iConverter® GM4-PoE+ and GM4-HPoE Network Interface Devices
Carrier Ethernet 2.0 NIDs with Power over Ethernet

The *iConverter*® GM4 PoE Network Interface Devices (NID) deliver advanced Carrier Ethernet 2.0 services and provide integrated Power over Ethernet (PoE) at the demarcation. GM4 PoE NIDs function as PoE Power Sourcing Equipment in small cell (metro cell) and WiFi applications, where the radio equipment can be powered through the Ethernet UTP cables.

By integrating Carrier Ethernet demarcation and PoE functions into a single device, Service Providers can easily deploy WiFi hot spots and small cells almost anywhere, reduce equipment costs and overall power consumption. This integrated PoE NID speeds time to market and reduces technical risks.

The GM4 PoE NIDs are available in two PoE power levels. GM4-PoE+ and GM4-HPoE models support 802.3af PoE (15.4W) and 802.3at PoE+ (25.5W) on each RJ-45 port. The GM4-HPoE models also provide up to 60W of power to access points for hot spot and metro cell applications.

The GM4 PoE NIDs enable rapid service deployments, Service Level Agreement (SLA) assurances, comprehensive fault management and service protection. These advanced capabilities reduce operating costs, provide faster return on investment (ROI) and improve customer satisfaction.

The standalone GM4-PoE+ and GM4-HPoE are available in 2, 4 and 5 port models, with up to four RJ-45 ports with PoE. They are DC powered with a terminal connector, or available with an external AC/DC power adapter. Built-in mounting brackets provide table-top and wall-mounting capability, and can also be rack-mounted using the 1RU 19" rack-mounting shelf.
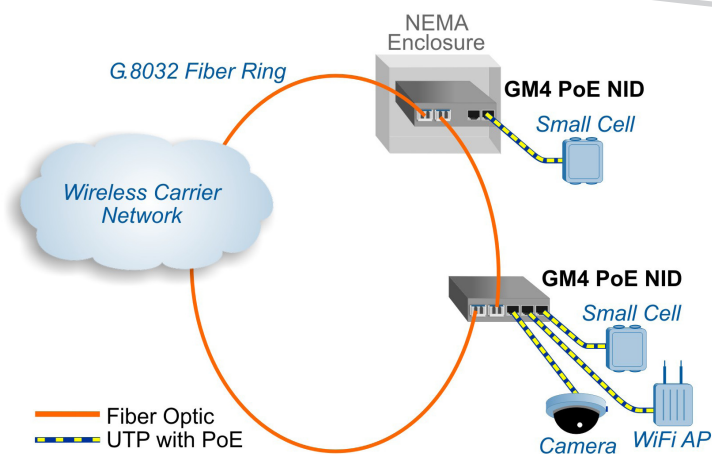
- Smallest full-function NIDs available with 60W PoE

- Power over Ethernet sourcing of 802.3af (15.4W), 802.3at (25.5W) and up to 60W

- 1000Mbps and 100Mbps Carrier Ethernet Fiber Access

- Multiple port configurations:
  - 1 or 2 SFP Fiber Ports
  - 1 to 4 RJ-45 PoE 10/100/1000 Ports

- MEF Carrier Ethernet 2.0 Compliant

- Advanced traffic management with service mapping, traffic policing and shaping with Hierarchical Rate Limiting

- IEEE 802.1ag and ITU-T Y.1731 Service OAM

- IEEE 802.1ax/802.3ad LAG with LACP*

- Zero-Touch Provisioning for automated service activation

- ITU-T Y.1564 and IETF RFC 2544 Service Testing

- ITU-T G.8262 Sync-E and IEEE 1588v2 Timing

- ITU-T G.8031 and G.8032v2 Protection Switching

- Remote management through TELNET, SSH and SNMPv1/v2c/v3

- *NetOutlook*® EMS streamlines the management of complex networks with up to 100,000 NIDs

- Commercial (0 to 50ºC), wide (-40º to 60ºC) and extended (-40º to 75ºC) temperature ranges

* Future firmware release

In the application example, a Service Provider offers metro/small cell coverage in addition to WiFi hot spot services. The multiport GM4 PoE NIDs provide full PoE power on each RJ-45 port.

GM4 PoE NIDs are available with two SFP fiber ports, and support G.8032 Ethernet Ring Protection Switching to enable resilient ring configurations. On-board contact closure monitors the equipment enclosures for unauthorized tampering.

The small cells and WiFi access points can be located in an outdoor enclosure, inside a building, or both. A GM4 PoE NID and the power supply can be installed in a compact NEMA enclosure for outdoor deployments.

NEMA Enclosure
GM4 PoE NID
Small Cell
G.8032 Fiber Ring
Wireless Carrier Network
GM4 PoE NID
Small Cell
Camera   WiFi AP
Fiber Optic
UTP with PoE

OST Omnitron Systems

INTERFACES

- Up to four 10/100/1000BASE-T Copper
- Up to two 100 or 1000BASE-X SFP fiber
- Small Form Pluggable (SFP) transceivers for standard or CWDM applications
- Port Mirroring

POWER OVER ETHERNET

- Power over Ethernet sourcing of 802.3af (15.4W), 802.3at (25.5W) and up to 60W
- Monitors attached PoE PDs through ping

TRAFFIC MANAGEMENT

- IEEE 802.1Q VLAN tagging, 802.1ad Q-in-Q and Q-in-Q-in-Q* VLAN stacking
- Service Multiplexing of up to 256 EVCs
- User-configurable Ethertype
- Ingress and Egress traffic management
- CIR/EIR Color Aware "two rates, three colors" bandwidth profiles for ingress rate limiting
- Hierarchical Rate Limiting with two level color aware policing
- Advanced Flow and CoS classification per Port, VLAN ID, PCP, IPv4/IPv6 (TOS/DiffServe) Priority, MAC address, IP address, TCP Port or L2CP
- Layer 2 Protocol Tunneling (L2PT) to encapsulate STP, VTP, PVST and CDP protocols (subscriber CISCO protocols)
- All ports configurable as UNI or NNI
- 10,240 byte Jumbo frames

PROTECTION AND REDUNDANCY

- ITU-T G.8031 Ethernet Linear Protection Switching
- ITU-T G.8032v2 Ethernet Ring Protection Switching with multi-ring protection and sub-ring support
- Sub-50ms failover for G.8031 and G.8032v2
- IEEE 802.1ax/802.3ad Link Aggregation Group (LAG) with Link Aggregation Control Protocol (LACP)*
- Link Failover 50ms protection switching
- Rapid Spanning Tree
- Link modes for port-to-port and UNI-to-UNI failure propagation

* Future firmware release

TIMING AND SYNCHRONIZATION

- ITU-T G.8262 Sync-E
- IEEE 1588v2 Transparent clock

SERVICE OAM AND TESTING

- IEEE 802.1ag End-to-End Connectivity Fault Management (CFM) – with 8 Maintenance Domain levels and 256 Maintenance Associations
- Supports IEEE 802.1ag Maintenance Intermediate Points (MIPs) for fault isolation
- ITU-T Y.1731 End-to-End Performance Monitoring
- Hardware-based Delay and Loopback measurement with nanosecond resolution
- Advanced classification and filtering of Layer 1, 2, 3 or 4 subscriber traffic as an EVC or CoS flow
- ITU-T Y.1731 threshold monitoring and threshold crossing alerts
- IEEE 802.3ah Ethernet Link OAM with dying gasp
- Zero-Touch Provisioning
- DEMARC Auto-Configuration (DAC) for DPoE Networks
- ITU-T Y.1564 Ethernet Service Activation testing with multi-flow testing of information rate, latency, jitter and frame loss
- RFC 2544 built-in test-head with wire-speed, per flow testing of throughput, latency, jitter and loss
- ITU-T Y.1564 and RFC 2544 test heads support generation/reception of in-service and out-of-service L2, L3 and L4 frames
- Test-heads with configurable rate-limiting to isolate provisioning and network issues
- Per-port and per-flow Loopback with MAC swap
- Compatible with third party in-band loopback testing
- Built-in UTP cable tester for troubleshooting through to the Customer Equipment

NETWORK MANAGEMENT

- Remote management via TELNET, SSH, SNMPv1/v2c/v3
- SNMP management of up to 100,000 devices with *NetOutlook*® Element Management System
- SNMP management using *NetOutlook*® Network Management software
- MEF 30 and 31 Service OAM Fault Management MIBs
- IP-less management through 802.3ah OAM extensions

Omnitron Systems

SPECIFICATIONS

Description		iConverter GM4-PoE and GM4-HPoE 10/100/1000BASE-TX UTP to 1000BASE-X Fiber Network Interface Device with Power over Ethernet
Standard Compliances		IEEE 802.1Q, 802.1ad, 802.1ax, 802.1p, 802.3, 802.3ad, 802.3ah, 802.1ag, 1588v2, 802.3af, 802.3at and 60W PoE RFC 2819 (RMON), 2863 (IF-MIB), 2131 (DHCP), 2544 ITU-T G.8031, G.8032, G.8262, Y.1731, Y.1564 MEF 9, 14, 21, 30, 31, Carrier Ethernet 2.0
Management		Telnet, SNMPv1, SNMPv2c, SNMPv3, SSH, Serial Console
Regulatory Compliances*		UL, CE, FCC Class A, NEBS Level 3, RoHS2, WEEE
Frame Size		Up to 10,240 bytes
Port Type	Copper:	10/100/1000BASE-T (RJ-45)
	Fiber:	1000BASE-X (ST, SC,SFP)
	Serial:	RJ-45
Cable Type	Copper:	EIA/TIA 568 A/B, Category 5 and higher
	Fiber:	Multimode: 50/125um, 62.5/125um Single-mode: 9/125um
	Serial:	EIA/TIA 568 A/B, Category 3 and higher
Temperature	Commercial: Wide: Extended: Storage:	0 to 50° C -40 to 60° C -40 to 75° C -40 to 80° C
Warranty		3 Year warranty

* Pending

AC Power Requirements	AC Adapter:	100 - 240VAC/60Hz, 2.8A @ 120VAC (max)	
DC Power Input	All models (except 8991T-14, 8991T-23): 2.1 mm Barrel Connector or 3-Pin Terminal Connector		
	8991T-14, 8991T-23: DIN-6 Connector or 3-Pin Terminal Connector		
DC Power Requirements	48 - 56VDC 1 PoE/PoE+ Port (30W) 2 PoE/PoE+ Ports (60W) 3 PoE/PoE+ Ports (90W) 4 PoE/PoE+ Ports (120W) 1 HPoE Port (60W) 2 HPoE Ports (120W) 3 HPoE Ports (180W) 4 HPoE Ports (240W)	 0.825A @ 48VDC 1.491A @ 48VDC 2.130A @ 48VDC 2.733A @ 48VDC 1.450A @ 48VDC 2.741A @ 48VDC 4.005A @ 48VDC 5.233A @ 48VDC	
Dimensions	W: 5" x D: 7.5" x H: 1.375" L: 127 mm x B: 190.5 mm x H: 34.93 mm		
Weight	without Power Adapter: with Power Adapter:	1.38 lbs. 2.50 lbs.	
Humidity	5% to 95% (non-condensing)		
Altitude	-100m to 4,000m (operational)		

ORDERING INFORMATION

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

D	External US AC Power Supply
E	External Universal AC Power Supply
F	DC Terminal Power

GM4-PoE+	GM4-HPoE		Port Configuration	
PoE, PoE+	PoE, PoE+, 60W PoE	PoE, PoE+, 60W PoE 120W Combined PoE Port Capability (AC Models Only)	Number of SFP Ports	Number of RJ-45 Ports
8991S-11	8991T-11	-	1	1
8991S-14	8991T-14	8991L-14**	1	4
8991S-22	8991T-22	-	2	2
8991S-23	8991T-23	8991L-23**	2	3

Visit www.omnitron-systems.com/optical-transceivers.php to order Small Form Pluggable Transceivers (SFPs)

** Available in future release
Please consult Omnitron for other configurations and information on the extended temperature models.

OST Omnitron Systems

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