

# AXS-110 All-Fiber OTDR

LAN/WAN INSTALLATION AND TROUBLESHOOTING UNIT



SPEC SHEET

A powerful handheld OTDR unit with integrated PM/VFL for LAN/WAN and data centers, which can be configured as a quad unit with both singlemode and multimode wavelengths.

## KEY FEATURES

Event dead zone: 0.8 m

Wavelengths: 850/1300/1310/1550 nm

Dynamic range: up to 32 dB

Battery autonomy: 8 hours

EF-Ready : compatible with SPSB-EF external launch conditioner to remove multimode uncertainty

## APPLICATIONS

Data centers

Singlemode and multimode fiber networks

LAN/WAN testing

Private network testing

## COMPLEMENTARY PRODUCTS AND OPTIONS



Fiber Inspector Probe  
FIP-400



Data Post-Processing  
Software  
FastReporter



Soft Pulse Suppressor Bag  
SPSB



Telecom Test and  
Service Assurance

**TROUBLESHOOTING OF HIGH-SPEED MULTIMODE NETWORKS WITH ENCIRCLED FLUX (PRELIMINARY)**



Whether it's for an expanding enterprise-class business or a large-volume data center, new high-speed data networks built with multimode fibers are running under tighter tolerances than ever before. In case of failure, intelligent and accurate test tools are needed to quickly find and fix the fault.

Multimode fibers are the trickiest links to test because the test results are highly dependent on each device's output conditions. Troubleshooting with a different unit than the construction unit may mislead the technician or result in the inability to find the fault, creating longer network downtimes.

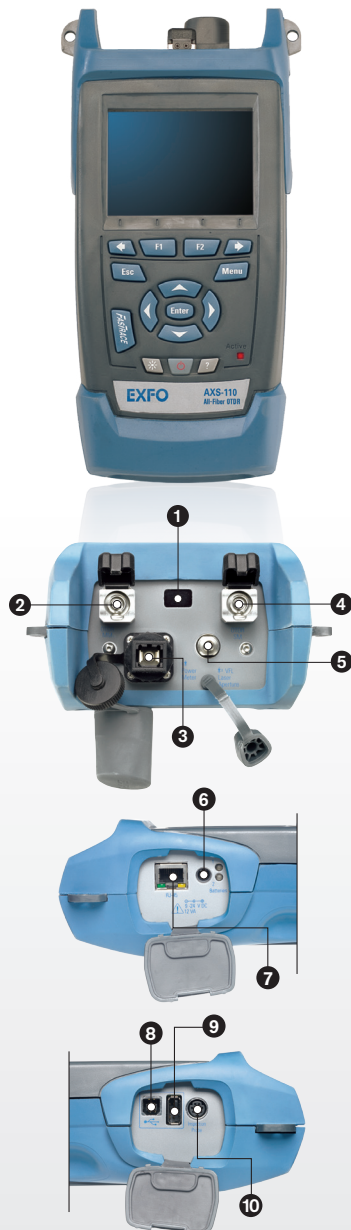
For multimode fibers, EXFO recommends using an external launch mode conditioner that is encircled flux (EF) compliant. The encircled flux standard (as recommended in TIA-568 via TIA-526-14-B and IEC 61280-4-1 Ed. 2.0) is a way of controlling the source launch conditions so that Tier-2 troubleshooting can be performed with maximum accuracy and consistency.

The use of an external EF-compliant device\* such as the SPSB-EF-C30 will ensure a fast and easy way to fix faulty networks.

\*For more detailed information about encircled flux compliance, please read the encircled flux test solution specification sheet.



SPSB-EF-C30



TECHNICAL SPECIFICATIONS <sup>a</sup>	
Wavelengths (nm)	850/1300/1310/1550
Dynamic range <sup>b</sup> (dB)	24/25/32/30
Pulse width (ns)	Multimode: 5, 10, 30, 100, 275, 1000 Singlemode: 5, 10, 30, 100, 275, 1000, 2500, 10 000
Event dead zone <sup>c</sup> (m)	0.8
Attenuation dead zone <sup>c</sup> (m)	3.5/4.5/4/4.5
Linearity (dB/dB)	±0.03
Loss threshold (dB)	0.01
Loss resolution (dB)	0.01
Sampling resolution (m)	Multimode: 0.08 to 2.5; singlemode: 0.08 to 5.0
Sampling points	Up to 64 000
Distance uncertainty <sup>d</sup> (m)	±(0.75 + 0.0025 % x distance + sampling resolution)
Distance range (km)	Multimode: 0.1 to 40; singlemode: 0.65 to 260
Typical real-time refresh (Hz)	4
Memory capacity	500 traces
Measurement time	User-defined
Stable source output power <sup>e</sup> (dBm)	Multimode: -3; singlemode: -2.5
Visual fault locator (optional)	Laser, 650 nm ± 10 nm CW typical P <sub>out</sub> = 1.4 mW open beam

- 1 Infrared Printer Interface
- 2 OTDR Port | Multimode testing.
- 3 Power Meter Detector Port | Compatible with almost every connector on the market. Manually and efficiently perform power and loss testing. Accurately measure power up to 26 dBm.
- 4 OTDR Port | Singlemode testing.
- 5 VFL Port | Built-in 650 nm visual fault location on a universal 2.5 mm connector.
- 6 AC Adapter
- 7 RJ-45 | TCP/IP testing.
- 8 USB B | Data transfer using ActiveSync or remote control.
- 9 USB A | Data transfer using memory stick.
- 10 Fiber Inspection Probe Port

OPTIONAL POWER METER <sup>f</sup>	
Calibrated wavelengths (nm)	850, 1270, 1290, 1310, 1330, 1350, 1370, 1390, 1410, 1430, 1450, 1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610, 1625
Power range (dBm)	26 to -64 (GeX 2 mm)
Uncertainty	±5 % ± 0.4 nW (up to 5 dBm)
Display resolution (dB)	0.01 (-54 dBm to P <sub>max</sub> ) 0.1 (-54 dBm to -64 dBm) 1 (-64 dBm to min)
Automatic offset nulling range <sup>g</sup>	Maximum power to -38 dBm
Tone detection (Hz)	270/1000/2000

GENERAL SPECIFICATIONS	
Size (H x W x D)	250 mm x 125 mm x 75 mm (9 7/8 in x 4 15/16 in x 3 in)
Weight	1 kg (2.2 lb)
Temperature	operating -18 °C to 50 °C (14 °F to 122 °F) storage -40 °C to 70 °C (-40 °F to 158 °F)
Relative humidity	0 % to 95 % non-condensing
Power	Li-ion batteries; 8 hours of continuous operation as per Bellcore TR-NWT-001138
Warranty (years)	1

### LASER SAFETY



- Notes**
- All specifications valid at 23 °C ± 2 °C (73.4 °F ± 3.6 °F) with an FC/PC connector, unless otherwise specified.
  - Typical dynamic range with longest pulse and three-minute averaging at SNR = 1. Multimode dynamic range is specified for 62.5 μm fiber; a 3 dB reduction is seen when testing 50 μm fiber. AXS-110-12CD-23B is 21/22/37/35. Singlemode dynamic range is unaffected by 50 μm fiber (different port).
  - Typical dead zone for multimode reflectance below -35 dB and singlemode reflectance below -45 dB, using shortest pulse.
  - Does not include uncertainty due to fiber index.
  - Typical output power is given at 1300 nm for multimode output and 1550 nm for singlemode output.
  - At 23 °C ± 1 °C, 1550 nm and with FC connector. With OTDR in idle mode, battery operated.
  - For ±0.05 dB, from 18 °C to 28 °C.

## ORDERING INFORMATION

**AXS-110-XX-XX-XX-XX-XX-XX-XX**

<p><b>Model</b> ■</p> <p>AXS-110-12CD = Dual-wavelength MM OTDR 850/1300 nm (50/125 μm, 62.5/125 μm)</p> <p>AXS-110-12CD-23B = Four-wavelength MM/SM all-fiber OTDR 850/1300 nm (50/125 μm, 62.5/125 μm) and 1310/1550 nm (9/125 μm)</p> <p><b>Connector</b> <sup>a</sup> ■</p> <p>EA-EUI-28 = APC/DIN 47256 <sup>b</sup></p> <p>EA-EUI-89 = APC/FC, narrow key <sup>b</sup></p> <p>EA-EUI-91 = APC/SC <sup>b</sup></p> <p>EA-EUI-95 = APC/E-2000 <sup>b</sup></p> <p>EA-EUI-98 = APC/LC <sup>b</sup></p> <p>EI-EUI-28 = UPC/DIN 47256</p> <p>EI-EUI-76 = UPC/HMS-10/AG</p> <p>EI-EUI-89 = UPC/FC, narrow key</p> <p>EI-EUI-90 = UPC/ST</p> <p>EI-EUI-91 = UPC/SC</p> <p>EI-EUI-95 = UPC/E-2000</p> <p>EI-EUI-98 = UPC/LC <sup>c</sup></p> <p><b>Power meter</b> ■</p> <p>00 = Without power meter</p> <p>PM2X = With GeX power meter</p>	<p><b>Software summary kit</b></p> <p>SK1 = SmartKit including macrobending detection, pass/fail and fault finder</p> <p>SK2 = IP testing</p> <p>SK3 = Fiber inspection probe software <sup>d</sup></p> <p><b>Probe option</b></p> <p>00 = Without probe</p> <p>FP4S = Inspection probe (400x)</p> <p>FP4D = Inspection probe (200x/400x)</p> <p><b>VFL</b></p> <p>00 = Without visual fault locator</p> <p>VFL = With visual fault locator</p> <p><b>Connector adapter</b></p> <p>FOA-12 = Biconic</p> <p>FOA-14 = D4, D4/PC</p> <p>FOA-16 = SMA/906</p> <p>FOA-22 = FC, FC (PC/SPC/UPC/APC), NEC-D3</p> <p>FOA-28 = DIN 47256 (LSA): DIN 47256 (PC/APC)</p> <p>FOA-32 = ST, ST (PC/SPC/UPC)</p> <p>FOA-54 = SC (PC/SPC/UPC/APC)</p> <p>FOA-78 = Radiall EC</p> <p>FOA-96B = E-2000/APC</p> <p>FOA-98 = LC</p> <p>FOA-99 = MU</p>
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Example: AXS-110-12CD-23B-EA-EUI-89-EI-EUI-95-PM2X-FOA-22-VFL-FP4S-SK1-SK2-SK3

- Notes**
- Refer to the example. First select the singlemode connector, and then the multimode connector or the live port connector.
  - Singlemode only.
  - Multimode only.
  - Mandatory with FP4S or FP4D.

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