Omnitron Systems

iConverter® 2GXT Plug-in Module User Manual

DESCRIPTION

The iConverter 2GXT is a plug-in managed media converter with two 10/100/1000 RJ-45 copper ports and two Small Form Pluggable (SFP) fiber ports. The 2GXT can be deployed as a dual-channel media converter that provides two independent Ethernet copper-to-fiber converters in one compact module, or deployed as a four-port Ethernet switch with dual fiber ports that can be configured to provide 1:1 uplink protection with less than 50ms switchover.

The 2GXT supports both 100BASE-X and 1000BASE-X SFPs to provide flexible connectivity to Fast Ethernet or Gigabit networks.

See data sheet for available features.

The 2GXT 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.

Advanced Features

The 2GXT supports the IEEE 802.1Q tag Virtual Local Area Network (VLAN) packet tagging and untagging

(including Q-in-Q) and the 802.1p Quality of Service priority standards. The switch module also supports Port Access Control which facilitates enabling and disabling of individual RJ-45 ports, Bandwidth Allocation, and reporting of MIB statistics.

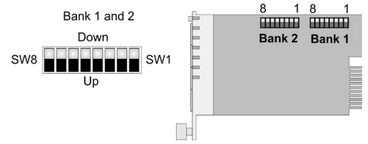
PORT STRUCTURE

The 2GXT module has two front 10/100/1000 copper ports, two front SFP ports and two 1000 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.

DIP-SWITCH SETTINGS

DIP-Switch Bank 1

The location of the DIP-switches is shown below.



The functions of DIP-switch Bank 1 are shown below.

Switch	Function	DOWN	UP
SW1	Backplane A	Disable	Enable
SW2	Backplane B	Disable	Enable
SW3 - SW4	Operational Modes		
SW5	Pause	Off	On
SW6	Link Mode	LS	P1 to P3 P2 to P4
SW7	Link Mode	LS	P3 to P1 P4 to P2
SW8	L2CP Forward	Discard	Forward

SW1 and SW2: BACKPLANE ENABLE

When these DIP-switches are in the DOWN position (factory default), the Backplane Port of the 2GXT is isolated from the Ethernet Backplane on the chassis. When these DIP-switches are in the UP position, the Backplane Port is enabled. This allows 1000M Ethernet Backplane connectivity to an adjacent module via the chassis A/B Backplane Link depending on the switch setting. Refer to the connected media converter and chassis user manual for detailed information on the Ethernet Backplane.

SW3 and SW4: Operational Modes

SW3	SW4	Operational Modes
Down	Down	4-Port Switch Mode (factory default)
Down	Up	Dual Media Converter Mode
Up	Down	Switch Mode with Redundant Fiber Mode - no return to Port 1
Up	Up	Switch Mode with Redundant Fiber Mode - return to Port 1

4-Port Switch Mode

When SW3 and SW4 are in the DOWN (factory default) position, the module operates as a 4-Port Layer 2 Ethernet switch.

Dual Media Converter Mode

When SW3 is in the DOWN position and SW4 is in the UP position, the module operates as two separate and independent Ethernet copper-to-fiber media converters, with P1 and P3 as one media converter, and P2 and P4 as the other media converter.

Switch Mode - Redundant Fiber Mode

When SW3 is in the UP position and SW4 is in either the UP or DOWN position, the module operates as a 4-Port Layer 2 Ethernet switch with the fiber ports configured as redundant links. When configured for link redundancy, the module will transmit and receive traffic on the primary port (Port 1) and no traffic on the backup port (Port 2). When

a fiber failure occurs on the primary port, the device will switch over to the backup port within 50msec.

When SW3 is in the UP position and SW4 is in the DOWN position, the module is configured to remain on the backup port (Port 2) even when a stable connection has been re-established on primary port (Port 1). When SW3 is in the UP position and SW4 is in the UP position, the module is configured to switch back to the primary port (Port 1) once a stable connection has been re-established.

SW5: Pause

The Pause DIP-switch sets the flow control functionality for all ports on the module, including pause mode advertisement, pause functionality, and half duplex back pressure. When the DIP-switch is in the Pause UP position, flow control functionality is enabled. When this DIP-switch is in the Pause DOWN (factory default) position, flow control functionality is disabled.

If Pause is enabled and the port is in half duplex, then half duplex flow control is enabled. When a port is in half duplex flow control it generates a back pressure signal when internal buffer resources are low.

If Pause is enabled and the port is in full duplex, then full duplex flow control is enabled. When a port is in full duplex flow control and internal buffering resources are low, a pause frame is generated to slow down the traffic flow to the port.

SW6 and SW7: Link Modes

These DIP-switches configure the link mode settings. It is recommended to have link modes DOWN (factory default) position during the initial installation. After the circuit has been tested and operational, configure the module for the desired mode. Link Modes are only valid when the module is operating in the Dual Media Converter mode. See Link Mode application note for more information.

Link Segment (LS)

In Link Segment mode, all ports operate independently. 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.

Link Propagate

In Link Propagate mode, faults are propagated based on the port notation. Port 1 to Port 3 notation indicates the direction the loss of link signal will propagate. A loss of receive link on Port 1 causes Port 3 to drop its link due to the propagated state (Port 1 to Port 3).

SW8: L2CP Forward

When this DIP-switch is in the default Down (factory default) position, the module will discard all L2CP frames. When the DIP-switch is in the Up position, the module will forward all L2CP frames.

DIP-Switch Bank 2

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

Switch	Function	DOWN	UP
SW1	Port 1 Speed	Auto	100
SW2	Port 2 Speed	Auto	100
SW3	Port 3 Negotiation	AN	Man
SW4	Port 3 Speed	100	10
SW5	Port 3 Duplex	FDX	HDX
SW6	Port 4 Negotiation	AN	Man
SW7	Port 4 Speed	100	10
SW8	Port 4 Duplex	FDX	HDX

SW1 and SW2: SFP Port Speed

These DIP-switches configure the speed of the transceivers installed in the SFP ports. If these DIP-switches are in the DOWN (factory default) position, the ports will detect the data rate of the transceivers installed and operate at 100M or 1G accordingly. If these DIP-switches are in the UP position, a 100M capable transceivers must be installed in the SFP ports.

SW3 - SW8: RJ-45 Negotiation, Speed and Duplex

Negotiation	Speed	Duplex	RJ-45 Mode of Operation
AN	10 or 100	FDX or HDX	When set to AN the following modes are advertised: 1000FDX, 1000HDX, 100FDX, 100HDX, 10FDX, 10HDX
Man	100	FDX	Port is set to manual 100FDX
Man	100	HDX	Port is set to manual 100HDX
Man	10	FDX	Port is set to manual 10FDX
Man	10	HDX	Port is set to manual 10HDX

SOFTWARE CONTROLLED SETTINGS

Additional settings are available via software control when a 2GXT is installed in an iConverter chassis with a Management Module.

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

- Operational Modes
- Port VLAN for Front Ports and Backplane Ports
- Port Access Control for All Ports
- MIB Statistics Reporting
- QoS and VLAN with 802.1ad
- Bandwidth Control

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. Insert the SFP fiber transceivers into the Port 1 and/or Port 2 SFP receptacles on the 2GXT.

NOTE: The release latch of the SFP Fiber transceiver must be in the closed position before insertion.

3. Connect the RJ-45 ports via a Category 5 or better Ethernet cables to a 10BASE-T, 100BASE-TX or 1000BASE-T Ethernet devices.

4. 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) SFP 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.

LED INDICATORS

LED	Color	Description
Power “PWR”	Green	**OFF:** No power applied or module is not operational **ON:** Module has power
P1 or P2 Activity “100”	Green/ Amber	**OFF:** Port is not linked at 100M **Solid Green:** Port linked at 100M **Blinking Green (10Hz):** Data activity **Blinking Green (1Hz):** Port linked and in redundant standby mode **Solid Amber:** Port linked and detecting a DDMI alarm **Blinking Amber (10Hz):** Data activity and SFP has detected a DDMI alarm **Blinking Amber (1Hz):** Port linked and SFP has detected a DDMI alarm (redundant standby mode) or Port is operating at 100M and receiving FEFI
P1 or P2 Activity “1000”	Green/ Amber	**OFF:** Port is not linked at 1000M **Solid Green:** Port linked at 1000M **Blinking Green (10Hz):** Data activity **Blinking Green (1Hz):** Port linked and in redundant standby mode **Solid Amber:** Port linked and detecting a DDMI alarm **Blinking Amber (10Hz):** Data activity and SFP has detected a DDMI alarm **Blinking Amber (1Hz):** Port linked and SFP has detected a DDMI alarm (redundant standby mode) or Port is operating at 1000M and receiving AN_Remote_Fault
P1 or P2 Activity “100” and “1000”	Green	**OFF:** Port is not linked at 10M **Solid Green:** Port linked at 10M **Blinking Green (10Hz):** Data activity **Blinking Green (1Hz):** Port linked and in redundant standby mode **Solid Amber:** Port linked and s detecting a DDMI alarm **Blinking Amber (10Hz):** Data activity and SFP has detected a DDMI alarm **Blinking Amber (1Hz):** Port linked and SFP has detected a DDMI alarm (redundant standby mode)
P3 or P4 Activity “100”	Green/ Amber	**OFF:** Port is not linked at 100M **Solid Green:** Port is linked at 100M **Blinking Green (10Hz):** Data activity
P3 or P4 Activity “1000”	Green/ Amber	**OFF:** Port is not linked at 1000M **Solid Green:** Port is linked at 1000M **Blinking Green (10Hz):** Data activity
P3 or P4 Activity “100” and “1000”	Green/ Amber	**OFF:** Port is not linked at 10M **Solid Green:** Port is linked at 1000M **Blinking Green (10Hz):** Data activity **Blinking Amber (1Hz):** Port receiving AN_Remote_Fault

SPECIFICATIONS

Standard Compliances	IEEE 802.3, 802.1Q, 802.1p, 802.1ad, 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 10,240 bytes	
Port Types	Copper: SFP Fiber:	10/100/1000BASE-T (RJ-45) 100BASE-X 1000BASE-X
Cable Types	Copper:	EIA/TIA 568A/B, Cat 5 UTP and higher
DC Power Requirements	DC Input: (Backplane)	3.3VDC, 2.4A @ 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: Extended: Storage:	0 to 50°C -40 to 60°C -40 to 75°C -40 to 80°C
Humidity	5 to 95% (non-condensing)	
Altitude	-100m to 4,000m	
MTBF (hrs)	520,000	
Warranty	Lifetime warranty and 24/7/365 free Technical Support	

The information contained in this publication is subject to change without notice. Omnitron Systems Technology, Inc. is not responsible for any inadvertent errors.

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

040-08484-002D 7/23