IMcV-10G Converter SFP+/SFP+

Fiber Mode Converter

USER MANUAL

B+B SMARTWORX

Powered by **ADVANTECH**

Advantech B+B SmartWorx - Americas

707 Dayton Road

Ottawa, IL 61350 USA

Phone 1 (815) 433-5100

Fax 1 (815) 433-5105

Advantech B+B SmartWorx - Europe

Westlink Commercial Park

Oranmore, Co. Galway, Ireland

Phone +353 91-792444

Fax +353 91-792445

www.advantech-bb.com

support@advantech-bb.com

CONTENTS

IMCV-10G-FIBER MODE CONVERTER SFP+/SFP+

OVERVIEW

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

The iMcV-10G-Converter SFP+/SFP+ is a media converter module with SFP+ ports that can provide a conversion between different fiber types. Fiber types include Single Mode (SM) and Multi Mode (MM). Supported transmission speeds are: 10G Ethernet, 10G Sonet/SDH, 10G fiber channel and 10G OTN.

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

iMcV-10G-Converter SFP+/SFP+

SPECIFICATIONS

Environmental	Operating temperature range: -20 to +60 ºC (-32 to +60 ºF) minimum
	Operating Humidity: 5% to 95%, non-condensing
	Altitude: 0 to 10000 ft.
Power Consumption	Typical @ 5V: 637mA @ 70 ºC
Dimensions	Single-wide iMcV module

4

INSTALLATION INSTRUCTIONS

PRE-SETUP STEPS

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

Your iMcV-10G-Converter SFP+/SFP+ has been tested for proper operation before packaging and shipping. It should be in perfect mechanical and electrical condition upon receipt.

ELECTROSTATIC DISCHARGE (ESD) PRECAUTIONS

This is an Electrostatic Sensitive Device. Use ESD precautions for safe handling.

Before removing the card from the anti-static protective packaging:

- Discharge any static electricity buildup on your body by touching a large grounded metal surface or the metal chassis on equipment connected to earth ground by a 3-wire power cord. Use of a grounding wrist strap is recommended.

- Avoid touching the gold connectors or other parts on the card except when necessary to set the configuration DIP Switches.

- Remove AC power from the computer before inserting the card.

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.

INSTALLING AN IMCV MODULE

The iMcV-10G-Converter SFP+/SFP+ can be installed in B+B SmartWorx' SNMP manageable iMediaChassis, MediaChassis series AC or DC, or IE-MediaChassis AC or DC.

NOTE: *All modules are hot swappable.*

INSTALL IMCV-10G-CONVERTER SFP+/SFP+

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 SFP+/SFP+ 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 10G converter will be identified in the slot it is installed in, as well as options to set LoopBack and Loss Carry Forward (LCF). The Module details includes an SFP+ table so that management can provide information about the SFP+ if SFP+ with DDMI is installed. The SFP+ table provides information such as temperature, voltage, output power, receive power, vendor serial number, vendor part number and vendor name.

CONFIGURATION CONTROL & SNMP MANAGEMENT

Some iMcV-Modules* offer Configuration Control. Configuration Control has been implemented to assist the end user with the following:

Any type of module or management module can be swapped out under power without losing configuration.

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

- The Management Module should not be subject 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.

Configuration Control is designed to solve the following issues:

6

- 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 SNMP Management Module is removed or fails, then the modules will revert back to the DIP Switch settings. When a module changes from Management Module's settings to DIP Switch settings, the traffic across the module will drop for a very short period of time.

- 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.

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

NOTE: *The iMcV-SFP+/SFP+ supports Configuration Control. In addition, a menu of 10G protocols can be selected through the iView² software, if the user chooses to specify the protocol rather than allow the module to detect it.*

UNMANAGED MODULES

Before installing, configure the iMcV-10G-Converter SFP+/SFP+ module/s 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 SFP+/SFP+ module/s.

NOTE: *You can also use iView[2] to choose specific 10G protocols.*

Switch	Function				Default
1	**ON** to Enable LCF from SFP+ 1 to SFP+ 2				OFF
2	**ON** to Enable LCF from SFP+ 2 to SFP+ 1				OFF
4,3	4,3	**Combination of Settings**			Internal Clock Reference Default 0,0
	0,0	10G Ethernet		10.3125 Gb/S	
	0,1	OC-192 SONET/SDH		9.9532 Gb/S	
	1,0	G Fiber Channel		10.518 Gb/S	
	1,1	ITU G.709 OTU-2		10.709 Gb/S	
7,6,5	7	6	5	**Combination of Settings**	Default All OFF
	OFF	OFF	OFF	No Loopbacks or Test Patterns	
	OFF	OFF	**ON**	Enable Loopback SFP+ 1 (Line Side Optical)	
	OFF	**ON**	OFF	Enable Loopback SFP+ 2 (Line Side Optical)	
	OFF	**ON**	**ON**	Enable Loopback both SFP+ 1 and SFP+ 2	
	ON	OFF	OFF	na	
	ON	OFF	**ON**	Send Test Pattern to SFP+ 1 (PRBS 2^31)	
	ON	**ON**	OFF	Send Test Pattern to SFP+ 2 (PRBS (2^31)	
	ON	**ON**	**ON**	na	
8	NA				OFF

DIP Switch Settings
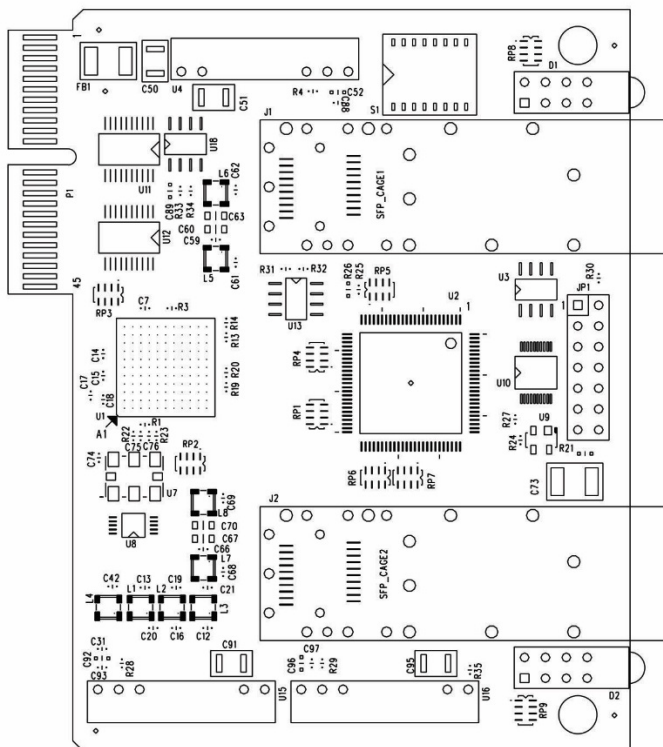
Board Layout

OPERATION

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 SFP+ units installed. This fault indication may become very intermittent depending on the actual optical signal level.

INTERNAL TEST HEAD

The SFP+ unit supports an internal test head function. This intrusive function can send a "test" signal pattern to the optical port. When this pattern is detected by the far end unit, it can be automatically looped back by the far end unit to the local end where it is checked for errors. In this way, complete full bandwidth, line test, and verification can be performed on the line from only one end.
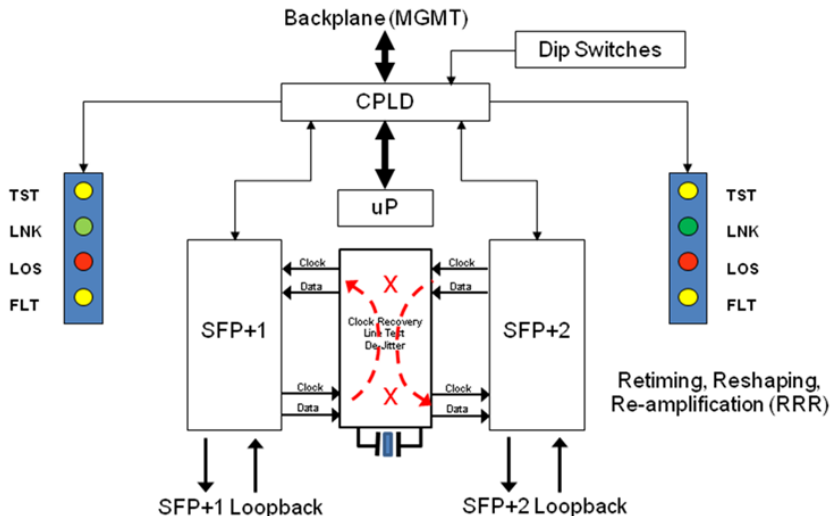
Internal Test Head Function

LED OPERATION

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

Name	Color	Function	
SFP+1			
FLT	Yellow	ON when a DDMI fault is detected or SFP+ not installed.	
LOS	Red	ON when no link is detected.	
LNK	Green	ON when the Optical Link is good.	
TST	Yellow	ON when Test Function is enabled; "Blinks" if test pattern received has any errors.	
SFP+2			
FLT	Red	ON when a DDMI fault is detected or SFP+ not installed.	
LOS	Yellow	ON when no link is detected.	
LNK	Green	ON when the Optical Link is good.	
TST	Yellow	ON when Test Function is enabled; "Blinks" if the test pattern received has any errors.	

LED Operation

NOTE: *Regardless of whether an SNMP Management Card is installed in the chassis, or not, if you insert a 10G card with the SFP+ ports populated, the 10G card should go through a short initialization (boot-up). After that occurs, the two LEDs on the left (LOS, FLT) will reflect Red, Amber, until you connect the SFP+ ports to your switch or whatever END Device 10G product you have. The LNK LED will flash green until the ports are synchronized and then remain a solid green.*

B+B SMARTWORX TECHNICAL SUPPORT

USA/Canada: 1 (800) 346-3119 (Ottawa IL USA)

Europe: +353 91 792444 (Ireland / Europe)

Email: support@advantech-bb.com

Web: www.advantech-bb.com

STATEMENTS, GUIDELINES, PRECAUTIONS, 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.

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

- SFP-MSA SFP standard (September 14, 2000)
- SFF-8472 DDMI standard (Revision 1.0)
- All SFPs used in this product should be certified to IEC 60825-1

UL/cUL: Listed to Safety of Information Technology Equipment, including Electrical Business Equipment.

CE: The products described herein comply with the Council Directive on Electromagnetic Compatibility (2004/108/EC) and the Council Directive on Electrical Equipment Designed for use within Certain Voltage Limits (2006/95/EC). Certified to Safety of Information Technology Equipment, Including Electrical Business Equipment. For further details, contact B+B SmartWorx.

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

The products described herein comply with the Council Directive on Electromagnetic Compatibility (2004/108/EC).

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.