Return Loss Meter

IQ-3200

- Sensitivity of -80 dB
- Complete data reporting
- Easy integration with automated component-testing software

Fiber-optic T&M, monitoring, manufacturing and assembly solutions

EXFO

Meeting the Demanding Needs of Laboratory and Manufacturing Environments

Performing consistent, reliable component/network optical return loss (ORL) and reflectance measurements requires high sensitivity and accuracy—which is what EXFO's IQ-3200 Return Loss Meter offers. The IQ-3200 uses a low-drift InGaAs photodetector coupled to a source port and a measurement port. When connected to any stable source (0 dBm output power), it enables measurements down to an impressive -80 dB. Based on state-of-the-art optical components, sophisticated signal processing, a dark current nulling function and a detailed calibration procedure, the IQ-3200 provides accurate (± 0.35 dB), linear (± 0.015 dB), high-resolution (0.001 dB) measurements, ideal for demanding lab and production-floor applications.

Why Measure Backreflection?

Backreflection contributes to overall power loss, degrades laser performance and interferes with voice and video signal processing. In order to maintain system and component integrity, measuring and controlling backreflection is therefore a must. Two terms are used to quantify backreflection: reflectance and ORL. Reflectance typically designates the reflection at a single interface or reflection site (e.g., connector or splice). It is specific to a single system component. ORL is made up of the combined reflections of a fiber-optic system or subsystem as measured from a specific point. It includes the reflectance of each system component, along with reflections generated along the fiber itself. EXFO's IQ-3200 Return Loss Meter measures both reflectance and ORL, and is an invaluable instrument for system or component design, manufacturing, testing and troubleshooting.

The IQ Solution

EXFO's IQ-3200 Return Loss Meter is one of the many modules housed in the flexible, versatile IQ platform. Combine it with the IQ-2100 ORL Light Source in the IQ-203 Optical Test System, and benefit from a first-class connector test station. Change the ORL source for the IQ-2300 ASE Broadband Source or the IQ-2600 Tunable Laser Source, and perform return loss measurements over the WDM wavelength range. The IQ-3200 can also be an integral part of larger, more complex, integrated measurement systems found in research and development environments.

Testing Tip

When performing return loss measurements, connector cleanliness is key. Connectors contaminated with dirt, dust, fingerprints, etc. will cause erroneous readings. EXFO recommends connectors be thoroughly cleaned with isopropyl alcohol to ensure measurement accuracy.

Typical Manufacturing and R&D Applications

- System or component return loss measurements
- Quality control and inspection
- System or component troubleshooting
- Bidirectional reflectance measurements

Intuitive, Flexible GUI

The IQ-3200's Windows-based graphical user interface (GUI) offers easy control with software buttons, front panel keys or keyboard. It provides multiple-user configuration storage as well as online help, and lets you launch various applications simultaneously, enabling true multitasking.

Calibration

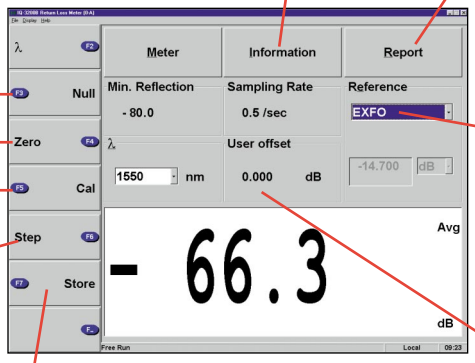
Null - Eliminates electronic offsets and dark currents. This helps improve accuracy and temperature stability.

Zero - Eliminates parasitic reflections occurring between the internal detector and the point of measurement. Improves accuracy and allows you to make measurements beyond known reflection sites.

Cal - Calibrates to the selected reflection reference.

Systematic Step-By-Step Procedure

Choose between manual or step-by-step measurements. The step-by-step procedure will lead you through all the required steps, including equipment setup, null measurement, meter setup, documentation, calibration, measurement and printing. This procedure is not only an excellent learning tool, but it also ensures a systematic, repeatable approach, as required in an ISO-9000 environment.



Documenting Measurement Conditions

Registers general and specific information about the current measurement conditions. This information will be included in the test report.

Detailed Test Reports

Produces detailed test reports that include instrumentation identification, environmental information and up to 100 stored measurements for each device under test.

Flexible Reference Calibration

Calibrates using the highly stable EXFO reflection reference or any other known reflection reference.

Convenient User Offset

Compensates for connecting-fiber or test-jumper insertion loss.

Practically Unlimited Data Storage

Stores up to 100 values for each wavelength and for each device under test. Since data is saved to either the floppy disk or the hard disk, all test data can be saved and subsequently catalogued.

Exceptional Performance in a Modular Package

With a dynamic range of 0 to -80 dB, the IQ-3200 brings you top performance, whether for measuring the reflectance of components typically showing extremely low backreflection, or for performing measurements beyond known reflection generators (e.g., when testing multiple components along a fiber connection).

- Accuracy of ± 0.35 dB
- Linearity of ± 0.015 dB
- Spectral range of 1250 to 1630 nm (at 1 nm)
- Resolution of 0.001 dB
- Low polarization sensitivity
- Stable reflection reference

Optical Specifications

Fiber type (µm)	9/125 (Corning SMF-28)
Detector type	InGaAs
Spectral range (nm)	1250 to 1630
Spectral resolution (nm)	1
Dynamic range[1, 2] (dB)	0 to -80
Insertion loss[3] (dB)	≤ 5
Resolution (dB)	0.001
Linearity[1, 2] (dB)	± 0.015 (-10 dB to -50 dB) ± 0.1 (-50 dB to -60 dB) ± 0.2 (-60 dB to -70 dB)
Uncertainty (accuracy)[1, 2, 4, 5] (dB)	± 0.35 (-10 dB to -50 dB) ± 0.50 (-50 dB to -60 dB) ± 0.65 (-60 dB to -70 dB)
Polarization sensitivity[2] (dB)	± 0.15
Maximum power[6] (dBm)	25
Reflection reference[7] (dB)	14.65 ± 0.2 dB at 1310 nm 14.70 ± 0.2 dB at 1550 nm
Reflection reference stability[8] (dB)	± 0.02

General Specifications

Temperature	operating	0 °C to 50 °C	(32 °F to 122 °F)
	storage	-40 °C to 70 °C	(-40 °F to 158 °F)
Relative humidity[9]		0 % to 95 % non-condensing	
Dimensions (H x W x D)		12.1 cm x 3.8 cm x 26.2 cm (4 3/4 in x 1 1/2 in x 10 5/16 in)	
Weight		0.68 kg	(1.5 lb)

Standard Accessories

User Guide, reflection reference, test jumper, calibration mandrel, Certificate of Compliance

Optional Accessories

LabVIEW drivers available, OCX controls available in IQ-SDK

Notes

1. Using a 0 dBm optically isolated source with ± 0.005 dB stability. The linearity specification is based on the internal power meter linearity.
2. At 1310 nm ± 40 nm and 1550 nm ± 40 nm.
3. Includes optical ports and connectors.
4. Includes linearity and connector repeatibility. The uncertainty is reported with a level of confidence of 95 %.
5. Throughout the temperature range while performing a calibration at each new temperature.
6. Assuming a -14 dB reflection.
7. The reflector's reference value is reported with a level of confidence of 95 %.
8. Calculation based on burn-in at 40 °C/104 °F, 60 hours.
9. Measured in 0 °C to 40 °C (32 °F to 104 °F).

Ordering Information

IQ-3200-B-EA

Fiber Code
9/125 µm singlemode

Connector code
APC — The fixed baseplate, must be ordered with a removable universal connector adapter (EUI-XX). Please specify one EUI from the following list:
EUI-89 = FC narrow key
EUI-91 = SC

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