

# IQ-5310

## Wavelength Meter



- Absolute wavelength accuracy:  $\pm 0.01$  nm
- Simultaneous display of central wavelength and total power
- Wavelength display resolution: 0.001 nm
- Integrated user-calibration capability

# Wavelength Measurement Made Easy

## Unsurpassed Accuracy

The IQ-5310 Wavelength Meter is the ideal modular instrument for measuring the central wavelength and frequency of a single incoming laser signal. It is perfectly suited for determining central wavelength shifts in conditions where the temperature, current, and power may vary. The module also allows for accurate laser diode and

transmitter characterization as well as simple wavelength calibration of other instruments, including optical spectrum analyzers (OSAs) and tunable laser sources. The IQ-5310 is indispensable if you need to control the drift of dense WDM channels for transmission system qualification.

## Basic Operation

The IQ-5310 measures wavelengths from the visible to the near-infrared range (600 to 1700 nm). The instrument is designed around a Michelson interferometer. The scanning distance of the interferometer's mirror is first calibrated with a reference laser that has a central wavelength value at least 10 times more accurate than the specified accuracy of the instrument. The IQ-5310 is then ready to perform its high-fidelity test measurements.

When a signal, coupled into an optical fiber, first enters the instrument, it produces sinusoidal

interference fringes. By counting the number of peaks detected during one mirror sweep of the interferometer, the IQ-5310 precisely measures the wavelength or frequency of the incoming signal. Pressure and temperature are constantly monitored to obtain wavelengths in a vacuum and various air conditions. When measuring optical power, the module automatically compensates for the detector's spectral responsivity.

The module operates in two different modes to display its results: Auto and Full. In Auto mode, the instrument evaluates the laser linewidth and determines the number of digits to be shown. In Full mode, a 0.001 nm resolution is always displayed. The coherence length of a laser beam plays a crucial role when using an interferometer to measure wavelength. Readings are more accurate and have

the highest resolution with narrow linewidths (<10 GHz).

The IQ-5310 is initially calibrated with a reference source traceable to

Effective linewidth	Wavelength accuracy	Display resolution in Average mode
<10 GHz	±0.01 nm	0.001 nm
≈100 GHz	±0.1 nm	0.01 nm
≈1 THz	±1 nm	0.1 nm

NIST. To save time, ensure optimum accuracy, and decrease costs, you can calibrate the instrument yourself with a stabilized HeNe laser or a DFB laser diode. EXFO also provides all calibration services upon request.

## The IQ Concept

EXFO has integrated highly precise wavelength measurement technology into its versatile IQ-200 Optical Test System. With the test platform's powerful capabilities and user-friendly visual development environments, such as Visual Basic and Delphi, the IQ-5310 can be integrated quickly and easily into your automated optical test system.



# Time-Saving Software Features

## F2 and F3

From reference set points, displays the difference in power and wavelength from preset levels.

## F4

Displays the total drift of wavelength and power.

## F5

Averages user-defined power and wavelength values. This feature is critical for more repeatable and stable measurements.

## F6

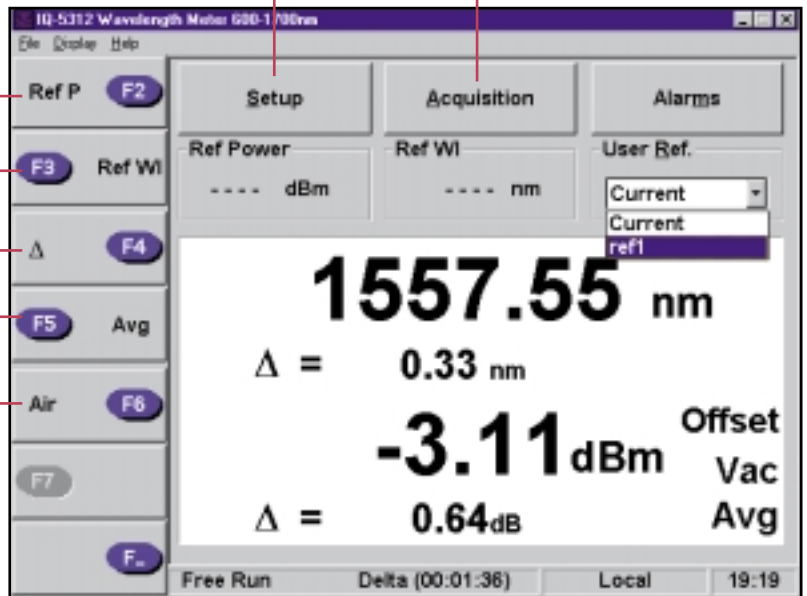
Allows measurements to be performed in current or user-defined environmental conditions as well as in a vacuum.

## Setup

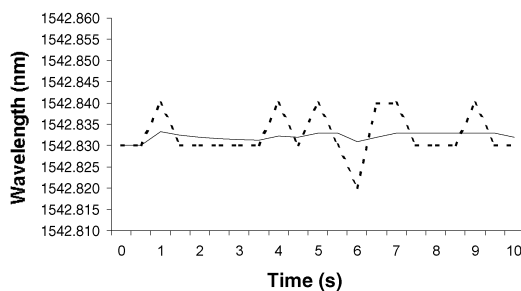
Allows you to choose the measurement unit to be displayed (nm or THz), the temperature in which the wavelength is measured, the display resolution, the number of points over which the average is calculated, and other measurement settings.

## Acquisition

Saves data in an ASCII file so that you can analyze the measurements and plot out the results in Microsoft Excel. The acquisition sampling rate and duration, file name, and start-up sequence can all be determined before any tests are performed.



Real-time and Average mode



## Average

In Average mode, a resolution of 0.001 nm can be attained.

- Real-time (2 Hz) value
- Progressive average value



## Alarm

The alarm warns you with a beeping noise if the wavelength or power falls outside pre-defined limits. For long-term monitoring, the exceeded times and limits are logged.

## SPECIFICATIONS

<b>Model</b>	<b>IQ-5312</b>	
Spectral range (nm)	600 to 1700	
Photodetector type <sup>1</sup>	InGaAs	
Power input range (dBm)	+10 to -30	
Optical input	singlemode fiber	
Wavelength display resolution <sup>2</sup> (nm)	0.001	
Absolute wavelength accuracy <sup>3</sup> (nm)	±0.03/±0.01 <sup>4</sup>	
Wavelength repeatability <sup>5</sup> (nm)	±0.02	
Power display resolution (dB)	0.01	
Absolute power accuracy <sup>6</sup> (dB)	±0.25	
Power measurement linearity <sup>7</sup> (dB)	<0.1	
Optical return loss (dB)	typical	35
Polarization dependent loss (dB)	at 1310 nm	<0.25
	at 1550 nm	<0.35
Sampling rate (Hz)	2	
Averaging	up to 1000 samples	

## GENERAL SPECIFICATIONS

Size	12 x 3.8 x 26.2 cm	4 <sup>3</sup> / <sub>4</sub> x 1 <sup>1</sup> / <sub>2</sub> x 10 <sup>1</sup> / <sub>3</sub> in.	
Temperature	operating	10° to 40°C	5° to 104°F
	storage	-40° to 70°C	-40° to 158°F
Relative humidity	0 to 95% non-condensing		

## NOTES

1. A wavelength meter (with similar specifications) equipped with a silicon detector (IQ-5311) is also available upon request for a shorter wavelength measurement range.
2. In averaging mode only. In real-time mode: 0.01 nm.
3. Due to the acquisition system's bandwidth, the presence of a low-frequency modulated signal can be interpreted as an erroneous wavelength.
4. After calibration with an external reference source or at 25°C.
5. Confidence level of 95% over one hour.
6. 1550 ±30 nm, 1310 ±20 nm at 25°C. Does not include connector repeatability.
7. Between -20 dBm and +10 dBm.

EXFO is certified ISO 9001 and attests to the quality of its products. These products are accompanied by a 24-month warranty and an excellent after-sales support service.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

EXFO has made every effort to ensure that the information contained in this brochure is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics, and products at any time without obligation.

Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.

## STANDARD ACCESSORIES

Instruction manual and Declaration of Conformity

## ORDERING INFORMATION

### IQ-5312-XX

#### Connector code

58 = FC/APC narrow key

89 = FC/UPC

EI = UPC Universal Interface

EA = APC Universal Interface

The fixed base-plate (EI or EA) must be ordered with a removable universal connector adapter (EUI-XX). Please specify one EUI from the following list:

EUI-28 = DIN 47256

EUI-90 = ST

EUI-76 = HMS-10/AG

EUI-91 = SC

EUI-89 = FC

EUI-95 = E-2000



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