Omnitron Systems

*iConverter®* **2FXM2**

**Plug-in Module Quick Start**

## Product Overview

The iConverter 2FXM2 Network Interface Device (NID) with integrated management provides Fast Ethernet (100BASE-FX) SFP fiber-to-fiber media conversion.

The 2FXM2 has built-in Operation, Administration and Maintenance (OAM) functionality enabling the 2FXM2 to operate as a managed demarcation point at the customer premises and network edge, offering Quality of Service capabilities.

The 2FXM2 supports IPv4 addressing, IP-Less protocol using the 802.3ah OAM channel, SNMPv1/v2c/v3, Telnet and serial console port.

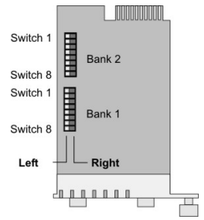
See data sheet for available models.



## DIP-Switches

### DIP-Switch Bank 1

The location of the DIP-switches is shown in below.




*DIP-switch Location*

The functions of DIP-switch Bank 1 are outlined in below.

| Switch | Left (Factory Default) | Right |
|---|---|---|
| **SW1** | **Off:** Pause Disable | **PAUS:** Pause Enable |
| **SW2** | **FDX:** Port 1 Full-Duplex | **HDX:** Port 1 Half-Duplex |
| **SW3, SW4** | **Reserved** | **Reserved** |
| **SW5** | **FDX:** Port 2 Full-Duplex | **HDX:** Port 2 Half-Duplex |
| **SW6 - SW8** | **See Link Mode Selection** | |

*DIP-switch BANK 1 Definitions*



### SW1 - Fiber Pause

When this DIP-switch is in the Left “OFF” position, Pause is disabled. When the DIP-switch is in the Right “PAUS” position Pause is enabled.

When a port is configured for Auto-Negotiation (AN), Pause operation is determined during the negotiation process between itself and the link partner. The port advertises its Pause capability (Symmetrical or No Pause) based on the Pause Disable/Enable DIP-switch setting.

When a port is operating in Manual mode (MAN), its Pause operation mode is based on the Pause Disable/Enable DIP-switch setting.

### SW2 - Port 1 Full/Half Duplex

Setting this DIP-switch to Half-Duplex “HDX” facilitates a connection that supports Half-Duplex. Setting this DIP-switch to Full-Duplex “FDX” facilitates a connection that supports Full-Duplex operation.

### SW3 and SW4 - Reserved

These DIP-switches are for factory use only and must always remain in the Left position (factory default).

### SW5 - Port 2 Full/Half Duplex

Setting this DIP-switch to Half-Duplex “HDX” facilitates a connection that supports Half-Duplex. Setting this DIP-switch to Full-Duplex “FDX” facilitates a connection that supports Full-Duplex operation.



### SW6, SW7, SW8 - Link Modes

These three DIP-switches configure the link mode settings. It is recommended to have link modes Left (default) during the initial installation. After the circuit has been tested and operational, configure the module for the desire mode.

For detailed information on the operation of the different Link Modes, download the application note “iConverter Link Modes”.

| SW6 | SW7 | SW8 | Link Mode Selection |
|---|---|---|---|
| Left | Left | Left | **Link Segment (LS)** (Factory Default) |
| Right | Left | Left | **Link Propagate (LP)** |
| Left | Right | Left | **Remote Fault Detect + Link Segment (RFD + LS)** |
| Right | Right | Left | **Remote Fault Detect + Link Propagate (RFD + LP)** |
| Left | Left | Right | **Symmetrical Fault Detect (SFD)** |
| Right | Left | Right | **Asymmetrical Link Propagate Port 1 to Port 2 (ALP P1-P2)** |
| Left | Right | Right | **Asymmetrical Link Propagate Port 2 to Port 1 (ALP P2-P1)** |
| Right | Right | Right | **Asymmetrical RFD + LP** |

*Link Modes*



### DIP-Switch Bank 2

The functions of DIP-switch Bank 2 are outlined below.

| Switch | Left (Factory Default) | Right |
|---|---|---|
| **SW1** | **A-DS:** Disable Backplane A | **A-EN:** Enable Backplane A |
| **SW2** | **B-DS:** Disable Backplane B | **B-EN:** Enable Backplane B |
| **SW3** | **Reserved** | **Reserved** |
| **SW4** | **M/SL:** Master/Slave Auto | **SL:** Slave-Mode Only |
| **SW5 - SW8** | **Reserved** | **Reserved** |

*DIP-switch Bank 2 Definitions*

### SW1, SW2 - Backplane Enable

When the DIP-switch is in the Left “DS” position (factory default), the Backplane Port of the 2FXM2 is isolated from the chassis’ Ethernet Backplane. When the DIP-switch is in the Right “EN” position, the Backplane Port is enabled. This allows Ethernet Backplane connectivity to an adjacent module via the chassis Backplane Link “A” or “B” depending on the switch setting.

### SW4 - Master/Slave

When the 2FXM2 module is installed in a chassis with an Network Management Module (NMM2), set the DIP-switch to the Left “M/SL” position (factory default). The assignment of mastership is automatically negotiated by the installed management modules. To designate the 2FXM2 module as the master of the chassis, set the DIP-switch on the module to the Left“M/SL” position, and set the other installed management modules’ DIP-switches to the Right “SL” position to enable Slave-Only mode.

### SW3, SW5, SW6, SW7, SW8 - Reserved

These DIP-switches are for factory use only and must always remain in the Left position (factory default).



## Software Controlled Switch Settings

Additional settings are available via software control.

The following software settings can be controlled via Serial Console/Telnet Console, NetOutlook Management Software or other third-party SNMP-based clients:

- DIP-switch Configuration
- Port 1 and Port 2 Configuration
- 802.1ad Q-in-Q, QoS and Port Access Control
- MIB statistics
- Bandwidth control (rate limiting)
- Configurable Link Fault Propagation modes

The module can be configured by attaching the serial port to a DB-9 serial (RS-232) equipped computer with terminal emulation software such as ProComm or Putty. The Serial Console Port (DCE) is a mini DIN-6 female connector which can be changed to a DB-9 connector with the included adapter. Attach the ends of a serial cable to the serial port of the PC and the Serial Console Port of the module. The port is a standard RS-232 asynchronous serial interface with the following settings.

| | |
|---|---|
| Bits Per Second | 57,600 |
| Stop Bits | 1 |
| Data Bits | 8 |
| Parity | NONE |
| Hardware Flow Control | NONE |

The default password is public.

When using Telnet or SNMP, the default IP address for the module is 192.168.1.220.

For more information on using and configuring the Advanced Features, register for access to the NetOutlook Management Software user manual or the 2FXM2 full user manual.



## Mounting and Cable Attachment

iConverter modules are hot-swappable and can be installed into any chassis in the iConverter family.

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

a. 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).

b. Insert the SFP fiber transceivers into the SFP receptacles on the module.

**NOTE: The release latch of the SFP transceiver must be in the closed (up) position before insertion.**

d. Connect an appropriate multimode or single-mode fiber cables to the fiber ports of the installed module. It is important to ensure that the transmit (TX) is attached to the receive side of the device at the other end and the receive (RX) is attached to the transmit side. Single-fiber (SF) media converter models operate in pairs. The TX wavelength must match the RX wavelength at the other end and the RX wavelength must match the TX wavelength at the other end.

**NOTE: In order to support Remote OAM Management Mode, Port 1 of the 2FXM2 must be connected to the Port 1 on the 2FXM2 or link partner.**



## LED Indicators

| LED | Color | Description |
|---|---|---|
| Power “PWR” | Green | **OFF:** No power applied or faulty<br>**ON:** Module has power |
| Power Status “PSx” | Green | **OFF:** Power Supply not installed<br>**ON:** Power Available<br>**Blinking:** No power available from “PSx” |
| P1 Activity “FO” | Green | **OFF:** No fiber link<br>**Blinking Green:** Data activity |
| P1 Duplex “FDX” | Green | **OFF:** Half-Duplex<br>**ON:** Full-Duplex |
| Master “BP” | Green | **OFF:** Slave Mode<br>**ON:** Master Mode |
| P2 Activity “FO” | Green | **OFF:** No fiber link<br>**Blinking Green:** Data activity |
| P2 Duplex “FDX” | Green | **OFF:** Half-Duplex<br>**ON:** Full-Duplex |



## Specifications

| | | |
|---|---|---|
| **Description** | iConverter **2FXM2**<br>100BASE-X Fiber to 100BASE-X Fiber Media Converter and Network Interface Device | |
| **Standard Compliances** | IEEE 802.3, 802.1Q, 802.1p, 802.1ad, 802.3ah<br>RFC 2819 (RMON), 2863, 2131<br>MEF 9, 14, 21 | |
| **Regulatory Compliances** | Safety:<br>EMI:<br>ACT: | UL, CE, NEBS Level 3, UKCA<br>FCC Class A<br>TAA, BAA, NDAA |
| **Environmental** | RoHS, WEEE, REACH | |
| **Management** | IPv4, Telnet, SNMPv1, SNMPv2c, SNMPv3, Serial Console | |
| **Frame Size** | Up to 2,048 bytes | |
| **Port Types** | Fiber:<br>Serial: | 100BASE-X (SFP)<br>RS-232 (Mini DIN-6 female)<br>Mini DIN-6 to DB-9 adapter included |
| **Cable Types** | Fiber:<br>Serial: | Multimode: 50/125µm, 62.5/125µm<br>Single-mode: 9/125µm<br>RS-232, 22 to 24 AWG, 12 to 50 pF/ft |
| **DC Power Requirements** | DC Input: (Backplane) | 3.3VDC, 1.2A @ 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:<br>Wide:<br>Extended:<br>Storage: | 0 to 50°C<br>-40 to 60°C<br>-40 to 75°C<br>-40 to 80°C |
| **Humidity** | 5 to 95% (non-condensing) | |
| **Altitude** | -100m to 4,000m | |
| **MTBF (hrs)** | 500,000 | |
| **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

Phone: (949) 250-6510

Fax: (949) 250-6514

Address: Omnitron Systems Technology, Inc.
38 Tesla
Irvine, CA 92618, USA

Email: support@omnitron-systems.com

URL: www.omnitron-systems.com

040-8940N-002C 4/23