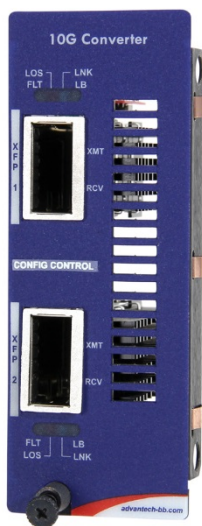# IMcV-10G-Converter XFP/XFP

Fiber Mode Converter

USER MANUAL

B+B SMARTWORX

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ABOUT IMCV-10G FIBER MODE 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 a media converter module has XFP ports that provide 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.

NOTE: *Some options require items that are sold separately, available from B+B SmartWorx.*

iMcV-10G-Converter XFP/XFP

CONFIGURATION INSTRUCTIONS

The iMcV-10G-Converter modules have user-configurable features: Loss Carry Forward (LCF), Speed (based on protocol selection) and Loopback.

INSTALLING IMCV MODULES

iMcV-10G-Converters can be installed in B+B SmartWorx SNMP manageable iMediaChassis, MediaChassis/2 AC or DC, or IE-MediaChassis/2 AC or DC.

NOTE: *All modules are hot swappable.*

INSTALLING 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 card guides, 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, an 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 converter will be identified in the slot it is installed in - plus options to set LoopBack and Loss Carry Forward (LCF).

However, the module details include an XFP table so management can provide information about the XFP 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 & SNMP MANAGEMENT

Some iMcV modules offer Configuration Control. Its main function is to assist the end-user by retaining the latest configuration regardless of how the initial configuration was set up - whether through DIP Switch settings or the SNMP Management Module's configuration.

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, 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 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.

Adding & Hot-Swapping Modules

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

- Any type of module or Management Module can be swapped under power without losing configuration.

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

- The module's DIP Switch settings can be used to make initial configuration settings, overriding the Management Module's setting.

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

INSERTING AN 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 previously installed in the slot, 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 than 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 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 that 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.

UNMANAGED MODULES

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

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 Fiber 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

DIP Switch Settings
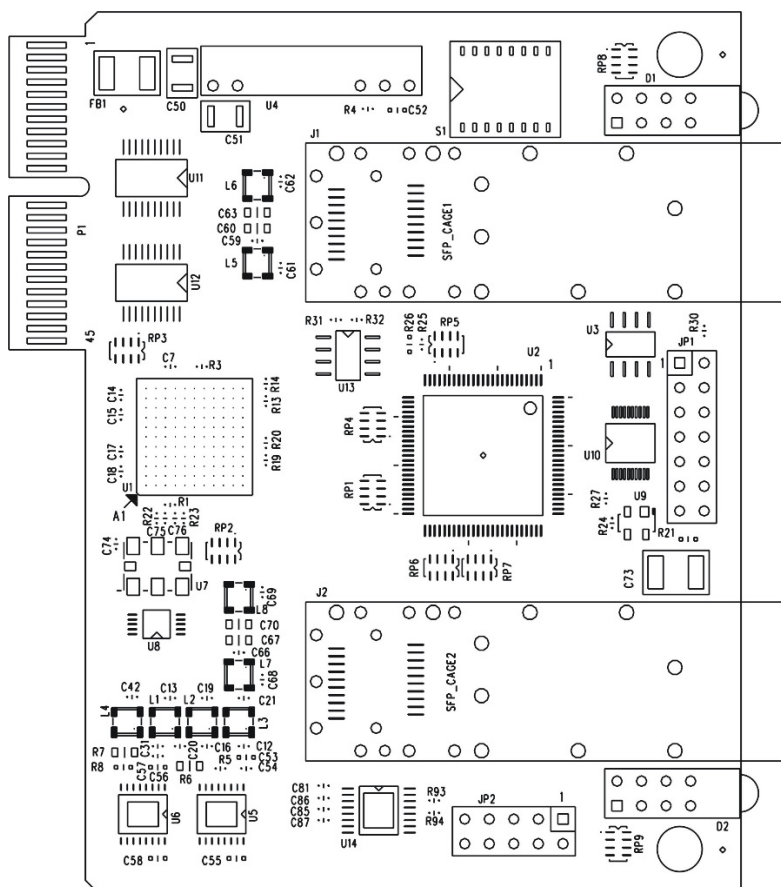
Board Layout

OPERATION

LOSS OF SIGNAL (LOS)

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 of Signal function provides a very positive fault indication to the downstream unit. LOS can be enabled on XFP1 or XFP2 by enabling the appropriate DIP Switch (refer to *LED Operation* table).

If the LOS 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. LOS displays as a red LED when the signal quality is poor.

XFP LOOPBACKS

XFP Loopback is based on what the XFP module is capable of. There are two loopback types that an XFP is capable of - 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.

Loopback
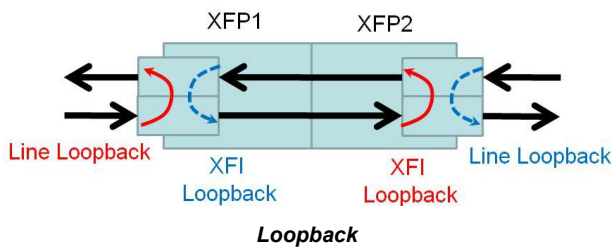
LED OPERATION

Each iMcV-10G-Converter XFP 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 optical LINK is poor.	
LNK	Green	ON when link is detected.	
LB	Yellow	ON when Loopback is enabled; "Blinks" if XFP cannot support this function when it has been requested.	

LED Operation

SPECIFICATIONS

Power Consumption (Typical @ 5V)
637mA @ +70 °C

Operating Temperature
-20 to +70 °C (-4 to +158 °F)

Storage Temperature
-40 to +85 °C (-40 to +185 °F)

Humidity
5 to 95% (non-condensing); 0 to 10000 ft. altitude

Dimensions
Dual-wide iMcV module

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STATEMENTS, PRECAUTIONS, GUIDELINES, REGULATORY

FCC RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class A 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 A 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 A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

ELECTROSTATIC DISCHARGE (ESD) 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 units by the edges; do not touch the electronic components or gold connectors.

4. After removal, always place 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.

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 the factory 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.

REGULATORY, STANDARDS, COMPLIANCES

CE

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

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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