iConverter

iConverter®10/100M

10/100BASE-TX UTP to 100BASE-FX Media Converter and Network Interface Device

- Carrier-Grade optical Ethernet Network Interface Device
- Integrated SNMPv1, SNMPv2c, SNMPv3 and IP-less 802.3ah management
- 802.3ah Link OAM for early fault detection and performance monitoring
- VLAN with Q-in-Q for E-Line and E-LAN services
- Quality of Service for Voice/Data/Video over Ethernet
- Bandwidth control (rate limiting)
- Port MIB statistics and optical performance statistics to support Service Level Agreements
- Port Access Control for enhanced security
- Configurable Link Fault Propagation modes
- Small Form Pluggable (SFP) transceivers with Optical Statistics for standard or CWDM applications
- Fixed-fiber connectors available for multimode and single-mode dual fiber and single-mode single-fiber
- UTP auto-crossover and auto-negotiation of data rate, duplex modes and pause capabilities
- Commercial (0 to 50°C), wide (-40° to 60°C) and extended (-40° to 75° C) temperature ranges
- MEF Certified Compliant
- NEBS Level 3 Compliant
- Lifetime Warranty and free 24/7 Technical Support

The *iConverter*® 10/100M conforms to the Ethernet in the First Mile (EFM) fiber standards to support Fiber-to-the-X Metropolitan and Enterprise LAN networks. The 10/100M provides intelligent, securely managed service demarcation at the customer premises, offering Quality of Service and Bandwidth Control (rate-limiting) capabilities. The 10/100M features built-in Operations, Administration and Maintenance (OAM) with comprehensive performance monitoring, fault detection and provisioning.

The 10/100M is available as a compact standalone unit or as a chassis plug-in module. The hot-swappable 10/100M plug-in module can be mounted in a 19 or 5-Module chassis with any combination of redundant AC and DC power supplies. It can also be mounted in a 2-Module AC or DC powered chassis, or in a 1-Module chassis with AC or DC power input.

The plug-in module can manage other modules in the same chassis and operate as a managed 10/100 media converter. It features two Ethernet backplane ports for connectivity to adjacent modules in a chassis for multi-port and multi-service configurations.

The standalone 10/100M is available as a tabletop or wall-mount unit. The tabletop model can be DIN-rail mounted using an optional DIN-rail mounting kit. Both the tabletop and the wall-mount models are DC powered and are available with an external AC/DC power adapter or a terminal connector for DC power. The 10/100M standalone unit combines management capability with a compact chassis for deployment at the demarcation point.

CARRIER-GRADE OPTICAL ETHERNET

CARRIER ETHERNET MEF Certified Compliant

iConverter fiber access Network Interface Devices and media converters are MEF certified compliant and NEBS Level 3 compliant. *iConverter* NIDs enable Carrier-Grade Optical Ethernet with reliability and performance monitoring to support Service Level Agreements (SLAs).

NEBS COMPLIANT LEVEL 3

The modular design of *iConverter* fiber access equipment future-proofs Metro Ethernet services with scalability of network services and lowers operating costs with comprehensive OAM management and provisioning.

ADVANCED FEATURES

Fiber Port Options

10/100M models with fixed-fiber connectors are available with multimode (MM) dual fiber, single-mode (SM) dual fiber and single-mode single-fiber (SF) options. They support ST, SC, LC and MT-RJ connectors with distances up to 5km over MM fiber, 120km over SM fiber and 40km over SF. The 10/100M Small Form Pluggable (SFP) model supports a wide variety of SFP transceivers available in 20nm increments from 1270nm to 1610nm to support FTTX and CWDM applications.

Link Modes

The 10/100M features multiple, user-selectable link fault detection modes, including Link Fault Propagation, Remote Fault Detection and Symmetrical Fault Detection. These Link Modes provide rapid fault detection and isolation by monitoring the state of the cabling hardware, and operate independently of the network management.

Tag VLAN, Port VLAN and QoS

The *iConverter* 10/100M 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.

10/100M VLAN Q-in-Q tunneling technology enables service providers to offer their customers E-Line and E-LAN services via Ethernet Virtual Circuit (EVC), which connect multiple business LANs at different locations and make their networks appear to be on the same local network. Q-in-Q Service tags transparently transport customer network traffic across the service provider network, isolating it from other customer and service provider management traffic.

10/100M Port VLAN enables the ability to specify and restrict traffic flow between the fiber, UTP, backplane and management ports.

The 802.1p prioritization standard enables delivery of Quality of Service (QoS) to high-priority, real-time applications such as voice and video over Ethernet.

Port Bandwidth Control and Port Access Control

The Bandwidth Control feature supports levels of bandwidth between the fiber and UTP ports from 128Kbps to Full Line Speed.

The 10/100M features Port Access Control which blocks user service while maintaining the network link. Port Access Control enables the service provider to control user access while maintaining port configuration for easy disabling or enabling of customer service. Port Access Control provides enterprise administrators the capability to improve network security by controlling port access when the port is not in use.

Port Statistics and Optical Performance Statistics

The 10/100M supports reporting of utilization, port and optical performance statistics. Port statistics are available for 38 different variables for the UTP and fiber ports. Additionally, full optical performance statistics are available on SFP fiber transceivers with a digital diagnostic bus.

Port and optical performance statistics reporting provides the ability to monitor customer bandwidth utilization, network performance and the link signal quality for each individual port.

IEEE 802.3ah Operations, Administration and Maintenance

The 10/100M supports the IEEE 802.3ah OAM standard, including Fault Detection, Performance Monitoring and Remote Loopback.

Fault Detection

The 10/100M detects and indicates link failures, dying gasp and other critical events.

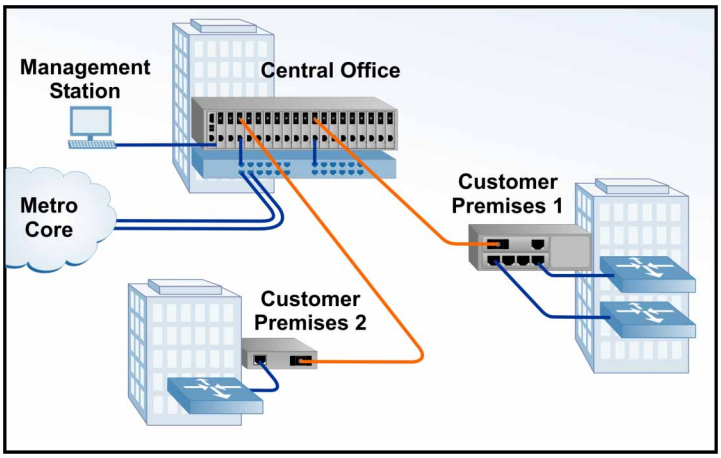
Performance Monitoring

802.3ah Performance Monitoring tools are used for the detection and notification of link performance (quality) faults. Ethernet data performance can deteriorate slowly before disrupting service, and the 10/100M allows the setting of error-per-second thresholds. Once the pre-set error threshold is exceeded, an event notification is generated that provides early indication of a problem that may be resolved prior to loss of service.

Remote Loopback

Remote Loopback is used for fault localization and link performance testing. When a 10/100M port is in loopback mode, all received service traffic is looped back and transmitted back unaltered. The statistics from the 10/100M port and the remote link partner can be compared for consistency.

METRO ETHERNET ACCESS



At the Central Office, the 10/100M plug-in module is installed in a managed *iConverter* 19-Module chassis for high-density fiber distribution from UTP switch equipment. At Customer Premises 1, the 10/100M plug-in module is installed in a 2-Module chassis with an *iConverter* 4TxVT four-port switch module. The two modules share data via the Ethernet Backplane. This configuration functions as a remotely managed demarcation switch with a fiber uplink port to the Central Office and five copper ports that drop off Ethernet service. At Customer Premises 2, the 10/100M standalone NID provides a fiber uplink to a single copper port for intelligent demarcation of Ethernet services.

MANAGEMENT SYSTEM

The 10/100M has integrated management, eliminating the cost and space required for external management hardware. The *iConverter* management system provides comprehensive remote configuration and performance monitoring. *iConverter* management reduces operational expenditures by keeping truck rolls to a minimum through remote provisioning, trap notification and loopback capabilities.

iConverter management is available out-of-band via IP-Less protocol using the 802.3ah OAM channel or Omnitron's Secure OAM channel, or in-band using SNMP or Telnet.

Management is accessed via Omnitron's *NetOutlook*® SNMP Network Management Software with an intuitive Graphical User Interface, or third party SNMP software. Telnet and CLI management interfaces are also supported, and utilize an easy to use, menu-driven interface. The CLI interface is accessed via a Serial Console Port, that provides local configuration and allows for firmware updates. Additionally, the port can be connected to a serial modem to provide an alternative remote management path.

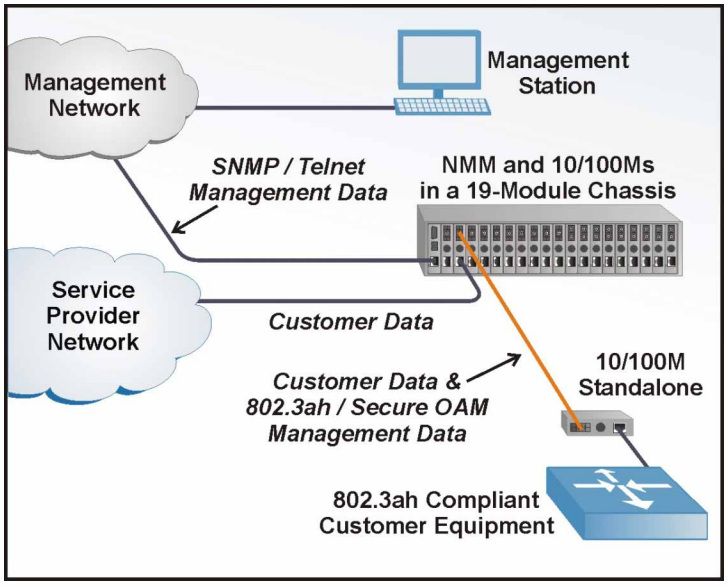
IP-Based Management

The 10/100M can be managed through IP protocols, SNMPv1, SNMPv2c, SNMPv3 and Telnet. The IP address of the 10/100M can be user-defined or resolved through the DHCP host on the network. The IP protocols for management access can be enabled or disabled individually or as a group. Access to the management is protected by password authentication. SMNPv3 strengthens secure access to devices by a combination of authenticating and encrypting packets over the network. Management VLAN can also be defined to separate management traffic from customer traffic.

802.3ah and Secure OAM Management Channels

When utilizing a Remote OAM management channel (Secure IP-less or 802.3ah), the NID at the Customer Premises is securely managed by its fiber link partner located at the Central Office or Point of Presence. The management network IP address is not available to the customer network and is isolated by the *iConverter* Network Management Module (NMM) in the 19-Module Chassis at the Central Office.

A management processor on the 10/100M in the 19-Module Chassis isolates the encrypted management data from the customer data and communicates with the NMM via a separate management backplane bus. Management traffic on the user data lines is IP-less and carried on a securely encrypted data channel to protect the management from unauthorized access. The chassis at the Central Office requires only a single IP address to manage itself and all of the connected remote chassis managed by the Remote OAM channel. This is the ideal configuration for networks that separate secure management traffic from the service (customer) traffic on different networks, or when management IP addresses are at a premium.



SPECIFICATIONS

Description	10/100BASE-T UTP to 100BASE-FX Fiber Media Converter and Network Interface Device
Protocols	10BASE-T, 100BASE-TX, 100BASE-FX with 1536 bytes max. frame size
UTP Cable	EIA/TIA 568A/B, Category 5 and higher
Fiber Cables	Multimode: 50/125, 62.5/125, 100/140µm Single-mode: 9/125µm
Serial Cable	RS-232, 22 to 24 AWG, 12 to 50 pF/ft.
UTP Connector	RJ-45
Fiber Connectors **SFP:** **Dual Fiber:** **Single-Fiber:**	 LC SC, ST, LC, MT-RJ SC
Serial Connector	Mini DIN-6 female, mini DIN-6 male to DB-9 female adapter included
Controls	DIP-Switches and LEDs
DC Power	Plug-In Module: 1.0A @ 3.3VDC Standalone: 8-15VDC, 0.6A @ 9VDC
DC Power Connector	Plug-In: Power supplied by backplane Standalone: 2.5mm Barrel Connector or Field-wireable Terminal Connector
AC Power Adapter [US]	Plug-In Module: N/A Standalone: 100-120VAC/60Hz 0.07A @ 120VAC
AC Power Adapter [Universal]	Plug-In Module: N/A Standalone: 100-240VAC/50-60Hz 0.07A @ 120VAC
Dimensions	Plug-In Module: W:0.85" x D:4.5" x H:2.8" Standalone: W:3.1" x D:4.8" x H:1.0" Wallmount: W:3.8" x D:4.8" x H:1.0"
Weight without power adapter	Plug-In Module: 8oz. Standalone: 1 lb.
Weight with power adapter	Plug-In Module: N/A Standalone: 1.5 lb.
Compliance	UL, CE, FCC Class A, MEF 9
IP-Based Management	Telnet; SNMPv1, SNMPv2c, SNMPv3
Temperature	Standard Operating: 0 to 50º C Wide Operating: -40 to 60º C Extended Operating: -40 to 75º C Storage: -40 to 80º C
Humidity	5% to 95% (non-condensing)
Altitude	-100m to 4000m (Operational)
MTBF (Hours)	Plug-In Module: 600,000 Standalone without Power Adapter: 600,000 Standalone With Power Adapter: 250,000

ORDERING INFORMATION

8 9 x x - x - x x

00	Dual-Fiber ST Connector Multimode
01	Dual-Fiber ST Connector Single-Mode
02	Dual-Fiber SC Connector Multimode
03	Dual-Fiber SC Connector Single-Mode
04	Dual-Fiber MT-RJ Connector Multimode
05	Dual-Fiber MT-RJ Connector Single-Mode
07	Dual-Fiber LC Connector Single-Mode
10	Single-Fiber SC Connector Single-Mode
11	Single-Fiber SC Connector Single-Mode
19	Small Form Pluggable (SFP) Model

0	For Dual-Fiber: 5km For SFP Model
1	For Single-Fiber: 20km For Dual-Fiber: 30km
2	For Single-Fiber: 40km For Dual-Fiber: 60km
3	For Dual-Fiber: 120km

<Blank>	Plug-In Module
A	Tabletop with External US AC Power Supply
B	Tabletop with External Universal AC Power Supply
C	Tabletop with DC Terminal Power
D	Wall-Mount with External US AC Power Supply
E	Wall-Mount with External Universal AC Power Supply
F	Wall-Mount with DC Terminal Power

<Blank>	Standard Operating Temperature Range Model
W	Wide Operating Temperature Range Model
Z	Extended Operating Temperature Range Model

Fiber Type / Dual Fiber or Single-Fiber	Distance	Connector Types					Tx Lambda [nm]	Rx Lambda [nm]	Min. Tx Power [dBm]	Max. Tx Power [dBm]	Min. Rx Sense [dBm]	Max. Rx Power [dBm]	Link Budget
		ST	SC	MT-RJ	LC	SFP							
SFP	-	**-**	**-**	**-**	**-**	**8919-0**	-	-	-	-	-	-	-
MM/DF	5km	**8900-0**	**8902-0**	**8904-0**	**-**	**-**	1310	1310	-24	-14	-31	-14	7
SM/DF	30km	**8901-1**	**8903-1**	**8905-1**	**8907-1**	**-**	1310	1310	-15	-8	-31	-8	16
SM/DF	60km	**8901-2**	**8903-2**	**-**	**8907-2**	**-**	1310	1310	-5	0	-31	-3*	26
SM/DF	120km	**-**	**8903-3**	**-**	**8907-3**	**-**	1550	1550	-5	0	-31	-3*	26
SM/SF	20km	**-**	**8910-1**	**-**	**-**	**-**	1310	1550	-15	-5	-30	-3	15
SM/SF	40km	**-**	**8910-2**	**-**	**-**	**-**	1310	1550	-8	0	-30	-3*	22
SM/SF	20km	**-**	**8911-1**	**-**	**-**	**-**	1550	1310	-15	-5	-30	-3	15
SM/SF	40km	**-**	**8911-2**	**-**	**-**	**-**	1550	1310	-8	0	-30	-3*	22

When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.
***A** minimum of 3dB of attenuation is required for these models. When ordering a Wide Temperature model, add a "W" to the end of the part number, and when ordering an Extended Temperature model, add a "Z" to the end of the part number (see chart above).

Omnitron Systems Technology, Inc.