

FIP-400B Fiber Inspection Scope Series

AUTOMATED WiFi AND WIRED INSPECTION TOOL WITH EMBEDDED ANALYSIS

■ Fully automated fiber inspection solution delivers both fast and consistent test results for single fiber and multifiber connectors from a single tool. Simplifies the overall process, provides accurate and consistent test results and provides pass/fail assessments quickly and easily.



COMPATIBLE WITH
EXchange
 ConnectorMax2

KEY FEATURES

- 100% automated for single fiber connectors, one step inspection process
- Screenless operation enabled by pass/fail LED indicator
- On-board connector endface analysis (IEC or custom standards)
- Feature-rich ConnectorMax2 mobile application compatible with Android™ and iOS™ devices¹
- Full reporting capabilities on mobile devices and EXFO test platforms
- All-day battery life that will never let you down¹
- MF-ready scopes compatible with single-fiber and automated multifiber tips
- Manufacturing automation using REST API available upon request

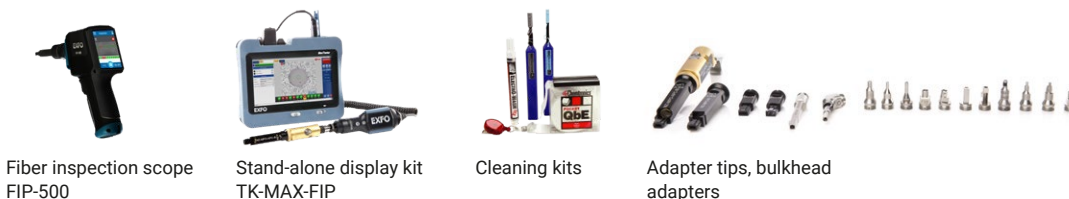
APPLICATIONS

- Central offices, exchanges and headends
- Data centers
- Wireless (e.g., 5G, FTTA, DAA, small cells)
- Fiber-to-the-home (FTTH)

SUPPORTED CONNECTORS

- Single-fiber connectors such as SC, LC, FC, ST and others
- MPO, MTP^{®2}, Q-ODC-12^{®3}, HMFOC^{®4}, OptiTip^{®5} and MT connectors
- Single- and dual-row multifiber connectors (12/24 or 16/32)

RELATED PRODUCTS AND OPTIONS



Fiber inspection scope
FIP-500

Stand-alone display kit
TK-MAX-FIP

Cleaning kits

Adapter tips, bulkhead
adapters

¹ Wireless models FIP-435B

² MTP is a registered trademark of US Conec Ltd.

³ Q-ODC is a registered trademark of Huber+Suhner

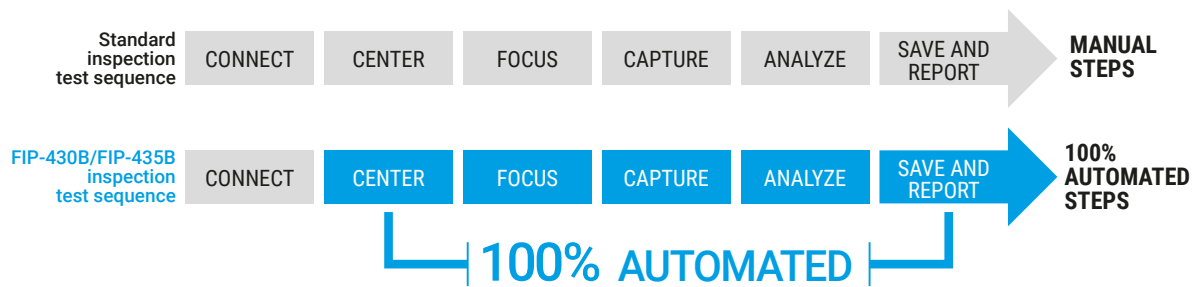
⁴ HMFOC is a registered trademark of CommScope Inc.

⁵ OptiTip is a registered trademark of Corning Cable Systems

AUTOMATING THE COMPLETE INSPECTION PROCESS

Turning fiber inspection into a one-step process

Enabled by a unique automatic focus-adjustment system, the FIP-430B and FIP-435B automate each operation in the test sequence, transforming the critical inspection step into a quick and simple one-step process accessible to technicians of any skill level.



Automated focus adjustment

Ensures that each connector image is captured at maximum quality for enhanced identification of defects.

Focus protection

Prevents image capture if focus is not adjusted properly. This ensures that no performance-affecting defects or residues are ignored in the analysis, thus preventing the reporting of false-positive results.

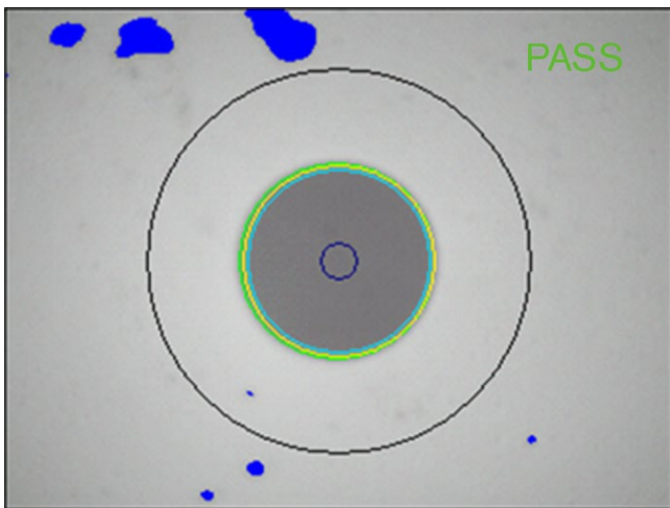


Figure 1. An out-of-focus image can hide critical defects capable of delivering a "pass" verdict.

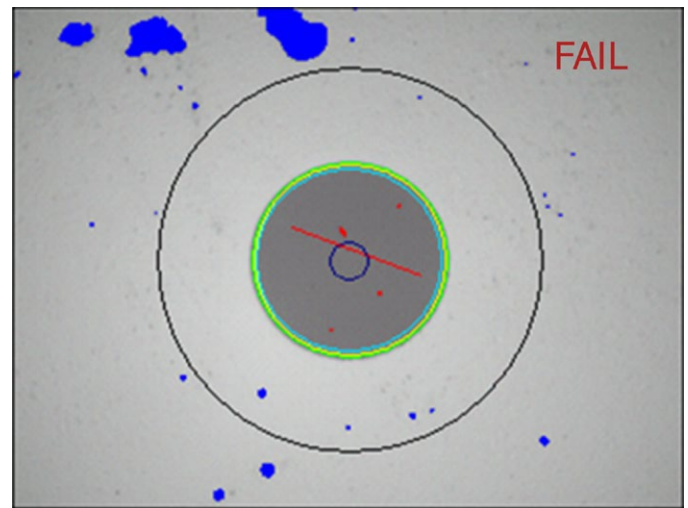


Figure 2. An optimized focus adjustment will ensure that all defects affecting performances are seen.

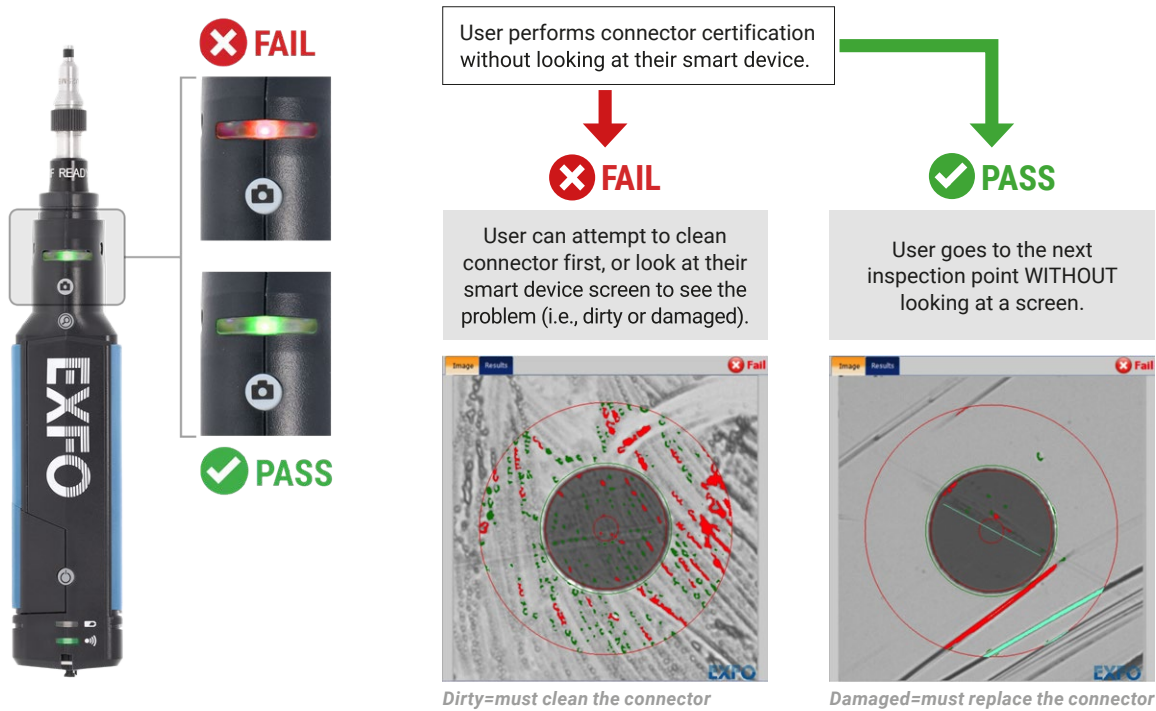
Operation modes

The FIP-435B scope is compatible with iOS and Android devices. Live video feed is streamed via WiFi without any wired connection required between the scope and the smart device. The wireless scope is also compatible with EXFO's FTB and MaxTester platforms (connected via USB cable or WiFi) as well as ConnectorMax2 software (on a Windows-based PC).

The FIP-4X0B Series scopes (FIP-410B/FIP-420B and FIP-430B) are USB-wired inspection scopes compatible with EXFO's FTB and MaxTester platforms as well as ConnectorMax2 software (on a Windows-based PC).

SCREENLESS OPERATION

Thanks to the pass/fail LED, users can perform connector certification without having to look at their smartphone or MaxTester display screen to view the results. Users can simply focus on getting ready for their next inspection while being able to use both hands in the process.



FIP-400B UNIVERSAL COMPATIBILITY

Thanks to its USB port, the FIP-400B Series is compatible with the entire FTB ecosystem, the MaxTester 700B OTDR Series, the MaxTester 940/945 OLTS, the MAX-FIP display, LTB platforms and PCs and laptops.



FTB ecosystem



MaxTester 700B OTDR Series



MaxTester 940/945 OLTS



Stand-alone MAX-FIP display



iOS and Android smartphones and tablets^a



PC and laptops



LTB platforms

a. FIP-435B Series

GET ACCURATE INSPECTION RESULTS

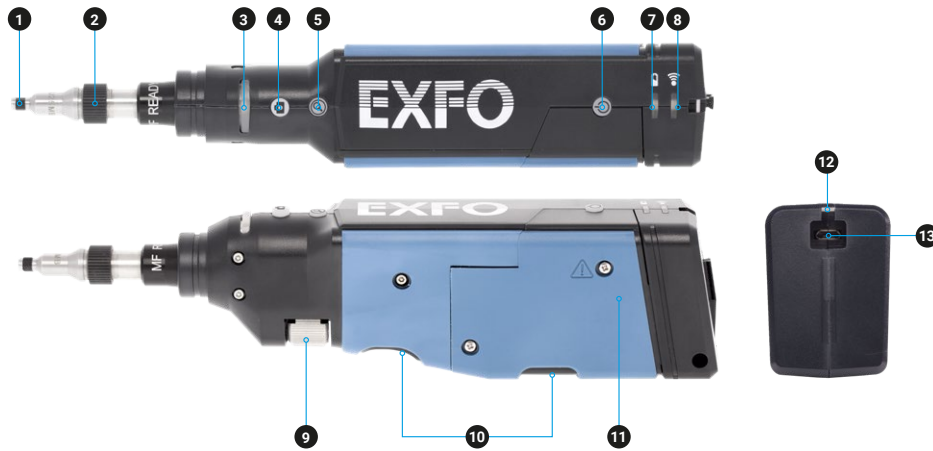
The autofocus feature in the FIP-430B and FIP-435B not only greatly facilitates inspection, but also enables optimized focus adjustment to ensure detection of all defects capable of affecting connector performance.

The system self-adjusts the image centering to ensure that all inspection zones are visible, and then automatically adjusts the focus to achieve the best optical resolution. Next, the IEC (or custom) standard is applied to deliver accurate certification results in a snap. Fussing with image focusing, centering and inaccurate analysis results are now things of the past.

FIP-400B FIBER INSPECTION SCOPE SERIES

- | | | |
|---|--------------------------|------------------------------------|
| 1 Interchangeable adapter tip (FIPT-400-XX) | 6 Power button | 11 Battery compartment |
| 2 Retaining nut | 7 Battery status LED | 12 Wrist-strap eyelet |
| 3 Activity and pass/fail status LED | 8 WiFi status LED | 13 Micro-USB port (power/recharge) |
| 4 Image capture control | 9 Focus adjustment wheel | 14 USB interface |
| 5 Magnification control | 10 Finger grip | |

Wireless scope: FIP-435B



USB wired scopes: FIP-4X0B Series



DISCOVER THE INDUSTRY'S FIRST FULLY AUTOMATED FIBER INSPECTION SCOPES

Housing a unique automatic focus adjustment system, EXFO's fiber inspection scope series automates each operation in the sequence of inspecting a connector endface. The result: **fiber inspection is now a quick, one-step process that can be performed by technicians of all skill levels.**

Automated models

The FIP-500: wireless, autonomous and fully automated scope featuring the fastest inspection in the industry for both multifiber and single-fiber connectors. All-day testing without the need to recharge batteries or offload results.

The FIP-435B: connected to EXFO platforms or your smart device, this fully automated wireless scope enables connector certification in one step. View and store results on your EXFO platform or smart device.

The FIP-430B: fully automated inspection scope featuring USB wired connectivity to PC and EXFO platforms.

Semi-automated and manual models

The FIP-420B: semi-automated scope featuring a manual focus adjustment. USB wired connectivity to PC and EXFO platforms.

The FIP-410B: basic inspection features for manual inspection. USB wired connectivity to PC and EXFO platforms.



FEATURES	USB WIRED			WIRELESS	AUTONOMOUS
	FIP-410B	FIP-420B	FIP-430B	FIP-435B	FIP-500
Image capture	•	•	•	•	•
Five-megapixel CMOS capturing device	•	•	•	•	•
Automatic fiber image-centering function and focus adjustment		•	•	•	•
Automatic fiber image-focus adjustment			•	•	•
Onboard pass/fail analysis		•	•	•	•
Pass/fail LED indicator		•	•	•	•
USB connectivity to an EXFO platform or PC	•	•	•	•	
Wireless connectivity to an EXFO platform or PC				•	
Wireless connectivity to a smartphone				•	•
Semi-automated multifiber / MPO inspection	•	•	•	•	
Fully automated multifiber / MPO inspection					•
Onboard touch screen and data storage					•
SmarTips with automated thresholds and quick-connect mechanism					•

For more information, visit www.EXFO.com/fiberinspection.

SEMI-AUTOMATED MULTIFIBER INSPECTION

Users can quickly and easily inspect all multiple- and single-row MPO connectors on densely populated panels without missing any fibers or dealing with the hassle of manipulating one or multiple scanning knobs—and do it right the first time.

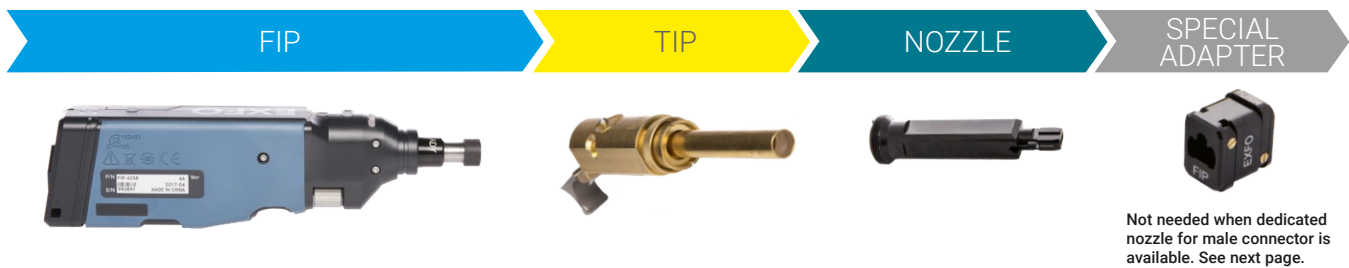
The FIPT-400-MF uses a trigger to efficiently scan all fibers. These features make it possible to inspect densely populated panels without having to disturb adjacent fibers that may be carrying information. Users can easily operate the FIPT-400-MF with just one hand—it provides automated and fumble-free fiber inspection.

COMPATIBLE WITH VARIOUS SINGLE-FIBER AND MULTIFIBER CONNECTORS

EXFO offers multiple patchcord tips and bulkhead adapters for both single fiber and multifiber applications.

These tips and adapters are built to fit a wide range of fiber connector types and designs that are currently used in the field including FC, SC, LC, ST for UPC and APC or FTTH/FTTA connectors. The MPO tip is compatible with single- and dual-row multifiber connectors regardless of the connector type.

For further information, please refer to our tip adapter guide.



Thanks to its removable nozzle, the solution can easily and quickly be adapted to various multifiber connector models:

- APC or UPC polishing type
- 12-fiber-row ferrule type for 12-24 fiber connectors
- 16-fiber-row ferrule type for 16-32 fiber connectors

Applications also include Q-ODC-12[®], OptiTip[®] and HMFOC[®] connectors.

Simply swap tips for an easy transition from single to multifiber using the same MF-ready inspection scope.



Watch it in action: [MPOvideo](#)

AUTOMATIC PASS/FAIL CONNECTOR CERTIFICATION

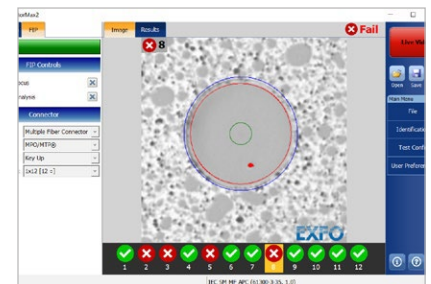
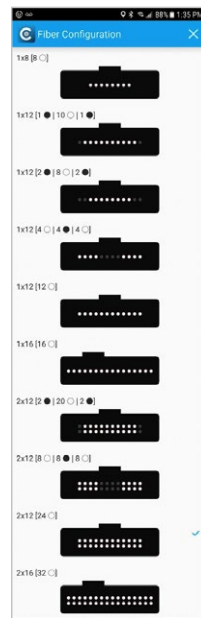
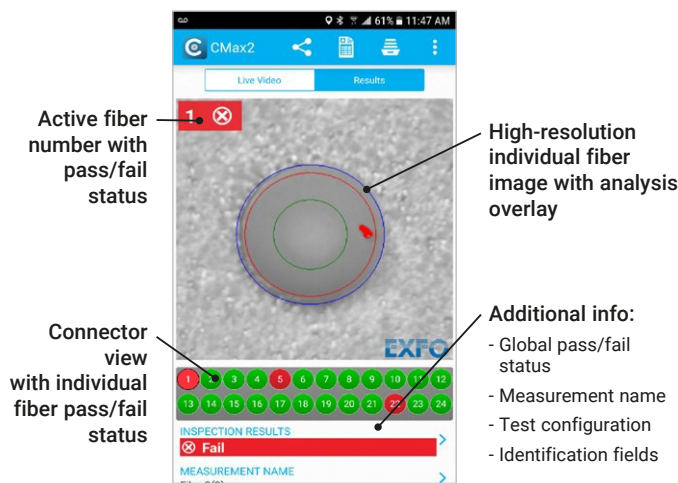
Thanks to its advanced onboard software algorithm, ConnectorMax2 performs automated pass/fail analysis within seconds and ensures that no fibers are skipped.

- No need to follow fibers and count them manually: the interface numbers each fiber automatically and assesses the pass/fail status of the entire connector as well as each individual fiber.

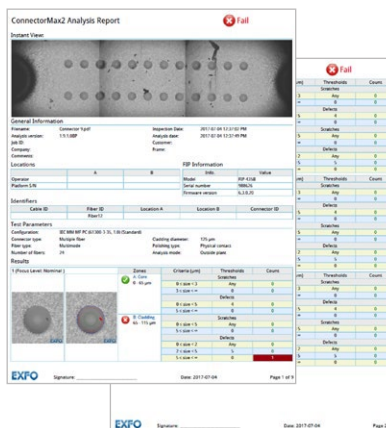
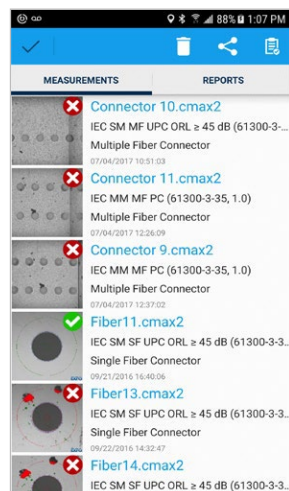
EXFO's interface enables a quick assessment of the entire multifiber connector in a single view.

- Access single fiber as well as the entire connector pass/fail status all at once by means of a simple interface without encountering fail status that could be caused by unused or missing fibers.
- Quickly navigate through individual high-resolution fiber images on demand by selecting fibers in the connector view or simply by swiping over the fiber image.

ConnectorMax supports various fiber configurations within multifiber connectors. This feature speeds up the inspection and analysis process by skipping unused fiber locations.



ConnectorMax includes complete documentation capabilities, accessible in the palm of your hand from your mobile device. You can archive your results and easily create and share reports within seconds.



MAX-FIP TEST UNIT

The MAX-FIP features the largest screen in the industry, providing the highest magnification level for precise viewing of even the smallest defects on fiber endfaces. Its bright 7-inch touchscreen ensures fast and easy operation.

The MAX-FIP kit can also be equipped with a power meter and visual fault locator (plug-and-play options).

MAX-FIP KEY FEATURES

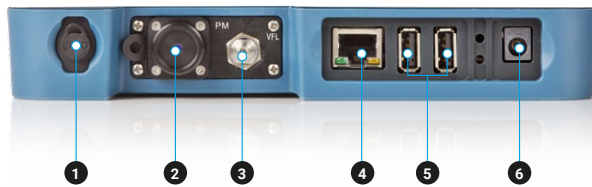
- Bright, 7-inch touchscreen display
- Rugged, compact tablet-inspired form factor
- Power meter and visual fault locator (VFL) (plug-and-play options)
- Full-day rechargeable Li-ion battery
- WiFi and Bluetooth connectivity (plug-and-play options)



The easy-to-install power meter and VFL pieces attach to the MAX-FIP display using four screws.

PACKAGED FOR EFFICIENCY

- | | |
|-------------------------------|---|
| 1 Stylus | 6 AC adapter |
| 2 Power meter | 7 Home/switch application and screen capture (hold) |
| 3 Visual fault location | 8 Power on/off/standby |
| 4 10/100 Mbit/s Ethernet port | 9 Battery LED status |
| 5 Two USB 2.0 ports | |



EXTENSIVE STORAGE CAPABILITY

The MAX-FIP standard 2 GB internal memory offers extensive storage of up to 4000 fiber certification results, and is expandable using USB memory sticks, optional WiFi and Bluetooth capability for cloud-based storage and wireless FIP-435B connectivity.



BEST-IN-CLASS AUTONOMY

Take full advantage of the MAX-FIP's amazing eight-hour battery operation that never lets you down, and enables you to complete full-day jobs without having to recharge the unit. Also, save money by avoiding high battery replacement costs associated with other handheld inspection kits on the market that operate on standard alkaline batteries.



TURN YOUR FIP-430B INTO A BENCHTOP SOLUTION WITH THE DESKTOP SUPPORT STAND (OPTIONAL)

GP-2182 ^a

The FIP-430B can be quickly transformed into a benchtop inspection solution by mounting the scope on a desktop support stand. This leaves your hands free for repetitive manipulations and inspection of fiber jumpers and connectors. This makes the FIP-430B scope a handy solution for the production floor for inspection of both patch cords and bulkheads.

- Stable hold and rugged design
- Adjustable angle up to 7 different positions
- Allows male and female connector inspection using the same tool
- Quick release handle
- Manufacturing automation using REST API available upon request



Inspecting and analyzing fiber connector endfaces has never been easier than with the FIP-430B digital fiber inspection scope.

BRING IT EVERYWHERE WITH THE BELT HOLSTER (OPTIONAL)

GP-2224 ^a

The perfect accessory to carry:

- 1 x FIP-435B unit
- 2 x IBC cleaner tools
- A selection of fiber inspection tips
- Smartphone
- FLS-140 VFL (or pen)



HANDS-FREE UTILITY BAG (OPTIONAL)

GP-2177 ^a

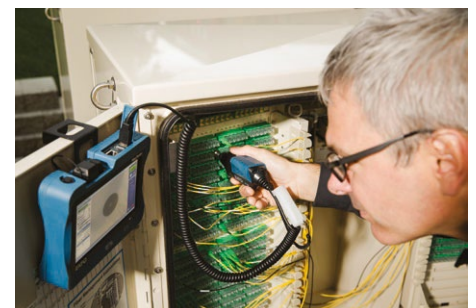
To help optimize your test process and get maximum performance from your MAX-FIP solution, EXFO offers a hands-free utility bag that enables secure, hands-free operation of the unit when you work with fibers, connectors and inspection tools.



MAX-FIP HOOK SUPPORT (OPTIONAL)

GP-2176 ^a

The MAX-FIP hook support is an optional accessory that fits any type of fiber cabinet door perfectly, enabling hands-free operation for easier and faster fiber manipulation during the connector certification test process.



Using the optional GP-2176 hook for the MAX-FIP.

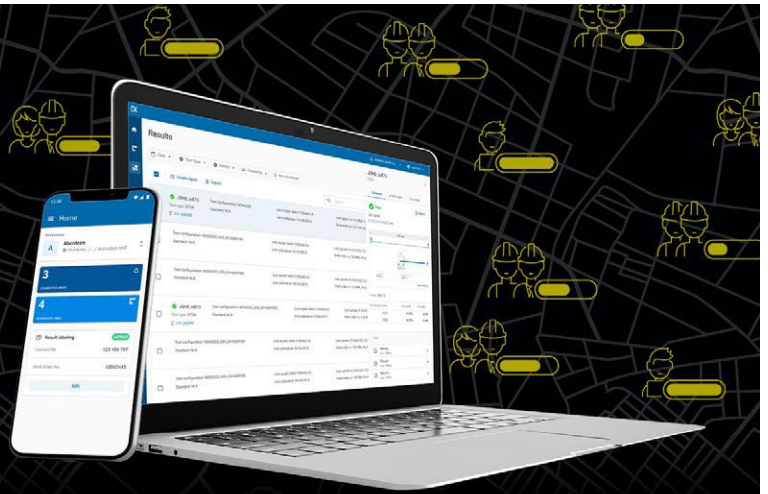
a. Accessories not included.



**SHARE TEST RESULTS.
BOOST COMPLIANCE.
UNLOCK INSIGHTS.**

Cloud-hosted solution for sharing test results and ensuring compliance.

Paired with EXFO's leading test instruments, EXFO Exchange drives an entire ecosystem, while integrating seamlessly with existing operation processes.



KEY BENEFITS



Automate test results management



Boost compliance and efficiency



Improve collaboration and visibility



Access comprehensive reporting



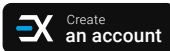
Unlock insights to see what matters

SIMPLE SETUP IN THREE STEPS

1

Create your free EXFO Exchange account

Begin your journey by creating an EXFO Exchange account. Setting up your account is quick and easy.



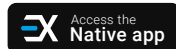
2

Install the mobile app

Download the EXFO Exchange app to allow test data from compatible EXFO devices to be uploaded securely to the cloud (free of charge).



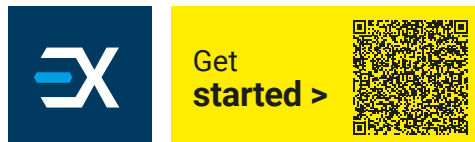
For MaxTester and FTB users, install the native app.



3

Save time and boost efficiency

Once your account created—and the mobile app installed and paired with compatible EXFO devices—all test results will be sent to the cloud. On the web app, you will see field test results from all invited testers.



FIP-400B SPECIFICATIONS

WiFi FIBER INSPECTION SCOPE SPECIFICATIONS (FIP-435B) ^b	
Size (H x W x D)	55 mm x 39 mm x 207 mm (2 ³ / ₁₆ in x 1 ¹ / ₂ in x 8 ¹ / ₈ in) ^c
Weight	0.3 kg (0.66 lb)
Resolution	0.55 μm
Camera sensor	Five-megapixel CMOS
Visual detection capability ^h	<1 μm
Field of view ^h	304 μm x 304 μm (high magnification) 608 μm x 608 μm (mid magnification) 912 μm x 912 μm (low magnification)
Light source	Blue LED
Lighting technique	Coaxial
Capture button	Available on all models
Magnification button	Available on all models
Digital magnification	Three levels
Connector	Micro USB
Connectivity	WiFi 802.11g
Frequency band	2.4 GHz
Smart device OS compatibility ^d	Android 4.4 and above, iOS 9 and above
Power	1 x removable battery
Autonomy ^e	≥8 hours
Recharge time ^f	≤ 4 h
Distance range ^g	2.5 m (8.2 ft)

USB FIBER INSPECTION SCOPE SPECIFICATIONS (FIP-4X0B) ^b	
Size (H x W x D)	47 mm x 42 mm x 162 mm (1 ⁷ / ₈ in x 6 ¹ / ₈ in x 2 in)
Weight	0.3 kg (0.66 lb)
Resolution	0.55 μm
Camera sensor	Five-megapixel CMOS
Visual detection capability	<1 μm
Field of view	304 μm x 304 μm (high magnification) 608 μm x 608 μm (mid magnification) 912 μm x 912 μm (low magnification)
Light source	Blue LED
Lighting technique	Coaxial
Capture button	Available on all models
Magnification button	Available on all models
Digital magnification	Three levels
Connector	Minimum USB 2.0

a. -20 °C to 60 °C (-4 °F to 140 °F) with the battery pack.

b. Typical.

c. Measurement excluding tip and including strain relief.

d. Software is qualified with Google Nexus, Apple iPhone and Apple iPad devices. Other models are not guaranteed to be 100% compatible.

e. One (1) test per minute. The scope remains in live mode for 20 seconds during each test.

f. Using USB AC adapter. When scope is in use it may take more time to fully recharge.

g. WiFi interference and physical obstacles may affect distance range.

h. Single fiber connector mode.

GENERAL SPECIFICATIONS

Temperature operating	Unit powered by batteries: -10 °C to °C 40 °C (14 °F to 104 °F) Unit connected to USB adapter: 0 °C to 40 °C (32 °F to 104 °F)
Temperature storage	Unit without batteries: -40 °C to 70 °C (-40 °F to 158 °F) Unit with batteries: -20 °C to 60 °C (-4 °F to 140 °F)
Relative humidity	Unit: 0% to 95% non-condensing USB Adapter: 5% to 95% non-condensing for storage. 8% to 90% for operating temperature



GP-2175



FIPT-BOX



GP-3108



GP-2225



GP-2226



GP-2227

INCLUDED ACCESSORIES

FIP-410B, FIP-420B, FIP-430B (USB wired scope)		FIP-435B (wireless scope)	
Video inspection scope, bulkhead and patchcord tips		Video inspection scope, bulkhead and patchcord tips	
ConnectorMax 2 software		ConnectorMax 2 software	
FIPT-BOX	Compartmentalized plastic case for tips	FIPT-BOX	Compartmentalized plastic case for tips
GP-3108	Soft pouch	GP-3108	Soft pouch
GP-2175	Protective cap and cord assembly	GP-2175	Protective cap and cord assembly
		GP-2225	USB to Micro USB cable
		GP-2226	Rechargeable battery (quantity: one)
		GP-2227	USB AC adapter

MAX-FIP SPECIFICATIONS

GENERAL SPECIFICATIONS

Size (H x W x D)	200 mm x 155 mm x 50 mm (7 7/8 in x 6 1/8 in x 2 in)
Weight (with battery)	1 kg (2.2 lb)
Temperature	Operating: -10 °C to 50 °C (14 °F to 122 °F) Storage: -40 °C to 70 °C (-40 °F to 158 °F) ^a
Relative humidity	0 % to 95 % non-condensing



GP-302



GP-1008



GP-2001



GP-2016



GP-2144



GP-2176



GP-2177



GP-2178



GP-2205



GP-10-072



GP-10-061

MAX-FIP OPTIONAL ACCESSORIES

GP-302	USB mouse	GP-2177	Hands-free bag for MAX-FIP
GP-1008	VFL adapter (2.5 mm to 1.25 mm)	GP-2178	Right-angle USB adapter cable for MAX-FIP (USB male to USB female)
GP-2001	USB keyboard	GP-2205	DC vehicle battery-charging adapter (12 V)
GP-2016	10-foot RJ45 LAN cable	GP-10-072	Semi-rigid carrying case
GP-2144	USB 16G microdrive	GP-10-061	Soft carrying case
GP-2176	Hook for MAX-FIP		

BUILT-IN POWER METER SPECIFICATIONS (GeX) (optional) ^a

Calibrated wavelengths (nm)	850, 1300, 1310, 1490, 1550, 1625, 1650
Power range (dBm) ^b	27 to -50
Uncertainty (%) ^c	±5 % ± 10 nW
Display resolution (dB)	0.01 = max to -40 dBm 0.1 = -40 dBm to -50 dBm
Automatic offset nulling range ^{b, d}	Max power to -34 dBm
Tone detection (Hz)	270/330/1000/2000

VISUAL FAULT LOCATOR (VFL) (optional)

Laser, 650 nm ± 10 nm
CW/Modulate 1 Hz
Typical P _{out} in 62.5/125 μm: > -1.5 dBm (0.7 mW)
Laser safety: Class 2

LASER SAFETY (for optional VFL on MAX-FIP)

ConnectorMax 2 SOFTWARE

The following minimum requirements must be met in order to install and run ConnectorMax 2 on a computer:

PC OPERATING SYSTEM COMPATIBILITY AND REQUIREMENTS

System requirements	Minimum requirements Windows 7 (32 bit and 64 bit)	Minimum requirements Windows 8 (32 bit and 64 bit)	Minimum requirements Windows 10 (32 bit and 64 bit)
Processor	Pentium (1.6 GHz or higher recommended)	Pentium (1.6 GHz or higher recommended)	Pentium (2 GHz or faster)
RAM	512 MB (2 GB recommended)	1 GB for 32; 2 GB for 64 (2 GB or more recommended)	2 GB for 32; 4 GB for 64
Disk space	40 MB	40 MB	40 MB
Other	Latest version of .NET Framework 3.5 DirectX 9.0; USB 2.0, minimum	Desktop applications supported	Desktop applications supported

At 23 °C ± 1 °C, 1550 nm and FC connector. Battery-operated after 20-minute warm-up.

a. Typical.

b. At calibration conditions.

c. For ±0.05 dB, from 10 °C to 30 °C.