iConverter® GM3 Network Interface Devices

Carrier-Grade NIDs for 100Mbps and 1000Mbps Ethernet Fiber Access

The iConverter GM3 is a flexible and cost-effective Network Interface Device (NID) with Service Operations, Administration and Maintenance (OAM), and Link OAM capabilities. The GM3 provides Carrier Ethernet service demarcation with rapid service activation, SLA assurance and fault management.

The GM3 supports MEF-certified User-to-Network Interface (UNI) functions including Class of Service (CoS) management, granular rate-limiting, and 802.1ad Provider Bridge VLAN stacking (Q-in-Q) for service multiplexing of multiple E-Line, E-LAN and E-Tree services.

The GM3 provides per-flow service mapping, traffic policing and shaping. CIR/EIR "two rates, three colors" ingress port policing provides granular bandwidth optimization. The GM3 also provides advanced classification and filtering of subscriber traffic as an EVC or CoS flow based on layer 1, 2, 3 or 4 identifiers.

The GM3 supports carrier-class Ethernet Service OAM standards. IEEE 802.1ag Connectivity Fault Management (CFM) monitors service availability and provides tools for rapid fault isolation. ITU-T Y.1731 Performance Monitoring provides the ability to monitor key SLA parameters including frame delay, frame delay variation and frame loss. These OAM features provide proactive fault detection and rapid isolation of potential service problems, enabling SLA assurance while reducing Operational costs (OPEX).

Zero-Touch Provisioning (ZTP) allows providers to achieve efficiencies in service activation that accelerate turn up and reduce the need for onsite technicians. ZTP allows service provisioning to be centralized, standardized and remotely managed.

The integrated management eliminates the cost and space required for external management hardware. The integrated management provides comprehensive remote configuration and performance monitoring.

The GM3 supports IPv4 addressing, IP-Less protocol using the 802.3ah OAM channel, SNMPv1/v2c/v3, Telnet and serial console port.

The IP address is user-defined or can be resolved through DHCP. Telnet and serial console management interfaces are supported, and utilize an easy-to-use, menu-driven interface. The serial interface provides local configuration access.

SFPs not included

KEY FEATURES

- 100/1000Mbps MEF Carrier Ethernet Fiber Access NID
- Smallest full-function NIDs available with the lowest power consumption
- Integrated IPv4, SNMPv1/v2c/v3, Telnet and IP-less 802.3ah OAM management
- SNMP management via NetOutlook® provides real-time port and module status information, configuration and trap notification
- Fixed fiber port supports multimode and single-mode dual fiber and single-mode single-fiber
- Supports Gigabit and Fast Ethernet SFP transceivers for standard, CWDM or DWDM wavelengths
- RJ-45 port supports 10/100/1000 and Half/Full-Duplex auto-negotiation and MDI/MDIX auto-crossover
- 10,240 byte Jumbo frames
- Supports 802.1ad Q-in-Q, QoS, Port Access Control and MIB statistics
- Rate Limiting using Committed Information Rate (CIR) and Committed Burst Size (CBS)
- IEEE 802.1ag Connectivity Fault Management (CFM)
- ITU-T Y.1731 End-to-End Performance Monitoring
- Zero-Touch Provisioning
- Configurable Link Fault Propagation modes
- Automatic Link Recovery
- Commercial (0 to 50ºC), wide (-40 to 60ºC) and extended (-40 to 75ºC) temperature ranges
- MEF 9, 14 and 21 Certified, MEF 30 and 31 Compliant
- TAA, BAA and NDAA compliant, and Made in the USA

SNMP management is available via Omnitron's NetOutlook® SNMP Network Management Software with an intuitive Graphical User Interface, or third party SNMP software.

The GM3 models are available with ST and SC fixed-fiber connectors supporting multimode dual fiber, single-mode dual fiber and single-mode single-fiber options. The GM3 Small Form Pluggable (SFP) models support a wide variety of Fast Ethernet and Gigabit SFP transceivers in standard, CWDM and DWDM wavelengths.

The GM3 is available in 2-port or 3-port options. The 3-port configuration supports geo-diverse redundant access links or multi-tenant demarcation with two subscriber ports.

The RJ-45 port supports 10/100/1000 and Half/Full-Duplex auto-negotiation and Pause control, with both hardware and software manual override controls. The module supports frame sizes up to 10,240 bytes.

The hot-swappable plug-in module can be mounted in a high-density 19 or 5-Module chassis with redundant AC and DC power supplies. It can also be mounted in a 2-Module or in a 1-Module chassis with AC or DC power input.

The plug-in module features two Gigabit Ethernet backplane ports for connectivity to adjacent modules in a chassis for multi-port and multi-service configurations.

The GM3 standalone unit is available with an external AC to DC power adapter or with a 2-pin terminal connector for direct connection to DC power. The standalone module can be DIN-Rail mounted using the optional DIN-Rail mounting bracket (8250-0), DIN-Rail Mounting Clips (8251-0) and wall/rack mounted.

The GM3 also functions as a fiber transport module for the modular iConverter T1/E1 and Ethernet Multiplexer System.

ADVANCED FEATURES

Management
IPv4, Telnet, SNMPv1, SNMPv2c, SNMPv3, Serial Console
SNMP management via NetOutlook Network Management software
IP-less management through 802.3ah OAM extensions
Traffic Management
IEEE 802.1Q VLAN Tagging
IEEE 802.1ad Q-in-Q VLAN Tagging
Service Multiplexing of up to 256 EVCs
User-configurable Ethertype
All ports configurable as UNI or NNI
Ingress and Egress traffic management
Hierarchical rate limiting with two-level color aware policing
CIR/EIR color aware "two rates, three colors" bandwidth profiles
Port Mirroring
IEEE 802.1p CoS Priority
per Port, VLAN ID, PCP, IPv4/IPv6 (TOS/DiffServe) Priority, MAC address, IP address, TCP Port or L2CP
L2CP Policy Management
L2PT Tunneling to encapsulate STP, VTP, PVST and CDP protocols
10,240 byte jumbo frames

Service OAM and Testing
IEEE 802.3ah Link OAM with Dying Gasp*
IEEE 802.1ag Connectivity Fault Management with 8 Maintenance Domain levels and 256 Maintenance Associations
IEEE 802.1ag Maintenance Intermediate Points for fault isolation
ITU-T-Y.1731 Performance Monitoring with threshold monitoring and crossing alerts
Advanced classification and filtering of Layer 1, 2, 3 or 4 subscriber traffic as an EVC or CoS flow
Per port and per flow loopback with MAC (Layer 2) swap
Zero-Touch Provisioning (DHCP/TFTP)
Portal integration with Cyan Blue Planet, Ocular IP, Orion Solarwinds and Web EMS
Third party in-band loopback support
Built-in UTP cable tester for troubleshooting to the Customer Equipment
Protection and Redundancy
Port Redundancy (Primary and Backup Link)
IEEE 802.1w Rapid Spanning Tree Protocol
Link Modes

*Supported on all standalone models. Supported on plug-in models when installed in a 1-Module or 2-Module chassis with dying gasp support.

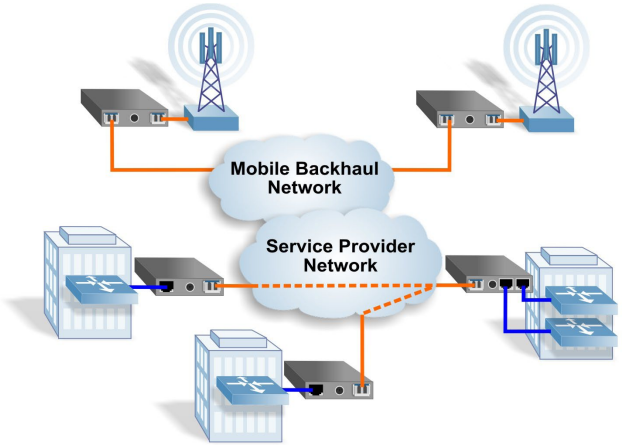
For more advanced features such as, ITU-T Y.1564 Ethernet Service Activation Testing, IETF RFC 2544 Ethernet Service Activation Testing, ITU-T G.8262 Sync-E, IEEE 1588v2 Timing, ITU-T G.8031 and G.8032v2 Ethernet Protection Switching, see the iConverter GM4 and iConverter GM4-PoE models.

APPLICATIONS

Mobile Backhaul

In this application, the GM3 NIDs on the top are used for demarcation of LTE Mobile Backhaul and provide performance monitoring for latency sensitive voice data.

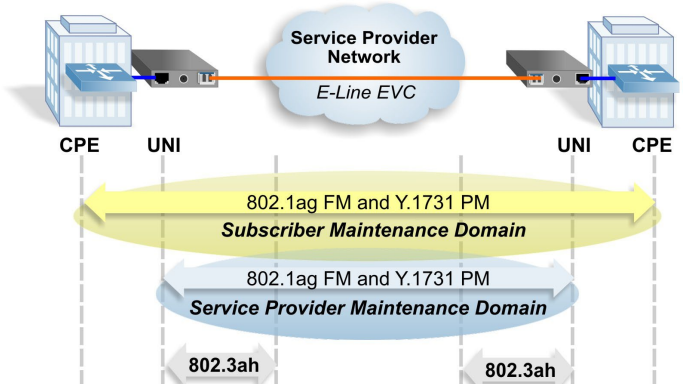
The GM3 NIDs on the bottom are providing demarcation for business services. The GM3 NID at the subscriber location on the right is providing a UNI with multiplexed services to two other locations.



Service OAM

IEEE 802.1ag Connectivity Fault Management (CFM) provides Maintenance Domain and Maintenance Associations for Subscribers, and multiple Service Providers. IEEE 802.1ag functions pro-actively monitor service availability and provide tools for rapid fault isolation.

ITU-T Y.1731 Performance Monitoring provides the ability to monitor SLA parameters including frame delay, frame delay variation and frame loss. Hardware-based Delay Measurement and Loopback Measurement with nanosecond resolution provides the highest level of service testing and SLA assurance for delay sensitive voice and financial services.



SPECIFICATIONS

Description	***iConverter* GM3** 10/100/1000BASE-T Copper to 100/1000BASE-X Fiber Network Interface Device	
Standard Compliances	IEEE 802.3, 802.1Q, 802.1p, 802.3ah, 802.1ad, 802.1ag, ITU-T Y.1731 RFC 2819 (RMON), 2863 (IF-MIB), 2131 (DHCP) Carrier Ethernet 2.0 Compliant, MEF 9, 14, 21, 30, 31	
Regulatory Compliances	Safety: EMI: ACT:	UL, cUL, CE, NEBS Level 3, UKCA FCC Class A TAA, BAA, NDAA
Environmental	RoHS, WEEE, REACH	
Port Types	Copper: Fiber: Serial:	10/100/1000BASE-T (RJ-45) 100BASE-X (SFP) 1000BASE-X (ST, SC,SFP) RS-232 (Mini DIN-6 female) Mini DIN-6 to DB-9 adapter included
Cable Types	Copper: Fiber: Serial:	EIA/TIA 568A/B, Cat 5 UTP and higher Multimode: 50/125µm, 62.5/125µm Single-mode: 9/125µm RS-232, 22 to 24 AWG, 12 to 50 pF/ft
AC Power Requirements	AC Adapter: (US) AC Adapter: (Universal)	100 - 240VAC/50 - 60Hz 0.1A @ 120VAC (max) 100 - 240VAC/50 - 60Hz 0.1A @ 120VAC (max)
DC Power Requirements	DC Input: (Backplane) DC Input: (Terminal Block) DC Input: (AC Adapter)	3.3VDC, 1.6A @ 3.3VDC +8 to +32VDC, 0.6A @ 9VDC 2-Pin Terminal (non-isolated) +8 to +32VDC, 0.6A @ 9VDC 2.5mm Barrel Connector

Management	IPv4, Telnet, SNMPv1, SNMPv2c, SNMPv3, Serial Console	
Frame Size	Up to 10,240 bytes	
Dimensions W x D x H	Plug-in: Standalone: w/mounting brackets:	0.85" x 4.5" x 2.8" (21.6 mm x 114.3 mm x 71.1 mm) 3.1" x 4.8" x 1.0" (78.74 mm x 121.92 mm x 25.4 mm) 3.8" x 4.8" x 1.0" (96.5 mm x 121.9 mm x 25.4 mm)
Weight	Plug-in: Standalone w/o Adapter: Standalone w Adapter:	8 oz. (226.8 grams) 1.0 lb. (453.6 grams) 1.5 lbs. (680.4 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)	Plug-in: Standalone w/o Adapter: Standalone w/ US Adapter: Standalone w/ Uni Adapter:	340,000 420,000 250,000 100,000
Warranty	3 year warranty with 24/7/365 free Technical Support	

ORDERING INFORMATION

Step 1: Choose a Base Part Number (xxxxP-x-pt)

Port Configuration			Fiber Type	Distance	Connector Types				Tx / Rx Wavelength	Min. Tx Power	Max. Tx Power	Min. Rx Power	Max. Rx Power	Min Attenuation	Link Budget
P1	P2	P3			ST	SC	SFP	RJ45	(nm)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)	(dB)
FF	RJ-45	-	MM/DF	220/550m[1]	8920P-0-pt	8922P-0-pt	-	-	850 / 850	-10	-4	-17	-3	-	7
FF	RJ-45	-	SM/DF	12km	8921P-1-pt	8923P-1-pt	-	-	1310 / 1310	-9.5	-3	-19.5	-3	-	10
FF	RJ-45	-	SM/DF	34km	-	8923P-2-pt	-	-	1310 / 1310	-5	0	-23	-3	3	18
FF	RJ-45	-	SM/DF	80km	-	8923P-3-pt	-	-	1550 / 1550	-5	0	-23	-3	3	18
FF	RJ-45	-	SM/DF	110km	-	8923P-4-pt	-	-	1550 / 1550	0	5	-24	-3	8	24
FF	RJ-45	-	SM/DF	140km	-	8923P-5-pt	-	-	1550 / 1550	2	5	-28	-8	13	30
FF	RJ-45	-	SM/SF[2]	20km	-	8930P-1-pt	-	-	1310 / 1550	-9.5	-3	-20	-3	-	10.5
FF	RJ-45	-	SM/SF[2]	20km	-	8931P-1-pt	-	-	1550 / 1310	-9.5	-3	-20	-3	-	10.5
FF	RJ-45	-	SM/SF[2]	40km	-	8930P-2-pt	-	-	1310 / 1550	-3	0	-20	-3	3	17
FF	RJ-45	-	SM/SF[2]	40km	-	8931P-2-pt	-	-	1550 / 1310	-3	0	-20	-3	3	17
SFP	RJ-45	-	-	-	-	-	8939P-0-pt	-	-	-	-	-	-	-	-
RJ-45	RJ-45	SFP	-	-	-	-	8970P-0-pt	-	-	-	-	-	-	-	-
RJ-45	RJ-45	RJ-45	-	100m	-	-	-	8974P-0-pt	-	-	-	-	-	-	-
SFP	SFP	RJ-45	-	-	-	-	8975P-0-pt	-	-	-	-	-	-	-	-
SFP	SFP	SFP	-	-	-	-	8979P-0-pt	-	-	-	-	-	-	-	-
RJ-45	RJ-45	-	-	100m	-	-	-	8989P-0-pt	-	-	-	-	-	-	-
SFP	SFP	-	-	-	-	-	8999P-0-pt	-	-	-	-	-	-	-	-

[1] 62.5/125µm, 100/140µm multimode fiber up to 220m. 50/125µm multimode fiber up to 550m. Refer to the fiber cable manufacturer for multimode distance specifications.
[2] When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.
FF - Fixed Fiber, SFP - Small Form Pluggable Transceiver, MM = Multimode, SM = Single-mode, DF = Dual Fiber, SF = Single-fiber
Contact Omnitron for other fiber options. Order the appropriate Fast or Gigabit SFPs separately. Visit the Omnitron Optical Transceivers web page.
For chassis options, see iConverter Chassis Overview web page.

Step 2: Choose a Power Option (xxxxP-x-pt)

<leave blank> = Plug-in module
A = Barrel Connector and AC/DC Power Adapter, 100-240VAC, 50-60Hz, with US power cord without integrated mounting brackets
B = Barrel Connector and Universal AC/DC Adapter, 100-240 VAC, 50-60Hz, No Power Cord, without integrated mounting brackets
C = Direct DC input, 2 pin terminal connector, no AC/DC power adapter, without integrated mounting brackets
D = Barrel Connector and AC/DC Power Adapter, 100-240VAC, 50-60Hz, with US power cord with integrated mounting brackets
E = Barrel Connector and Universal AC/DC Adapter, 100-240 VAC, 50-60Hz, No Power Cord, with integrated mounting brackets
F = Direct DC input, 2 pin terminal connector, no AC/DC power adapter, with integrated mounting brackets

Step 3: Choose an Operating Temperature Range (xxxxP-x-pt)

<leave blank> = Commercial temperature (0 to 50°C)
W = Wide temperature (-40 to 60°C)
Z = Extended temperature (-40 to 75°C)

ACCESSORIES

Model Number	Description
8250-0	DIN Rail Mounting Bracket for standalone modules without integrated mounting brackets (power option -A, -B, -C)
8251-0	DIN Rail Mounting Clip for standalone models with integrated mounting brackets (power options -D, -E, -F)
8260-0	1U Rack Mount Shelf for standalone models (up to 4 modules)