IQS-2800

ITLA Tunable Light Source Module

www.EXFO.com

EXFO | Telecom Test and Service Assurance

EXFO's Commerce And Government Entities (CAGE) code under the North Atlantic Treaty Organization (NATO) is 0L8C3.

The information contained in this publication is subject to change without notice.

Trademarks
EXFO's trademarks have been identified as such. However, the presence or absence of such identification does not affect the legal status of any trademark.

Units of Measurement
Units of measurement in this publication conform to SI standards and practices.

Version Number: **4.0**

Contents

Certification Information

North America Regulatory Statement
This unit was certified by an agency approved in both Canada and the United States of America. It has been evaluated according to applicable North American approved standards for product safety for use in Canada and the United States.

Electronic test and measurement equipment is exempt from FCC part 15, subpart B compliance in the United States of America and from ICES-003 compliance in Canada. However, EXFO Inc. makes reasonable efforts to ensure compliance to the applicable standards.

The limits set by these standards are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, maybe cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- **Reorient or relocate the receiving antenna.**
- **Increase the separation between the equipment and receiver.**
- **Connect the equipment into an outlet on a circuit different form that to which the receiver is connected.**
- **Consult the dealer or an experienced radio/TV technician for help.**

Conventions

Before using the instrument described in this manual, you should understand the following conventions:

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in *death or serious injury*. Do not proceed unless you understand and meet the required conditions.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *minor or moderate injury*. Do not proceed unless you understand and meet the required conditions.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *component damage*. Do not proceed unless you understand and meet the required conditions.

IMPORTANT

Refers to information about this product you should not overlook.

1. Safety Information

WARNING

- This instrument must be used with an approved IEC cable with an EARTH terminal. Do not attempt to use this instrument without a proper earth terminal, doing so may lead to a hazardous condition and/or damage to the equipment.
- Do not install or terminate fibers while a light source is active. Never look directly into a live fiber and ensure that your eyes are protected at all times.
- The use of controls, adjustments and procedures other than those specified herein may result in exposure to hazardous situations or impair the protection provided by this unit.

CAUTION

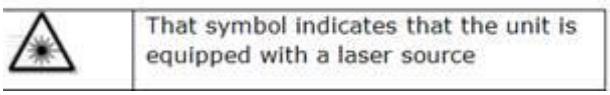
The IQS-2800 expansion modules are sensitive to electrostatic discharge (ESD). Please be sure to store the modules that are not installed in protective electrostatic packaging.

IMPORTANT

- For electromagnetic compatibility, this instrument is a Class A product. It is intended for use in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted as well as radiated disturbances.

➤ When you see the following symbol on your unit  , make sure that you refer to the instructions provided in your user documentation. Ensure that you understand and meet the required conditions before using your product.

Your instrument is a Class 1M laser product in compliance with standards IEC 60825-1:2007 and 21 CFR 1040.10. Laser radiation may be encountered at the output port.



VIEWING THE LASER OUTPUT WITH CERTAIN OPTICAL INSTRUMENTS (FOR EXAMPLE, EYE LOUPES, MAGNIFIERS AND MICROSCOPES) WITHIN A DISTANCE OF 100 MM MAY POSE AN EYE HAZARD

Figure 1a - Class 1M Laser Product Warning

L'OBSERVATION DE LA SORTIE DU LASER AVEC CERTAINS INSTRUMENTS D'OPTIQUE (PAR EXEMPLE LOUPES D'HORLOGER, LOUPES À MAIN ET MICROSCOPES) À UNE DISTANCE INFÉRIEURE À 100 MM PEUT PRÉSENTER UN DANGER POUR LES YEUX.

Figure 2b – Avertissement : Produit de classe laser 1M

2. Introducing the IQS-2800 Tunable Laser Source

The IQS-2800 Tunable Laser Source is a multi-channel Continuous Wave (CW) laser module designed to be used in the IQS-636 platform. The laser sources are installed as modules with 2 or 4 lasers. With its high power output, narrow linewidth and the ability for high resolution tuning, the IQS-636 platform with IQS-2800 modules is a cost-effective and versatile solution for various applications including coherent detection of high speed complex modulation formats, DWDM component testing and optical sensor interrogation.

The modular chassis design of the IQS-636, with nine (9) expansion slots, can hold up to thirty six (36) tunable laser sources providing great flexibility to manage the number of laser sources to meet changing laboratory demands.

Figure 3 - EXFO IQS-636 Modular Tunable Laser Source Platform

3. Technical Specifications

IMPORTANT

These technical specifications can change without notice. The information presented in this section is provided as a reference only. To obtain this product's most recent technical specifications, visit the EXFO Web site at *www.exfo.com*.

Table 1 - IQS-2800 Module Specifications

IQS-2800 Part Number	Optical connector Type	Number of lasers	Optical Power (dBm)	Band	Operating frequency range (THz)	Operating wavelength range (nm)
IQS-2800-1-2-A-S-89 IQS-2800-1-2-A-S-91	PM FC/UPC PM SC/UPC	2	7.0 - 13.0	A	191.300 – 196.050	1529.163 - 1567.133

IQS-2800-1-4-A-S-89	PM FC/UPC	4				
IQS-2800-1-4-A-S-91	PM SC/UPC					
IQS-2800-1-2-A-H-89	PM FC/UPC	2	7.0 – 15.0			
IQS-2800-1-2-A-H-91	PM SC/UPC					
IQS-2800-1-4-A-H-89	PM FC/UPC	4				
IQS-2800-1-4-A-H-91	PM SC/UPC					
IQS-2800-1-2-C-S-89	PM FC/UPC	2	7.0 - 13.0	C	191.500 – 196.250	1527.605 – 1565.496
IQS-2800-1-2-C-S-91	PM SC/UPC					
IQS-2800-1-4-C-S-89	PM FC/UPC	4				
IQS-2800-1-4-C-S-91	PM SC/UPC					
IQS-2800-1-2-C-H-89	PM FC/UPC	2	7.0 – 15.0			
IQS-2800-1-2-C-H-91	PM SC/UPC					
IQS-2800-1-4-C-H-89	PM FC/UPC	4				
IQS-2800-1-4-C-H-91	PM SC/UPC					
IQS-2800-1-2-L-S-89	PM FC/UPC	2	7.0 - 13.0	L	186.350 – 191.100	1568.773 – 1608.760
IQS-2800-1-2-L-S-91	PM SC/UPC					
IQS-2800-1-4-L-S-89	PM FC/UPC	4				
IQS-2800-1-4-L-S-91	PM SC/UPC					
IQS-2800-1-2-L-H-89	PM FC/UPC	2	7.0 – 15.0			
IQS-2800-1-2-L-H-91	PM SC/UPC					
IQS-2800-1-4-L-H-89	PM FC/UPC	4				
IQS-2800-1-4-L-H-91	PM SC/UPC					

Specification (23°C± 3°C)	Units	All IQS-2800 models
Laser type		CW ECDL[1]
Frequency tuning resolution	MHz	100
Wavelength tuning resolution[2]	pm	~1
Fine tune frequency resolution	MHz	1
Fine tune frequency range	GHz	6
Maximum time to tune and power lock (warm start)[3]	sec	< 25
Spectral Characteristics		
Linewidth [FWHM (-3dB), instantaneous][4]	kHz	< 100
Side mode suppression ratio	dB	55 typical (40 min)
Frequency uncertainty	GHz	± 2.5
Frequency stability, over 24 hours	GHz	± 0.3
RIN for 13dBm output power[5]	dB/Hz	-145
Optical Power		
Maximum optical output power, High power models	dBm	≥ 15.0
Maximum optical output power, Standard power models	dBm	≥ 13.0
Minimum optical output power, High power models	dBm	≤ 8.0
Minimum optical output power, Standard power models	dBm	≤ 7.0
Output power uncertainty, after calibration	dBm	± 0.6
Output power step size	dB	0.01
Power stability, 24 hours	dB	± 0.1
Power flatness over frequency (BOL)	dB	< 0.5
Power monitoring		Built-in

General Characteristics

Dimensions	41 (W) x 305 (D) x 129 (H) mm
Weight	1.7 kg

Equipment Rating	
Temperature ➢ Operation ➢ Storage	 ➢ 5 °C to 45 °C (41 °F to113 °F) ➢ -40 °C to 70 °C (-40 °F to 158 °F)
Relative humidity	≤ 93 % non-condensing
Maximum operation altitude	2 000 m (6562 ft)
Pollution degree	2
Overvoltage category	II
Measurement category	Not rated for measurement categories II, III or IV

1. Continuous Wave (CW) thermally tuned External-Cavity Diode Laser (ECDL).
2. Varies slightly depending on the wavelength
3. Laser operation time of at least 30 minutes
4. The laser uses a small FM dithering as part of its wavelength locking mechanism. The instantaneous Linewidth is measured over a 1 ms integration time
5. RIN is specified for 10Mhz to 40GHz

4. Connecting Optical Output

IMPORTANT

To ensure maximum power and to avoid erroneous readings always inspect fiber ends and make sure that they are clean as explained below before inserting them into the port. EXFO is not responsible for damage or errors caused by bad fiber cleaning or handling.

CAUTION

The type of optical connectors is specific to the IQS-2800 module. The connectors will be of type PM FC/UPC or PM SC/UPC. This information can be found printed on the front plate of the IQS-2800 module and in

IMPORTANT

These technical specifications can change without notice. The information presented in this section is provided as a reference only. To obtain this product's most recent technical specifications, visit the EXFO Web site at *www.exfo.com*.

Table 1 - IQS-2800 Module Specifications. Joining mismatched connectors will damage the ferrules

Cleaning and Connecting Optical Fibers

To connect the fiber-optic cable to the port:

1. Inspect the fiber using a fiber inspection microscope. If the fiber is clean, proceed to connecting it to the port. If the fiber is dirty, clean it as explained below.
2. Clean the fiber ends as follows:
   - **2a.** Gently wipe the fiber end with a lint-free swab dipped in isopropyl alcohol.
   - **2b.** Use compressed air to dry completely.
   - **2c.** Visually inspect the fiber end to ensure its cleanliness.
3. Carefully align the connector and port to prevent the fiber end from touching the outside of the port or rubbing against other surfaces. If your connector features a key, ensure that it is fully fitted into the port's corresponding notch.
4. Push the connector in so that the fiber-optic cable is firmly in place, thus ensuring adequate contact. If your connector features a screw sleeve, tighten the connector enough to firmly maintain the fiber in place. Do not over tighten, as this will damage the fiber and the port.

***Note**: If your fiber-optic cable is not properly aligned and/or connected, you will notice heavy loss and reflection.*

EXFO uses good quality connectors in compliance with EIA-455-21A standards.

To keep connectors clean and in good condition, EXFO strongly recommends inspecting them with a fiber inspection probe before connecting them. Failure to do so will result in permanent damage to the connectors and degradation in measurements.

5. Installing an IQS-2800 Expansion Module

WARNING

DO NOT attempt to remove or adjust any component of the IQS-636 while the power is on. Make sure you follow the correct procedures below and power down the IQS-636 first.

CAUTION

- Do not remove the IQS-2800 from the antistatic packaging until instructed during the following installation procedure.
- The IQS-2800 is sensitive to ESD. Please be sure to wear a grounded wrist strap at all times when handling the IQS-2800 module to prevent such damage.
- Take care not to handle the connector on the IQS-2800 module once they are exposed as this may leave corrosive residue which can damage the connector.

***Note**: You will need a Phillips screwdriver to both unfasten the blanking module and secure the new IQS-2800 module in place.*

Power down the IQS-636

1. Press the *Power On/Off* switch. The switch will no longer be illuminated indicating that the instrument is off.

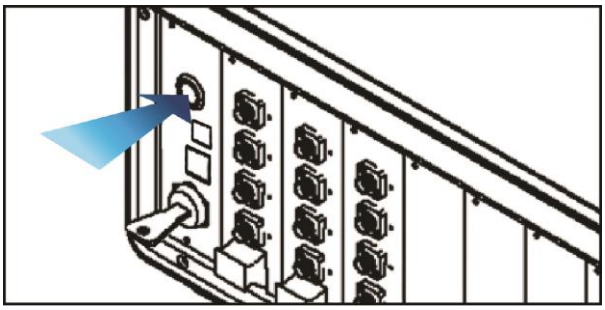


Figure 4 - Turn Off Power

Remove the blanking module

2. To remove the *blanking module* of the desired slot, loosen the screw underneath the *release latch*. Do not attempt to remove the screw completely as they are designed to stay inside the *release latch*.

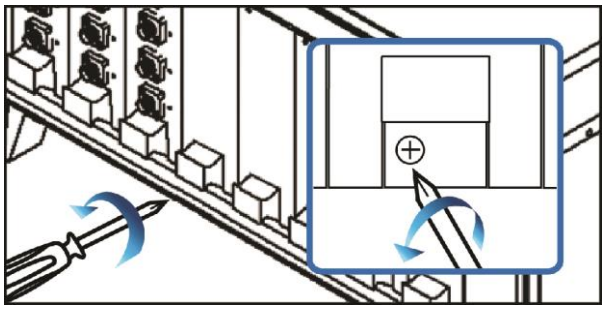


Figure 5 - Unfasten screw under Release Latch

3. Slide the *blanking module* out to remove it and store the *blanking module* near the IQS-636 for future use.

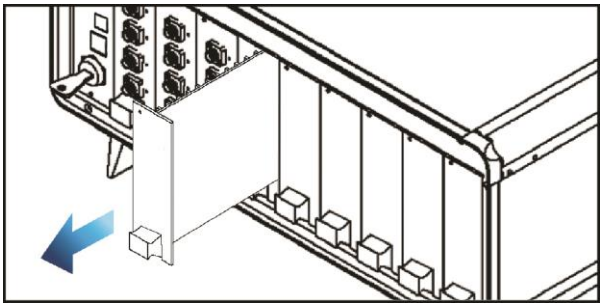


Figure 6 - Removing Blanking Module

Remove the IQS-2800 from packaging

4. Unpack the IQS-2800 module from the antistatic packaging, making sure to store the packaging near the IQS-636 so it is available to safely store any IQS-2800 that may be removed in the future.

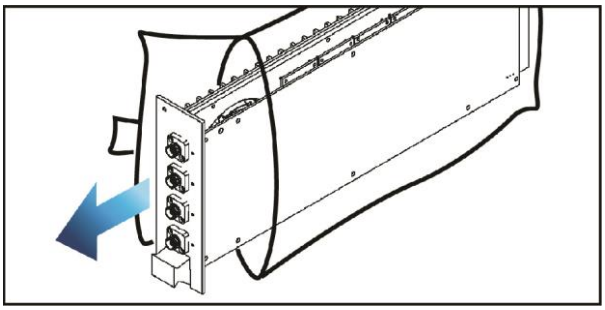


Figure 7 - Remove and store Antistatic Packaging

Insert the IQS-2800 securing into place

5. Slide the IQS-2800 into the available slot using the guide rails.

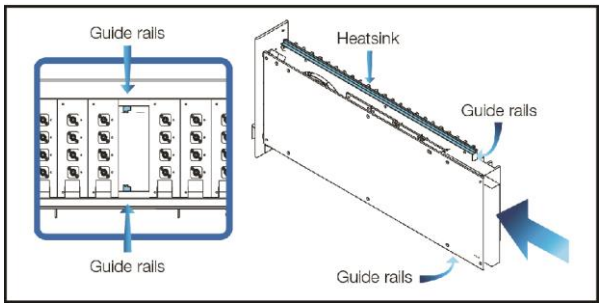


Figure 8 - IQS-636 and IQS-2800 Guide Rails

6. Once the IQS-2800 reaches the connector at the end of the slot, press your thumbs on the *release latch* and the top of the IQS-2800 module as shown in Figure 10 to make sure the IQS-2800 seats correctly.

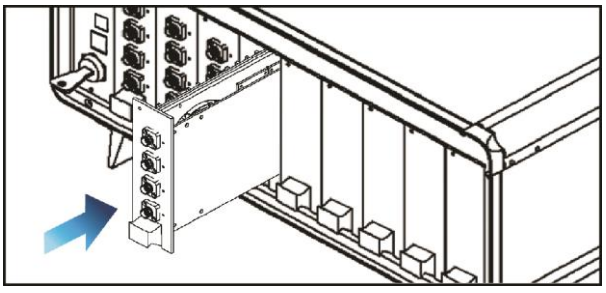


Figure 9 - Installing the IQS-2800 Module

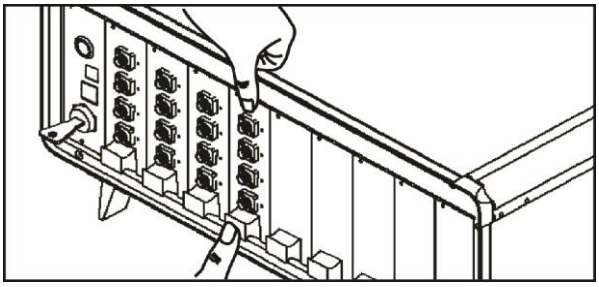


Figure 10 – Press the IQS-2800 Module to seat it into the Connector

7. Once the IQS-2800 is installed, fasten the screw in the *release latch* to lock the IQS-2800 into place.

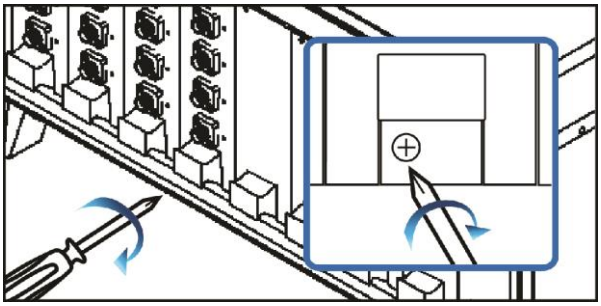


Figure 11 – Fasten screw in Release Latch

Power on the IQS-636

8. Power on the IQS-636 by pressing the *Power On/Off* switch. The switch will become illuminated to verify that the instrument is powered on.

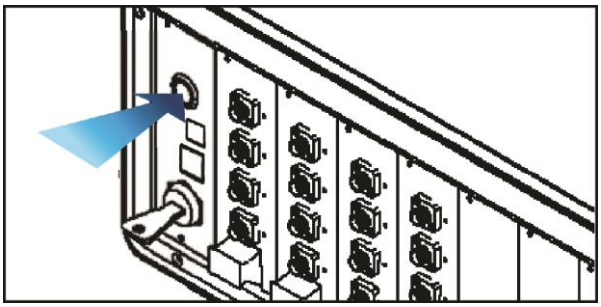


Figure 12 - Powering On the IQS-636

IMPORTANT

After powering on the IQS-636, please wait at least 2 minutes before attempting to communicate with the instrument. This will allow the IQS-636 enough time to finish boot procedures and initialize the communication server.

Configure the new IQS-2800

9. Use your preferred method of communicating with the IQS-636 to configure the newly installed IQS-2800.

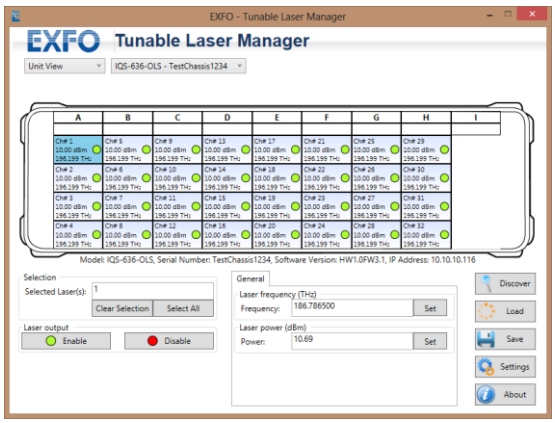


Figure 13 – Configure the IQS-2800

6. Removing an IQS-2800 Expansion Module

WARNING

DO NOT attempt to remove or adjust any component of the IQS-636 while the power is on. Make sure you follow the correct procedures below and power down the IQS-636 first.

CAUTION

- Do not remove the IQS-2800 from the antistatic packaging until instructed during the following installation procedure.
- The IQS-2800 is sensitive to ESD. Please be sure to wear a grounded wrist strap at all times when handling the IQS-2800 module to prevent such damage.
- Take care not to handle the connector on the IQS-2800 module once they are exposed as this may leave corrosive residue which can damage the connector.
-

IMPORTANT

- ➢ A Blanking module will be required to replace the removed IQS-2800 module. Please make sure you have a blanking module available. The specifications of the IQS-2800 are only valid when all empty slots have blanking modules.
- ➢ You will need antistatic packaging to store the IQS-2800 upon removal at the appropriate step in the following installation procedures. Please make sure this packaging is immediately available before continuing with the following procedure.

***Note**: You will need a Phillips screwdriver to both unfasten the blanking module and secure the new IQS-2800 module in place.*

Acquire storage electrostatic packaging and blanking module

1. In preparation for removal of the IQS-2800 module, locate and retrieve the antistatic packaging the IQS-2800 was supplied in. This should have been stored near the IQS-636 when the IQS-2800 was installed.

2. Also you will require a *blanking module* to install once the IQS-2800 has been removed.

IMPORTANT

Do not continue unless you have the *blanking module* and appropriate storage packaging for the removed IQS-2800. If the IQS-2800 is not stored correctly it may be affected by ESD. The specifications of the IQS-2800 are only valid when all slots have blanking modules.

Power down the IQS-636

3. Press the *Power On/Off* switch. The switch will no longer be illuminated indicating that the instrument is off.

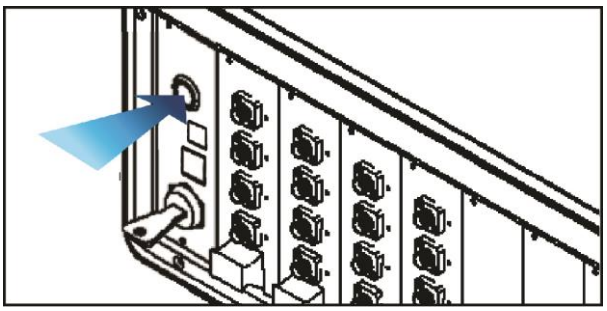


Figure 14 - Turn Off Power

WARNING

Take care when handling the IQS-2800 as during operation the IQS-2800 module may be very hot.

Remove the IQS-2800

4. To remove the desired IQS-2800 module, loosen the screw underneath the *release latch*. Do not try to remove the screw completely as they are designed to stay inside the *release latch*.

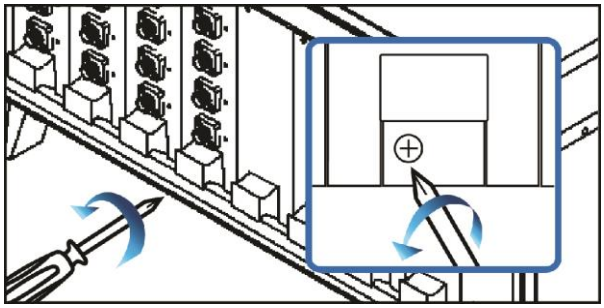


Figure 15 – Unfasten screw under Release Latch

5. Press downward on the *release latch* to unseat the IQS-2800 module from the back connector as shown in Figure 16**.**

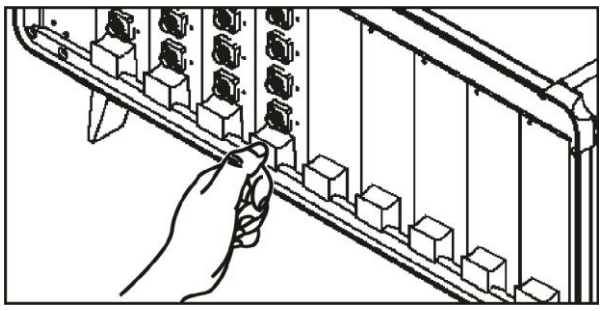


Figure 16 – Press down on the Release Latch

6. Slide the IQS-2800 module out to remove.

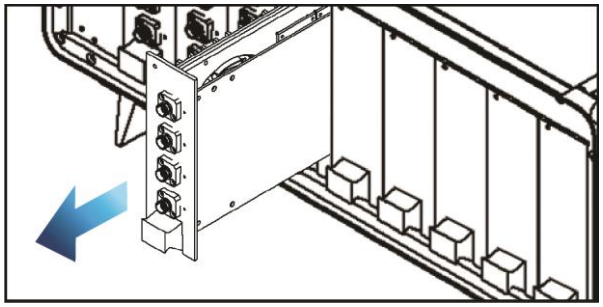


Figure 17 – Slide out the IQS-2800 Module

Package the IQS-2800 for storage

7. Once removed, put the IQS-2800 module into the antistatic packaging for storage. This will ensure the IQS-2800 is not subject to ESD.

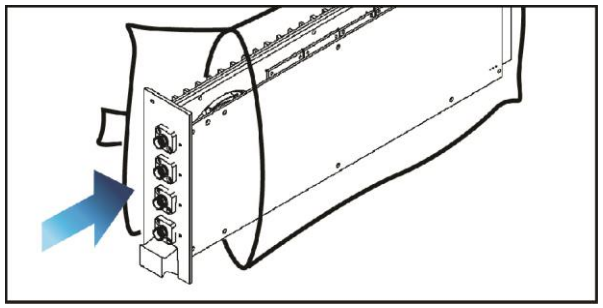


Figure 18 - Storing the IQS-2800 Module

8. Slide the *blanking module* into the empty slot using the guide rails.

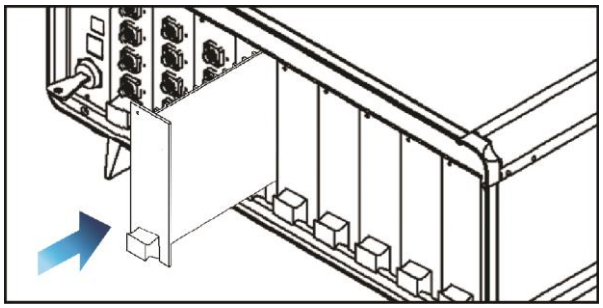


Figure 19 - Installing the Blanking Module

9. Once the *blanking module* is fully inserted, fasten the screw in the *release latch* to secure the *blanking module* into place.

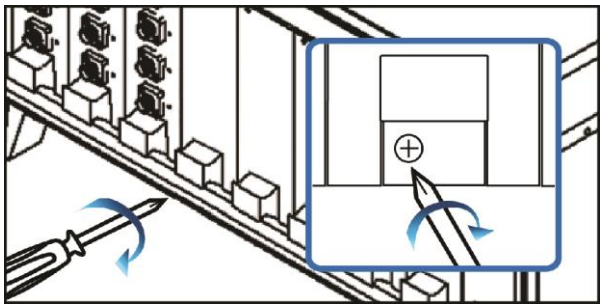


Figure 20 - Fasten screw under Release Latch

Power on the IQS-636

10. Power on the IQS-636 by pressing the *Power On/Off* switch. The switch will become illuminated to verify that the instrument is powered on.

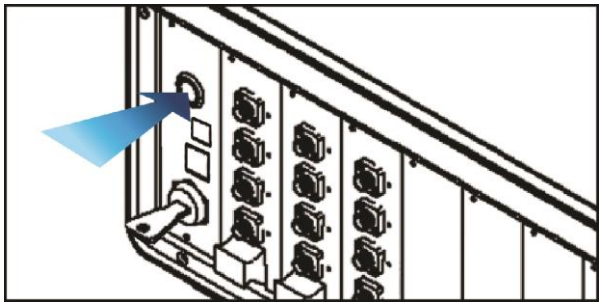


Figure 21 – Power on the IQS-636

IMPORTANT

After powering on the IQS-636, please wait at least 2 minutes before attempting to communicate with the instrument. This will allow the IQS-636 enough time to finish boot procedures and initialize the communication server.

7. Maintenance

To help ensure long, trouble-free operation:

- Always inspect fiber-optic connectors before using them and clean them if necessary.
- Keep the unit free of dust.
- Always use blanking modules in slots that do not have an IQS-2800 laser module.
- Clean the unit casing and front panel with a cloth slightly dampened with water.
- Store unit at room temperature in a clean and dry area. Keep the unit out of direct sunlight.
- Avoid high humidity or significant temperature fluctuations.
- Avoid unnecessary shocks and vibrations.
- If any liquids are spilled on or into the unit, turn off the power immediately, disconnect from any external power source, remove the batteries and let the unit dry completely.

WARNING

The use of controls, adjustments and procedures other than those specified herein may result in exposure to hazardous situations or impair the protection provided by this unit.

Recycling and Disposal (Applies to European Union only)

For complete recycling/disposal information as per European Directive WEEE 2012/19/UE, visit the EXFO Web site at www.exfo.com/recycle

NOTICE

通告

CHINESE REGULATION ON RESTRICTION OF HAZARDOUS SUBSTANCES
中国关于危害物质限制的规定

NAMES AND CONTENTS OF THE TOXIC OR HAZARDOUS SUBSTANCES OR ELEMENTS CONTAINED IN THIS EXFO PRODUCT

包含在本 EXFO 产品中的有毒有害物质或元素的名称和含量

O	Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
X	Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

Part Name 部件名称	Toxic or hazardous Substances and Elements 有毒有害物质和元素					
	Lead 铅 (Pb)	Mercury 汞 (Hg)	Cadmium 镉 (Cd)	Hexavalent Chromium 六价铬 (Cr VI)	Polybrominated biphenyls 多溴联苯 (PBB)	Polybrominated diphenyl ethers 多溴二苯醚 (PBDE)
Enclosure 外壳	O	O	O	O	O	O
Electronic and electrical sub-assembly 电子和电子组件	X	O	X	O	X	X
Optical sub-assembly[a] 光学组件 [a]	X	O	O	O	O	O
Mechanical sub-assembly[a] 机械组件 [a]	O	O	O	O	O	O

MARKING REQUIREMENTS

标注要求

Product 产品	Environmental protection use period (years) 环境保护使用期限(年)	Logo 标志
This EXFO product 本 EXFO 产品	10	
Battery[a] 电池 [a]	5	

a. If applicable.
如果适用

8. Technical Support

Contacting the Technical Support Group

To obtain after-sales service or technical support for this product, contact EXFO at one of the following numbers. The Technical Support Group is available to take your calls from Monday to Friday, 8:00 a.m. to 7:00 p.m. (Eastern Time in North America).

Technical Support Group
400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 (USA and Canada)
Tel.: 1 418 683-5498
Fax: 1 418 683-9224
support@exfo.com

For detailed information about technical support, and for a list of other worldwide locations, visit the EXFO Web site at www.exfo.com.

To accelerate the process, please have information such as the name and the serial number (see the product identification label), as well as a description of your problem, close at hand.

You may also be requested to provide software and module version numbers. This information, as well as technical support contact information, can be found in the '*About*' window.

Transportation

Maintain a temperature range within specifications when transporting the unit. Transportation damage can occur from improper handling. The IQS-636 should be moved, lifted or otherwise transported without any IQS-2800 modules in the expansion slots.

The following steps are recommended to minimize the possibility of damage:

- Pack the unit in its original packing material when shipping.
- Avoid high humidity or large temperature fluctuations.
- Keep the unit out of direct sunlight.
- Avoid unnecessary shocks and vibrations.

IMPORTANT

Keep this manual close at hand as it contains important details about your product.

9. Warranty

General Information

EXFO Inc. (EXFO) warrants this equipment against defects in material and workmanship for a period of one year from the date of original shipment. EXFO also warrants that this equipment will meet applicable specifications under normal use.

During the warranty period, EXFO will, at its discretion, repair, replace, or issue credit for any defective product, as well as verify and adjust the product free of charge should the equipment need to be repaired or if the original calibration is erroneous. If the equipment is sent back for verification of calibration during the warranty period and found to meet all published specifications, EXFO will charge standard calibration fees.

IMPORTANT

The warranty can become null and void if:

- The unit has been tampered with, repaired, or worked upon by unauthorized individuals or non-EXFO personnel.
- The warranty sticker has been removed.
- The case screws, other than those specified in this guide, have been removed.
- The case has been opened, other than as explained in this guide.
- The unit serial number has been altered, erased, or removed.
- The unit has been misused, neglected, or damaged by accident.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL EXFO BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

Liability

EXFO shall not be liable for damages resulting from the use of the product, nor shall be responsible for any failure in the performance of other items to which the product is connected or the operation of any system of which the product may be a part.

EXFO shall not be liable for damages resulting from improper usage, transportation or unauthorized modification of the product, its accompanying accessories and software.

Exclusions

EXFO reserves the right to make changes in the design or construction of any of its products at any time without incurring obligation to make any changes whatsoever on units purchased. Accessories, including but not limited to fuses, pilot lamps, batteries and universal interfaces (EUI) used with EXFO products are not covered by this warranty.

This warranty excludes failure resulting from: improper use or installation, normal wear and tear, accident, abuse, neglect, fire, water, lightning or other acts of nature, causes external to the product or other factors beyond the control of EXFO.

IMPORTANT

EXFO will charge a fee for replacing optical connectors that were damaged due to misuse or bad cleaning.

Certification

EXFO certifies that this equipment met its published specifications at the time of shipment from the factory.

Service and Repairs

EXFO commits to providing product service and repair for five years following the date of purchase.

To send any equipment for service or repair:

1. Call one of EXFO's authorized service centers (see EXFO Service Centers Worldwide on page 20). Support personnel will determine if the equipment requires service, repair, or calibration.
2. If equipment must be returned to EXFO or an authorized service center, support personnel will issue a Return Merchandise Authorization (RMA) number and provide an address for return.
3. If possible, back up your data before sending the unit for repair.
4. Pack the equipment in its original shipping material. Be sure to include a statement or report fully detailing the defect and the conditions under which it was observed.
5. Return the equipment, prepaid, to the address given to you by support personnel. Be sure to write the RMA number on the shipping slip. EXFO will refuse and return any package that does not bear an RMA number.

***Note**: A test setup fee will apply to any returned unit that, after test, is found to meet the applicable specifications.*

After repair, the equipment will be returned with a repair report. If the equipment is not under warranty, you will be invoiced for the cost appearing on this report. EXFO will pay return-to-customer shipping costs for equipment under warranty. Shipping insurance is at your expense.

Routine recalibration is not included in any of the warranty plans. Since calibrations/verifications are not covered by the basic or extended warranties, you may elect to purchase FlexCare Calibration/Verification Packages for a definite period of time. Contact an authorized service center (see EXFO Service Centers Worldwide on page 20).

10.EXFO Service Centers Worldwide

If your product requires servicing, contact the nearest authorized service center.

EXFO Headquarters Service Center
400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 (USA and Canada)
Tel.: 1 418 683-5498
Fax: 1 418 683-9224
support@exfo.com

EXFO Europe Service Center
Winchester House, School Lane
Chandlers Ford, Hampshire S053 4DG
ENGLAND

Tel.: +44 2380 246800
Fax: +44 2380 246801
support.europe@exfo.com

EXFO Telecom Equipment (Shenzhen) Ltd.
3rd Floor, Building 10,
Yu Sheng Industrial Park (Gu Shu Crossing), No. 467,
National Highway 107,
Xixiang, Bao An District,
Shenzhen, China, 518126

Tel: +86 (755) 2955 3100
Fax: +86 (755) 2955 3101
support.asia@exfo.com

www.EXFO.com info@exfo.com

CORPORATE HEADQUARTERS	400 Godin Avenue	Quebec (Quebec) G1M 2K2 CANADA Tel.: 1 418 683-0211 · Fax: 1 418 683-2170
EXFO AMERICA	3400 Waterview Parkway Suite 100	Richardson, TX 75080 USA Tel.: 1 972-761-927 · Fax: 1 972-761-9067
EXFO EUROPE	Winchester House, School Lane	Chandlers Ford, Hampshire S053 4DG ENGLAND Tel.: +44 2380 246 800 · Fax: +44 2380 246 801
EXFO ASIA-PACIFIC	100 Beach Road, #25-01/03 Shaw Tower	SINGAPORE 189702 Tel.: +65 6333 8241 · Fax: +65 6333 8242
EXFO CHINA	Beijing Global Trade Center, Tower C, Room 1207, 36 North Third Ring Road East, Dongcheng District	Beijing 100013 P. R. CHINA Tel.: +86 (10) 5825 7755 · Fax: +86 (10) 5825 7722
EXFO SERVICE ASSURANCE	270 Billerica Road	Chelmsford MA, 01824 USA Tel.: 1 978 367-5600 · Fax: 1 978 367-5700
EXFO FINLAND	Elektroniikkatie 2	FI-90590 Oulu, FINLAND Tel.: +358 (0) 403 010 300 · Fax: +358 (0) 8 564 5203
TOLL-FREE	(USA and Canada)	1 800 663-3936

ISO 9001 CE

EXFO | Telecom Test and Service Assurance