Omnitron Systems Technology, Inc.

iConverter® 4Tx VT
4-Port Manageable Switch Module
User Manual

Port 1 (P1)
Port 2 (P2)
Port 3 (P3)
Port 4 (P4)

iConverter 4-Port Managed Ethernet Switch		
Model Type	Connectors	Distance
8481-4	RJ-45 x 4	100m

For wide temperature (-40 to 60º C) modules, add a "W" to the end of the model number. Consult factory for other configurations and extended temperature (-40 to +75º C) modules.

OVERVIEW:

The Omnitron *iConverter* ® 4Tx VT Manageable Switch module is a compact 4-Port 10/100 Ethernet switch that can be expanded across the *iConverter* chassis. When installed in an *iConverter* chassis, the 4Tx VT features two 10/100 Ethernet Backplane Ports that connect to adjacent *iConverter* modules. This design permits flexible network configurations like the unique in-band management (remote access of management module without additional wire uplink) and versatile multi-module configurations (see the APPLICATION EXAMPLE section of this manual for details). The *iConverter* 19-Module, 5-Module and 2-Module chassis all have Backplanes that facilitate connectivity between adjacent modules. The *iConverter* 1-Module chassis supports the 4Tx VT as standalone 4-Port switch.

The 4Tx VT supports UTP auto-negotiation for 10/100Mbps speeds in Full-Duplex and Half-Duplex modes, and also features automatic UTP-crossover capability for hassle-free attachment to hubs, switches and workstations. DIP-Switches are available for configuring UTP Ports 1 and 2, with all four ports configurable via software control.

4Tx VT Advanced Features:

The 4Tx VT features Port VLAN control on the UTP and Backplane Ports. Port VLAN restricts broadcast data to predetermined network paths, therefore eliminating unauthorized packet-sniffing. Other advanced features include Port Access Control which facilitates enabling and disabling of individual UTP ports, Bandwidth Allocation and reporting of MIB statistics. MIB statistics are available for 32 variables per port, reporting a wide range of real-time packet statistics to provide performance and operational monitoring.

The 4Tx VT also features Tag VLAN and supports security and QoS prioritization based on IEEE 802.1Q and 802.1p specifications. These specifications allow control of data flow between the four front-panel UTP ports and the Ethernet Backplane Ports.

Note that software control for configuring Advanced Features listed above requires a chassis with an *iConverter* Management Module, such as the Network Management Module or the 10/100M Media Converter and Management Module.

For more information on using and configuring the Advanced Features, please refer to the *NetOutlook*™ Management Software user manual.

PORT STRUCTURE:

Front-Panel and Backplane Ports:

Using a 6-port switch architecture, the 4Tx VT features four 10/100Mbps UTP ports on the front-panel and two additional 10/100Mbps Ethernet connections on the Backplane Ports ("A" and "B"). The Backplane Ports allow Backplane Ethernet connectivity between adjacent modules in an *iConverter* chassis.

Between each two adjacent chassis slots is a Backplane Link (A or B), which can carry the 10/100Mbps Ethernet data between the two modules. Some switch-based *iConverter* modules have a Backplane Port A and a Backplane Port B. When the Backplane Ports are enabled, the *iConverter* module can communicate via the Ethernet Backplane Link A and B, with other switch-based modules in adjacent slots. The Backplane Port A and Port B can be independently enabled.

When the 4Tx VT Backplane Ports A and B are enabled (configurable using board-mounted DIP-Switches "A EN" and "B EN"), they connect via the chassis' Backplane Links ("A" and "B") to the adjacent module-slots on the left and right side of the 4Tx VT module. Through the 10/100 Ethernet Backplane Links, the 4Tx VT module can expand network configuration with other switch-based *iConverter* modules that have Backplane Ports, such as the 10/100M or an additional 4Tx VT.

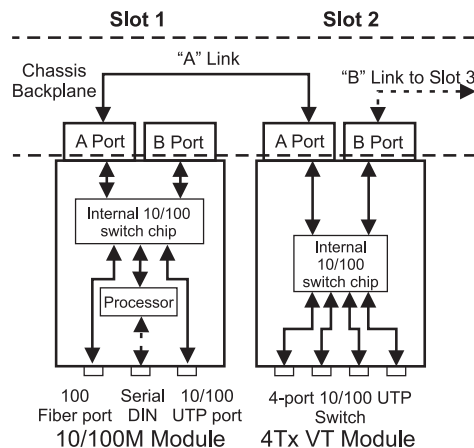## APPLICATION EXAMPLE:
4Tx VT Backplane Application:

Fig. 1 4Tx VT Backplane Application

Figure 1 illustrates one of the many applications of the 4Tx VT when used in an *iConverter* Chassis. By enabling Backplane Port A on both modules, the 4Tx VT in slot 2 is communicating to the 10/100M in slot 1 via the Backplane Link A.

The connected *iConverter* 10/100M module is a 10/100Mbps UTP to Fiber media converter with integrated management capability. The 10/100M provides the long-haul network uplink via the "100 Fiber Port", and the 4Tx VT distributes

the network service locally via the 4-port 10/100 UTP Switch along with the 10/100M's 100 UTP Port. Therefore the 4Tx VT and the 10/100M form a managed 5-port switch with a fiber uplink. Additional expandability is available by connecting other *iConverter* modules to the chassis.

DIP-SWITCH SETTINGS:

Fig. 2 4Tx VT DIP-Switch Label

Backplane Port A Enable/Disable "A EN" DIP-Switch:
When this DIP-Switch is in the LEFT position (factory default), the 4Tx VT Backplane Port A is disabled and isolated from the Backplane. To enable the Backplane Port A, the DIP-Switch should be set to the "A EN" position. Enabling the 4Tx VT Backplane Port A allows Ethernet connectivity to an adjacent module via the Backplane "A" Link.

Backplane Port A Enable/Disable "B EN" DIP-Switch:
When this DIP-Switch is in the LEFT position (factory default), the 4Tx VT Backplane Port B is disabled and isolated from the Backplane. To enable the Backplane Port B, the DIP-Switch should be set to the "B EN" position. Enabling the 4Tx VT Backplane Port B allows Ethernet connectivity to an adjacent module via the Backplane "B" Link.

UTP Auto-Negotiate/Manual "AN / MAN" DIP-Switch (for Port 1 or Port 2):
When this DIP-Switch is in the UTP Auto-Negotiate "AN" position (factory default), the designated UTP port automatically determines and matches the speed and duplex

mode of the connecting UTP device. If the connecting UTP device cannot provide the proper signal to indicate its own mode of operation, then the DIP-Switch should be set to the UTP Manual mode "MAN" position. Manual mode requires manually configuring the UTP port to match the speed and the duplex mode of the connecting UTP device (configurable using the "10/100" and "HD/FD" DIP-Switches).

When a UTP port is configured for Auto-Negotiation, either by setting the "AN/MAN" DIP-Switch to "AN" position or via software control, automatic crossover detection is enabled for that particular UTP port. Automatic crossover detection is disabled when the UTP port is configured for manual negotiation.

UTP 10/100Mbps "10/100" DIP-Switch (for Port 1 or Port 2):
When the UTP "AN/MAN" DIP-Switch (described above) is in the manual "MAN" position, the "10/100" DIP-Switch determines the speed of operation for the designated UTP port. Setting the "10/100" DIP-Switch to UTP 100Mbps "100" position (factory default) forces the UTP port to operate at 100Mbps. Setting this DIP-Switch to UTP 10Mbps "10" position forces the UTP port to operate at 10Mbps. Adjust the "10/100" DIP-Switch to match the speed of the connecting UTP device.

UTP Full/Half-Duplex "HD/FD" DIP-Switch (for Port 1 or Port 2):
When the UTP "AN/MAN" DIP-Switch (described above) is in the manual "MAN" position, the UTP Full/Half-Duplex "HD/FD" DIP-Switch determines the duplex operation mode for the UTP port. Setting the UTP Full/Half-Duplex "HD/FD" DIP-Switch to UTP Full-Duplex "FD" (factory default) position forces the UTP port to operate in Full-Duplex. Setting this DIP-Switch to UTP Half-Duplex "HD" forces the UTP port to operate in Half-Duplex. Adjust the UTP Half/Full-Duplex DIP-Switch to match duplex mode the connecting UTP device.

When the UTP "AN/MAN" DIP-Switch is in the Auto-Negotiate "AN" position and the UTP Full/Half Duplex DIP-Switch is in the Full-Duplex "FD" position, the UTP port Auto-Negotiates to Full or Half-Duplex. When in the Half-Duplex "HDX" position, the UTP port functions only in Half-Duplex.

Software Controlled Switch Settings:

Additional settings are available via software control when a 4Tx VT is installed in an *iConverter* chassis with a Management Module, such as the Network Management Module or the 10/100M Media Converter and Management Module. The following settings can be controlled via Serial Console/Telnet Console, *NetOutlook* Management Software or other third-party SNMP-based clients:

– Enabling 10/100 Ethernet Backplane Port A and B
– UTP Ports 1-4 Auto/Manual Negotiation mode selection
– UTP Ports 1-4 10/100 speed selection
– UTP Ports 1-4 Full/Half Duplex mode selection
– Port VLAN for UTP Ports and Backplane Ports ("A" and "B")
– Port Access Control for UTP Ports
– MIB Statistics Reporting
– Tag VLAN for UTP Ports and Backplane Ports ("A" and "B")
– Bandwidth Allocation for UTP Ports

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

For more information on using and configuring the Advanced Features, please refer to the *NetOutlook* Management Software user manual.

MOUNTING AND CABLE ATTACHMENT:

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

1. After configuring the DIP-Switches, carefully slide the *iConverter* module into the installation slot, aligning the module with the installation guides. Ensure that the module is firmly seated against the Backplane.
2. Secure the module by fastening the panel thumb screw (attached to the module) to chassis front.
3. If the chassis also has a management module installed, configure the 4Tx VT via the management module.
4. Attach the UTP ports via a Category 5 cable to a 10BASE-T or 100BASE-TX Ethernet device.

LED INDICATORS:

LED	Color	Description
Power:	Yellow	On—Power
Port 1-100 Link:	Green	On—Link/Blink—activity
Port 1-10 Link:	Green	On—Link/Blink—activity
Port 2-100 Link:	Green	On—Link/Blink—activity
Port 2-10 Link:	Green	On—Link/Blink—activity
Port 3-100 Link:	Green	On—Link/Blink—activity
Port 3-10 Link:	Green	On—Link/Blink—activity
Port 4-100 Link:	Green	On—Link/Blink—activity
Port 4-10 Link:	Green	On—Link/Blink—activity

4Tx VT SPECIFICATIONS:

Model Type	4Tx VT
Protocols	10BASE-T, 100BASE-TX
UTP Connectors	RJ-45
Controls	BP Enable, Auto/Man, 10/100, FDX/HDX
LED Displays	Power, 10/100 UTP Link
Dimensions	W:0.85" x D:4.5" x H:2.8"
Weight	8 oz.
Compliance	UL, CE, FCC Class A
Power Requirement	0.7A @ 3.3VDC (typical)
Temperature	Standard: 0 to 50º C Wide: -40 to 60º C Storage: -40 to 80º C
Humidity	5 to 95% (non-condensing)
Altitude	-100m to 4000m
MTBF (hrs)	740,000

Warning
The operating description in this Instruction Manual is for use by qualified personnel only. To avoid electrical shock, do not perform any servicing of this unit other than that contained in the operating instructions, unless you are qualified and certified to do so by Omnitron Systems Technology, Inc.

Warranty
This product is warranted to the original purchaser against defects in material and workmanship for a period of TWO YEARS from the date of shipment. A LIFETIME warranty may be obtained by the original purchaser by REGISTERING this product with Omnitron within 90 days from the date of shipment. TO REGISTER, COMPLETE AND MAIL OR FAX THE ENCLOSED REGISTRATION FORM TO THE INDICATED ADDRESS. Or you may register your product on the Internet at www.omnitron-systems.com. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective.

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.
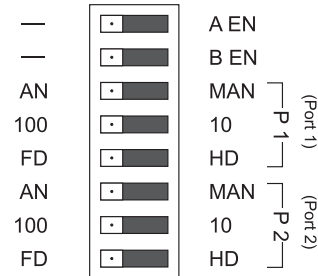
Limitation of Warranty
The foregoing warranty shall not apply to defects resulting from improper or inadequate use and/or maintenance of the equipment by Buyer, Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or tampering with equipment (including removal of equipment 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.

Exclusive Remedies
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.

TECHNICAL SUPPORT:
For help with this product, contact our Technical Support:

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Fax: (949) 250-6514
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Irvine, CA 92618 USA
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