique rules of fiber optic communication products. You learn this knowledge and these rules from the lectures and hands on activities of this comprehensive and well-developed program. In addition to learning basic skills for most of the procedures, this program 'takes you up the connector installation learning curve', so you achieve consistent low loss and low cost during connector installation.

### DESCRIPTION

Through the combination of lectures and hands on activities, you learn how to perform all the steps required from the time you receive the products to the time at which you certify the network as being properly and reliably installed. These steps include:



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Installation of cables without damage  
End preparation of both loose and tight tube cables  
Installation of low loss, reliable multimode and singlemode connectors  
Inspection of connectors to determine installation quality  
Installation of low loss fusion and mechanical splices  
Proper testing of insertion loss, OTDR and reflectance  
Calculation of acceptance values for all tests, and  
Certification and troubleshooting of installed links for maximum reliability.

During connector installation training, you install 24 connectors under the supervision of a **highly experienced instructor**. By inspecting each connector after installation, you gain feedback on the quality of your installation procedure. This nearly- immediate feedback enables you to identify proper installation methods and learn to avoid high power loss and high installation cost. By testing the power loss after each pair of connectors, you learn the impact of your installation method. This nearly-immediate feedback enables you to develop consistent installation procedures for two different installation methods.

## **EXTENSIVE HANDS-ON ACTIVITIES**

Advanced Fiber Connector Installation includes 40 hands-on training activities for all of these necessary steps. These hands-on activities consume approximately 70-75% of the program.

Mr. Eric R. Pearson developed and delivers this program. Mr. Pearson, CFOS, is a 39-year veteran of fiber optic communications, a former Director of the FOA, a BICSI Master Instructor, a Certified Professional Consultant, a FOA Master Instructor, and a widely recognized expert in fiber optics and in installation procedures.

Whether you are a data network or SAN installer, military data specialist, network technician, PON technician, installation supervisor, network supervisor, security system installer, or CATV installer, this program will return many times your investment! This program is based on the comprehensive, 494-page, up-to-date text, [Professional Fiber Optic Installation-v10](#) (© 2017). This text is a valuable and useful field reference and resource.

Be successful like the more than 7900 people who have taken installation-training programs from Pearson Technologies!

### **DAY 1**

1. OVERVIEW OF NETWORKS  
Topologies



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## Link And Components

### 2. THE LANGUAGE OF LIGHT

Three Descriptions Of Behavior

Seven Properties

Wavelength

Spectral Width

Index of Refraction

Power

Reflection

Numerical Aperture

Refraction

Dispersion

### 3. FIBER

Three Structural Regions And Functions

Three Types

Two Performance Specifications

Dispersion

Attenuation

**Hands On Activities**

**Determine Fiber Handling Rule For Tension**

**Determine Fiber Handling Rule For Bending**

**Determine Fiber Preparation Rule**

**Determine Fiber Insertion Rule**

**Practice Fiber Strength Check**

### 4. CABLE

Structure

Types

Installation Specifications

Environmental Specifications

**Hands On Activities**

**Prepare Loose Tube Cable End**

**Prepare Tight Tube Cable End**

**The Continuity Test**

### 5. CABLE INSTALLATION RULES

Environmental Limits

Installation Limits

Cable Placement

Planning And Management Issues

Safety Issues



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End Preparation  
Review Questions [for FOA certification programs]

## DAY 2

### 6. CONNECTORS

- Function
- Structures
- Specifications
- Features
- Types
- Installation Methods

### 7. PRINCIPLES OF CONNECTOR INSTALLATION

- Adhesive Use
- Crimping
- Polishing
- Cleaning
- Cleaving

#### Hands On Activities

Install 12 polish type connectors [SC is standard. FC and ST™-compatible are options]

Install 12 Unicam® Connectors; [SC is standard. LC, SC, and ST™-compatible are options]

Option: install 12 pigtail connectors; type to be determined

## DAY 3

### The Continuity Test

### 8. CONNECTOR INSPECTION

- Inspection Criteria
  - Core
  - Cladding
  - Ferrule Surface
- Hands On Activity
  - Inspect And Rate Connectors
  - Use Visual Fault Finder With No Polish Connectors

### 9. SPLICES

- Locations
- Type Options
- Structure



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## Specifications

### Hands On Activity

- Fusion Splicing- midspan
- Fusion Splicing- ribbon[optional]
- Mechanical Splicing- midspan
- Measure Loss- midspan fusion splice
- Measure Loss- midspan mechanical splice
- Review Questions [for FOA certification programs]

## **DAY 4**

### 10. TESTING PRINCIPLES

#### General Principles

TIA/EIA-568 B Requirements

Insertion Loss Testing

Hands On Activities

Method B Test

Test Directional Effects

Test Repeatability And Range

Correlate Microscopic Appearance With Loss

Troubleshoot Testing Problems

Optical Time Domain Reflectometry

Theory

Three Typical Traces

Measurement Methods

Length

Connection Loss

Attenuation Rate

Hands On Activities

Identify Measurements

Identify Features

Reflectance

### 11. OPTOELECTRONICS

Design Concerns

Light Sources And Detectors

Specification Options

Optical Power Budget (Available)

Minimum Required Loss

Wavelength

Spectral Width

Connector Type



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## **DAY 5**

### **12. NETWORK CERTIFICATION FOR MAXIMUM RELIABILITY**

Certification With Maximum Loss Values

Advantage

Disadvantage

Develop Certification Strategy For Maximum Reliability

Acceptance Values for 850 nm Premises Riser Network

**Hands On Activities**

**Calculate Acceptance Values For 850 nm Premises Riser Network**

**Calculate Acceptance Values For 1310 nm OSP Network**

### **13. NETWORK CERTIFICATION AND TROUBLESHOOTING**

**Hands On Activities**

**Calculate Acceptance Values**

**Insertion Loss**

**OTDR**

**Perform Insertion Loss Test**

**Perform OTDR Tests**

**Length**

**Connector Loss**

**Attenuation Rate**

**Uniformity of Segment**

**Determine Location of Defective Installation**

**Recognize Proper Cursor Placement**

**Interpret OTDR Traces**

**Write Certification Summary**

Review Questions [for FOA certification programs]





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