

# AI & DATA CENTER NETWORKS

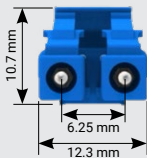
QUICK TESTING GUIDE

EXFO

# FIBER DENSIFICATION

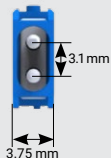
AI data centers are adopting high-density fiber to boost bandwidth, but more fibers in less space bring about new testing challenges.

## Form factor



### Small Form Factor (SFF):

Traditional connectors (e.g., LC and MPO). Common in data center and enterprise networks.



### Very Small Form Factor (VSFF):

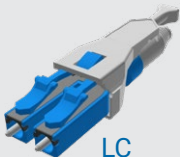
Next-gen ultra-compact connectors (e.g., SN and MMC). Made for higher port density in AI data centers.

## Duplex connectors

Uses two fibers, available with traditional LC or newer VSFF connectors.

**TIP**

Choose uni-boot duplex connectors to simplify test cord handling.



## Multi-fiber connectors

Uses multiple fibers (up to 32) with MPO or newer VSFF connectors. Common in AI data centers.



## Multi-fiber rows

Base 8/12/16 connectors use one row.

Base 24/32 connectors use two rows.



## Multi-fiber gender

Connector alignment is achieved through guiding pins—always pair a pinned connector with an unpinned one to ensure proper mating.

Pinned  
gender

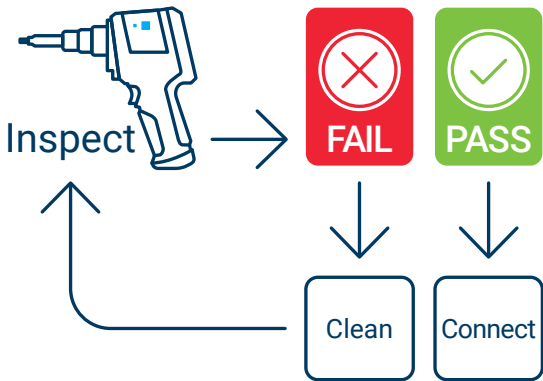


Unpinned  
gender

# FIBER INSPECTION

Avoid the No.1 cause of ISSUES

Contaminated connectors increase power loss and risks damage—inspect before and after cleaning to avoid rework.



# Ensure connector performance

3 steps

1 | Inspect before cleaning; clean only if dirty.

2 | Use an automated inspection scope (e.g., FIP-500) for quick connector health assessment.

3 | Inspect both ends of a connection.



# Tools for inspection and cleaning

## Mechanical cleaners

allows cleaning both exposed jumper ends and connectors in adapters.



## FIP-500

one-step, zero-button assessment of connectors. Quick and clear results.



EXFO's adapter tips allows inspection of simplex, duplex and multi-fiber connectors.



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# Exchange

## SHARE TEST RESULTS. BOOST COMPLIANCE.

- Create workspaces and assign jobs.
- Get real-time visibility of jobs.
- Generate comprehensive reports.
- Paired with EXFO's leading test instruments.



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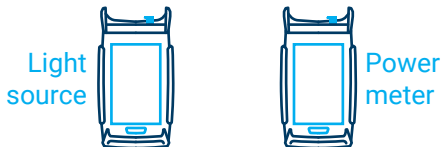


Acces  
digital  
version

# EXFO

# TIER-1 CERTIFICATION WITH OLTS

Tier-1 certification is the industry standard using an Optical Loss Test Set (OLTS) composed of a light source and power meter. Measures the total insertion loss, length, and polarity of a fiber-optic link.



## Reference methods

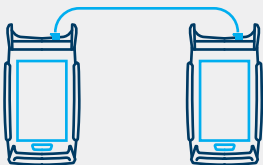
One-, two-, three-, and adapter cord reference methods all set a zero-decibel baseline but differ by how many adapter cords and connections are used.



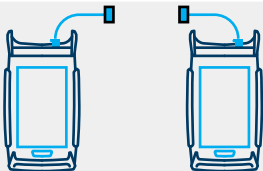
# Reference & test

One-cord is recommended. Includes both the first and last connections in the loss budget.

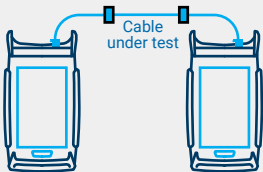
- 1 | Connect the reference cable between the power-meter and light source to set your reference.



- 2 | Add the receive cable on the power meter.



- 3 | Start testing.



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# PXM/LXM

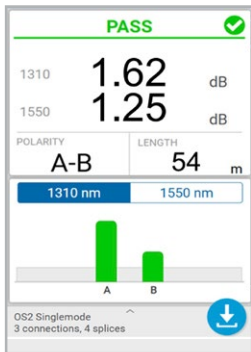
The pro version of PXM/LXM Supports fast duplex and multi-fiber testing for loss, polarity, and length in one second.

Click-out adapter: swappable in the field.



## Duplex & multi-fiber test

Two test modes allowing duplex and multi-fiber (base-8/12/16/24) cables test.



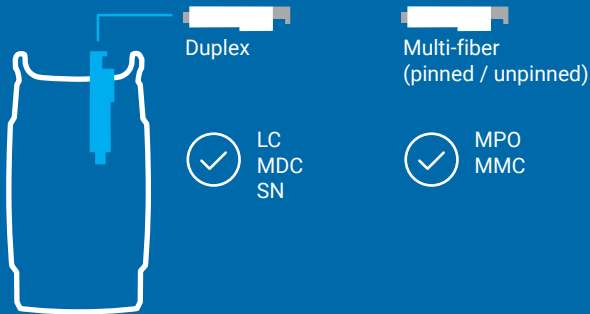
Duplex mode



24-fiber mode

# Tips for accurate testing

Use the correct connector gender to avoid adapters and follow the one-cord reference method.



Once the reference is set, do not disconnect the reference cable from the light source.

Use reference grade cables to ensure accurate measurements and repeatability.

Make sure all connectors are inspected and cleaned, if necessary, prior to performing references.

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# Using the correct gender

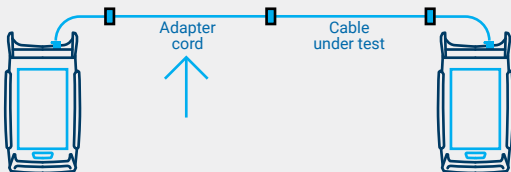
Multi-fiber connector typically include guide pins for fiber alignment. Gender matching can be achieved with adapter cords, interchangeable jumpers, or by using a power meter with the correct gender.

## Using the PXM:



Use a power meter click-out adapter matching the cable under test compatible gender.

## Using the adapter cord method:



# Troubleshoot

## Result

## Action



Negative  
loss result

**Reference issue:** inspect and clean test cords, then perform a new reference.

Use reference grade test cords to ensure low loss during reference.



Increasing  
loss result

**Dirty cords:** inspect and clean test cords.

**Worn cords:** replace and re-reference.



Unable to perform  
reference

Check for contamination or damage  
Ensure proper light source connection  
and matching connector gender  
(pinned vs. unpinned).

Access free e-learning training.  
**Get EXFO-certified.**

