

# FOM 7900B

## System

### Product Features

8 channels of user-selectable laser source modules

$\pm 3\text{pm}$  wavelength stability with  
 $\pm 0.003\text{dB}$  power stability

Customer specified WDM DFB sources covering S, C, and L-bands at up to 20mW per channel

Internal synchronous modulation to 500kHz

Dual power meter and fiber optic switch modules available

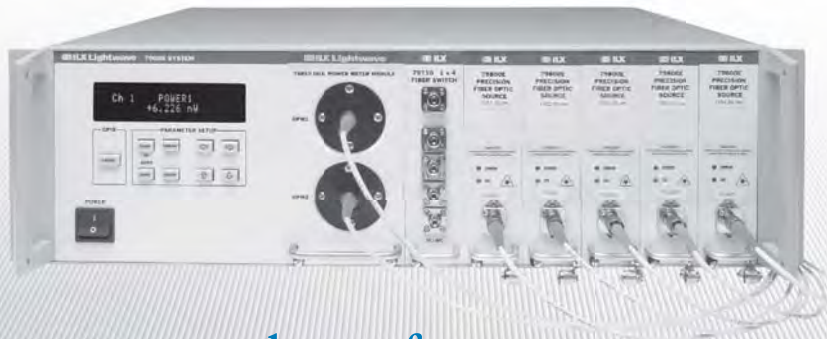
GPIB/IEEE488 and RS-232 interfaces

The FOM-7900B is a high-performance fiber-optic test and development platform with eight channels supporting plug-in laser source, power meter, and fiber optic switch modules. This system provides a cost-effective solution for WDM and CWDM test applications including EDFA, SOA, and fiber optic component characterization.

Front panel plug-in modules are offered at user-specified wavelengths from 1475-1625nm including service channels at 1310, 1480, 1510, and 1625nm. Each channel can be tuned over a 1.7nm range with 0.001nm resolution. These sources can be customized to meet special requirements including fiber optic connector type, PM alignment and fiber, and center wavelength on ITU grid points.

For higher density WDM system requirements, up to 25 additional FOM-7900B mainframes can be linked together for a total of 200 channels, all controlled from a single GPIB address.

Complete your fiber optic test system with the FOS-79710 low insertion loss 1 x 4 switch and the FOS-79810 dual channel low PDR power meter module.



## High Performance Multi-Channel Fiber Optic Test System

 **ILX Lightwave**  
Laser Diode Instrumentation & Test Systems

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### Solutions for Multi-Wavelength Fiber Optic Test Applications

The FOM-7900B, with the FOS-79800E source modules, FOS-79710 switch, and FOS-79810 dual power meter, delivers a complete multi-wavelength test solution for both active and passive WDM components and systems. Each module can be controlled independently through the front panel or remotely through the GPIB/IEEE-488 or RS-232 interfaces. Full control of wavelength, output power, calibration and modulation, switching, and power measurement give you the flexibility needed for most fiber optic testing applications.

### Fifth Generation Laser Sources for Today's Testing Needs

The FOS-79800E laser source modules set the standard with an impressive list of features: picometer resolution, 20mW output power with 0.005dB stability, >40dB side mode suppression ratio, coherence control, optional source shutter, and  $\pm 0.1$ dB attenuation accuracy. These modules provide the performance and reliability required for today's fiber optic testing needs.

Coherence control of the modules broadens laser linewidth from 30MHz to 1GHz. This reduces spectral power density and decreases coherence length from several meters to around 20cm, which is especially important in component test and system applications to reduce the effects of connector reflections and stimulated Brillouin scattering. The final result is power and wavelength stability of  $\pm 0.003$ dB and  $\pm 3$ pm, respectively.

### Performance for EDFA Testing

For gain flatness testing with accurate attenuator-like performance, the FOS-79800E modules feature high-resolution attenuation so that you can easily equalize channel levels.

Attenuation is accurate within  $\pm 0.1$ dB, while maintaining other specifications from maximum power to 5dB down. If speed is critical to your application, the optional SS-810 shutter blocks the output, effectively turning off the source without turning off the current to the lasers, eliminating settling time.

For measuring EDFA spontaneous emission background levels, the FOS-79800E modules feature 100% depth and 50% duty cycle modulated drive current to the lasers. Each source can be modulated synchronously at any frequency from 1-500kHz.

Normal and inverted TTL-level outputs provide flexible triggering for data acquisition instruments, simplifying test setup. In addition, a rear panel modulation input synchronizes multiple mainframes and allows synchronization of the system with an external instrument.

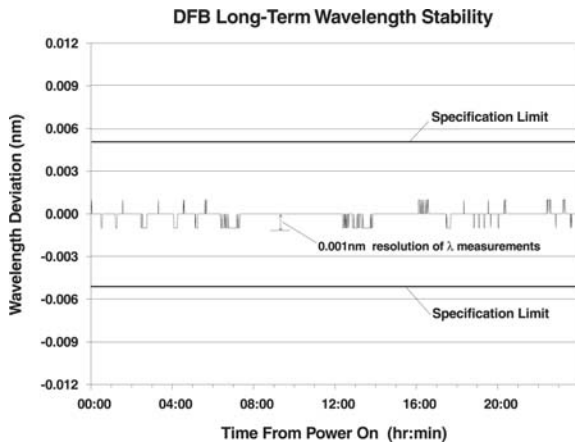
### Complete Integrated Systems Test

The FOS-79810 Dual Power Meter Module, designed specifically for the FOM-7900B, provides an integrated test system solution for component and EDFA test applications. Two channels can measure up to 1W of optical power, each with the flexibility to measure absolute power or the difference between them. The design of the FOS-79810 incorporates ILX's patented integrating sphere technology, ensuring excellent repeatability and the lowest PDR available in a modular power meter.

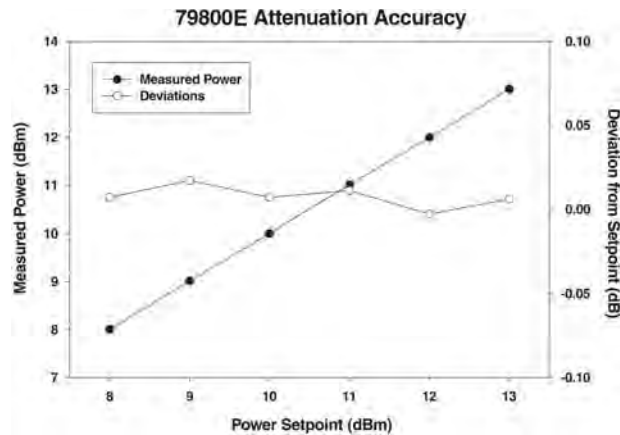
Even more flexibility is available by adding the FOS-79710 Fiber Optic Switch Module. The 1 x 4 switch is optimized for excellent stability with minimal insertion and return loss. This optically-passive fiber optic switch is bidirectional in operation and transparent to signal formats and

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*Precise control of laser diode temperature and current densities ensures a stable wavelength.*



*Industry-leading fiber optic source power attenuation accuracy.*

bandwidth. The FOS-79710 allows you to switch the input of a single fiber optic channel to any one of four output ports or to a "blocking" position into a zero-reflection terminator. You can define a switch position sequence to occur at defined time intervals or by external trigger.

Combining the FOS-79810 with the FOS-79800E Source Modules and the FOS-79710 Optical Switch Module enables splice loss testing, edge testing, and characterization of optical cross connects and optical switches.

### Multi-Channel Module Control

Each FOM-7900B module can be controlled independently through an intuitive menu on the front panel or remotely through the GPIB/IEEE-488 interface. Easy-to-understand commands allow full control of each module's control parameters. Banked remote capability provides control of up to two hundred source, switch, and power meter functions from a single GPIB address.

### Remote Control for Automated Testing

For complete automated control, the 7900B system comes with a powerful GPIB interface, allowing remote programming and control from most computers. This interface uses the National Instruments TNT488 chip-set, which supports high-speed GPIB protocol. All instrument functions accessible from the front panel are also accessible through the interface bus, and all commands are based on a set of easy-to-use mnemonics. For further control flexibility, LabVIEW® instrument drivers are available at no additional cost.

### The First Name in Fiber Optic Test

Today's largest world-leading fiber optic component manufacturers are testing with more laser sources from ILX Lightwave than from any other company. Our technically qualified sales engineers can help you define the custom fiber optic source configuration for your component and amplifier testing needs.

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### Specifications

#### 7900B System Mainframe

##### INTERNAL MODULATION

Waveform:	TTL
Frequency:	0.1–500kHz
Duty Cycle: <sup>1</sup>	50% ±1%
Modulation Depth:	100%
Rise/Fall Time:	<250ns
Channel to Channel Synchronization: <sup>2</sup>	<100ns

##### MODULATION IN

Level:	TTL
Frequency:	1–500kHz
Duty Cycle: <sup>1</sup>	50% ±1%
Polarity:	0V = Laser turned OFF 5V = Laser turned ON
Optical Delay: <sup>2</sup>	<1µs
Channel to Channel Synchronization: <sup>3</sup>	<100ns
Jitter: <sup>4</sup>	<50ns
Connector:	BNC Female on rear panel

##### MODULATION OUT

Level:	TTL
Polarity:	0V = Laser turned OFF 5V = Laser turned ON
Gate Delay: <sup>5</sup>	<60ns/mainframe
Jitter: <sup>4</sup>	<50ns
Connector:	BNC Female on rear panel
Load Capability:	Capable of driving 3 additional 7900B mainframes in parallel

##### EXTERNAL TRIGGER INPUT/OUTPUT

Level:	TTL, Active Low
Pulse Width:	100ns (minimum)
Connector:	BNC Female on rear panel

##### COMPUTER INTERFACE

GPIB/IEEE-488 Hardware:	ANSI/IEEE Std 488.1–1987
Fanout:	200 modules
RS-232	
Baud Rate:	9600
Stop Bits:	1
Parity:	None
Data Bits:	8
Flow Control:	None
Connector	
RS-232 A Connector:	9 pin male "D" connector
RS-232 B Connector:	9 pin female "D" connector

##### DISPLAY

Two lines by 20 character vacuum fluorescent display used uniquely by each module or the mainframe. The selected module channel is always displayed in the upper left corner of the display.

##### GENERAL

Number of Channels:	Up to 8 plug-in Modules
Size (HxWxD):	14.0cm x 45.1cm x 44.5cm 5.5" x 17.75" x 17.5"
Weight	
Mainframe:	12.7kg (28lbs)
Modules (typical):	0.45kg (1lb)

Power Requirements:	100–120VAC (50/60Hz, 1.5A) 220–240VAC (50/60Hz, 0.8A)
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Temperature	
Operating:	0°C–40°C
Storage:	–40°C to 70°C
Humidity:	<90% RH, non-condensing
CE certified to the following standards:	
EMC:	EN 61326-1:2000
Safety:	EN 61010-1:2001; 73/23/EEC, 93/68/EEC

##### NOTES

- 1 Input modulation duty cycles other than 50% ±1% will result in output power inaccuracies.
- 2 Optical Delay is the time between the rising edge of the input modulation signal and the rising edge of the modulated optical output.
- 3 Channel to Channel Synchronization is the maximum variation in optical delay between modules in the same mainframe.
- 4 Jitter is the variation in optical delay for any given module.
- 5 Gate Delay is the time between the input modulation signal and the output modulation signal.

In keeping with our commitment to continuing improvement, ILX Lightwave reserves the right to change specifications without notice and without liability for such changes.

##### ORDERING INFORMATION

FOM-7900B	System Mainframe with 8-bay capacity (Includes GPIB interface)
FOS-79800E/315C1	WDM DFB 9-10mW Source Module (1527.98-1564.26nm user-specified wavelength)
FOS-79800E/315L1	WDM DFB 9-10mW Source Module (1564.27-1610.06nm user-specified wavelength)
FOS-79800E/315C2	WDM DFB 10-20mW Source Module (1527.98-1564.26nm user-specified wavelength)
FOS-79800E/315L2	WDM DFB 10-20mW Source Module (1564.26-1610nm user-specified wave length)
FOS-79800E/315S	WDM DFB 9-20mW Source Module (1475-1527.97nm user-specified wave length)
FOS-79800E/315EL	WDM DFB 9-20mW Source Module (1610.01-1625nm user-specified wave length)
FOS-79800E/SERV	WDM DFB 9-20mW Source Module (1310, 1480, 1510, and 1625 ± 5nm user-specified wavelength)
FOS-79800E/000	Special Product for non-standard wave length
FOS-79710	1 x 4 Fiber Optic Switch Module
SS-810	Source Shutter Option (not compatible with PM alignment)
DPM-79810	Dual Power Meter Module
SSE50	50dB Ratio of Signal to Spontaneous Emission Option
PM Alignment	Per Channel PM Alignment

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P.O. Box 6310, Bozeman, MT 59771 • FAX: 406-586-9405

[www.ilxlightwave.com](http://www.ilxlightwave.com)

For information call

**1-800-459-9459**

International Inquiries: 406-556-2481  
email: [sales@ilxlightwave.com](mailto:sales@ilxlightwave.com)



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