Fiber Optic Connectors

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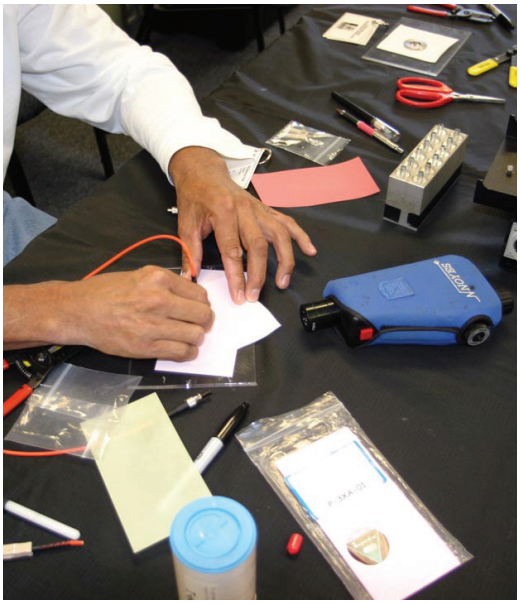
The LIGHT BRIGADE®
Your Fiber Optic Resource.

Increase your yield

Since fiber optics first appeared in communication networks, the role of the connector has been critical to the success of the fiber link. The installation of a fiber transmission system would be impossible without some way of connecting fibers with low signal loss. Early connectors suffered from poor alignment tolerances and stability problems due to their design, yet they were installed by the millions. Since these early days, manufacturers have strived to produce innovative solutions to today's multitude of connectivity needs.

While manufacturers must adhere to strict standards and performance specifications, the final performance of a system and its links ultimately lies in the hands of the fiber-optic technician. From polishing to cleaning to visual inspection, a technician must have the necessary skills and knowledge to properly terminate each fiber and ensure that its connectors provide the lowest loss and reflection levels possible in order to achieve optimum performance.

"Yield", the number of connectors that test good after termination, is a critical concept. In general, the cost of the connector plug itself is minimal when compared to the cost of the labor required to install it. Having highly-skilled and knowledgeable technicians will increase yield and lower the total installed cost of the system.



Chapter Selections

Introduction – 9:32
This chapter introduces fiber optic connectors their evolution, their many applications and roles. It also discusses performance issues such as attenuation, reflection, and repeatability.

Connector Styles – 12:10
This chapter covers the discrete parts of connectors, including ferrules/termini, alignment sleeves, plugs, and receptacles (adaptors). It also addresses the various styles of fiber optic connectors that are available (e.g., SC, ST, FC, LC, multi-fiber, et al) and their evolution.

Tolerances – 7:49
Optical terminations involve various fiber and mechanical tolerances related to the precision ferrules and alignment sleeve. This chapter addresses the many kinds of tolerances for common multimode and singlemode fibers, connectors, and their impact on the optical performance of the connection.

Bonding and Scribing – 17:23
This chapter covers the methods used to bond, hold, and align optical fibers for factory and field terminations. It also discusses scribing tools and techniques.

Polishing – 10:14
Whether connectors are polished in a controlled factory setting or by hand in the field, proper polishing of the optical endface is required for low attenuation, low reflection, and optimum performance.

Cleaning – 14:16
The plug, ferrule, or termini must be clean before an optical endface can be inspected. Cleaning optical surfaces minimizes damage, lowers attenuation, and improves reflection values. This chapter explores various techniques and products for cleaning plugs and adaptors in both manufacturing and field installations.

Endface Verification – 12:43
Visual inspection is critical to confirm that an optical endface is undamaged and free of contaminants. This chapter reviews microscopes, digital inspection scopes, and interferometers and their applications. It also reviews common causes of damage and contamination.

Testing Patchcords – 10:41
This chapter includes how to test singlemode and multimode cable assemblies for attenuation and reflections in factory and field environments. It details test methods, fiber optic test procedures, and standards.

Multi-fiber Connectors – 14:07
This chapter covers the types of multi-fiber connectors including MPO/MTP, MT-RJ, FDDI/FSD, ESCON, and backplane connectors such as the MU. Specialty connectors, such as the HDTV connector, are reviewed along with connector styles used specifically in military and aerospace applications.

Specialty Connectors – 5:32
Special variations of connectors have evolved to meet attenuation requirements and to test systems and fiber spans. This chapter addresses attenuators, terminators, and loopback devices as well as their applications.

Yield – 4:16
This chapter summarizes the role of those terminating fiber optic interconnection devices. Yield is the actual loaded cost of a termination and includes the component cost, consumables, and the associated labor.

Bonus Materials – Quiz in Word format with both student and instructor versions.

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