



FX80 Series

OPM/OLS/OLTS/ORL/Talkset



The FX80 family of optical test sets are a new generation of lightweight, handheld and rugged devices for installing and maintaining point-to-point or point-to-multipoint fiber networks. A large, high contrast backlit LCD display simplifies setup and viewing of results in any work environment.

Key Features

Platform

- High contrast LCD - visible outdoors and backlight for indoor or low light conditions
- Handheld, lightweight rugged design
- Protective rubber boot with tilt bail stand
- Splash and dust resistant design
- Non-volatile storage for saved test results
- Up to 1920 single wavelength records
- Up to 960 tri-wavelength PON records
- Date/Time Stamp of test results
- Programmable thresholds with Pass/Fail
- USB (wired) or optional Bluetooth (wireless) interface for test result transfer
- Rechargeable Li Polymer battery pack
- Micro-USB, 5 Volt DC charger

Software support

- LT-Sync PC software for offloading test results and basic pdf report generation
- Fiberizer Desktop Plus and Cloud versions for transfer of saved results from PC for advanced post processing
- Fiberizer Mobile for USB tethering applications

Key Test Functions

Optical Power Meter (OPM)

- Wavelength Range 800 to 1650 nm
- Wide dynamic range InGaAs detector
- WaveID auto wavelength recognition (when paired with compatible VeEX OLS)
- Universal connector adapters

Optical Light Source (OLS)

- Single, Dual, Tri and Quad wavelength options
- Multimode - 850, 1300,
- Singlemode - 1310, 1490, 1550, and 1625nm
- Quad CWDM per ITU-T G.694.2 grid
- Tunable DWDM per ITU-T G.694.1 grid
- Modes: CW or Modulated (270/1000/2000 Hz)

Visual Fault Locator (VFL)

- 650 nm laser with 1 mW output
- Universal 2.5 mm ferrule

Optical Talk Set (OTS)

- Full duplex, digital communication over single fiber under test
- 2.5 mm headset with volume control

A New Generation of Handheld Optical Test Sets

The FX80 product family offer high performance test capability at an affordable price point. A wide range of different test sets have been carefully developed to address your exact test needs, whether it be a basic Optical Power Meter to an advanced Optical Loss Test set or Tunable DWDM laser source. Every device is equipped with a large 3.25-inch (82 mm) TFT LCD display simplifying setup and allowing viewing of measurements in almost any test environment. Saved results can be downloaded directly to a PC via USB cable for basic report generation or transferred to Fiberizer Desktop Plus or Cloud applications for advanced archiving and processing.

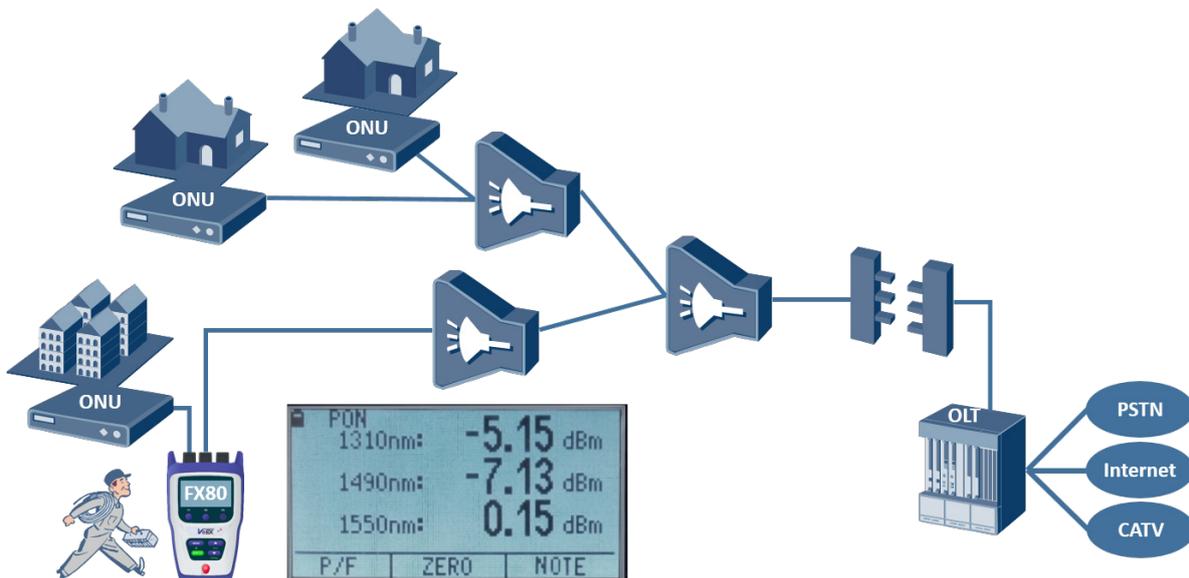
FX80 Product Family							
Model	FX80	FX82	FX83	FX84	FX85	FX86	FX87
Test Application	GPON OPM	OPM	OLS	Uni-directional OLTS	Bi-directional OLTS/ORL	CWDM OLS	DWDM TLS
Fiber Type	SM	MM/SM	MM/SM	MM/SM	MM/SM	SM	SM
Broadband Power Meter	○	●	--	●	●	--	○
GPON up/down	Pass-through	--	--	--	--	--	--
Light Source	--	--	Up to 4 fixed λ	Up to 4 fixed λ	Up to 4 fixed λ	4 fixed λ per G.694.2	C-band tunable in 50 GHz steps per G.694.1
VFL	○	○	○	○	○	--	--
ORL	--	--	--	--	SM	--	--
Talk Set	--	--	--	--	○	--	--
Bluetooth	○	○	--	○	○	--	--
VeriPHY™	--	--	--	--	○ Remote unit	--	--

○ Optional ● Included -- Not supported

FX80 GPON Power Meter

The FX80 FTTx/PON power meter is used to verify, activate and troubleshoot B-PON, E-PON and G-PON networks. The wavelength selective through mode enables simultaneous, non-intrusive measurement of 1490nm downstream and 1310nm burst upstream signals, including optional 1550nm. The unit can also be configured with optional broadband optical power meter or optional visual fault locator.

The PON meter can be connected at the OLT, FDH or ONT/ONU or any other access point available in the FTTx/PON network. The technician can measure signal levels precisely or just apply the Pass/Fail test mode which accelerates ODN span testing, new service activation or scheduled maintenance tasks.



FX82 Optical Power Meter (OPM)

The FX82 broadband OPM features a large 1mm InGaAs detector ensuring superb measurement accuracy over a wide wavelength and dynamic range. The detector's flat spectral response across the 1500-1600nm window is particularly suited for DWDM measurements. The optical power meter is factory calibrated at all legacy wavelengths and all CWDM wavelengths can be added as an option.

The unit measures continuous wave signal levels and detects 270Hz, 1KHz and 2KHz modulated signals used for fiber identification. When paired with a VeEX optical light source in CW mode supporting WaveID, the unit automatically recognizes the incoming wavelength and applies the correct calibration factor accordingly. Interchangeable adapters support a wide range of industry connector types.



FX83 Optical Light Source (OLS)

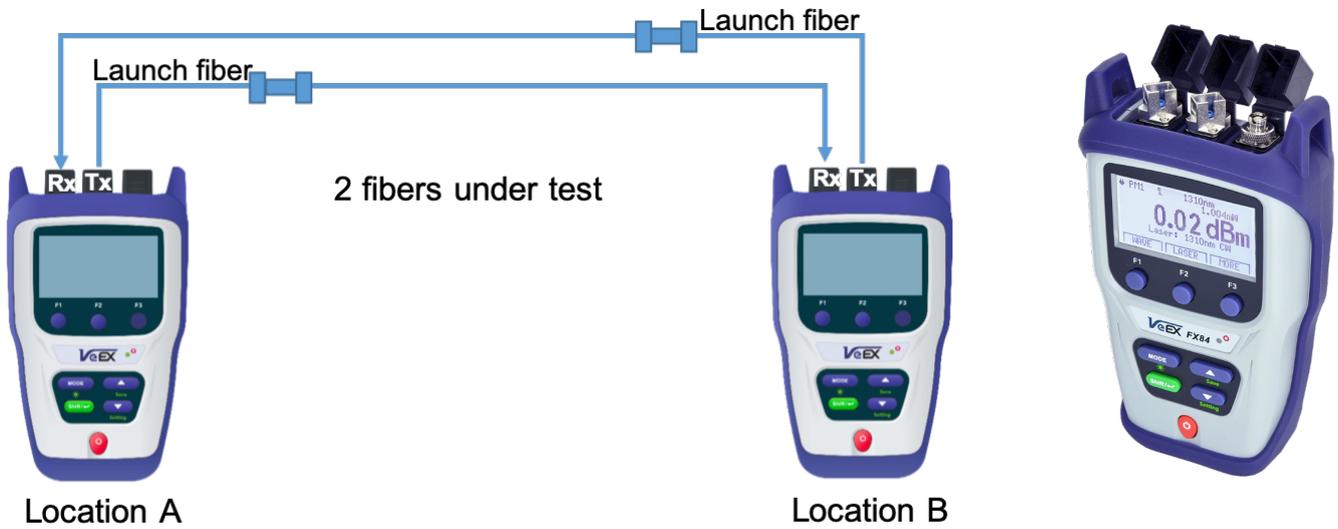
The FX83 OLS is fitted with high performance lasers offering excellent wavelength and power stability over a broad operating temperature range. Each source is equipped with WaveID which can be paired with compatible VeEX optical power meters for fiber identification. The optical light source can be configured with up to four singlemode wavelengths (1310nm, 1490nm, 1550nm, or 1625nm) on a single output port for verifying FTTx/PON telecom, CATV or government/defense fiber network applications. Alternatively, up to four wavelengths (850/1300nm multimode and 1310/1550nm singlemode) can be configured on two individual ports for testing LAN/WAN access and enterprise/data centers that still utilize both multimode and singlemode fiber types. The Multi-wave (loop) function automatically toggles through all wavelengths for faster loss measurements.

When performing loss on multimode fiber networks, the IEC 61300-3-4 standard stipulates that a LED source be used to control the launch conditions. In such test applications, VeEX recommends the use of an external, mode conditioner which modifies the FX83's output to provide repeatable launch conditions. Encircled Flux (EF) defined in TIA-526-14-B and referenced in TIA-568-C.0-2, ISO/IEC 11801 and ISO/IEC 14763-3 standards, mandates EF launch conditions for all multimode fiber loss measurements, including sectional attenuation (dB/km), link loss (dB), connector and splice loss (dB). EF compliance ensures maximum accuracy and repeatability between measurements by overcoming under-filled and over-filled launch conditions.



FX84 Optical Loss Test Set (OLTS)

The FX84 OLTS combines both power meter and light source functions into a single test unit. Individual test ports support uni-directional loss measurements allowing two technicians on opposite ends of a fiber link to test simultaneously. The auto-loop mode toggles the light source wavelengths automatically, while the OPM test partner detects the incoming wavelength/s using the WaveID feature. Single-ended loss is usually measured by mating the cable under test to a reference launch cable and measuring the power at the remote end.

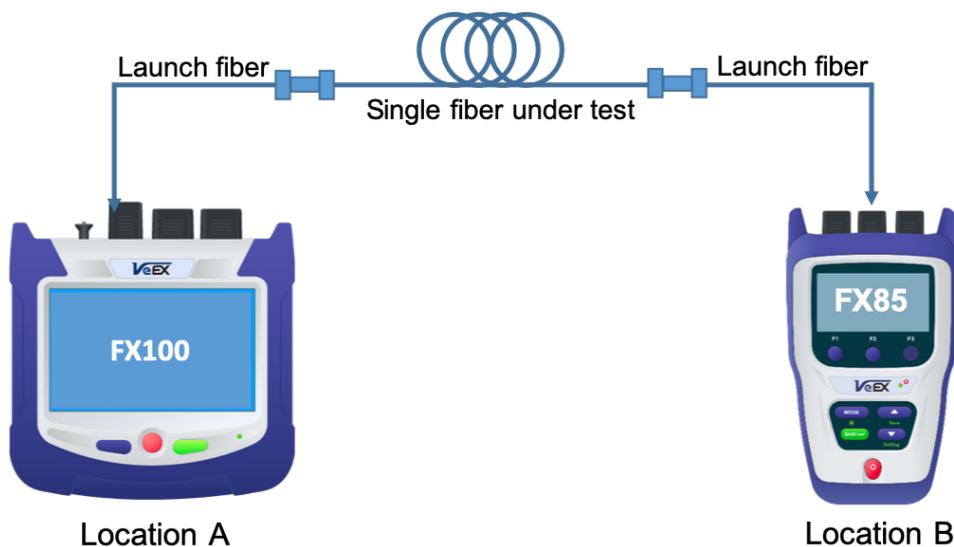


FX85 OLTS with Optical Return Loss (ORL)

As network transmission rates increase, link return loss (ORL) must be minimized to reduce bit errors. In addition, optical systems employing high-speed lasers, analog transmission (CATV), or Raman amplifiers also require low return loss for optimal performance.

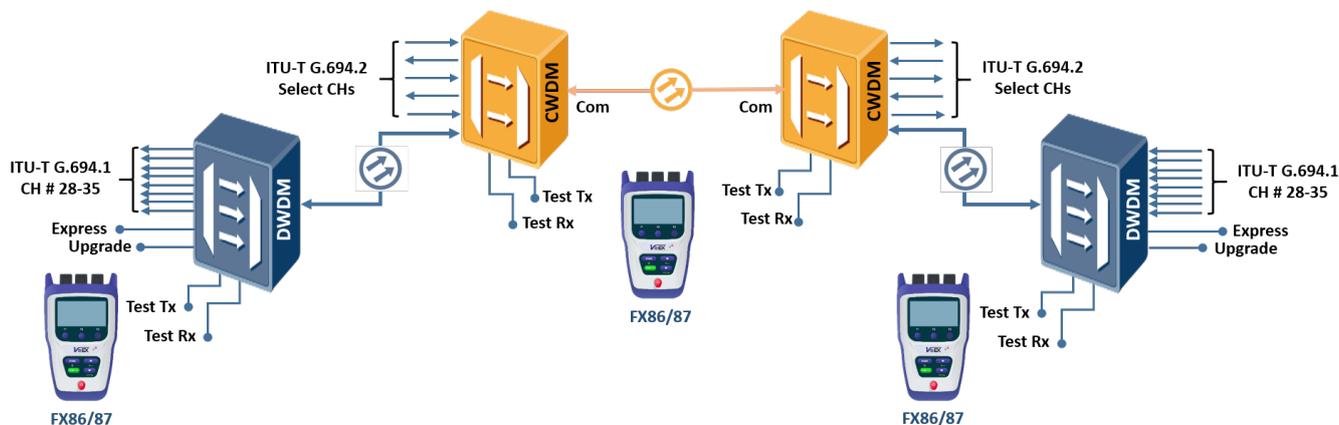
The FX85 ORL meter integrates laser source, optical power meter, and optical return loss test functions into a single tester. The unit performs loss and optical return loss (ORL) at single or multiple wavelengths on a single fiber simultaneously reducing test time significantly. The unit's sensitive power meter, stabilized laser source and angled (APC) test port enables up to a 70dB measurement range.

The VeriPHY option allows the FX85 to be paired with VeEX's FX100 advanced OLTS/ORL tester. Acting as a remote test partner, the units measure bi-directional insertion loss and ORL at up to three wavelengths on a single fiber automatically, in less than 15 seconds.



xWDM Network Testing

As CWDM and DWDM networks proliferate in access, metro and regional networks, a new generation of cost effective CWDM and DWDM light sources are required for construction, system activation and troubleshooting. Paired with full band Optical Channel Checkers (OCC), technicians are able to characterize the entire link including add-drop multiplexers (OADM) guaranteeing continuity to the final destination.



FX86 CWDM Optical Light Source (OLS)

The FX86 can be configured with any combination of four ITU-T G.694.2 CWDM wavelengths. Each output generates an independent wavelength which can be modulated individually for unique fiber identification purpose. The output ports are equipped with SC/APC connectors and feature a built-in dust and laser safety shutter.



FX87 DWDM Tunable Light Source (TLS)

The FX87 TLS is designed to test and verify DWDM systems operating in the C-band spectrum. The laser can be tuned in 50 GHz increments from CH62 1527.994 to CH14 1566.314 nm according to the ITU-T G.694.1 DWDM grid to verify link insertion loss by wavelength including mux/demux and OADM network elements.

Paired with an Optical Channel Checker, technicians are able to perform non-intrusive, end-to-end continuity tests quickly and efficiently without disrupting other channels or service.

In addition, when configured with the optional OPM, the unit can be used as a loopback device to check continuity from one test location using its unique WaveID feature.



Visual Fault Locator (VFL) Option

The VFL is an ideal tool for fiber identification and to visually locate major defects in optical distribution frames or within an OTDR's dead-zone. The VFL employs a Class 2 eye-safe laser with 1mW output supporting a 3-5 km test range.

Optical Talk-Set (OTS) Option

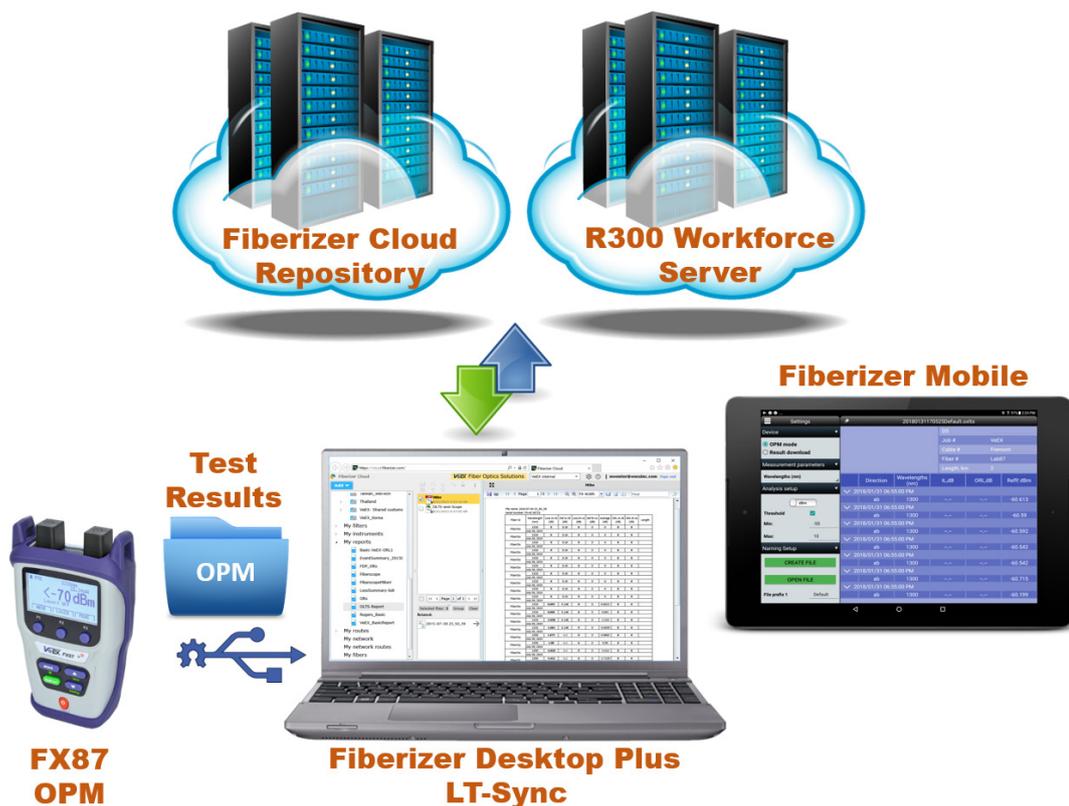
The talk-set provides full duplex, digital voice communication over the fiber under test. This inexpensive solution offers hands-free operation for up to 220 km over singlemode fiber at 1550nm. Technicians can easily communicate with each other regardless of testing location or mobile phone coverage. The talk-set is automatically detected and activated when the headset is plugged into the audio jack so there are no additional setups or controls to worry about.

Fiberizer™ Software

Fiberizer is a family of fiber software applications that dramatically increases technician efficiency, workflow integration and process compliance.

Fiberizer Desktop-Plus enables comprehensive test data analysis and report generation on Windows PC platforms. The software supports upload of test data to Fiberizer Cloud or VeSion R300 server for offsite record keeping and report generation.

Fiberizer Cloud lets you store, analyze and access all your fiber optic test data in a single online repository. This unique Enterprise or Cloud based solution provides superior centralized test data management – plus being a full online web service, technicians can work or access data from almost any location, at any time.



VeSion R300 Productivity Server

Designed for medium-to-large service providers facing the enormous challenge of managing and coordinating hundreds of installations per day, collecting the field test results for billing/record purposes and having to maintain a large inventory of test sets. When used in conjunction with Fiberizer™ Mobile, the back-office server application becomes a powerful tool to reduce customer call-backs and associated truck rolls, maximizing workforce efficiency and lowering operational costs.

Optical Specifications¹

PON Optical Power Meter - FX80	
PON Types	BPON, EPON, GPON
Test Ports	Pass-Through (ONU, OLT)
Upstream Measurement (nm)	1310
Burst Power Level Range (dBm)	-35 to +10
Downstream Measurement (nm)	1490 and 1550
1490 nm Power Level Range (dBm)	-40 to +12
1550 nm Power Level Range (dBm)	-40 to +25
Calibrated Wavelengths (nm)	1310/1490 or 1310/1490/1550nm
Spectral Passband (nm), typ FWHM	
1310 nm	1260 to 1360
1490 nm	1470 to 1505
1550 nm	1535 to 1570
Pass-through Insertion Loss (dB) ⁴	≤ 1.5
Pass-through Isolation (dB)	≥ 30
ORL (dB)	@1550 nm: ≥ 60
Power uncertainty (dB) ^{2, 10, 11}	±0.5
Linearity (dB)	±0.1, ±0.2 @ 1550 nm (≥ -40 dBm)
Refresh rate of display (Hz)	2.5

Broadband Optical Power Meter - FX80/82/84/85	
Wavelength range (nm)	800 to 1700
Calibrated wavelengths (nm)	Standard - 850/1300/1310/1490/1550/1625/1650 Optional - CWDM ITU-T 694.2 Grid (FX82 only)
Detector type ⁹	InGaAs
Measurement range (dBm)	
Standard (PM1)	-70 to +10
High Power (PM2) ⁹	-50 to +25
VeriPHY (PM3)	-65 to +3
Power Accuracy, % (dB)	± 5 (± 0.22)
Linearity, % (dB)	± 2.5 (±0.11)
Readout Resolution (dB)	±0.01
Tone Detection (Hz)	270/330/1000/2000
Wave ID (Auto)	Compatible with VeEX Light Source
Optical Adaptors (interchangeable)	ST/SC/FC/LC, Universal 2.5/1.25 mm

Optical Light Source - FX83/84/85		
Fiber Type	Singlemode, 9/125 μm	Multimode, 50/125 μm
Center Wavelengths (nm)	1310/1490/1550/1625	850/1300
Wavelength Tolerance (nm)	± 2	± 20 to 50
Line Width (nm)	≤ 1	≤ 50/135, 40-200 nm
Output Power (dBm)	> 2 typ.	≥ 20 (62.5/125μm)
Laser Safety	Class 1M	
Power Stability (dB)	± 0.03 (15 min) ±0.1 (8 hr)	± 0.05 (15 min) ±0.1 (8 hr)
Modulation (Hz)	CW, and 270/1000/2000	
WaveID	Yes	
Optical Connectors	Fixed (SC/FC/ST/LC) Optional universal interface with interchangeable adaptors (SC/FC/ST/LC/DIN/E2000)	

Optical Specifications¹ cont'd

Visual Fault Locator (VFL) Option - FX80/82/83/84/85	
Emitter Type	Laser
Wavelength (nm)	655 nm ± 5 nm
Output Power (mW) ²	1 mW
Laser Safety	Class 2
Modulation	CW, 1Hz, 2 Hz
Connector Type ⁷	Universal 2.5 mm

Optical Return Loss (ORL) Option - FX85 only	
Fiber Type	Singlemode 9/125 μm
Wavelength (nm)	1310/1490/1550/1625
ORL Range (APC) (dB)	50
ORL Uncertainty (dB) ^{2,5}	± 1
Readout Resolution (dB)	0.01

Talkset Option - FX85 only	
Dynamic Range (dB)	45
Distance Range (km)	depends on wavelength
Operation ⁸	Full duplex, digital communication
Accessory	Headset with 2.5 mm jack

VeriPHY Option - FX85 only	
Function	Remote Test Partner
Testing Speed (Simplex fiber)	10 seconds (two wavelengths, bidirectional, automated IL+ORL)
	15 seconds (three wavelengths, bidirectional, automated, IL+ORL)
Loss Range (dB) ²	60
Loss Accuracy (dB) ⁶	0.2
Loopback (dB)	0.25

CWDM Light Source - FX86	
Center Wavelength (nm)	ITU-T G.694.2 grid ± 2 nm
Output Ports	Four maximum, equipped with protective shutter
Spectral Width (nm)	≤ 1
Output power (dBm) ³	+2
Side Mode Suppression Ratio (dB)	35
Optical Isolation (dB)	40
Laser safety	Class 1M
Power stability (dB)	± 0.03 (15 min) ±0.1 (8 hr)
Modulation	CW, 270Hz, 330Hz, 1 kHz, 2 kHz
WaveID	Yes, all 18 wavelengths as fitted, but only one port at a time
Optical connector type	Fixed SC/APC connectors

Optical Specifications¹ cont'd

DWDM Tunable Light Source - FX87	
C-Band Tuning Range (nm)	1528.77 to 1563.86
Spectral Width (kHz)	500
Grid spacing	ITU-T G.694.1 DWDM 50GHz grid \pm 2 nm
Output power (dBm) ²	5
Side Mode Suppression Ratio (dB)	40
Optical Isolation (dB)	25
Laser safety	Class 3B
Power stability	0.1 dB
Modulation (Hz)	270/1000/2000
WavelD	Yes
Optical connector type	Fixed SC/APC connector

Notes

1. All specifications valid at 23°C \pm 1°C after 15 minutes warm up.
2. Typical value.
3. Uncertainty is valid at calibration conditions.
4. At 1550nm for singlemode.
5. No discrete reflectance greater than -65 dB. Up to 45 dB.
6. For multimode requires Encircled Flux compliant reference cord.
7. 2.5 mm to 1.25mm converter available.
8. Talkset feature cannot be used during fiber measurements.
9. Filtered InGaAs detector used for high power PM2 version.
10. Calibration conditions, -10 dBm.
11. Calibrated wavelengths.

General Specifications

Size:	164.39 x 100 x 46.93 mm (H x W x D)	PC connection:	Micro USB, data transfer via LT Sync PC software
Weight:	420 g (0.93 lbs.) unit dependent	Display:	High contrast LCD (128x64 pixels)
Construction:	Rugged, Polycarbonate chassis, 1 meter drop tested	Operating Temp:	-10 °C to +50 °C (unless noted)
Battery:	Built-in Rechargeable Li-Polymer	Storage Temp:	-20 °C to +70 °C
Power Supply:	Micro USB interface, 5 VDC charger	Humidity:	0% to 95%, non-condensing
Connectivity:	Bluetooth (optional)		



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