Omnitron Systems

iConverter® TM3 Transport Module Quick Start

DESCRIPTION

This document describes the basic installation and configuration of the TM3 Transport module.

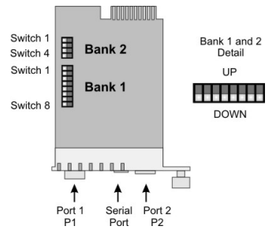
The iConverter Modular T1/E1 Multiplexer transports up to sixteen T1/E1 circuits and 10/100/1000 Ethernet over a fiber transport link or CWDM channel. This flexible and scalable system is comprised of an iConverter TM3 transport module, and one or more iConverter 4xT1/E1 MUX modules installed in a 2, 5 or 19-module chassis.

The TM3 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



DIP-switch Location

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

Switch	Down (Factory Default)	Up
SW1	**AN:** P1 Auto	**Man:** P1 Manual
SW2	**AN:** P2 Auto	**Man:** P2 Manual
SW3	**1000:** P2 1000Mbps	**10-100:** P2 10-100Mbps
SW4	**100:** P2 100Mbps	**10:** P2 10Mbps
SW5	**FDX:** P2 Full-Duplex	**HDX:** P2 Half-Duplex
SW6 - SW8	**See Link Mode Selection**	

DIP-switch BANK 1 Definitions

SW1 - P1 Negotiation "AN/Man"

When this DIP-switch is in the Down "AN" position (factory default), the fiber optic port automatically determines the pause modes of the connecting fiber optic device. If the connecting fiber optic device cannot provide the proper

signal to indicate its own mode of operation, the DIP-switch should be set to the Up "Man" position. When Port 1 is set to the "Man" position, no capabilities are advertised.

Gigabit fiber always operate in Full-Duplex mode.

SW2, SW3, SW4 and SW5 - P2 Mode of Operation

DIP-switches SW2, SW3, SW4 and SW5 control the setting for P2.

SW2	SW3	SW4	SW5	P2 Mode of Operation
AN	1000	100 or 10	FDX	Port is set to auto-negotiation with the following modes advertised: 1000F, 1000H, 100F, 100H, 10F, 10H
AN	1000	100 or 10	HDX	Port is set to auto-negotiation with the following modes advertised: 1000H, 100F, 100H, 10F, 10H
AN	100-10	100	FDX	Port is set to auto-negotiation with the following modes advertised: 100F, 100H, 10F, 10H
AN	100-10	100	HDX	Port is set to auto-negotiation with the following modes advertised: 100H, 10F, 10H
AN	100-10	10	FDX	Port is set to auto-negotiation with the following modes advertised: 10F, 10H
AN	100-10	10	HDX	Port is set to auto-negotiation with the following modes advertised: 10H
Man	100-10	100	FDX	Port is set to manual negotiation and is forced to: 100F
Man	100-10	100	HDX	Port is set to manual negotiation and is forced to: 100H
Man	100-10	10	FDX	Port is set to manual negotiation and is forced to: 10F
Man	100-10	10	HDX	Port is set to manual negotiation and is forced to: 10H

RJ-45 Port - Mode of Operation

When SW2 is set to MAN and SW3 is set to 1000, the module is operating per the IEEE specification in Auto-Negotiation mode.

SW6, SW7, SW8 - Link Modes

These three DIP-switches configure the link mode settings. It is recommended to have link modes Down (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
Down	Down	Down	**Link Segment (LS)** (Factory Default)
Up	Down	Down	**Link Propagate (LP)**
Down	Up	Down	**Remote Fault Detect + Link Segment (RFD + LS)**
Up	Up	Down	**Remote Fault Detect + Link Propagate (RFD + LP)**
Down	Down	Up	**Symmetrical Fault Detect (SFD)**
Up	Down	Up	**Asymmetrical Link Propagate Port 1 to Port 2 (ALP P1-P2)**
Down	Up	Up	**Asymmetrical Link Propagate Port 2 to Port 1 (ALP P2-P1)**
Up	Up	Up	**Asymmetrical Link Propagate Port 1 to Port 2 + Port 1 Remote Fault Detect (ALP P1 P2 + P1 RFD)**

Link Modes

DIP-Switch Bank 2

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

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

DIP-switch Bank 2 Definitions

SW1, SW2 - Backplane Enable

When the DIP-switch is in the Down "DS" position (factory default), the Backplane Port of the module is isolated from the chassis' Ethernet Backplane. When the DIP-switch is in the Up "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.

SW3 - Master/Slave

When the module is installed in a chassis with an Network Management Module (NMM2), set the DIP-switch to the Down "M/SL" position (factory default). The assignment of mastership is automatically negotiated by the installed management modules. To designate the TM3 module as the master of the chassis, set the DIP-switch on the module to the Down "M/SL" position, and set the other installed management modules' DIP-switches to the "SL" position to enable Slave-Only mode.

SW4 - Reserved

This DIP-switch is for factory use only and must always remain in the Down 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
- 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 module, register for access to the NetOutlook Management Software user manual or the Menu Driven Interface T1/E1 Multiplexer 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. The 4xT1/E1 MUX modules must be installed in adjacent slots to the TM3 Transport module. The slot numbers must be greater then the slot number of the TM3 Transport module. Up to four 4xT1/E1 MUX modules can be installed in adjacent slots.

c. When using a TM3 model with SFP ports, insert the SFP fiber transceivers into the SFP receptacles on the module.

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

d. Connect the appropriate multimode or single-mode fiber cable to the fiber port 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. When using single-fiber (SF) TM3 models, 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.

e. Connect the RJ-45 port via a Category 5 or better cable to a 10BASE-T, 100BASE-TX or 1000BASE-T Ethernet device (depending on the configuration of the port).

LED Indicators

LED	Color	Description
Power "PWR"	Green	**OFF:** No power applied or faulty **ON:** Module has power
P1 Activity "100"	Green	**OFF:** No fiber link **ON:** Fiber linked at 100M **Blinking Green:** Data activity
P1 Activity "1000"	Green	**OFF:** No fiber link **ON:** Fiber linked at 1000M **Blinking Green:** Data activity
P1 Activity "100 + 1000"	Green	**OFF:** No fiber link **ON:** Fiber linked at 10M **Blinking Green:** Data activity
Test/Alarm "Tst/Alm"	Green	**Reserved**
Master "Msr/Slv"	Green	**OFF:** Slave Mode **ON:** Master Mode **Blinking:** Secure Slave
P2 Speed "100"	Green	**OFF:** Port is not linked at 100M **ON:** Port linked at 100M **Blinking Green:** Data activity
P2 Speed "1000"	Green	**OFF:** Port is not linked at 1000M **ON:** Port linked at 1000M **Blinking Green:** Data activity
P2 Speed "100 + 1000"	Green	**OFF:** Port is not linked at 10M **ON:** Port linked at 10M **Blinking Green:** Data activity

Specifications

Description	iConverter **TM3** T1/E1 and Ethernet Transport Module
Standard Compliances	IEEE 802.3
Regulatory Compliances	Safety: UL, CE, NEBS Level 3,UKCA EMI: FCC Class A ACT: TAA, BAA, NDAA
Environmental	RoHS, WEEE, REACH
Management	IPv4, Telnet, SNMPv1, SNMPv2c, SNMPv3, Serial Console
Frame Size	Up to 10,236 bytes
Port Types	Copper: 10/100/1000BASE-T (RJ-45) Fiber: 1000BASE-X (SFP, ST, SC, LC) Serial: RS-232 (Mini DIN-6 female) Mini DIN-6 to DB-9 adapter incl.
Cable Types	Copper: EIA/TIA 568A/B, Cat 5 UTP and higher Fiber: Multimode: 50/125µm, 62.5/125µm Single-mode: 9/125µm Serial: RS-232, 22 to 24 AWG, 12 to 50 pF/ft
DC Power Requirements	DC Input (Backplane): 3.3VDC, 1.6A @ 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: 0 to 50°C Wide: -40 to 60°C Extended: -40 to 75°C Storage: -40 to 80°C
Humidity	5 to 95% (non-condensing)
Altitude	-100m to 4,000m
MTBF (hrs)	340,000
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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