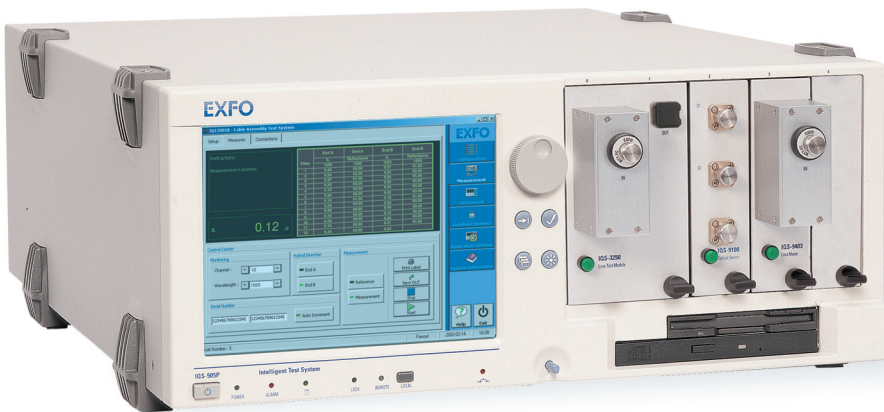


CABLE ASSEMBLY AND COMPONENT TEST SYSTEM

IQS-12001B

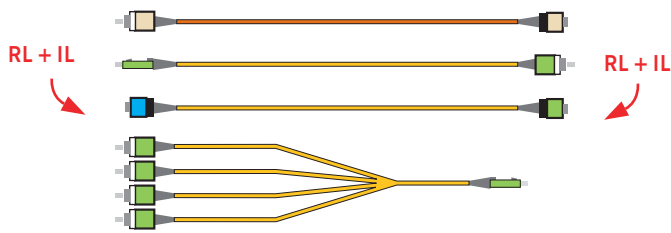
R&D AND MANUFACTURING—OPTICAL



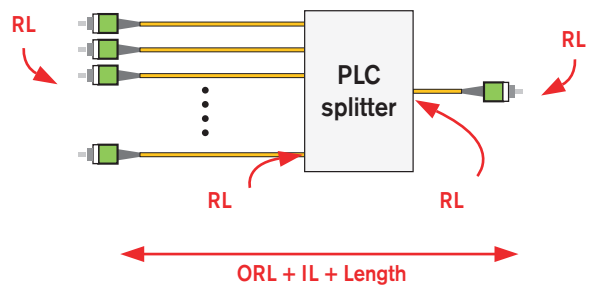
- Best-in-class insertion loss measurements for components and cable assemblies
- High-sensitivity, mandrel-free reflectance measurements down to -75 dB, meeting requirements for the most demanding applications
- 850/1300 nm and 1310/1490/1550/1625 nm wavelength options
- Compatible with simplex, duplex, multifiber, bundle, hybrid and fanout cable assemblies, as well as PLC splitters and planar arrays
- DLL command library for custom applications
- Remote configuration and control capabilities

Fully Integrated Cable Assembly and Component Testing

Maximize production throughput for insertion loss (IL) and mandrel-free reflection testing for all types of fiber-optic interconnect cable and component assemblies with the IQS-12001B Cable Assembly and Component Test System. This fast and accurate system comes with the most complete single-software package available, delivering truly integrated testing for simplex, duplex, multifiber, hybrid and fanout fiber assemblies, as well as for components such as PLC splitters used in FTTx systems.



**Simplex, Duplex, Multifiber,
Fanout with or without hybrid
connectors**



Component Testing – New!

KEY FEATURES

- High-sensitivity reflectance measurements down to -75dB
- Fast, mandrel-free insertion loss (IL) and reflectance measurements
- Up to 32 measurement channels (more if external optical switches are used)
- Multimode and singlemode testing in one system
- IL measurement practically insensitive to fiber positioning and alignment
- Remote communication and control interfaces

APPLICATIONS

- Start-up, mid-range and high-volume production
- Singlemode and multimode IL and reflectance measurements
- FTTx splitter characterization
- Simplex, duplex, multifiber, bundle, hybrid and fanout cable assemblies
- FC, SC, ST, LC, MTP, MT, MPO, MT-RJ, MU and other connectors
- Military harnesses

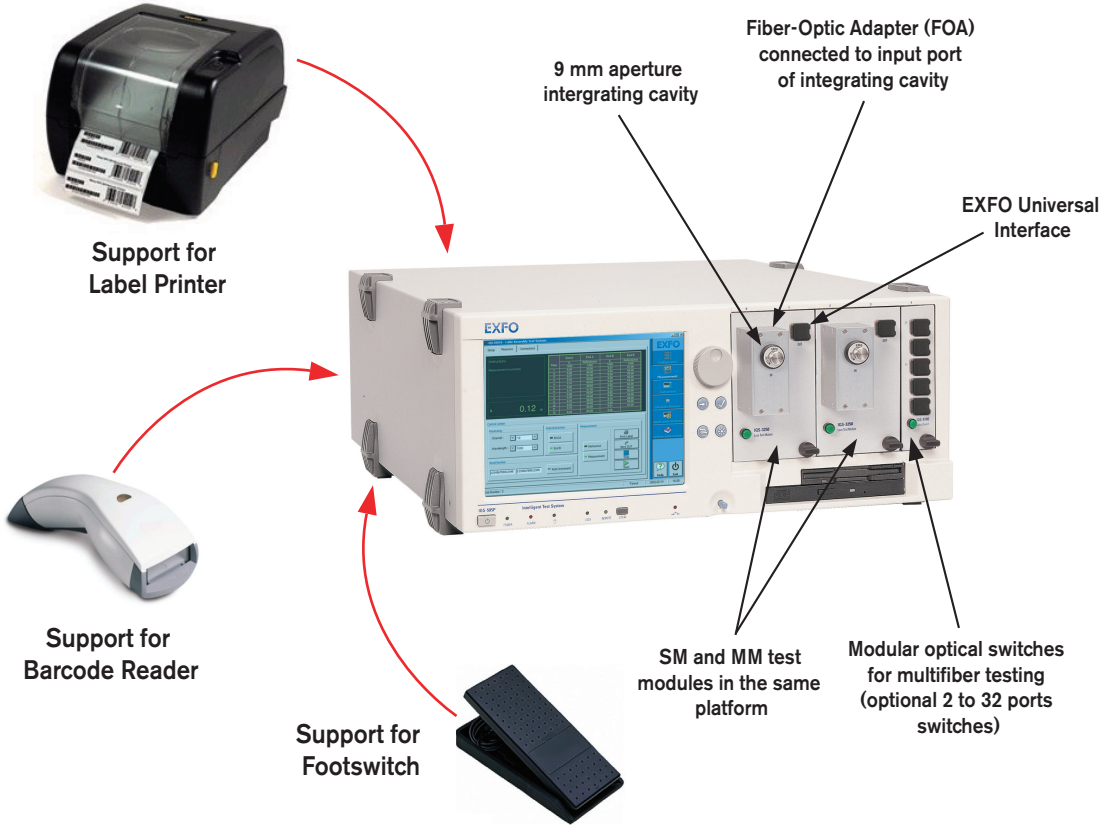
SYSTEM OVERVIEW

The IQS-12001B system features a loss test module (IQS-3250/3250B), optional optical switches and a software package that integrates and manages test sequences, the database and its results, as well as the peripherals such as bar code reader, label printers and foot switches used in production environments.

The IQS-3250/3250B Loss Test Module is based on advanced time-domain technology with a wide-aperture integrating cavity detector. Unlike other methods, this approach delivers accurate, repeatable reflectance measurements without the need for time-consuming mandrels. The IQS-3250/3250B's internal monitoring channel ensures IL measurement accuracy by compensating for any source power variation, a technology that complies with the TIA/EIA-455-34A FOTP-34A Interconnection Device Insertion Loss Test standard.

The IQS-3250/3250B's internal reflectance reference significantly improves multimode and singlemode reflectance measurement performance and, in singlemode assembly, accounts for the effects of Rayleigh backscattering in each measurement. Combined with EXFO's advanced detection electronics and algorithms, the IQS-3250/3250B provides highly accurate mandrel-free reflectance measurements for even the most difficult-to-test APC connectors.

For multimode applications, the IQS-3250 performs reflectance measurements at 850 nm and 1300 nm using two lasers. IL measurements are obtained through using LED sources at 850 nm and 1300 nm, meeting widely recognized standards—namely TIA/EIA-526-14A (OFSTP-14, Optical Power Loss Measurement of Installed Multimode Fiber Cable Plant). With controlled launch conditions, measurement reproducibility increases to ± 0.05 dB.

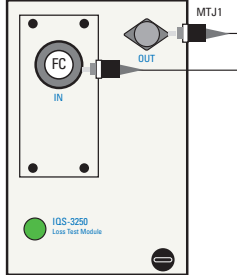
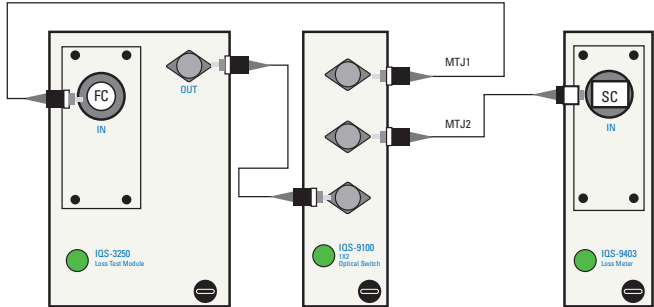
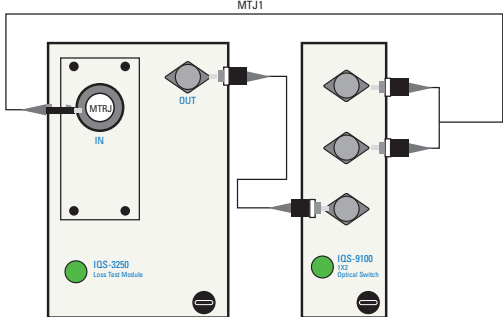
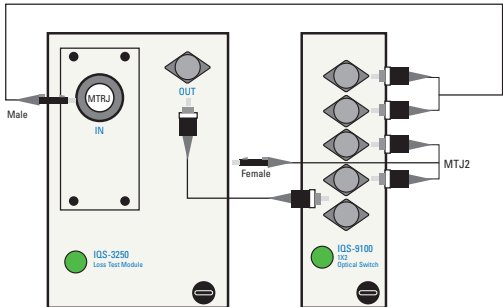


Configure Your System for Optimal Performance

The IQS-12001B Cable Assembly Test System is available in two configurations: Standard and High-Throughput. The Standard configuration includes only the minimal hardware necessary to get the job done. It keeps costs in check, while providing fast and accurate measurements in a user-friendly format.

The High-Throughput (HT) configuration minimizes the handling required, reducing the overall testing time and increasing the productivity. This mode of operation is particularly well-suited to hybrid assembly and/or multiwavelength testing. The IQS-12001B can accommodate additional switch ports and loss meters, enabling hybrid assemblies to be tested in one sequence. External optical switches can be controlled by the IQS-12001B GPIB interface for test applications requiring more than 32 channels.

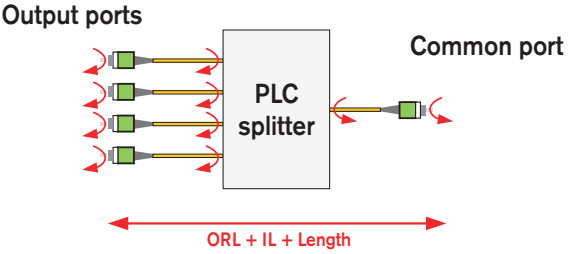
The IQS-12001B lets you dedicate switch ports to specific connector types, which avoids having to disconnect the launch fiber, saving valuable setup time. For example, with a 1 x 32 switch, you can dedicate ports 1 to 24 to MTP connectors (male and female), ports 25 to 28 to MT-RJ connectors (male and female), and still have room for FC, ST, SC and MU connectors. Depending on the device under test (DUT), the system uses the appropriate port.

STANDARD CONFIGURATIONS	HIGH-TROUGHPUT CONFIGURATION
<p style="text-align: center;">Simplex</p>  <p style="text-align: center;">Basic configuration for testing simplex and multifiber bundles.</p>	<p style="text-align: center;">Simplex</p>  <p style="text-align: center;">With an additional loss meter and a 1x2 optical switch, hybrid simplex assemblies can be efficiently tested. The two master test jumpers and detectors are configured for the different connectors of the hybrid assembly.</p>
<p style="text-align: center;">Multifiber Connector</p>  <p style="text-align: center;">Basic configuration for testing multifiber connector such as MTP and MT-RJ.</p>	<p style="text-align: center;">Multifiber Connector</p>  <p style="text-align: center;">By doubling the number of switch ports, the system can be configured to accept both male and female multifiber connectors. The end result is faster and simpler testing in a single sequence.</p>

Standard and High-Throughput configurations are also available for testing bundle, duplex and multifiber to fanout assemblies.

Custom Applications for Component Testing

The IQS-12001B's DLL interface enables component insertion loss, reflectance, length and optical return loss (ORL) measurements. Manufacturers can therefore test PLC splitters in a very efficient way, with the ability to distinguish between connector and component reflectance values. All this can be done in seconds without the need to perform time-consuming mandrels.

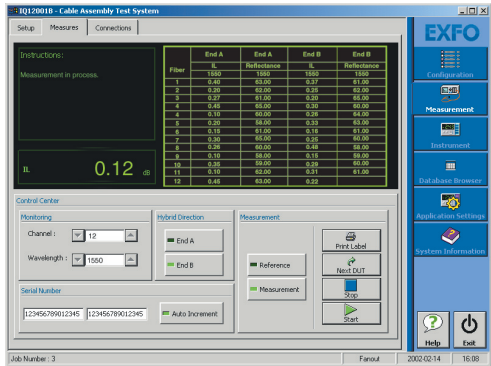


= Reflectance (RL) measured
 = IL + ORL + Length

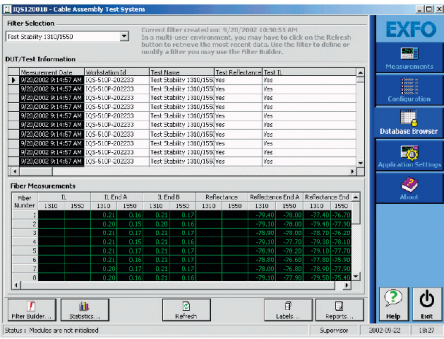
COMPREHENSIVE SOFTWARE

EXFO designed the IQS-12001B software using critical input gathered from its manufacturer customer base. The result is a comprehensive, high-performance software package that brings you the following features:

- Configurable operator and supervisor access levels
- Pass, fail and warning thresholds
- Report and label printing
- On-screen instructions
- Comprehensive SQL results database
- A single software for all multimode and singlemode applications



Thanks to a centralized database, the IQS-12001B can work as a stand-alone station, or it can be connected to a LAN. The LAN connection enables a supervisor to configure connector parameters, cable assemblies, sequences and work orders directly from the office—a convenient feature that saves time and money. A built-in database browser also lets you view, print or export data based on a user-defined filter.

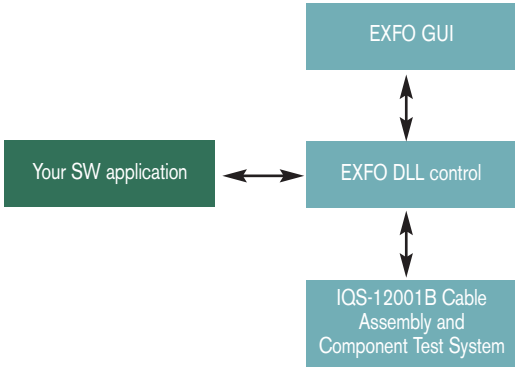


- View, print or export statistics charts based on displayed data and selected template
- View or print reports and labels based on displayed data and selected template
- Customize templates by using built-in VSReport Designer software

Thanks to a unique software package design, EXFO's IQS-12001B Cable Assembly Test System brings it all: performance, versatility and high throughput—meeting your most exacting needs.

DLL CONTROLS FOR CUSTOMIZED APPLICATIONS

The IQS-12001B comes with DLL interfaces that enable you to create your own applications and remotely control your system. These system-level commands ensure smooth, efficient application creation without compromising the system's measurement accuracy and speed. A simple Visual Basic demo is provided to help you get started with your own application.



INTEGRATING CAVITY TECHNOLOGY

EXFO has developed an innovative detector assembly for the IQS-12001B. Using wide-aperture integrating cavity packaging, the detector has many properties that make it ideal for interconnect testing. The wide aperture allows it to be used for simplex and multifiber connectors. Because it uses integrating cavity technology, connector alignment is less critical and polarization dependence is negligible. The end result is increased accuracy, repeatability and flexibility.

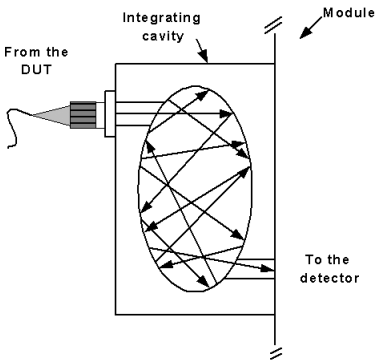


Figure 3: Integrating cavity diagram

The integrating cavity technology is similar to what is known in the industry as the integrating sphere technology. Geometry is the major distinction between the latter and EXFO’s integrating cavity, which is more ellipsoidal than spherical. The interior of the cavity is coated with a light-reflecting material. The light entering the integrating cavity generates a uniform field of light within the cavity, which is used as a means of measurement.

Combining an integrating cavity with a detector and the right diameter input port provides a major advantage: power measurements are independent of the fiber’s numerical aperture, ferrule polish (PC or APC) and alignment, since the cavity scatters all incident light, with the same average power reaching the detector. Integrating cavity technology is a built-in feature of the two detectors used with the IQS-12001B Cable Assembly and Component Test System, the IQS-3250/3250B Loss Test Module and the IQS-9403 Loss Meter.

Optimal power meter/detector characteristics for use with all types of connectors:

- Surface uniformity
- Wide area
- Excellent linearity
- Repeatable connection loss, even with changing adapters
- Economical
- Modular
- Flexible
- Fast response
- Compatible with angled and non-angled polishes
- Low polarization dependence

THE PERFECT TOOL FOR REFLECTION TESTING

To provide the most accurate singlemode reflectance measurement in the -30 to -75 dB range, EXFO specialists have developed a reflectance reference allowing the system to be calibrated in the middle of this range.

Reflectance referencing can also be achieved through the CKT-30 Singlemode Reflectance Reference module. Using the IQS-12001B’s reflectance verification wizard, you can perform step-by-step verification of your system’s reflectance calibration. As long as your system’s reflectance calibration is within ≤ 0.5 dB to that of the CKT-30, you know it meets calibration specifications and don’t need to send it to EXFO for verification—avoiding unnecessary downtime.



Wavelength	IL (dB)	Refl. (dB)
1310 nm	3.56	-53.93
1550 nm	3.63	-52.53
1625 nm	3.32	-54.29

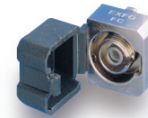
CKT-30 reflectance values for each wavelength

CKT-30 insertion loss values between its In and Out ports for each wavelength

The CKT-30’s reflectance values vary from -55 to -50 dB, according to wavelength. The calibration value, along with the standard insertion loss (IL) values (see figure above), is reported in a calibration certificate. The IQS-12001B system takes into account the difference between IL measured during standard CKT-30 calibration and IL measured during IQS-3250 calibration. The CKT-30 has an uncertainty of ± 0.8 dB, including IL uncertainty.

UNIVERSAL INTERFACE

The IQS-12001B uses the EXFO Universal Interface on the IQS-3250/3250B Loss Test Module, which helps you avoid high insertion loss, high return loss and measurement instability caused by dirty or contaminated connectors. This patented universal connector gives you access to the ferrule, simplifying connector cleaning and ensuring better results.



SPECIFICATIONS ^a

	Singlemode ^b (1310/1550 nm)	Singlemode ^b (1490/1625 nm)	Multimode ^c
Testing time ^d (s)	< 6	< 6	< 6
Cable assembly length (m)	1.8 to 1500	1.8 to 1500	1.8 to 500
Insertion loss measurement uncertainty	± 0.03 ^e	± 0.03 ^e	± 0.07 ^f
Insertion loss measurement stability ^g (dB)	< 0.005	< 0.005	< 0.028
Reflectance range (dB)	−30 to −75	−30 to −75	−10 to −50
Reflectance measurement uncertainty (dB)	±1 dB (−30 dB to −70 dB)	±1 dB (−30 dB to −70 dB)	± 1.6 (−10 dB to −30 dB) ± 1.7 (−30 dB to −45 dB) ± 1.9 (−45 dB to −50 dB)
Reflectance measurement repeatability ^h (dB)	±1.8 dB (−70 dB to −75 dB) ±0.1 dB (−30 dB to −65 dB) ±0.2 dB (−65 dB to −70 dB) ±0.4 dB (−70 dB to −75 dB)	±2 dB (−70 dB to −75 dB) ±0.1 dB (−30 dB to −65 dB) ±0.2 dB (−65 dB to −70 dB) ±0.5 dB (−70 dB to −75 dB)	± 0.2 (−10 dB to −30 dB) ± 0.4 (−30 dB to −40 dB) ± 0.6 (−40 dB to −50 dB)
Wavelengths (nm)	1310/1550	1490/1625	850/1300
Output channels	Up to 32 channels	Up to 32 channels	Up to 32 channels
Test method	End-to-end/bidirectional	End-to-end/bidirectional	End-to-end/bidirectional

Notes

- a. Calculated and measured with the following considerations:
 - Based on recommended procedure for ORL measurements
 - The FOA-300 series' uncertainty is included in all uncertainty values
 - Although tests are possible with other fiber-optic adapters, these specifications are only valid with the FOA-300 series
 - Cable assemblies < 1.8 m can be tested using a non-reflective termination
 - With 15 minute warm-up time
- b. For SMF-28 fiber. At 23 °C ± 1 °C in High-Sensitivity Reflectance mode with no switch.
- c. At 850 nm and 1300 nm. For 62.5/125 µm fibers. At 23 °C ± 1 °C. Switch module connectorized with FC/PC connectors.
Uncertainty due to launching conditions not included.
- d. Calculation and storage time for simplex, dual-wavelength IL/reflectance end-to-end measurements (Standard Reflectance Sensitivity mode, 500 meter range); does not include referencing and connection time.
- e. For simplex measurements using FOA-322 adapter. Uncertainty for MTP to MTP, MT-RJ to MT-RJ, MTP to fanout and MT-RJ to fanout is ± 0.06 dB (reported with a level of confidence of 95 %). This does not include uncertainties due to connector, connector adapter or switch PDL.
- f. For simplex measurement using FOA-322 adapter. Uncertainty for MTP to MTP, MT-RJ to MT-RJ, MTP to fanout and MT-RJ to fanout is ± 0.08 dB (calculated for a level of confidence of 95 %). Does not include uncertainties due to connector, connector adapter or uncertainties due to mode dependence of the switch.
- g. For a stable connection, over 15 minutes, at constant temperature.
- h. For a stable connection, over 10 measurements.

General Specifications

Communication interfaces

General-purpose interface bus (GPIB)
Ethernet (10/100 Base-T)
RS-232

Temperature

Operating	0 °C to 40 °C	(32 °F to 104 °F)
Storage	−40 °C to 60 °C	(−40 °F to 140 °F)

Relative humidity 80 % maximum, non-condensing

Laser Safety

21 CFR 1040.10	CLASS 1 LASER PRODUCT
IEC 60825-1:2001	CLASS 1 LASER PRODUCT

Standard Accessories

Expansion units as required, user guide, certificate of compliance, custom report, label generator, IQS-12001B software and EUI-89 FC narrow key connector.

ORDERING INFORMATION

MODULE

IQS-12001B-XX-XX-X-XX-XX-XX-XX

Model

- IQS-12001B-05-S5-B = IQS-505P, 1310/1550 nm, IL/RL, optional switch 9/125 µm, APC connector
- IQS-12001B-05-S6-B = IQS-505P, 1490/1625 nm, IL/RL, optional switch 9/125 µm, APC connector
- IQS-12001B-05-S7-B = IQS-505P, 1490 nm, IL/RL, optional switch 9/125 µm, APC connector
- IQS-12001B-05-S8-B = IQS-505P, 1310/1550 and 1490/1625 nm, IL/RL with 1x2 optical switch, optional switch 9/125 µm, APC connector
- IQS-12001B-10-S5-B = IQS-510P, 1310/1550 nm, IL/RL, optional switch 9/125 µm, APC connector
- IQS-12001B-10-S6-B = IQS-510P, 1490/1625 nm, IL/RL, optional switch 9/125 µm, APC connector
- IQS-12001B-10-S7-B = IQS-510P, 1490 nm, IL/RL, optional switch 9/125 µm, APC connector
- IQS-12001B-10-S8-B = IQS-510P, 1310/1550 and 1490/1625 nm, IL/RL with 1x2 optical switch, optional switch 9/125 µm, APC connector
- IQS-12001B-05-S1-C = IQS-505P, 850/1300 nm, IL only, optional switch 50/125 µm, PC connector
- IQS-12001B-05-S1-D = IQS-505P, 850/1300 nm, IL only, optional switch 62.5/125 µm, PC connector
- IQS-12001B-05-S2-C = IQS-505P, 850/1300 nm, IL/RL, optional switch 50/125 µm, PC connector
- IQS-12001B-05-S2-D = IQS-505P, 850/1300 nm, IL/RL, optional switch 62.5/125 µm, PC connector
- IQS-12001B-10-S1-C = IQS-510P, 850/1300 nm, IL only, optional switch 50/125 µm, PC connector
- IQS-12001B-10-S1-D = IQS-510P, 850/1300 nm, IL only, optional switch 62.5/125 µm, PC connector
- IQS-12001B-10-S2-C = IQS-510P, 850/1300 nm, IL/RL, optional switch 50/125 µm, PC connector
- IQS-12001B-10-S2-D = IQS-510P, 850/1300 nm, IL/RL, optional switch 62.5/125 µm, PC connector

Reflectance Reference

- 00 = Without reflectance reference
- CKT-30 = With reflectance reference singlemode

Additional Loss Meter

- 00 = Without additional loss meter
- PM01 = With one additional loss meter

Channel Count

- 00 = Without switch
- 1-02 = 1x2 switch
- 1-04 = 1x4 switch
- 1-12 = 1x12 switch
- 1-24 = 1x24 switch
- 1-32 = 1x32 switch
- Singlemode switch with FC/APC connector
- Multimode switch with FC/PC connector
- Other connectors available: contact EXFO for special order

Connector Adapter

- FOA-316 = Ultra-low reflection SMA 906
- FOA-322 = Ultra-low reflection FC
- FOA-328 = Ultra-low reflection DIN 47256
- FOA-332 = Ultra-low reflection ST
- FOA-340 = Ultra-low reflection HMS-0, HMS-3
- FOA-354 = Ultra-low reflection SC
- FOA-376 = Ultra-low reflection HMS, HFS-10/AG
- FOA-384 = Ultra-low reflection HMS-10/HP, HFS
- FOA-392 = Ultra-low reflection MTP
- FOA-393 = Ultra-low reflection MT-RJ
- FOA-396 = Ultra-low reflection E-2000
- FOA-397 = Ultra-low reflection LX.5
- FOA-398 = Ultra-low reflection LC
- FOA-399 = Ultra-low reflection MU
- FOA-3000 = Adapter for BFA-3000

Connector Adapter

- FOA-316 = Ultra-low reflection SMA 906
- FOA-322 = Ultra-low reflection FC
- FOA-328 = Ultra-low reflection DIN 47256
- FOA-332 = Ultra-low reflection ST
- FOA-340 = Ultra-low reflection HMS-0, HFS-3
- FOA-354 = Ultra-low reflection SC
- FOA-376 = Ultra-low reflection HMS, HFS-10/AG
- FOA-384 = Ultra-low reflection HMS-10/HP, HFS
- FOA-392 = Ultra-low reflection MTP
- FOA-393 = Ultra-low reflection MT-RJ
- FOA-396 = Ultra-low reflection E-2000
- FOA-397 = Ultra-low reflection LX.5
- FOA-398 = Ultra-low reflection LC
- FOA-399 = Ultra-low reflection MU
- FOA-3000 = Adapter for BFA-3000

Example: IQS-12001B-10-S3-B-FOA-322

Optional Accessories

- FIP-USB4:** Video Fiber Inspection Probe with USB module
- FOA-U12:** Universal 1.25 mm ferrule
- FOA-U25:** Universal 2.5 mm ferrule

IQS-3250-XX-XX

Model

- IQS-3250-12-D-IL = 850/1300 nm IL 62.5/125 µm, PC connector
- IQS-3250-12-D = 850/1300 nm IL/RL 62.5/125 µm, PC connector
- Example: IQS-3250-12-D-IL-FOA-322

IQS-3250B-XX-XX

Model

- IQS-3250B-23-B = 1310/1550 nm IL/RL 9/125 µm, APC connector
- IQS-3250B-46-B = 1490/1625 nm IL/RL 9/125 µm, APC connector
- IQS-3250B-06-B = 1490 nm IL/RL 9/125 µm, APC connector
- Example: IQS-3250B-23-B-FOA-322

Find out more about EXFO's extensive line of high-performance portable instruments by visiting our website at www.EXFO.com.

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EXFO is certified ISO 9001 and attests to the quality of these products. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device must 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 specification sheet is accurate. All of EXFO's manufactured products are compliant with the European Union's WEEE directive. For more information, please visit www.EXFO.com/recycle. 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. Units of measurement in this document conform to SI standards and practices. Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.

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