

# TK-SWITCH MPO and MTP® Kit

iOLM-BASED AUTOMATED MPO AND MTP CABLE CHARACTERIZATION SOLUTION



 DATA CENTER SOLUTION

 EXFO Connect Compatible

 iOLM | intelligent Optical Link Mapper

Note: MTP is a registered trademark of US Conec Ltd.

Go beyond insertion loss and fully characterize each individual fiber of MPO and MTP connectorized cables with an intelligent and automated test process.

## KEY FEATURES

Test, in automated sequence, the individual fibers of an MPO and MTP connectorized cable, inside or outside the data center

Leverage the power of iOLM/OTDR and precisely locate faults and connectors' reflectance

Versatile solution: allows for the use of the same test set for certification and troubleshooting on multifiber and single-fiber links

Field-scalable solution

## APPLICATIONS

Construction of data center physical layer, characterization of singlemode MPO and MTP 12 fibers cable

Troubleshooting of data center physical layer; map the fault along the fiber

Back reflection measurement at patch panels; in migration from 10G to 40/100G+

Data center, enterprise-structured cabling

## RELATED PRODUCTS



Platform  
FTB-1v2/FTB-1 Pro



Platform  
FTB-2/FTB-2 Pro



Fiber Inspection Probe  
FIP-400B (USB)



Fiber Inspection Probe  
FIP-435B MF-ready (wireless)

**EXFO**

## MPO AND MTP CABLE TESTING CHALLENGES

As bandwidth and cabling density requirements keep growing, MPO and MTP cables are becoming widely used in data centers and spreading to other applications. Testing MPO and MTP connectorized links can be way more challenging than single fiber cables when using legacy test processes and equipment.



Figure 1: MPO and MTP male and female connectors

## MULTIFIBER MPO AND MTP CABLE CHARACTERIZATION AND TROUBLESHOOTING

In combination with the external 1x12 MPO and MTP switch, the iOLM allows for faster-than-ever testing of singlemode MPO and MTP cables, with no need to use a fan-out cable or cassette. Human manipulation is reduced by 90%, which in turn significantly reduces the risk of error. Thanks to the intelligent multifiber algorithm (iMF), a single push of the **Start** button initiates a fully automated test sequence of the 12 fibers, resulting in 12 single measurements.

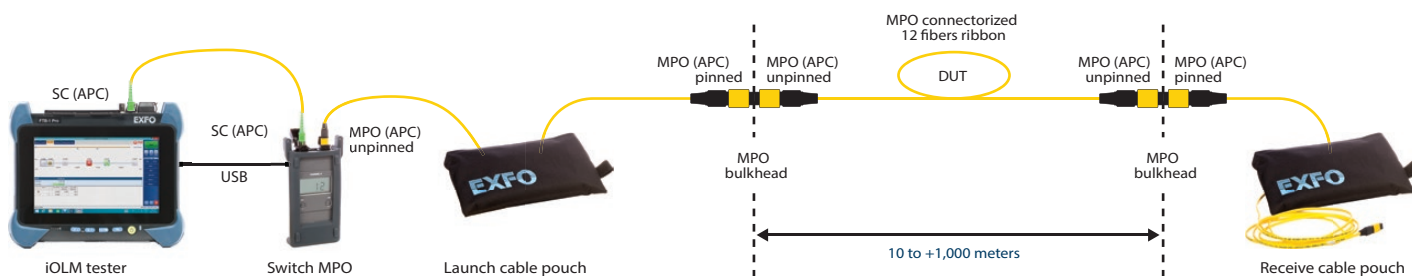


Figure 2: Typical test set-up for an unpinned-to-unpinned MPO trunk



Figure 3: Individual fiber link view

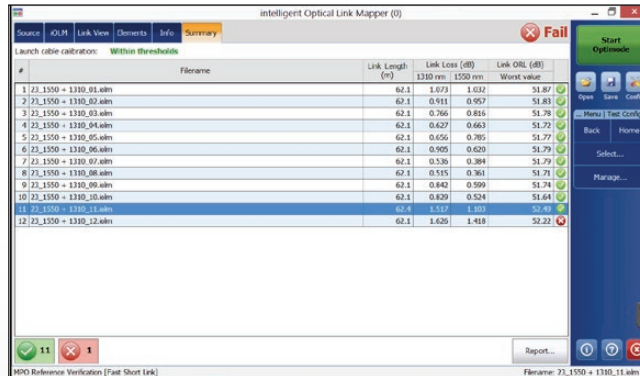


Figure 4: Summary link results

MEASURED PARAMETERS

- Link length
- Total link loss
- Link ORL
- Connection insertion loss
- Connection reflectance
- Pass/fail diagnostic

## iOLM AND AUTOMATED EXTERNAL SWITCH BENEFITS

- › Scan all fibers with a single push of the **Start** button
- › Intelligent wizard guides technician step-by-step through the test and calibration process
- › Go beyond insertion loss to fully characterize and locate faults, including connectors' reflectance
- › No inaccuracies related to test cord references
- › Single technician process
- › Minimum training needed thanks to iOLM ease of use
- › Versatile solution: test, certify and troubleshoot single-fiber and multifiber with same equipment set
- › Field-scalable solution: turn your iOLM-ready tester into a multifiber tester direct from the field

## iOLM TESTERS

The TK-SWITCH-MF can be operated and controlled on automated mode from any of the iOLM-ready testers<sup>a</sup> shown below:

MODELS		
 <b>FTB-1v2/FTB-1 Pro</b>	<b>FTB-720C/Gv2</b>	✓
	<b>FTB-730C/Gv2</b>	✓
	<b>FTB-735C</b>	✓
	<b>FTB-750C</b>	✓
 <b>FTB-2/FTB-2 Pro</b>	<b>FTBx-720C</b>	✓
	<b>FTBx-730C</b>	✓
	<b>FTBx-735C</b>	✓
	<b>FTBx-750C</b>	✓

**Note**

a. Works in iOLM mode: requires enabling iOLM and iPRO

## GET THE BEST OUT OF YOUR DATA POST-PROCESSING



### ONE SOFTWARE DOES IT ALL

This powerful reporting software is the perfect complement to your OTDR, and can be used to create and customize reports to fully address your needs.



## FIBER CONNECTOR INSPECTION AND CERTIFICATION—THE ESSENTIAL FIRST STEP BEFORE ANY OTDR TESTING



ConnectorMax2

Taking the time to properly inspect a fiber-optic connector using an EXFO fiber inspection probe can prevent a host of issues from arising further down the line, thus saving you time, money and trouble. Moreover, using a fully automated solution with autofocus capabilities will turn this critical inspection phase into a fast and hassle-free, one-step process.

### DID YOU KNOW THAT THE CONNECTOR OF YOUR OTDR/iOLM IS ALSO CRITICAL?

The presence of a dirty connector at an OTDR port or launch cable can negatively impact your test results, and even cause permanent damage during mating. Therefore, it is critical to regularly inspect these connectors to ensure that they are free of any contamination. Making inspection the first step of your OTDR best practices will maximize the performance of your OTDR and efficiency.

### THREE MODELS TO FIT YOUR BUDGET

FEATURES	USB WIRED		
	Basic FIP-410B	Semi-Automated FIP-420B	Fully Automated FIP-430B
Three magnification levels	✓	✓	✓
Image capture	✓	✓	✓
Five-megapixel CMOS capturing device	✓	✓	✓
Automatic fiber image-centering function	X	✓	✓
Automatic focus adjustment	X	X	✓
Onboard pass/fail analysis	X	✓	✓
Pass/fail LED indicator	X	✓	✓

For additional information, please refer to the FIP-400B USB specification sheet.

### AUTOMATIC PASS/FAIL CONNECTOR CERTIFICATION WITH CONNECTORMAX2 SOFTWARE

#### Powerful connector-endface image viewing and analysis software

- › Automatic pass/fail analysis of the connector endfaces
- › Lightning-fast results in seconds with simple one-touch operation
- › Complete test reports for future referencing
- › Stores images and results for recordkeeping

ConnectorMax2

Delivering fast pass/fail assessment of connector endfaces, EXFO's ConnectorMax2 Software is designed to save both time and money in the field. The ConnectorMax2 automated inspection application eliminates guesswork by providing clear-cut connector endface analysis.

Using ConnectorMax2 in conjunction with the FIP-400B Series of fiber inspection probes (models with onboard analysis feature), field technicians are able to analyze defects and scratches and measure their impact on connector performance. Results are then compared against preprogrammed IEC/IPC standards or user-defined criteria, leading to accurate pass/fail verdicts established right on-site.

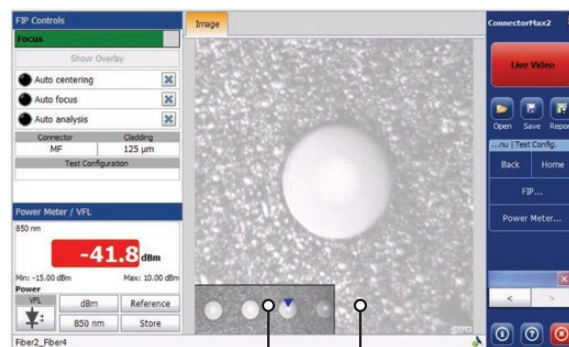
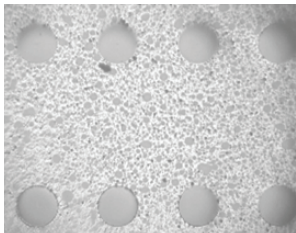
Therefore, running a pass/fail analysis helps avoid two-time, money-draining situations (i.e., undetected connector defects that require technicians to return to the site at a later date) and unnecessary replacement of connectors with slight defects so small that they do not generate a fail verdict.

Thanks to ConnectorMax2's newly redesigned interface, the unit features a unique all-in-one integrated GUI with a touchscreen providing quick access to all of the instrument's main functionalities.

ConnectorMax2 Software is included with all FIP-400B Series fiber inspection probes as the default image viewer and results saving tool. However, please note that the automated pass/fail analysis functionality is only enabled when used in conjunction with FIP-420B, FIP-425, FIP-430 and FIP-435B probe models, which offer onboard analysis features.

## SIMULTANEOUS MULTIFIBER VIEW WITH PICTURE-IN-PICTURE (PIP)

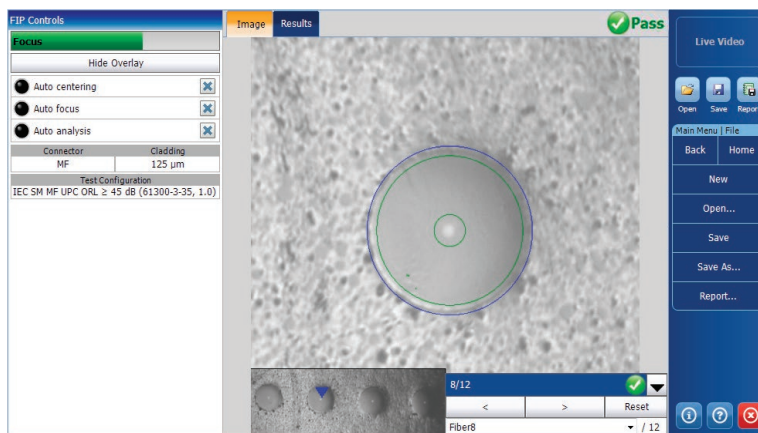
The FIP-400B's unique  $912\ \mu\text{m} \times 912\ \mu\text{m}$  field of view (FOV) greatly facilitates viewing of the multifiber push-on (MPO) connector. Plus, ConnectorMax2 includes a low-magnification PIP window that displays multiple fibers (four or eight at a time), ensuring that you never miss a fiber while scanning.



Low-magnification view with PIP  
See and track which fiber is being inspected

High-magnification view  
Analyze each fiber for contamination and defects

ConnectorMax2 also offers the smoothest MPO and MTP connector analysis process thanks to its unique PIP multifiber view, which is paired with the automated centering and focusing functions of the FIP-430/435. This leaves your hands free to control the *X* and *Y* scanning tool, enabling you to sequentially run the pass/fail analysis on each fiber of the connector in order to obtain a global status as per the standards.



## SPECIALIZE YOUR iOLM WITH MPOS OPTIMODES<sup>a</sup>

Optimodes are test configurations tailored to optimize specific use cases and go a step beyond recognized iOLM performances. For MPO and MTP testing, iOLM gives you the option of proceeding with a quick test perfectly suited for high volume (Fast Short Link MPO) or a higher resolution to resolve closer events with best-in-class event dead zone (Short Link Close Events MPO).

### Optimode: Fast Short Link MPO

Tailored to test typical data center multifiber MPO and MTP links in a high-volume context, this optimode is designed to quickly identify faulty links. It will provide Tier 2 mapping, including reflectance of each connector and worst reflectance in less than 9 seconds, or even lower, per fiber.

SPECIFICATIONS <sup>b</sup>			
	FTB/FTBx-720C	FTB/FTBx-730C/735C	FTB/FTBx-750C
Maximum link length (m) <sup>c</sup>	2500	2500	2500
Maximum link loss (dB)	3	3	3
Launch and receive cables' length (m)	30-175	30-175	30-175
Measurement time <sup>d, e</sup>	2 min 15 s	1 min 40 s	1 min
Event deadzone (m) <sup>d, f</sup>	6	6	2.5

#### Notes

- Works in iOLM mode: requires enabling iOLM and iPRO on the iOLM-ready instrument
- For more details on each individual OTDR model, refer to individual OTDR specification sheets
- Total length, including launch and receive fibers
- Typical
- 12 fibers, 1 wavelength, excluded launch and received calibration sequence
- At 1550 nm, for connector reflectance  $\leq -45$  dB

## Optimode: Short Link Close Events MPO

This optimode is optimized to resolve close connectors and provides higher resolution in situations where high reflectance is identified.

SPECIFICATIONS <sup>a</sup>			
	FTB/FTBx-720C	FTB/FTBx-730C/735C	FTB/FTBx-750C
Maximum link length (m) <sup>b</sup>	2500	2500	2500
Maximum link loss (dB)	3	3	3
Launch and receive cables' length (m)	30-175	30-175	30-175
Measurement time (min) <sup>c, d</sup>	5	5	4
Event deadzone (m) <sup>c, e</sup>	2.5	2.5	1.5

## SPECIFICATIONS

TECHNICAL SPECIFICATIONS (MPO SWITCH 1X12)	
Input port	SC/APC
Output port	MPO APC unpinned
Wavelength range (nm)	1270-1670
Insertion loss (dB) <sup>f, g</sup>	2.8
Battery <sup>h</sup>	Li-ion rechargeable
Size (H x W x D)	147 mm x 74 mm x 28 mm (5 3/4 in x 2 7/8 in x 1 1/8 in)
Weight	0.3 kg (0.66 lb)
Temperature	
Operating	-10 °C to +50 °C (14 °F to 122 °F)
Storage	-30 °C to +60 °C (22 °F to 140 °F)
Relative humidity	0 % to 75 % non-condensing

### Notes

- a. For more details on each individual OTDR model, refer to individual OTDR specifications sheets
- b. Total length, including launch and receive fibers
- c. Typical
- d. 12 fibers, 1 wavelength, excluded launch and received calibration sequence.
- e. At 1550 nm, for connector reflectance  $\leq$  -45 dB
- f. Typical
- g. Maximum insertion loss: 3.3 dB
- h. In automated mode, the switch is constantly powered via the USB link connected to the iOLM tester.  
In manual mode, the battery lifetime is over 400 MPO 12 fibers measures.

## ORDERING INFORMATION

## TK-SWITCH-MF-XX-XX

## Model

TK-SWITCH-MF = 1 x 2 Singlemode, Multifiber Switch

## MPO Links to be tested

- A = Unpinned-Unpinned MPO links (Assembly Type A)
- B = Pinned-Pinned MPO links (Assembly Type A)
- E = Unpinned-Unpinned and Pinned-Pinned MPO links (Assembly Type A)

## Test Jumper to iOLM connector

- 58 = SC/APC to FC/APC
- 88 = SC/APC to SC/APC
- 96 = SC/APC to E2000/APC
- 104 = SC/APC to LC/APC

Example: TK-SWITCH-MF-A-88

Works in iOLM mode: requires enabling iOLM and iPRO on the iOLM-ready instrument

## ACCESSORIES

SPSB-MF-12-B-30-UU	30 m soft pulse suppressor box, unpinned/unpinned APC MPO connectors, assembly type A
SPSB-MF-12-B-30-PP	30 m soft pulse suppressor box, pinned/pinned APC MPO connectors, assembly type A
SPSB-MF-12-B-30-UP	30 m soft pulse suppressor box, unpinned/pinned APC MPO connectors, assembly type A
RAC-MTP	MPO and MTP bulkhead connector
GP-2008	USB to mini USB cable
TJ-B88-XX	3 m test jumper SC/APC 9/125 µm to iOLM connector

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