![IMC Networks logo]

iMcV-10G-Converter

XFP/XFP

Operation Manual

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B computing device, pursuant to Part 15 of the FCC Rules. These limits 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 instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits. This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

Warranty

IMC Networks warrants to the original end-user purchaser that this product, EXCLUSIVE OF SOFTWARE, shall be free from defects in materials and workmanship under normal and proper use in accordance with IMC Networks' instructions and directions for a period of six (6) years after the original date of purchase. This warranty is subject to the limitations set forth below.

At its option, IMC Networks will repair or replace at no charge the product which proves to be defective within such warranty period. This limited warranty shall not apply if the IMC Networks product has been damaged by unreasonable use, accident, negligence, service or modification by anyone other than an authorized IMC Networks Service Technician or by any other causes unrelated to defective materials or workmanship. Any replaced or repaired products or parts carry a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

To receive in-warranty service, the defective product must be received at IMC Networks no later than the end of the warranty period. The product must be accompanied by proof of purchase, satisfactory to IMC Networks, denoting product serial number and purchase date, a written description of the defect and a Return Merchandise Authorization (RMA) number issued by IMC Networks. No products will be accepted by IMC Networks which do not have an RMA number. For an RMA number, contact IMC Networks at PHONE: (800) 624-1070 (in the U.S and Canada) or (949) 465-3000 or FAX: (949) 465-3020. The end-user shall return the defective product to IMC Networks, freight, customs and handling charges prepaid. End-user agrees to accept all liability for loss of or damages to the returned product during shipment. IMC Networks shall repair or replace the returned product, at its option, and return the repaired or new product to the end-user, freight prepaid, via method to be determined by IMC Networks. IMC Networks shall not be liable for any costs of procurement of substitute goods, loss of profits, or any incidental, consequential, and/or special damages of any kind resulting from a breach of any applicable express or implied warranty, breach of any obligation arising from breach of warranty, or otherwise with respect to the manufacture and sale of any IMC Networks product, whether or not IMC Networks has been advised of the possibility of such loss or damage.

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About the iMcV-10G-Converter XFP/XFP

The iMcV-10G-Converter is a dual wide module that can be installed in an iMediaChassis series, a MediaChassis /2 or an IE-MediaChassis/2.

The iMcV-10G-Converter is a media converter module with XFP ports which can provide a conversion between different fiber types or copper to fiber. Fiber types include Single Mode (SM) and Multi Mode (MM). The supported transmission speeds are: 10G Ethernet, 10G Sonet/SDH, 10G Fiber channel and 10G OTN. The copper SFP supports 10G Ethernet only.

For information about the iMcV-10G-Converter refer to the IMC Networks web site at: http://www.imcnetworks.com/Support/Downloads.cfm

Configuration Instructions

The iMcV-10G-Converter modules have user-configurable features (e.g., Loss Carry Forward (LCF), speed (based on protocol selection) and loopback.

Installing an iMcV-Modules

The iMcV-10G-Converter can be installed in IMC Networks' SNMP manageable iMediaChassis, MediaChassis/2 AC or DC, or IE-MediaChassis/2 AC or DC.

NOTE
All modules are hot-swappable.

To install an iMcV-10G-Converter:

1. Remove the blank bracket covering the slot where the module is to be installed by removing the screws on the outside edges of the bracket.

2. Slide the iMcV-10G-Converter into the chassis, via the cardguides, until the module is seated securely in the connector.

3. Secure the module to the chassis by tightening the captive screw.

4. Save any "blanks" removed during installation for future use if the configuration requirements change.

Managed Modules

To manage one or more iMcV-Modules, a SNMP Management Module must be installed in an iMediaChassis series, available in 3, 6 or 20 slots for both AC and DC. Using management, the 10G converter will be identified in the slot it is installed in, as well as options to set LoopBack and Loss Carry Forward (LCF). However, the Module details includes an XFP table so that management can provide information about the XFP if and XFP with DDMI is installed. The XFP table provides information such as temperature, voltage, output power, receive power, vendor serial number, vendor part number and vendor name.

iMcV-10G-Converter requires SNMP binary 953-00D1 or higher.

Configuration Control and SNMP Management

Some iMcV-Modules* offer Configuration Control. Labels on the front faceplate will identify if the iMcV-module has Configuration Control.

Its main function is to assist the end-user by retaining the latest configuration regardless of how the initial configuration was setup, whether through DIP Switch settings or the SNMP Management Module's configuration.

Configuration Control was created to solve several issues:

1. When non-Configuration Control modules are placed in a managed chassis, the module's DIP Switches are ignored, and the module is configured by the chassis' Management Module. If the Management Module is removed or fails, then the modules will revert back to the DIP Switch settings. When a module changes from Management Module settings to DIP Switch settings, the traffic across the module will drop for a very short period of time.

2. When introducing a Management Module to a chassis full of working non-Configuration Control modules, the modules will stop using the DIP Switch settings and start using the Management Module settings. When a module changes from DIP Switch settings to Management Module settings, the traffic across the modules will drop for a very short period of time.

3. When removing an existing module and replacing it with a different type of module, the configuration of the existing module remains.

Configuration Control had three goals when it was created:

1. Any type of module or Management Module, could be swapped out under power with out losing any configuration.

2. The Management Module can be added to a chassis without losing any configuration.

3. The Management Module should not be subjected to failure or interruption in a "Mission Critical" environment. If the Management Module is removed or fail, the modules should not experience an interruption in service.

There are two features that have been incorporated in Configuration Control:

1. Any module, including the Management Module, can be physically swapped out with the identical module under power and the configuration from the removed module will be automatically copied to the new module.

2. The module's DIP Switch settings can be used to make initial configuration settings, overriding the Management Module's setting. (see contents below for clarification)

Inserting a iMcV-module

-   **Without Configuration Control**

    *   The DIP Switches are ignored and the module takes the configuration from the Management Module. This could be the default configuration or from a previously installed module.

-   **With Configuration Control**

    *   If the module is different (model or DIP Switch settings) from the module installed in the slot previously, then the DIP Switch settings are used for configuration. This configuration is then copied up to the Management Module.

    *   If the module is exactly the same (model and DIP Switch settings) to the module previously installed, the current module will use the settings from the management module.

Inserting a Management Module

- **Without Configuration Control**

  - Modules in an unmanaged chassis use DIP Switch settings. When the Management Module is inserted, the modules use the configuration stored in the Management Module. This will more then likely change the configuration of the modules, and will cause a short interruption in data flowing through the modules.

- **With Configuration Control**

  - The modules copy their configuration up to the Management Module. The modules keep working, with no configuration change and no interruption in data.

Removing a Management Module / Failed Management Module

- **Without Configuration Control**

  - Modules previously configured by the Management Module will revert back to their DIP Switch settings. This will more than likely change the configuration, based on default settings and will cause an interruption in data flow.

- **With Configuration Control**

  - The modules continue to use whatever configuration they were set to. They maintain a local copy of the configuration.

  - The SNMP Write Lock switch does not impact any of the iMcV-Modules with Configuration Control.

  - If there is a mixture of iMcV-Modules with and without Configuration Control, the Write Lock Switch and a new Management Module must be taken into consideration.

  - If the command cleandb is applied to a Management Module, all the settings for the modules it maintains will be removed, but the Configuration Control modules will still be based on the last change made, while those without Configuration Control will be set to their default settings.

  * iMcV-Modules will be referred to as modules

Unmanaged Modules

Before installing, configure the iMcV-10G-Converter modules for desired features. The DIP Switch settings enable the end user to select the speed/protocol, loopback modes and Loss Carry Forward (LCF). The table below indicates the available features and settings for the iMcV-10G-Converter modules.

Switch	Function				Default
1	"ON" to Enable LOS from XFP1 to XFP2				OFF
2	"ON" to Enable LOS from XFP2 to XFP1				OFF
5,4,3	5	4	3	Combination of settings	OFF/OFF/ OFF (Ethernet)
	OFF	OFF	OFF	Use Internal clock	
	OFF	ON	OFF	OC-192 SONET/SDH (9.95 Gb/S)	
	OFF	OFF	ON	10G Ethernet (10.32 Gb/S)	
	OFF	ON	ON	10G Fibre Channel (10.52 Gb/S)	
	ON	OFF	OFF	ITU G-709 OUT-2 (10.70)	
	ON	OFF	ON	10G Ethernet G.702 (11.09Gb/S)	
	ON	ON	OFF	N.A. (default 0,0,0)	
	ON	ON	ON		
6	"ON" to enable FAULT on DDMI alarm				OFF
7	Enable Loopback XFP1				OFF
8	Enable Loopback XFP2				OFF
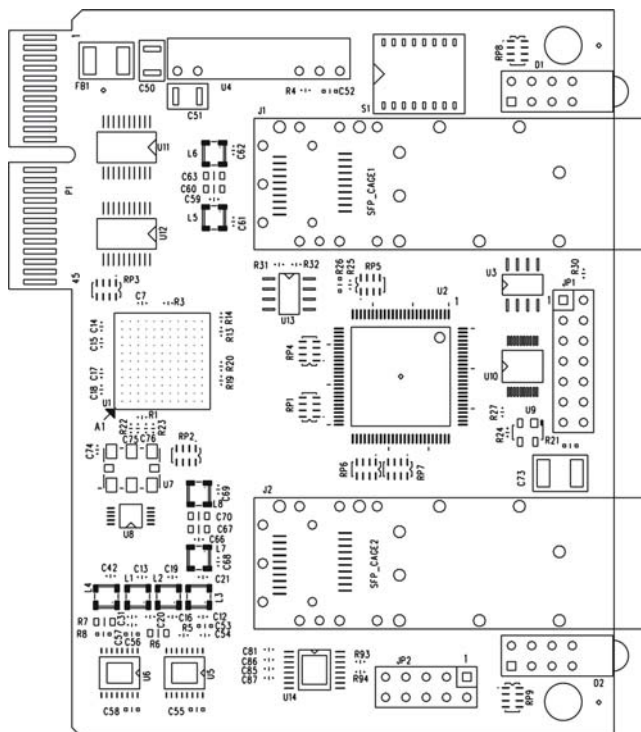
Loss Carry Forward (LCF)

When a fault is detected on the incoming optical line that would severely affect the quality of the corresponding output optical signal, this signal is turned OFF as opposed to sending a bad optical signal to the next unit over the optical line. The Loss Carry Forward function provides a very positive fault indication to the downstream unit.

If the LCF function is not enabled, the transmitted optical signal is dependent on the XFP units installed. This fault indication may become very intermittent depending on the actual optical signal level.

XFP Loopback

XFP Loopback is based on what the XFP module is capable of. There are 2 types of loopback that an XFP has the potential to do: Lineside Loopback (red) and XFI Loopback (blue). (If an OEM XFP is not capable of loopback, the SNMP Management Module will provide notification of this status.)

If an XFP is capable of Lineside Loopback, that is the type of loopback that will be used. Lineside Loopback should be enabled on XFP1 OR XFP2. However, if both XFP1 and XFP2 are enabled via the DIP Switches, XFP1 as the primary XFP will support the task of Lineside Loopback. In addition, if just one port has an XFP installed in it, and the other remains unoccupied, the loopback is still functional.

XFI Loopback has a different set of requirements. First, both XFP ports must be installed for it to function. If an end user wants to perform a loopback on XFP1, and it is not capable of Lineside Loopback, it must verify that XFP2 can do XFI Loopback, and a message 'not capable' will be displayed.   By following the receive signal on XFP1, it goes through the XFP1 to XFP2 where it loops it back to the transmit signal of XFP1.
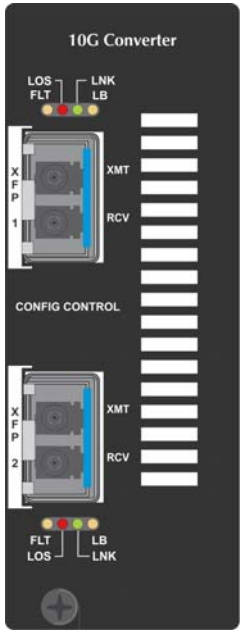
If an end user enables loopback on both XFPs that are capable of XFI Loopback, loopback is allowed on XFP1 and 'not capable' on XFP2. The loopback LED on XFP2 will blink to indicate this status.
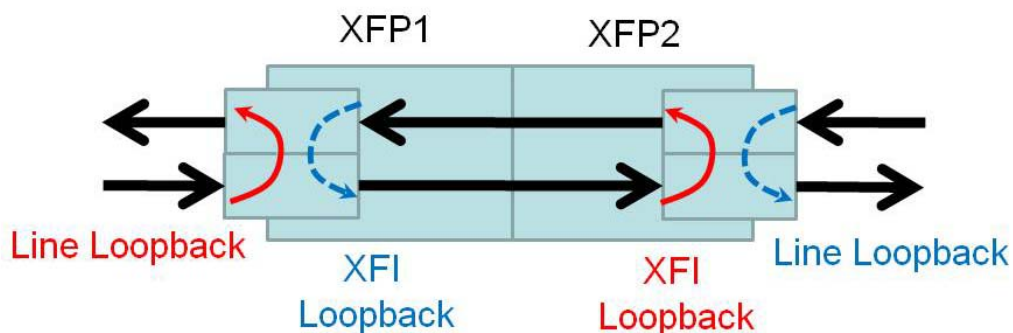
LED Operation

Each iMcV-10G-Converter features diagnostic LEDs that provide information on features and ports.

Name	Color	Function	
FLT	Yellow	ON When a DDMI fault is detected	
LOS	Red	ON when the Optical LINK is good	
LCF	Green	ON when no link is detected	
LB	Yellow	ON when Loopback is enabled and "Blinks" if the XFP can't support this function when it has been requested.	

Specifications

Power Consumption (Typical @ 5V):

637mA @ +70C

Operating Temperature

-4°F to +158°F (-20°C to +70°C)

Storage Temperature

-40°F to +185°F (-40°C to +85°C)

Humidity

5 to 95% (non-condensing); 0 to 10,000 ft. altitude

Dimensions

Dual-wide iMcV-module

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+32-16-550880 (Europe)

Fax: (949) 465-3020

E-Mail: techsupport@imcnetworks.com

Web: www.imcnetworks.com

Fiber Optic Cleaning Guidelines

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.

2. Dust caps are installed at IMC Networks to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Should it be necessary to disconnect the fiber device, reinstall the protective dust caps.

3. Store spare caps in a dust-free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.

4. If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can cause damage to any product, add-in modules or stand alone units, containing electronic components. Always observe the following precautions when installing or handling these kinds of products

1. Do not remove unit from its protective packaging until ready to install.

2. Wear an ESD wrist grounding strap before handling any module or component. If the wrist strap is not available, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.

3. Hold the units by the edges; do not touch the electronic components or gold connectors.

4. After removal, always place the boards on a grounded, static-free surface, ESD pad or in a proper ESD bag. Do not slide the modules or stand alone units over any surface.

WARNING! Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

Certifications

CE: The products described herein comply with the Council Directive on Electromagnetic Compatibility (2004/108/EC) For further details, contact IMC Networks.

$$\mathsf{C}\mathsf{E}$$

> **Class 1 Laser product, Luokan 1 Laserlaite,**
> **Laser Klasse 1, Appareil A'Laser de Classe 1**

European Directive 2002/96/EC (WEEE) requires that any equipment that bears this symbol on product or packaging must not be disposed of with unsorted municipal waste. This symbol indicates that the equipment should be disposed of separately from regular household waste. It is the consumer's responsibility to dispose of this and all equipment so marked through designated collection facilities appointed by government or local authorities. Following these steps through proper disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about proper disposal, please contact local authorities, waste disposal services, or the point of purchase for this equipment.

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