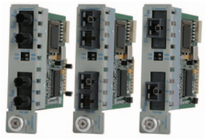
Omnitron Systems

iConverter® 2Fx User Manual



DESCRIPTION

The iConverter 2Fx is a two-port, 100BASE-FX to 100BASE-FX manageable optical switch that retimes and regenerates the fiber optic signal. It performs error checking and MAC address learning, and can be used to daisy chain chassis for distributed networking.

The 2Fx supports Half-Duplex and Full-Duplex modes for easy attachment to hubs, switches and workstations.

In addition to the two fiber optic ports, the 2Fx can also use its two 10/100 backplane ports to connect to adjacent modules.

See data sheet for available models.

The 2Fx can be used in an unmanaged or managed applications. To be managed, an Network Management Module (NMM2) or a module with integrated management must be installed in the same chassis.

For more information on management software and hardware options, see Comprehensive Network Management Solution product page.

2Fx Advanced Features

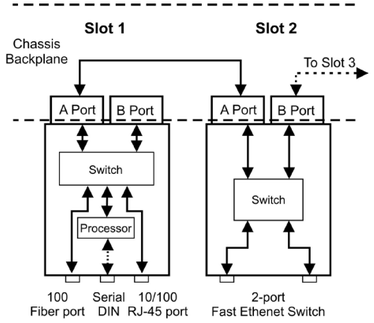
The 2Fx features Port VLAN and Tag VLAN, which allow complete control of traffic flow between both fiber ports and chassis backplane ports on a module, and Port Access Control, which facilitates enabling and disabling of individual ports. The 2Fx also supports individual port bandwidth control and reporting of MIB statistics.

PORT STRUCTURE

The 2Fx module has two front Fast Ethernet fiber ports and two 100 Ethernet backplane port. The front ports allow connections to external devices and the backplane ports allow connections to adjacent module in an iConverter chassis. The backplane ports on the module are enabled using the on-board DIP-switches.

Multi-slot iConverter chassis have backplane ports that allow connectivity to adjacent slots. Backplane Port A allows connectivity between Odd Slot numbers to Even Slot numbers (1 to 2, 3 to 4, etc). Backplane Port B allows connectivity between Even Slot numbers to Odd Slot numbers (2 to 3, 4 to 5, etc).

The figure below illustrates one of the many applications of the 2Fx when used in an iConverter chassis. By enabling Backplane Port A on both modules, the 2Fx in slot 2 is communicating to the 10/100M2 in slot 1 via the Backplane A.



The iConverter 10/100M2 module is a 10/100Mbps copper to fiber media converter with integrated management

capability. The 10/100M2 provides management of the chassis and an additional fiber and copper port. With this configuration,the 2Fx and the 10/100M2 form a managed 4-port fiber and copper Ethernet switch.

DIP-SWITCH SETTINGS

Front Panel DIP-Switches

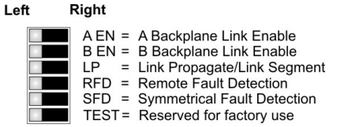
P1 Fiber Full/Half-Duplex “FDX/HDX”

When this DIP-switch is in the “HDX” RIGHT position, the port will operate in half-duplex mode. This allows connections to hubs or workstations that supports only half-duplex. When this DIP-switch is in the “FDX” LEFT position, the port will operate in full-duplex mode. This allows connections to hubs or workstations that supports full-duplex.

P2 Fiber Full/Half-Duplex “FDX / HDX”

When this DIP-switch is in the “HDX” RIGHT position, the port will operate in half-duplex mode. This allows connections to hubs or workstations that supports only half-duplex. When this DIP-switch is in the “FDX” LEFT position, the port will operate in full-duplex mode. This allows connections to hubs or workstations that supports full-duplex.

On-Board DIP-Switches



Backplane A Enable “BP A-EN”

When this DIP-switch is in the “BP A-EN” RIGHT position, backplane A is enabled and the module is connected to the

adjacent slots in the chassis. When this DIP-switch is in the LEFT position (factory setting), the backplane port is disabled and disconnected from the backplane.

Backplane B Enable “BP B-EN”

When this DIP-switch is in the “BP B-EN” RIGHT position, backplane B is enabled and the module is connected to the adjacent slots in the chassis. When this DIP-switch is in the LEFT position (factory setting), the backplane port is disabled and disconnected from the backplane.

Link Modes

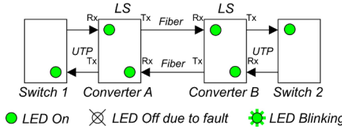
LP	RFD	SFD	Link Mode
Left	Left	Left	Link Segment (LS)
Right	Left	Left	Link Propagate (LP)
Left	Right	Left	Remote Fault Detect (RFD)
Right	Right	Left	Remote Fault Detect + Link Propagate (RFD+LP)
Left	Left	Right	Symmetrical Fault Detect (SFD)

Any other DIP-Switch combination will result in unpredictable conditions.

Link Modes

In order to accommodate different user needs, the 2Fx supports four different linking modes. Figure 2 illustrates the different link modes.

Normal Operation

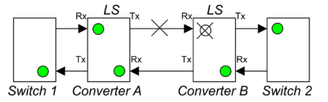


LED On *LED Off due to fault* *LED Blinking*

The Link Segment (LS) mode transmits a link signal independently of any received link at any port. Utilizing

this configuration, a loss of a receive link signal will only affect the port detecting the loss of signal. All the other ports will continue to generate a link signal.

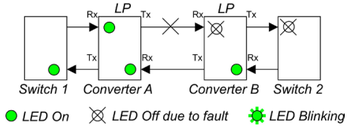
Fiber Fault with Link Segment



LED On *LED Off due to fault* *LED Blinking*

The Link Propagate (LP) mode transmits a link signal only when a link signal is detected. Utilizing this configuration, a loss of a receive link signal will continue to propagate through to the next port in the network.

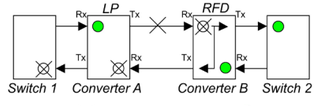
Fiber Fault with Link Propagate



LED On *LED Off due to fault* *LED Blinking*

The Remote Fault Detection (RFD) mode transmits a link signal only when a link signal is detected. When a loss of link is detected, this mode will loop back the fault condition.

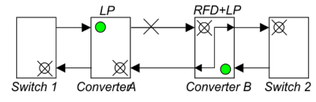
Fiber Fault with RFD Link Mode



LED On *LED Off due to fault* *LED Blinking*

The Remote Fault Detection + Link Propagate (RFD+LP) mode transmits a link signal only when a link signal is detected. When a loss of link is detected, this mode will loop back and propagate forward the fault condition.

Fiber Fault with RFD+LP Link Mode

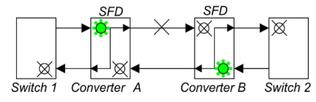


LED On *LED Off due to fault* *LED Blinking*

Connecting two modules set to RFD will cause a lockup condition.

In Symmetrical Fault Detection (SFD), the RJ-45 port transmits a Link signal only when receiving a Link at the fiber port. The fiber port transmits a Link signal only when receiving a Link signal at both the fiber port and the RJ-45 port. As a result, fiber faults (no Link received at the fiber) are looped back and can be reported to the network core. In addition, connecting two back-to-back modules which are both set to SFD facilitates dual-loop-back, where fiber faults are reported to both ends of the network link. A blinking fiber link LED on a module indicates a fault of the transmit fiber or UTP cables of that module.

Fiber Fault with SFD Link Mode



LED On *LED Off due to fault* *LED Blinking*

Converters in SFD mode must be deployed in pairs.

Software Controlled Settings

Additional settings are available via software control when a 2Fx is installed in an iConverter chassis with a Management Module, such as a Network Management Module (NMM2) or a 10/100M2 Media Converter with Integrated Management. The following settings can be controlled via the Serial Console, Telnet or SNMP Management Software such as *NetOutlook*® Management Software or other third-party SNMP-based clients:

- Enabling 10/100 Ethernet Backplane Ports
- Fiber Ports Full/Half Duplex mode selection
- Port VLAN for Fiber Ports and Backplane Ports
- Port Access Control for Fiber Ports
- MIB Statistics Reporting
- Tag VLAN for Fiber Ports and Backplane Ports
- Bandwidth Allocation for Fiber Ports

Software controlled settings can be selected to override DIP-switch settings.

For more information on using and configuring the Advanced Features, register for access to the NetOutlook Management Software user manual.

MOUNTING AND CABLE ATTACHMENT

The iConverter modules are hot-swappable and can be installed into any iConverter chassis.

Caution: Use proper ESD protection to reduce the risk of damage to your equipment.

1. Carefully slide the module into an open slot in the chassis. Align the module with the installation guides and ensure that the module is firmly seated against the backplane. Secure the module by fastening the front panel thumbscrew (push in and turn clockwise to tighten) to the chassis front. Verify the “Pwr” LED is ON (indicating the chassis is powered).

2. Using a multimode or single-mode dual-fiber cable as required per the module type, attach the fiber port to a 100BASE-FX mating Ethernet device. The transmit (Tx) must attach to the receive side of the mating device and the receive (Rx) must attach to the transmit side.

3. Single-fiber (SF) modules must be used in matched pairs. The transmit (Tx) and receive (Rx) wavelengths of one converter must match the receive (Rx) and transmit (Tx) wavelengths of the mating converter. For example, an 8450-1 must be connected to an 8451-1.

LED INDICATORS

LED	Color	Description
Pwr	Yellow	Module has power
Port 1 “FDX”	Green	OFF: Configured for half-duplex ON: Configured for full-duplex (both conditions require a active link)
Port 1 “Lk/Act”	Green	OFF: Not linked ON: Fiber link Blinking: Transmit data activity
Port 2 “FDX”	Green	OFF: Configured for half-duplex ON: Configured for full-duplex (both conditions require a active link)
Port 2 “Lk/Act”	Green	OFF: Not linked ON: Fiber link Blinking: Transmit data activity

SPECIFICATIONS

Standard Compliances	IEEE 802.3, 802.1Q, 802.1p RFC 2819 (RMON)	
Regulatory Compliances	Safety: EMI: ACT:	UL, CE, UKCA FCC Class A TAA, BAA, NDAA
Environmental	RoHS, WEEE, REACH	
Frame Size	Up to 1,536 bytes	
Port Types	Fiber:	100BASE-FX (ST, SC, LC, SF/SC)
Cable Types	Fiber:	Multimode: 50/125µm, 62.5/125µm Single-mode: 9/125µm
DC Power Requirements	DC Input: (Backplane)	3.3VDC, 0.9A @ 3.3VDC
Dimensions W x D x H	0.85” x 4.5” x 2.8” (21.6 mm x 114.3 mm x 71.1 mm)	
Weight	8 oz. (226.8 grams)	
Temperature	Commercial: Wide: Storage:	0 to 50°C -40 to 60°C -40 to 80°C
Humidity	5 to 95% (non-condensing)	
Altitude	-100m to 4,000m	
MTBF (hrs)	880,000	
Warranty	Lifetime warranty and 24/7/365 free Technical Support	

Warranty

This product is warranted to the original purchaser (Buyer) against defects in material and workmanship for a period of two (2) years from the date of shipment. A lifetime warranty may be obtained by the original purchaser by registering this product at www.omnitron-systems.com/support within ninety (90) days from the date of shipment. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective with the same product or with a product with at least the same functionality.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer’s expense. Omnitron will pay the shipping charge to return the product to Buyer’s designated US address using Omnitron’s standard shipping method.

Limitation of Warranty

The foregoing warranty shall not apply to product malfunctions resulting from improper or inadequate use and/or maintenance of the equipment by Buyer,

Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or tampering with equipment (including removal of equipment cover by personnel not specifically authorized and certified by Omnitron), or misuse, or operating outside the environmental specification of the product (including but not limited to voltage, ambient temperature, radiation, unusual dust, etc.), or improper site preparation or maintenance.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.

The remedies provided herein are the Buyer’s sole and exclusive remedies. Omnitron shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any legal theory.

Environmental Notices

The equipment covered by this manual must be disposed of or recycled in accordance with the Waste Electrical and Electronic Equipment Directive (WEEE Directive) of the European Community directive 2012/19/EU on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive 2015/863/EU, for electrical and electronic equipment sold in the EU after July 2019. Such disposal must follow national legislation for IT and Telecommunication equipment in accordance with the WEEE directive: (a) Do not dispose waste equipment with unsorted municipal and household waste. (b) Collect equipment waste separately. (c) Return equipment using collection method agreed with Omnitron.

The equipment is marked with the WEEE symbol shown to indicate that it must be collected separately from other types of waste. In case of small items the symbol may be printed only on the packaging or in the user manual. If you have questions regarding the correct disposal of equipment go to www.omniton-systems.com/support or e-mail to Omnitron at intlinfo@omnitron-systems.com.

Safety Warnings and Cautions

ATTENTION: Observe precautions for handling electrostatic discharge sensitive devices.

WARNING: Potential damage to equipment and personal injury.

WARNING: Risk of electrical shock.

Customer Support Information

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