RuggedNet GPoE+/Mi

Managed Industrial 10/100/1000 Power Source Equipment (PSE) PoE/PoE+ Ethernet Fiber Switch

The RuggedNet GPoE+/Mi is an industrial ruggedized and temperature-hardened Ethernet switch that features one or two 1000BASE-X Gigabit fiber ports and four or eight 10/100/1000BASE-T RJ-45 Power Sourcing Power-over-Ethernet (PoE and PoE+) ports. The RuggedNet switch enables network distance extension with fiber cabling and provides full PoE+ power simultaneously to all RJ-45 ports.

The GPoE+/Mi functions can be configured using easily accessible DIP-switches or using Web, Telnet or Serial Console management interfaces. The IP-based web and Telnet management can be accessed through any of the Ethernet RJ-45 or fiber ports and facilitates the configuration and real-time operation monitoring of each port.

The RuggedNet GPoE+/Mi is a Layer 2 Ethernet switch that can be configured in Directed Switch mode. As a Layer 2 Ethernet switch, frames are forwarded to any port based on their MAC address. In Directed Switch mode, multicast traffic (such as video) is directed only to the appropriate fiber port, preventing the flooding of copper ports.

Models with two fiber ports support Dual Device Mode that enables the GPoE+/Mi to operate as two independent and isolated switches. Models with two fiber ports also support redundant fiber uplinks for critical applications that require protection and sub-50ms restoration in the event of a fiber failure. The second fiber port may also be used to daisy-chain multiple RuggedNet PoE fiber switches, or it may be used as another switch port.

The RuggedNet GPoE+/Mi is available with fixed ST, SC, and LC connectors or Small Form Pluggable (SFP) transceivers. Fiber ports support multimode or single-mode and dual fiber or single-fiber with distances up to 140 km. SFPs support a variety of distances in standard and CWDM wavelengths.

The GPoE+/Mi automatically negotiates and delivers the power level required by its Powered Device (PD) partner. When negotiating to PoE (IEEE 802.3af) it delivers up to 15.4 Watts per RJ-45 port. When negotiating to PoE+ (IEEE 802.3at) it delivers up to 30 Watts per RJ-45 port. To support power for non-standard powered devices, each port can be configured to be forced to deliver up to the 30 Watts of power.

The GPoE+/Mi features a remote PoE power reset function that can be configured with a DIP-switch or via management. This feature allows all PDs or individual PDs to be power-

SFPs not included

KEY FEATURES

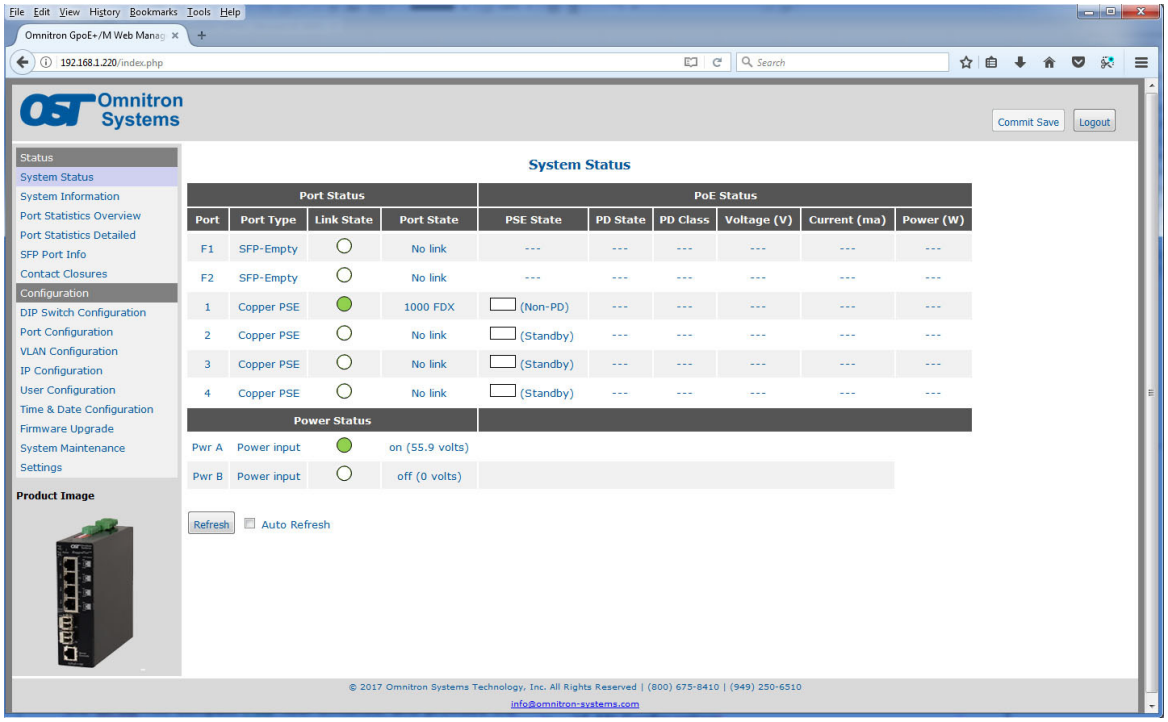
- Managed Ruggedized Ethernet Power Sourcing Equipment (PSE) PoE/PoE+ switch
- Multiple port configurations:
  - 1 Fiber + 4 RJ-45
  - 2 Fiber + 4 RJ-45
  - 1 Fiber + 8 RJ-45
  - 2 Fiber + 8 RJ-45
- Management via Web, Telnet and serial interfaces
- Provides full PoE/PoE+ power simultaneously to all Ethernet RJ-45 ports
- Configurable PoE Power Reset
- Supports ST, SC and LC fiber ports or SFP transceivers
- Fiber redundancy on models with two fiber ports
- Dual Device mode for operating as two separate switches
- Directed Switch mode to prevent port flooding
- Supports jumbo frames up to 10,240 bytes
- Alarm contacts and sensors
- Isolated single or dual DC power for redundancy
- DIN-rail mountable
- Industrial (-40 to 75ºC) operating temperature
- Free 24/7/365 Technical Support

cycled and reset remotely to save time and expense by eliminating the need to dispatch manpower to remote network sites.

The compact RuggedNet Ethernet switches can be DIN-rail mounted using the included DIN-rail mounting clip. They are available with single or dual DC input power options.

Two contact-closure alarm relays are available to detect user configured events. Relay contacts can be configured for normally open or normally closed operation. One alarm input is available for detecting external events such as door open or closed.

MANAGEMENT



The IP-based web management provides easy access to all the features of the GPoE+/Mi using any standard web browser.

IP-based web management provides remote management of the GPoE+/Mi compact PoE fiber switches, and provides the ability to remotely monitor status and configure hardware/software parameters.

The management software provides intuitive and easy-to-navigate menu options for Status and Configuration screens.

Status

- System Status
- System Information
- Port Statistics Overview
- Port Statistic Detailed
- SFP Port Information statistics
- Contact Closures

Configuration

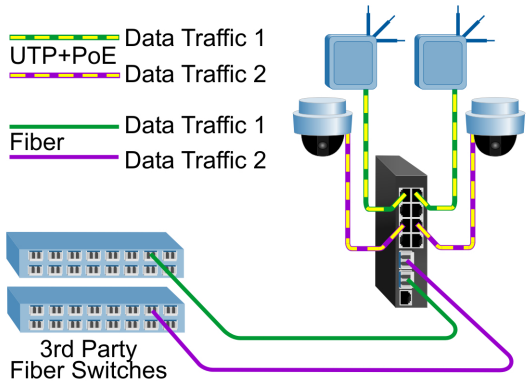
- DIP-switch Configuration
- Port Configuration
- VLAN Configuration
- IP Configuration
- User Configuration
- Time & Date Configuration
- Firmware Update
- System Maintenance

APPLICATIONS

Dual Device Mode

For secure applications requiring two separate network domains over fiber runs to the same location and independent connectivity to the Powered Devices, the GPoE+/Mi can be configured in Dual Device Mode.

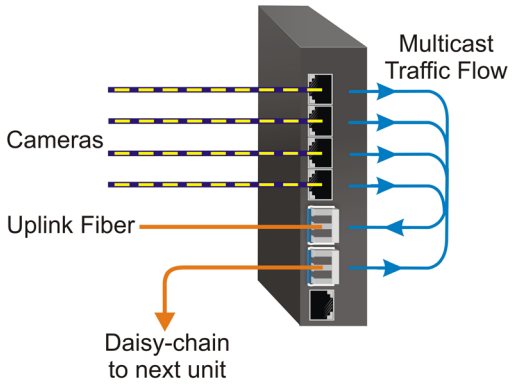
The GPoE+/Mi provides separate and independent data traffic paths between the two fiber links and four or eight RJ-45 ports. In the example below, the green lines represents one independent domain and the purple lines represent the other independent domain.



Directed Switch Mode

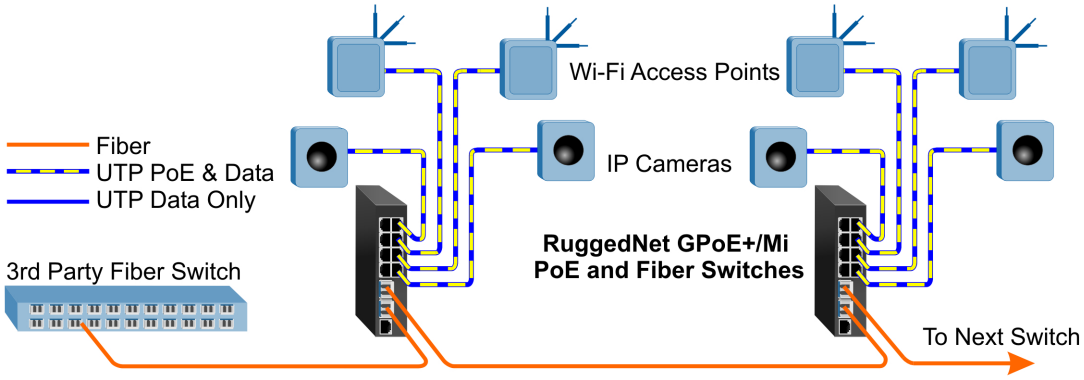
In some networks, video cameras broadcast a single multicast video stream to the entire network, and the video stream is received by all of the destinations. This multicast video can cause port flooding on other network devices (including other cameras, printers and workstations). To avoid this, multicast traffic is routed only to ports where the destination devices are connected.

The GPoE+/Mi can be configured to operate in Directed Switch Mode, which directs video traffic only to the uplink fiber port, as shown in the diagram below, preventing the multicast video traffic from flooding other network ports.



Daisy Chain Application

In this industrial manufacturing application example, RuggedNet GPoE+/Mi PoE fiber switches are deployed along an assembly line. Gigabit fiber is distributed from a fiber switch at a network hub location to RuggedNet GPoE+/Mi PoE switches with dual fiber ports that enable a fiber daisy chain with multiple locations. Each RuggedNet GPoE+/Mi provides fiber data connectivity and PoE+ power for IP cameras and Wi-Fi access points at each location.



SPECIFICATIONS

Description	**RuggedNet GPoE+/Mi** 10/100/1000BASE-T to 1000BASE-X Ruggedized Managed PoE+ Ethernet Switch	
Standard Compliances	IEEE 802.3, IEEE 802.3af (15.40 watts max), IEEE 802.3at (30 watts max)	
Environmental	REACH, RoHS2 and WEEE	
PoE Modes	IEEE Alternate A (Alt A)	
Management	Web, Telnet, Serial Console	
Frame Size	Up to 10,240 bytes	
Port Types	Copper: Fiber: Serial:	10/100/1000BASE-T (RJ-45) 1000BASE-X (ST, SC, LC, SFP) RJ-45
Cable Types	Copper: Fiber: Serial:	EIA/TIA 568A/B, Cat 5 UTP and higher Multimode: 50/125, 62.5/125µm Single-mode: 9/125µm Category 3 and higher
DC Power Requirements	DC Input: (4 RJ-45 Ports) (8 RJ-45 Ports)	+/-46 to +/-57VDC[1]; 2.7A @ 48VDC 2 Pin Terminal (isolated) 5.2A @ 48VDC 2 Pin Terminal (isolated)
Dimensions	W: 1.5” x D: 5.5” x H: 5.14” L: 38.1 mm x B: 139.7 mm x H: 130.5 mm	
Weight	4 RJ-45 Ports: 8 RJ-45 Ports:	TBD lb.; TBD grams TBD lb.; TBD grams
Operating Temperature	-40 to 75°C (-20°C cold start)	
Humidity	5 to 95% (non-condensing)	
Altitude	-100m to 4,000m (operational)	
MTBF (hours)	4 RJ-45 Ports: 8 RJ-45 Ports:	DC Power: TBD DC Power: TBD
Warranty	5 year product warranty with 24/7/365 free Technical Support	

[1] A minimum of 52VDC is required to guarantee 25.5 watts at 100 meters on Cat 5 or better cable.

Standards and Compliances*

Safety	UL 60950-1 IEC 60950-1:2005+A1:2009 and EN 60950-1:2006+A11:2009+A1:2010+A12:2011 CE Mark
EMC	EN 55032/24
EMI	CISPR 32, FCC 47 Part 15 Subpart B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: Signal: 10 V IEC 61000-4-8 (Magnetic Field) IEC 61000-4-11 (General Immunity in Industrial Environments)
IP Rating	IP40 Protection

* Pending

Alarm Contacts and Sensors

Alarm Contact (Output)	2 form C Relays for Normally Open and Normally Closed Operation 110VDC/125VAC Maximum Voltage 2A Maximum Current
Alarm Sensor (Input)	2.0ma @ 3.3VDC Closure Detection

ORDERING INFORMATION

RuggedNet GPoE+/Mi 4 Port - IEEE 802.3at PoE+

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1	Single DC 2-Pin Terminal Connector
2	Dual DC 2-Pin Terminal Connectors

Fiber Type	Distance	Connector Type				Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
		ST	SC	LC	SFP								
MM/DF	220/550m[1]	9540-0-14	9542-0-14	9546-0-14	-	850	850	-10	-4	-17	-3	-	7
MM/DF (x2)	220/550m[1]	-	-	9546-0-24	-	850	850	-10	-4	-17	-3	-	7
MM/DF	2km	-	9542-6-14	-	-	1310	1310	-9.5	-3	-19.5	-3	-	10
SM/DF	12km	9541-1-14	9543-1-14	9547-1-14	-	1310	1310	-9.5	-3	-19.5	-3	-	10
SM/DF (x2)	12km	-	-	9547-1-24	-	1310	1310	-9.5	-3	-19.5	-3	-	10
SM/DF	34km	-	9543-2-14	-	-	1310	1310	-5	0	-23	-3	3	18
SM/DF	80km	-	9543-3-14	-	-	1550	1550	-5	0	-23	-3	3	18
SM/DF	110km	-	9543-4-14	-	-	1550	1550	0	5	-24	-3	8	24
SM/DF	140km	-	9543-5-14	-	-	1550	1550	2	5	-28	-8	13	30
MM/SF	220/550m[1]	-	9550-0-14	-	-	1310	1550	-9	-3	-18	-3	-	9
MM/SF	220/550m[1]	-	9551-0-14	-	-	1550	1310	-9	-3	-18	-3	-	9
SM/SF	20km	-	9550-1-14	-	-	1310	1550	-9.5	-3	-20	-3	-	10.5
SM/SF	20km	-	9551-1-14	-	-	1550	1310	-9.5	-3	-20	-3	-	10.5
SM/SF	40km	-	9550-2-14	-	-	1310	1550	-3	0	-20	-3	3	17
SM/SF	40km	-	9551-2-14	-	-	1550	1310	-3	0	-20	-3	3	17
SFP (x1)	-	-	-	-	9559-0-14								
SFP (x2)	-	-	-	-	9559-0-24								

[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.

Contact Omnitron for other fiber options. Order the appropriate SFPs separately. Visit the Omnitron Optical Transceivers web page.

ORDERING INFORMATION

RuggedNet GPoE+/Mi 8 Port - IEEE 802.3at PoE+

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1	Single DC 2-Pin Terminal Connector
2	Dual DC 2-Pin Terminal Connectors

Fiber Type	Distance	Connector Type				Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
		ST	SC	LC	SFP								
MM/DF	220/550m[1]	9540-0-18	9542-0-18	9546-0-18	-	850	850	-10	-4	-17	-3	-	7
MM/DF (x2)	220/550m[1]	-	-	9546-0-28	-	850	850	-10	-4	-17	-3	-	7
MM/DF	2km	-	9542-6-18	-	-	1310	1310	-9.5	-3	-19.5	-3	-	10
SM/DF	12km	9541-1-18	9543-1-18	9547-1-18	-	1310	1310	-9.5	-3	-19.5	-3	-	10
SM/DF (x2)	12km	-	-	9547-1-28	-	1310	1310	-9.5	-3	-19.5	-3	-	10
SM/DF	34km	-	9543-2-18	-	-	1310	1310	-5	0	-23	-3	3	18
SM/DF	80km	-	9543-3-18	-	-	1550	1550	-5	0	-23	-3	3	18
SM/DF	110km	-	9543-4-18	-	-	1550	1550	0	5	-24	-3	8	24
SM/DF	140km	-	9543-5-18	-	-	1550	1550	2	5	-28	-8	13	30
MM/SF	220/550m[1]	-	9550-0-18	-	-	1310	1550	-9	-3	-18	-3	-	9
MM/SF	220/550m[1]	-	9551-0-18	-	-	1550	1310	-9	-3	-18	-3	-	9
SM/SF	20km	-	9550-1-18	-	-	1310	1550	-9.5	-3	-20	-3	-	10.5
SM/SF	20km	-	9551-1-18	-	-	1550	1310	-9.5	-3	-20	-3	-	10.5
SM/SF	40km	-	9550-2-18	-	-	1310	1550	-3	0	-20	-3	3	17
SM/SF	40km	-	9551-2-18	-	-	1550	1310	-3	0	-20	-3	3	17
SFP (x1)	-	-	-	-	9559-0-18								
SFP (x2)	-	-	-	-	9559-0-28								

[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.

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800-675-8410 • 949-250-6510 • www.omnitron-systems.com • info@omnitron-systems.com • 38 Tesla, Irvine, CA USA 92618