



iMcV-LIM 10/100
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.

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About the iMcV-LIM 10/100

The iMcV-LIM 10/100 is an SNMP-manageable, IEEE 802.3 single-conversion media conversion module which converts between:

- 10Base-T twisted pair and 10Base-FL multi-mode or single-mode fiber, or
- 100Base-TX twisted pair and 100Base-SX multi-mode fiber, 100Base-FX single-mode fiber or single-strand single-mode fiber.

The iMcV-LIM requires one slot in an SNMP-manageable chassis or an unmanaged chassis from IMC Networks. The iMcV-LIM features one RJ-45 connector and one pair of ST or SC fiber connectors.

Configuration Instructions

In many networks, the media converter is typically installed as a pair, between two copper-based end devices. The iMcV-LIM 10/100 can also be installed as a single media converter, between one copper-based device and the other a fiber-based device. However, when connected to certain fiber-based devices, there may be difficulty in the installation: if a link partner that is connected to the iMcV-LIM 10/100 media converter is powered down on the copper port, noise on the copper segment may be detected and transferred to the fiber line. A result of the noise will generate errors that look like CRC errors. Some fiber-based devices may detect this noise and disable the fiber segment.

Installing an iMcV-LIM 10/100

The iMcV Modules install in IMC Networks' SNMP manageable iMediaChassis series or in any MediaChassis.

NOTE
All modules are hot-swappable.

To install an iMcV Modules:

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 Modules 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-LIM 10/100, an SNMP agent must be present in the chassis. To configure Managed Modules, install the module first, and then configure using the management software. If using management software, software will override hardware DIP Switch settings.

Unmanaged Modules

Before installing, configure the iMcV-LIM 10/100modules for desired features. Refer to table which indicates the available features and settings for the iMcV-LIM 10/100 modules.

Dip Switch	Feature	Function	Default
S1	LFD	Link fault detection available in forced mode only (S3 is ON)	OFF
S2	PNP (AN)	Auto Negotiation mode (plug-n-play) available when forced mode is disabled (S3 is OFF)	ON
S3	Force	Force mode forces the module to operate at 10 or 100 Mbps as determined by S4	OFF
S4	10/100	When ON, operates at 10 Mbps. When OFF, operates at 100 Mbps. Available when forced mode is enabled (S3 is ON)	OFF
Remaining DIP Switches are factory configured—DO NOT CHANGE			

Modes of Operation

The iMcV-LIM 10/100 has four modes of operation:

- PNP (Auto Negotiation)
- FORCE 10Mbps
- FORCE 100Mbps
- Selective Advertising AN (All OFF)

NOTE
<i>The iMcV-LIM 10/100 cannot be set for Half- or Full-Duplex manually. Duplex is determined by the link partners connected to the iMcV-LIM 10/100.</i>

The iMcV-LIM 10/100 media converter is typically installed in pairs and provides compatibility with legacy 10BASE-FL devices, while also providing support for 100Mbps devices. This is a PHY based device to allow very low propagation delays but in turn the speed and duplex of both its copper and fiber ports must be the same. For the iMcV-LIM 10/100 to function properly, the copper port must have link before the fiber port will link up.

In a back to back configuration, both units must have the Plug-N-Play **PNP (AN)** switch set to ON for the copper ports to auto negotiate from end to end. In this mode the fiber link becomes transparent allowing the units at both ends of the link to function as if they were connected over one copper line. All auto negotiation signaling is the result of signaling received on the ports of the unit. Only use this mode with two iMcV-LIM 10/100 media converters installed as a pair.

With all switches set to OFF, the unit sends its own **Selective Advertising (AN)** signaling on the copper port. This advertises both FDX and HDX with the physical speed that is detected on the fiber line. This signaling cannot occur until this fiber port is active. If auto negotiation signaling is also received over the fiber from the far end equipment, the auto negotiation signaling on the copper port will include this information.

In all of the **FORCE modes**, no auto negotiation signals are sent or acted on. The unit will blindly send the speed assigned and supports either FDX or HDX data. The LFD function is only available in the FORCE modes.

Selective Advertising is a mode in which the speed and duplex for the copper and the fiber are specifically advertised. This mode is available when DSW 1-4 are set to OFF.

Dip Switch	Feature	Selective Advertising	PNP (AN)	Force 100	Force 10	Force 100 LFD	Force 10 LFD
S1	LFD	OFF	OFF	OFF	OFF	ON	ON
S2	PNP (AN)	OFF	ON	OFF	OFF	OFF	OFF
S3	FORCE	OFF	OFF	ON	ON	ON	ON
S4	10/100	OFF	OFF	OFF	ON	OFF	ON

Troubleshooting Features

The iMcV-LIM 10/100 media converters include two advanced troubleshooting features to help locate “silent failures” on the network.

- Transparency
- Link Fault Detection (LFD)

Transparency

Transparency is only available in PNP mode. Transparency treats the connection between the two end devices as if there were no media converters installed. In a typical application where two media converters are installed between two copper-based switches, the twisted pair cables as well as the fiber cable are seen as one entity. If a fault occurs on any segment between the two end devices, link LEDs on the end devices will go out. This prevents any failure on the link between the end units from going undetected.

As stated, transparency is available when iMcV-LIM 10/100 is operating in PNP (AN) mode:

- S2 PNP (AN) must be ON
- S1 (LFD), S3 (Force) and S4 (10 or 100) must be OFF

Link Fault Detection in FORCE Modes (LFD)

Link Fault Detection (LFD) is only available when using Force 10 or Force 100 mode and provides the same information as link fault pass through as does in PNP mode to detect silent failures. When LFD is enabled and the input link is down at one interface to the iMcV-LIM 10/100, the transmitter output on that interface is turned off for about 425ms every 3.8 seconds (i.e., blinking). It applies to both network interfaces and to both data rates. If the link at the other interface to the iMcV-LIM 10/100 is also down, there is no output. LFD causes the Link Up indicator of the link partner to blink.

When the iMcV-LIM 10/100 is in one of the FORCE modes, enable LFD by setting S1 to the ON position.

In order for LFD to function properly, Force mode must be enabled by setting:

- S3 to ON with either S4 ON for 10 Mbps or S4 OFF for 100 Mbps
- S2 must also be OFF

NOTE
<i>When using the LFD feature, if the DIP Switches are in any other combination than listed above, the iMcV-LIM 10/100 may exhibit erratic behavior.</i>

LED Operation

The iMcV-LIM 10/100 features several standard and diagnostic LEDs per port.

<p>LNK</p> <p>ACT</p> <p>100</p> <p>LFD</p> <p>PNP (AN)</p> <p>PWR</p>	<p><u>Twisted Pair Port</u></p> <p>Glows green when a twisted pair link is established.</p> <p>Glows yellow when data is detected on the port.</p> <p>Glows yellow when 100 Mbps data is detected on the port.</p> <p>Glows green when Link Fault Detection is enabled.</p> <p>Glows green when Auto Negotiation mode is enabled (transparency).</p> <p>Glows green when unit has power.</p>	
<p>100</p> <p>ACT</p> <p>LNK</p>	<p><u>Fiber Port</u></p> <p>Glows yellow when 100 Mbps data is detected on the port.</p> <p>Glows green when data is detected on the port.</p> <p>Glows green when a fiber link is established.</p>	

NOTE

Before either LNK LED will glow solid, the twisted pair and fiber optic cables must be connected and the twisted pair crossover/ pass-through switch set correctly.

Troubleshooting Features

The 10/100 Autosensing Modules includes two advanced troubleshooting features, Transparency and Link Fault Detection, to help locate “silent failures” on the network.

Transparency

Transparency is only available when using AN. When the 10/100 Autosensing Modules is Auto Negotiating, transparency treats the connection between the two end devices as if there were no media converters installed. For example, in a typical application where two media converters are installed between two copper-based switches the twisted pair cables as well as the fiber cable are seen as “one” entity. If a fault occurs on any segment between the two end devices, link LEDs on the end devices will go out.

Since transparency is only available when the 10/100 Autosensing Modules is operating in Auto Negotiation mode, S2 (AN) must be ON and S1 (LFD), S3 (Force) and S4 (10/100) must be OFF.

Link Fault Detection

Link Fault Detection (LFD) is only available when using Force 10 or Force 100 mode. When LFD is enabled and the input link is down at one interface to the 10/100 Autosensing Modules, the LFD LED will blink. This applies to both network interfaces and to both data rates. If the link at the other interface to the 10/100 Autosensing Modules 10/100 is also down, there is no output and LFD causes the Link LED to blink.

When the 10/100 Autosensing Modules is in one of the Force modes, enable LFD by setting S1 to the ON position. In order for LFD to function properly, Force mode must be enabled by setting S3 to ON with S4 set for the proper speed.

Twisted Pair Crossover/Pass-Through Switch

The iMcV-LIM 10/100 features a crossover/pass-through push-button switch, located on the faceplate next to the RJ-45 connector, to set the twisted pair connection type. Select a pass-through connection by pressing the push-button IN. A crossover connection is selected when the push-button is OUT. If it is not clear which connection is needed, set the push-button to whatever setting makes the twisted pair LNK LED glow.

Specifications

Operating Temperature

+32°F to +122°F (0°C to +50°C)

Storage Temperature

-4°F to 158°F (-20°C to +70°C)

Humidity

5 - 95% (non-condensing)

Power Consumption (typical)

650 mA max. @ 5 VDC

For fiber optic specifications, visit the IMC Networks Web site.

IMC Networks Technical Support

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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.



**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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