

QA-805 and W²CM Interface Module



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Units of Measurement

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

April 12, 2013

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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.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

UL Information

This unit is certified by the UL and was evaluated according to applicable UL standards (as confirmed by cULus mark) as well as applicable IEC standards for use in Canada, the United States, and other countries.



DECLARATION OF CONFORMITY

Application of Council Directive(s): 1999/5/EC – The R&TTE Directive
2011/65/UE – Restriction of the use of certain hazardous substances (RoHS)
And their amendments

Manufacturer's Name and Address:

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Equipment Type/Environment: Test & Measurement / Industrial
Trade Name/Model No.: Next-Generation Network Test Platform—Quality Assurer QA-805

Standard(s) to which Conformity is declared:

EN 60950-1:2006 + A11:2009, 2nd Edition Information Technology Equipment – Safety – Part 1: General requirements

EN 61326-1:2006 Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive and Standards.

Manufacturer:

Stephen Bull, E. Eng
Vice-President Research and Development

400 Godin Avenue,
Quebec City, Quebec
G1M-2K2, CANADA
August 31, 2011





DECLARATION OF CONFORMITY

Application of Council Directive(s): 1999/5/EC – The R&TTE Directive
2011/65/UE – Restriction of the use of certain hazardous substances (RoHS)
And their amendments

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Equipment Type/Environment: Test & Measurement / Basic
Trade Name/Model No.: 10 Gigabit Ethernet Interface Series—W²CM

Standard(s) to which Conformity is declared:

EN 60950-1:2006 + A11:2009, 2nd Edition Information Technology Equipment – Safety – Part 1: General requirements

EN 61326-1:2006 Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements

EN 60825-1:2007 Edition 2.0 Safety of laser products – Part 1: Equipment classification and requirements

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive and Standards.

Manufacturer:



Stephen Bull, E. Eng
Vice-President Research and Development

400 Godin Avenue,
Quebec City, Quebec
G1M-2K2, CANADA
May 23, 2012



1 **Introduction**

EXFO's QualityAssurer™ QA-805 is targeted at NEMs and NSPs that are developing and deploying IMS and wireless networks. The QA-805 offers easy-to-use test solutions covering the complete testing life cycle of LTE, IMS, VoLTE, and VoIP networks and services.

QA-805 Features

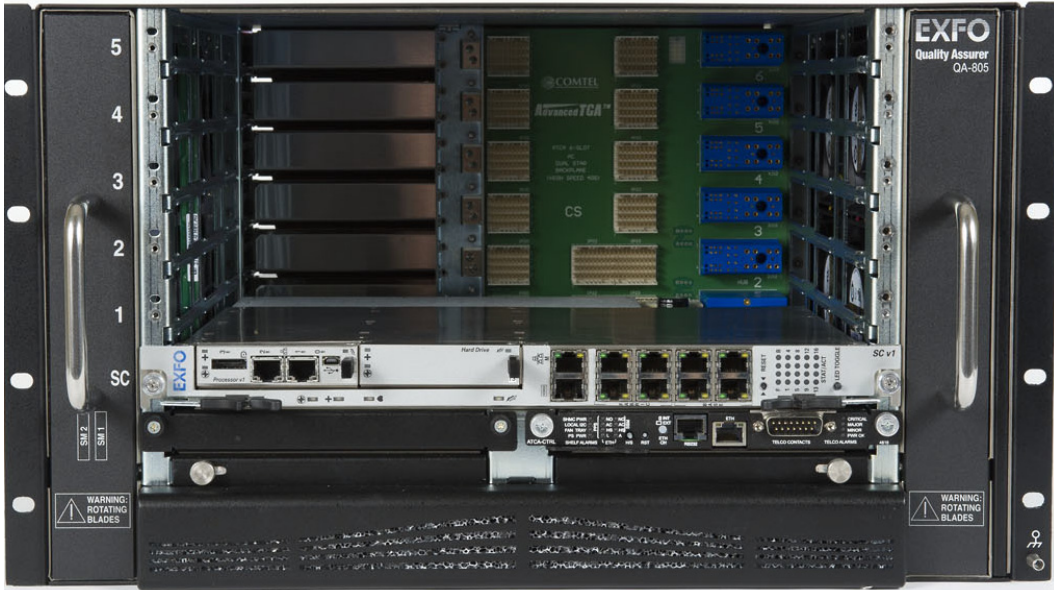
- Six-unit rack-mounted
- Emulation of over 5 million LTE or IMS subscribers
- 8 million data sessions
- 1.25 million RTP streams
- 50 Gbit/s of user-plane data generation and analysis
- USB, DP, Ethernet (management)

Introduction

Front View of QA-805

Front View of QA-805

This image of the QA-805 chassis provides a realistic view of the front panel. See the section *Chassis Front Panel* on page 4, for further details that identify specific parts of the QA-805.



Rear View of QA-805

This image of the rear panel on the QA-805 provides a realistic view of the back of the chassis. See the section *Chassis Back Panel* on page 5 for details of the QA-805 rear panel.



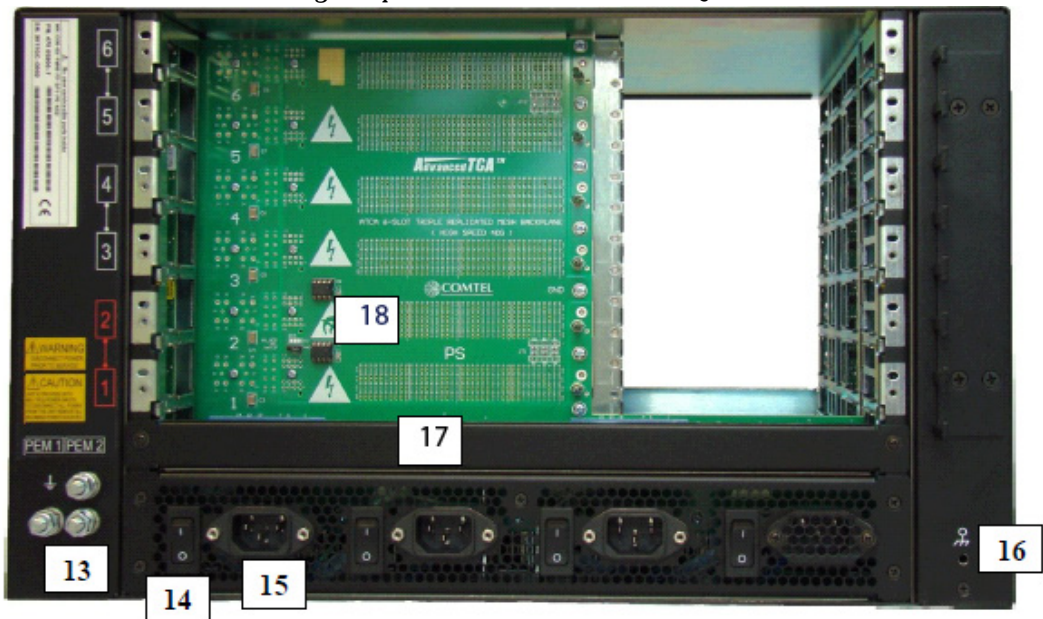
10. Power supply unit/slot 2

11. Power supply unit/slot 3

12. Power supply unit/slot 4

Chassis Back Panel

The following is a picture of the back of the QA-805 chassis.



13. Shelf Ground Terminals

14. Individual Power Switch for each power supply

15. Individual AC Inlet for each power supply

16. ESD Wrist Strap Terminal (Banana Jack)

17. Power Bridge slot

18. Shelf FRU (field replacement unit)

Introduction

Physical Description of QA-805 Unit

Backplane

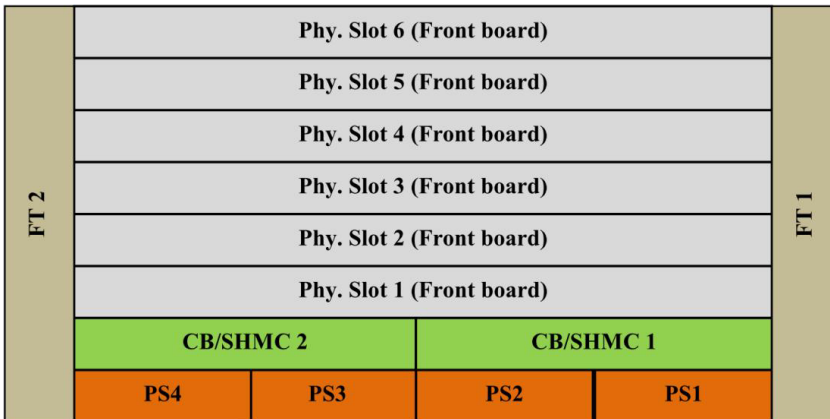
The QA-805 provides a monolithic backplane. Power and high speed links are routed on the same stack up. The backplane supports the following:

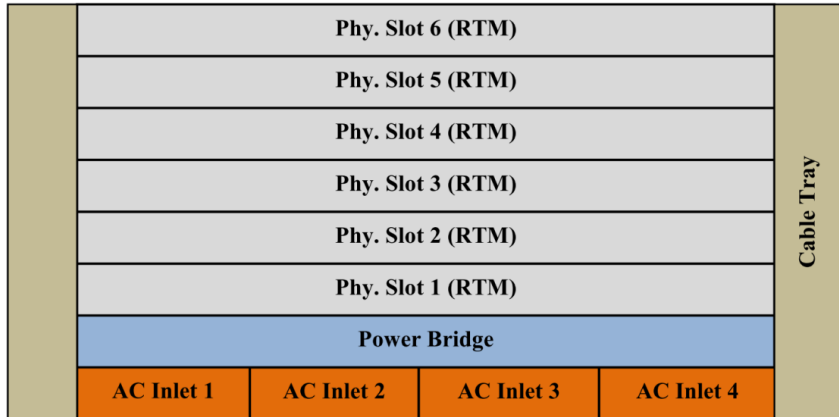
- 6 AdvancedTCA front board slots
- 6 AdvancedTCA RTM (Rear Transmission Module) slots
- 2 fan trays
- 4 power supply slots

Physical Layout

The physical layout of FRUs (field replacement units) populated in the shelf is shown below.

Front FRU Physical Layout



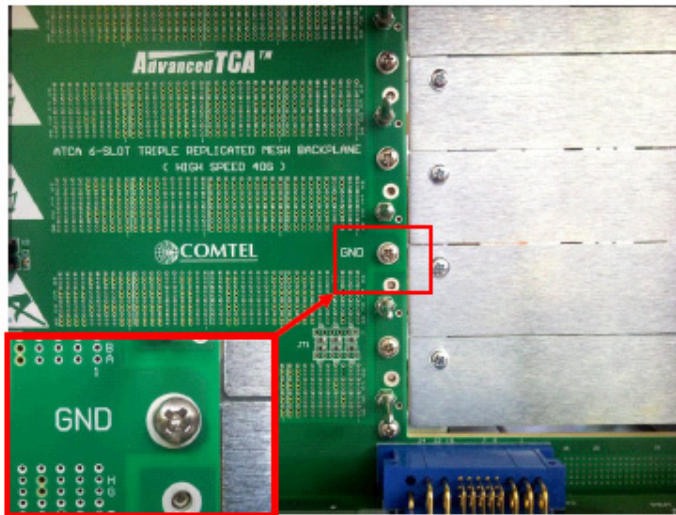
Rear FRU Physical Layout**Logic Ground**

Logic ground is used as reference for low voltage electronics and is isolated from the chassis/shelf ground and 48 V power lines. For EMI/EMC purposes, it might be needed to connect the logic ground and shelf ground together.

To connect both grounds, a screw with a conductive metal washer is installed in this location (GND) as shown in the following picture. To disconnect, remove this screw.

Introduction

Physical Description of QA-805 Unit



Note: *The screw is installed by default.*

Cooling Assembly

Fan Tray

There are 2 fan tray cassettes in the system. The cooling is performed side to side. While the fan tray is a single mechanical block, it has 2 functions: front board cooling and RTM cooling. The front and rear blanks are necessary for proper airflow.

The fan tray contains electronics such that it is detected as a fully PICMG compliant IPMC by the shelf manager. It contains hot-swap circuitry, common fusing, fan supervising, and control circuitry.

The system utilizes push pull cooling with 2 separately managed fan trays and 4 independent cooling zones. Integrated power supplies enable using 48 V fans without any degradation in performance under 90 – 264 V.

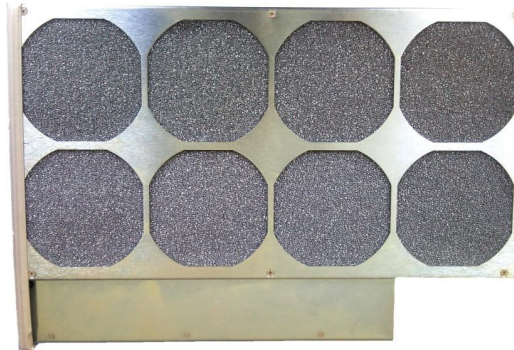
Under normal operating conditions the shelf manager cooling algorithm sets the fan speed to an acceptable level.

The cooling algorithm works based on temperature events coming from FRUs. Fan speed in a particular cooling zone will be increased if any FRU in that zone reports a temperature crossing non-critical threshold. For safety reasons, if any FRU reports a temperature crossing critical threshold, the fan speed in all cooling zones will be increased.

Introduction

Cooling Assembly

The following depicts the fan tray with air filter frame:



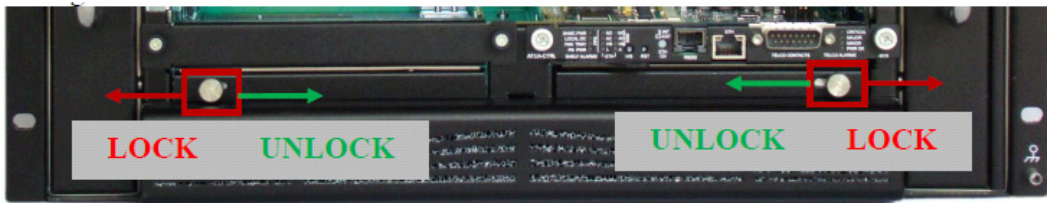
To remove the fan tray:

1. Loosen the locking mechanism and move the head to the left or right (away from the fan tray).
2. Hold the head while pulling out the fan tray using the handle.

To insert the fan tray:

1. Loosen the locking mechanism and move the head to the left or right (away from the fan tray).
2. Hold the head while inserting the fan tray using the handle.
3. Tighten the locking mechanism.

The following depicts the fan tray locking mechanism:





CAUTION

Rotating fan blades can cause injury or cut. Keep hands clear when servicing. Allow time for fan blades to slow to a stop before fully removing.



CAUTION

Electrostatic Discharge (ESD) Sensitive Equipment:

To avoid damage due to electrostatic discharge, all removable cards must be stored and handled using approved ESD protective packaging. When removing and installing cards use a grounding wrist strap and work in an approved ESD safe work area.

A GND connection point is located on the front of the chassis.

Introduction

Cooling Assembly

Air Filter

The air filter provides:

- Filtration of intake air from dust particles
- Additional static pressure to achieve uniform airflow

Air filter frame is mounted on the right fan tray cassette.

To change the air filter:

- 1.** Extract the fan tray (FT1, right side looking from front).
- 2.** Replace only the filter material.
- 3.** Re-use the filter frame.

Power Supplies

Up to 4 AC power supplies can be plugged in the shelf. The Blutek BPA-R850-480A power supply is shown below and features the following:

- Total output power 850 W-48 VDC output under 90-264 V input
- AC frequency range 47-63 Hz
- EMI filter EN55022 Class B, FCC Part 15
- Active PFC = 0.99
- Hot-swappable
- Power supply present and power OK sensors
- Bi-colour LED indicates Power OK



CAUTION

Internal fusing: Input voltage to this unit is classified as hazardous connection.

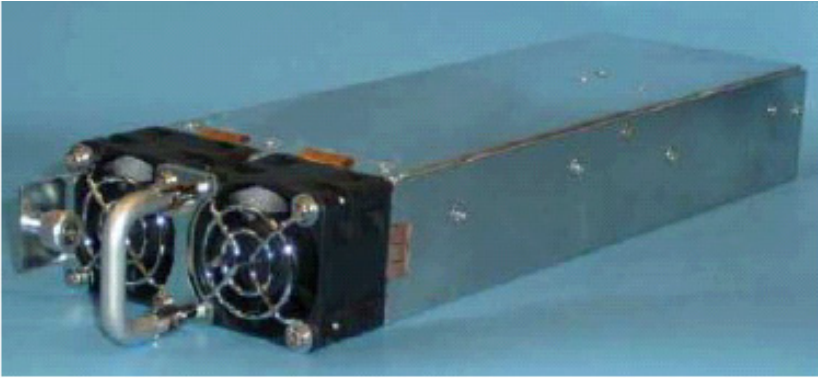


CAUTION

This unit contains electronic components that are sensitive to static electricity. All electronic boards in this shelf are protected by Shelf Ground. It is recommended that anti static wrist straps be worn and connected to a known good shelf ground connection when servicing.

Introduction

Power Supplies



Powering the Shelf

For each power supply, a separate AC inlet as well as switch is provided. Use power cords rated for currents which exceed the maximum power supply current.



CAUTION

When working near the power supply power inlets, the shelf operating voltage falls into 90 - 264 V range. This voltage is considered hazardous.

QA-805 Technical Specifications

Physical Dimensions

- Width: 482.60 mm (19 in)
- Height: 265.90 mm (10.47 in)
- Depth: 388.45 mm (15.29 in)
- Weight: 25.50 kg (56 lbs)
- D (cable trays): 466.15 mm (18.35 in)

Power Specification

- 4 slots for redundant hot-swappable power supplies
- 850 W/power supply at low line (90 V) and high line (264 V)
- 2N and N+1 (with additional bridge board) redundancy for full mesh backplane
- N+1 redundancy for dual star backplane

Cooling Capability

- Push Pull Cooling Scheme
- 300 W+/ Front Board
- 35 W+/ RTM

Shelf Management

- Pigeon Point SHMM500 shelf manager
- Intelligent Fan Trays (IPMC based)

Conventions

Before using the product described in this guide, 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.

2 **Safety Information**

Laser Safety Warnings



WARNING

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.




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.



IMPORTANT

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 1 laser product in compliance with standards IEC 60825-1 2007 and 21 CFR 1040.10. Laser radiation may be encountered at the output port.

The following label indicates that a product contains a Class 1 source:



Safety Information

Operating Cautions



CAUTION

Use only EXFO-supplied or approved Class 1 SFP, SFP+, or XFP optical transceivers.

Operating Cautions



CAUTION

Rotating fan blades can cause injury or cut. Keep hands clear when servicing. Allow time for fan blades to slow to a stop before fully removing.



CAUTION

Electrostatic Discharge (ESD) Sensitive Equipment:

To avoid damage due to electrostatic discharge, all removable cards must be stored and handled using approved ESD protective packaging. When removing and installing cards use a grounding wrist strap and work in an approved ESD safe work area.

A GND connection point is located on the front of the chassis.

Installation Instruction Warnings

Rack Mounting

If rack mounted units are installed in a closed or multi-unit rack assembly, they may require further evaluation by Certification Agencies. The following items must be considered:

1. The ambient temperature within the rack may be greater than room temperature. Installation should be such that the amount of air flow required for safe operation is not compromised. The maximum temperature for the equipment in this environment is 40 °C. Consideration should be given to the maximum rated ambient.
2. Installation should be such that a hazardous stability condition is not achieved due to uneven loading.
3. Reliable earthing of rack-mounted equipment should be maintained.
4. Thumbscrews should be tightened with a tool after both initial installation and subsequent access.



CAUTION

Do not lift the chassis by the fan tray handle.

Input Supply

- Check nameplate ratings to assure there is no overloading of supply circuits that could have an effect on overcurrent protection and supply wiring.
- Unit is provided with multiple power inputs. To disconnect all from the unit remove all incoming power sources.

Safety Information

Installation Instruction Warnings

Card Installation

Cards installed in the QA-805 unit are hot-swap tolerant but should only be hot-swapped when not in use by an application.

Cooling

To ensure optimum cooling within the chassis, all empty slots in the chassis (front and back) must be filled with the appropriate sized Filler Panel/Air Baffle.



CAUTION

Ensure that cards are plugged in parallel to the slot. Applying downward force may result in damage to cards.

Equipment Ratings

Equipment Ratings	
Temperature	
➤ Operation	➤ 0 °C to 40 °C (32 °F to 104 °F)
➤ Storage	➤ -40 °C to 70 °C (-40 °F to 158 °F)
Relative humidity ^a	≤ 95 % non-condensing
Maximum operation altitude	2000 m (6562 ft)
Pollution degree	2
Overtoltage category	II
Input power ^b	
➤ unit	➤ 850 W
➤ each power cord	➤ ~ 100 - 240 V; 50/60 Hz; 11/5 A

a. Measured in 0 °C to 31 °C (32 °F to 87.8 °F) range, decreasing linearly to 50 % at 40 °C (104 °F).

b. Not exceeding -10 % to 6 % of the nominal voltage.

3 Getting Started

Shelf Installation



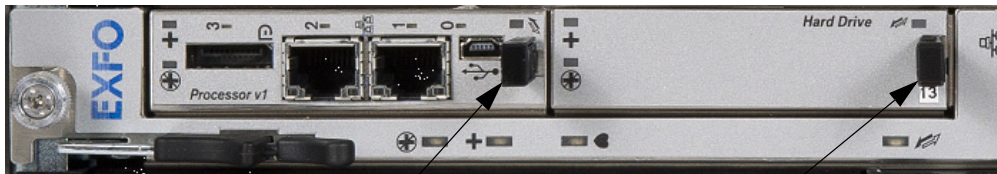
CAUTION

Improper installation might cause system damage or personal injury.

Consider the following guidelines:

1. Install the system only in an area with restricted access.
2. Follow the installation rules governed in your country.
3. Power distribution to the shelf must include over current protection devices.
4. Use appropriate protective bonding conductor according to over current limits for power lines.
5. Make sure that personnel will not interfere with cables and cords connected to the rack/shelf.
6. Make sure that the ventilation openings are not disturbed by cables and rack construction, to allow proper shelf airflow. Otherwise, it may lead to system damage.

Turning the Unit On/Off



AM4020M's HotSwap Switch

Hard Drive's HotSwap Switch

Getting Started

Turning the Unit On/Off

Turning Off the Unit

To safely turn off the QA-805, please ensure the following steps are taken:

- 1.** Stop all test applications and save results to prevent measurement loss.
- 2.** Power down the Processor v1 (AM4020M System Controller) by pulling out the HotSwap switch to its first click position. Wait until the Blue HotSwap LED stops flashing and turns Solid Blue to indicate that the System Controller has shut down safely.
- 3.** Power down the Hard Drive (AM4500) by pulling out the HotSwap switch. Wait until the Blue HotSwap LED stops flashing and turns Solid Blue to indicate that the Hard Drive has shut down safely.
- 4.** Power down all active power supplies.

Turning On the Unit

To safely turn on the QA-805, please ensure the following steps are taken:

- 1.** Ensure that all empty slots are filled with the appropriate sized Filler Card/Air Baffle.
- 2.** Ensure that the HotSwap switches on both the Processor v1 (AM4020M System Controller) and Hard Drive (AM4500) are fully pushed in.
- 3.** Power up all required power supplies.

4 **W²CM-10Gb Ethernet Interface Series**

The W²CM-10GbE module tests fixed-mobile converged networks and services like wireless (2G/3G/LTE), IMS, VoLTE, and VoIP. It is specially designed for signaling and user-plane testing of network elements such as the P-GW, S-GW, eNodeB, SBC, CSCFs, BGF, HSS, and IMS application servers.

With EXFO's QA-805, the W²CM-10GbE, W²CM-10GbE Lite, and W²CM-4GbE modules can emulate tens of millions of subscribers, generating real-world traffic toward LTE, IMS, and VoIP networks.

Note: *The W²CM-10GbE Lite and W²CM-4GbE options use the same physical hardware, but extra capacity can be enabled through the purchase of an upgrade licence. Please see Contacting the Technical Support Group on page 37 to contact EXFO.*

W²CM-10GbE 2-slot module



W²CM-10GbE Lite/W²CM-4GbE 1-slot module



Module Installation

The W²CM modules are hot-swappable, but care must be taken when and how the modules are removed.

Inserting a Module

Follow these steps to insert a module into the QA-805 Chassis:

1. Remove any Filler Cards/Air Baffles required, to provide space for the module being inserted.
2. Before inserting the card, ensure that the levers on either side of the card are in the fully open position, perpendicular to the faceplate.
3. Align the card with the card rails and gently glide the card straight into the chassis. Ensure that the guide-pins insert into their associated holes in the chassis.
4. Ensure that no cables are between the card's faceplate and the chassis.
5. To fully seat the card into the chassis, use constant pressure while closing both levers, allowing the levers to pull the card into position.

6. Ensure levers fully lock into the closed position. If the chassis is powered up, the Blue HotSwap LED flashes briefly and then turns off.
7. Secure the module to the chassis with the screws on either side of the module.
8. If required, connect the External Time Sync cables to the card to provide the synchronized hardware based timestamps for test measurements.
9. Re-insert any cables into the test-port as required.

Extracting a Module

Follow these steps to remove a module from the QA-805 Chassis:

1. If the chassis is powered up, ensure that the module is not in use in any Test Application, otherwise measurement data could be lost.
2. Fully loosen the screws on either side of the module.
3. Remove any cables connected to the module, noting their positions if needed.
4. If the External Time Sync cables are plugged into this card, move them to another card in the system to ensure the chassis will still have a synchronized hardware based timestamp.
5. If the chassis is powered up, release the HotSwap latches to start the HotSwap process. The Blue HotSwap LED will blink for several seconds. When the LED is solid blue, the card can be safely extracted.
6. Slowly open both levers, applying constant pressure to unseat the card from the chassis's backplane.
7. Slide the module carefully out of the chassis along the guide rails.
8. Fill any open slots in the chassis with an appropriate Filler Card/Air Baffle.

W2CM-10Gb Ethernet Interface Series

10/100/1000 M Copper and 1 G Optical Interfaces (SFP)

10/100/1000 M Copper and 1 G Optical Interfaces (SFP)

Eight SFP interfaces are available on the faceplate for either optical or copper pluggable SFPs. Neither copper nor optical SFPs have built-in LEDs consequently two LEDs per SFP are positioned right beside each SFP cage.

LED definition for 10/100/1000 M copper SFP:

LED#	Label	Color	Definition
1	Activity	Off	Idle
		Green	Unidirectional Activity RX
		Yellow	Bidirectional Activity
		Red	Unidirectional Activity TX

LED#	Label	Color	Definition
2	Link/Speed	Off	No link
		Green	10 Mbps
		Yellow	100 Mbps
		Red	1 Gbps

W2CM-10Gb Ethernet Interface Series

10/100/1000 M Copper and 1 G Optical Interfaces (SFP)

LED definition for 1 G optical SFP:

LED#	Label	Color	Definition
1	Activity	Off	Idle
		Green	Unidirectional Activity RX
		Yellow	Bidirectional Activity
		Red	Unidirectional Activity TX

LED#	Label	Color	Definition
2	Laser On/Signal	Off	Laser off
		Green	Laser on - signal, with link
		Yellow	Laser on - signal, no link
		Red	Laser on - no signal

10/100/1000 M Copper SFP

The component for the copper SFP is the Finisar FCLF8520P2BTL which supports a 10/100/1000BASE-T operation, and integrates a Marvell's PHY 88E1111. The FCLF8520P2BTL uses the SFP's RX_LOS pin for link indication while 1000BASE-X auto-negotiation should be disabled on the host system.



W2CM-10Gb Ethernet Interface Series

10/100/1000 M Copper and 1 G Optical Interfaces (SFP)

1 G Optical SFP

The following optical Class 1 Laser SFPs from Finisar are supported:

EXFO Product #	Transceivers (Finisar)	Output Power (dBm)	Rx Sensitivity (dBm)	SFP Specs
FTB-8590	FTLF8519P2BNL 1000BASE-SX Multi-rate: GigE, 1xFC, 2xFC	MIN = -9 MAX = -3	(@ GigE) MIN = n/a MAX = -20	850 nm SR /500 m
FTB-8591	FTRJ1319P1BTL 1000BASE-LX Multi-rate: GigE, 1xFC, 2xFC	MIN = -9.5 MAX = -3	(@ GigE) MIN = n/a MAX = -22	1310 nm IR1 /10 km
FTB-8592	FTRJ1519P1BCL 1000BASE-ZX Multi-rate: GigE, 1xFC, 2xFC	MIN = 0 MAX = +5	(@ GigE) MIN = n/a MAX = -22	1550 nm LR2 /90 km

Optical SFP with LC connector



10 G LAN/WAN Optical Interfaces (SFP+)

Two Class 1 Laser SFP+ interfaces are available on the faceplate. On the host side, these SFP+ interfaces are connected directly to the LIM FPGA.

The following optical SFP+ from Finisar, are supported:

EXFO Product #	Transceivers (Finisar)	Output Power (dBm)	Rx Sensitivity (dBm)	SFP+ Specs
FTB-8690	FTLX8571D3BCL Multi-rate 9.95-10.3 Gbit/s 10GBASE-SR/SW	MIN = -5 MAX = -1	@ 10.3 Gbit/s MIN = -11.1 MAX = 0.5	850 nm 300 m OM3
FTB-8691	FTLX1471D3BCL Multi-rate 9.95-10.5 Gbit/s 10GBASE-LR/LW 10GFC	MIN = -8.2 MAX = +0.5	@ 10.3 Gbit/s MIN = -12.6 MAX = 0.5	1310 nm 10 km SMF
FTB-8692	FTLX1671D3BCL Multi-rate 9.95-10.3 Gbit/s 10GBASE-ER/EW	MIN = -4.7 MAX = +4.0	@ 10 Gbit/s MIN = -14.1 MAX = -1.0	1550 nm 40 km SMF

Optical SFP+ with LC Connector



W2CM-10Gb Ethernet Interface Series

10 G LAN/WAN Optical Interfaces (SFP+)

LED definition for 10 G optical SFP+:

LED#	Label	Color	Definition
1	Activity	Off	Idle
		Green	Unidirectional Activity RX
		Yellow	Bidirectional Activity
		Red	Unidirectional Activity TX

LED#	Label	Color	Definition
2	Laser On/Signal	Off	Laser off
		Green	Laser on - signal, with link
		Yellow	Laser on - signal, no link
		Red	Laser on - no signal

5 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.
- 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 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.

Maintaining Air Filters

Due to the environment the system operates in, the filters will accumulate dust, causing a degradation in filtration and airflow to the system. Therefore the filters must be replaced periodically with the frequency depending on the environment, for instance, in clean laboratory environment - one time per half year.

The first air filter is mounted on the right fan tray and intended for filtering the air used for cooling the ATCA blades. The second air filter is located at lower front of the shelf and intended for filtering the air used for cooling the AC power supplies.

Maintenance

Fan Tray Replacing

To replace the ATCA card cage air filter, perform the following:

1. Slowly remove the right fan tray.
2. Remove the screws from the filter on the fan tray.
3. Remove the filter from the card cage.
4. Remove the dust from the fan tray with a soft brush.
5. Insert a new filter in the frame and screw it on the fan tray.
6. Insert the fan tray in the system.

To replace the AC power supplies filter, perform the following:

1. Remove the front panel covering the power supply slots.
2. Carefully and slowly remove the old filter.
3. Install a new filter.
4. Replace the front panel.

The old air filter can be cleaned with a vacuum cleaner but this is not recommended since the filter will never regain its original properties after cleaning.

Fan Tray Replacing

Fan trays should be replaced due to wear and tear. The malfunction of a fan tray will be reported via the shelf manager (fan tachometer sensors). In case of failure, immediately replace the faulty fan tray, otherwise the degradation in cooling performance may cause overheating of the ATCA blades. For further details, see *Fan Tray* on page 9.

Power Supply Replacing

A power supply should be replaced in case of failure. The malfunction of the power supply will be reported via the shelf manager (Power OK sensor), the red LED at the front of power supply and additionally via the front panel LED.

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.

6 **Troubleshooting**

Contacting the Technical Support Group

To obtain after-sales service or technical support for this product, contact local EXFO Navtel Product Group representative at one of the following numbers.

For detailed information about technical support, visit the EXFO Web site at www.exfo.com.

Technical Support Group

160 Drumlin Circle
Concord, ON L4K 3E5
CANADA

1 800 267-7235 (USA and Canada)
Tel.: 1 905 738-3741
Email: info@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.

Transportation

Maintain a temperature range within specifications when transporting the unit. Transportation damage can occur from improper handling. The following steps are recommended to minimize the possibility of damage:

- Pack the unit in its original packing material when shipping.
- Ensure all cards are secured with the screws provided.
- Avoid high humidity or large temperature fluctuations.
- Keep the unit out of direct sunlight.
- Avoid unnecessary shocks and vibrations.

7 **Warranty**

General Information

EXFO Inc. (EXFO) warrants this equipment against defects in material and workmanship for a period of XX Number of Years XX 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:

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

Warranty

Liability

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 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

In the case of products equipped with optical connectors, EXFO will charge a fee for replacing 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 43). 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 43).

EXFO Service Centers Worldwide

If your product requires servicing, contact your 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

A *Technical Specifications*



IMPORTANT

The following 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.

QualityAssurer - QA-805

SPECIFICATIONS			
	QA-813	QA-805	QA-604
Platform	13 slots, rack-mounted	5 slots, rack-mounted	4 slots, rack-mounted or desktop
Hot-swappable modules	Up to 6 W ² CM-10GbE or 13 W ² CM-10GbE-Lite	Up to 2 W ² CM-10GbE or 5 W ² CM-10GbE-Lite	Up to 4 SCM-GbE or 2 MCM-GbE (or MCM-GbE-Lite)
Reset	Per platform, per interface or per port (hardware or software)	Per platform, per interface or per port (hardware or software)	Per platform, per interface or per port (hardware or software)
Interfaces	USB, DP, Ethernet (management)	USB, DP, Ethernet (management)	USB (2), VGA, Ethernet (management)
Operating system	Linux	Linux	Solaris
Processor and memories	AMC Core i7 2.53 GHz, 8 GB RAM, 500 GB hard disk	AMC Core i7 2.53 GHz, 8 GB RAM, 500 GB hard disk	Intel Core 2 Duo, 2 GHz, 2 GB RAM (min), 120 GB hard disk (min)
Remote control	Standard Windows applications such as VNC and Exceed	Standard Windows applications such as VNC and Exceed	Standard Windows applications such as VNC and Exceed
Size (H x W x D)	577 mm x 443 mm x 434 mm (22.72 in x 17.44 in x 17.09 in)	265.90 mm x 482.60 mm x 388.45 mm (10.47 in x 19 in x 15.29 in)	101 mm x 483 mm x 362 mm (4 in x 19 in x 14 1/4 in)
Weight	29 kg (64 lb)	25.50 kg (56 lb)	5.5 kg (12.1 lb)
Power supply	Recommended rectifier: Input: 90-277 V, 47-63 Hz, 25 A x 4 Output: 60 V – Max. 17200 W	850 W, 90 to 264 V input, single plus 5 VSB output	100 to 240 V, 50/60 H

Technical Specifications

W2CM 10 Gigabit Ethernet Interface Series

W²CM 10 Gigabit Ethernet Interface Series

SPECIFICATIONS	
Test solution	LTE eNodeB, P-GW, S-GW, MME SBC, security gateways, BGF, IMS I/P/C-CSCF, HSS, SIP proxy/registrar
Protocol supported	HTTP, SMTP, POP, RTSP, GTP-c, GTP-u, S1-AP, S1-MME, NAS, SIP, Diameter, Megaco/H.248, RTP/RTCP, SRTP/SRTCP, TLS, IPSec, IKEv1, IKEv2, IPv4, IPv6, TCP, UDP, SCTP, DHCP, DNS
CODEC support	AMR, ILBC, G.711, G.729, G.721, G.722, G.726, G.723, G.728, EVRC, EVRC-B, GSM-EFR, GSM-FR, GSM-HR, H.263, H.264, DTMF
SIP/LTE endpoints per module	2 million (W ² CM-10GbE), 1 million (W ² CM-10GbE-Lite)
Number of sessions per module	2 million (W ² CM-10GbE), 1 million (W ² CM-10GbE-Lite)
Throughput	20 Gbit/s (W ² CM-10GbE), 10 Gbit/s (W ² CM-10GbE-Lite)
Number of RTP streams per module	512 000 (W ² CM-10GbE), 256 000 (W ² CM-10GbE-Lite)
Connection speed	Auto-negotiate 10/100/1000/10000 Mbit/s
Number of ports	8 x 1GbE and 2 x 10GbE
Hot-swappable modules	Yes
Hardware variance	W ² CM-10GbE (2 slots module), W ² CM-10GbE-Lite (1 slot module)
Platforms supported	QA-805 (2xW2CM-10GbE or 5xW2CM-10GbE-Lite) QA-813 (6xW2CM-10GbE or 13xW2CM-10GbE-Lite)
Available SFP transceiver module	1000Base-T SFP 850 nm, 500 m SFP 1310 nm, 10 km SFP 850 nm, 300 m SFP+ 1310 nm, 10 km SFP+

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NOTICE

通告

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

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

a. If applicable.
如果适用。

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。

P/N: 1063196

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