RuggedNet® GHPoEBT/Mi

Managed Industrial 6-Port 60/100W IEEE 802.3bt Gigabit Switches

SFPs not included

The RuggedNet GHPoEBT/Mi replaces the GHPoE/Mi and is recommended for all new designs.

The RuggedNet GHPoEBT/Mi is a managed Industrial Ethernet switch that features two 100M/1G uplink ports and four 10/100/1000 RJ-45 IEEE 802.3bt 60W or 100W PoE user ports.

All models support Directed Switch mode, which directs multicast traffic, such as video, to the appropriate uplink port, preventing multicast traffic from flooding other network ports.

Models with two fiber or two copper uplink ports support redundant uplinks, industrial ring Media Redundancy Protocol (MRP), Rapid Spanning Tree Protocol (RSTP) and daisy-chain configurations for high availability industrial network applications.

Models with two fiber or two copper uplink ports also support Dual Device mode that enables the switches to operate as two independent and isolated Ethernet switches.

The mode of operation can be configured using easily accessible DIP-switches or using Web, Telnet, SSH, SNMPv1/v2c/v3 or Serial Console management interfaces. IPv4 and IPv6 are supported on the switches. These management interfaces provide access to filtering and security options, such as, broadcast storm prevention, IGMP, IEEE 802.1x, RADIUS, TACACS+ and Access Control Lists. Email notification and alarm reporting is provided.

The RuggedNet PoE switches are available with fixed fiber ST, SC, and LC connectors or Small Form Pluggable (SFP) transceiver ports. Fiber ports support multimode or single-mode and dual fiber or single-fiber with distances up to 140km. SFP models support a variety of distances in standard, CWDM and DWDM wavelengths.

The switches feature a PoE Power Reset function that enables the user to remotely power-cycle and reset each PD, such as a camera or access point. They also feature a configurable Heartbeat Reset function that automatically pings the attached PDs and automatically power cycles and resets the PDs when detecting a heartbeat loss. The Power Reset and the Heartbeat Reset functions save time and expense by eliminating the need to dispatch manpower to remote network sites.

An alarm relay is available to detect user configured events. The relay contact 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.

KEY FEATURES

- Managed 60W/100W PoE Gigabit Ethernet Switches
- Supports the IEEE 802.3bt 60W or 100W
- Modbus Industrial Protocol for device management and monitoring
- Supports IPv4 and IPv6
- IEEE 802.1x, RADIUS, TACACS+ and ACL
- Email Notification
- Rapid and Multiple Spanning Tree Protocol
- Media Redundancy Protocol (MRP)
- IEEE 802.1ax LAG and LACP; Act/Act and Act/Standby
- IEEE 802.1Q VLAN tagging and IEEE 802.1ad Q-in-Q
- Broadcast / Multicast / Unicast Storm Prevention
- DHCP Relay Option 82, DHCPv6 and DHCPv6 Relay
- IPv4 IGMP and IPv6 MLD snooping
- Rate Limiting, Queue prioritization and Class of Service
- IEEE 802.1ab Link Layer Discovery Protocol
- Static MAC configuration and blocking of unknown Unicast/Multicast addresses
- PoE Watchdog Self-Healing function / PoE Heartbeat Monitoring and Configurable PoE Power Reset
- PoE power management with LLDP MED and MDI TLV, and PoE Power Multi-Day Scheduler
- Management via Web, Telnet, SSH, SNMPv1/v2c/v3 and serial interfaces
- Easy to use Hierarchical Command Line Interface
- SNMP management via Omnitron's NetOutlook® management software, or third-party SNMP software
- Dual Device mode configured as two separate switches
- Directed Switch mode prevents flooding of multicast video traffic
- Free 24/7/365 Technical Support

ADDITIONAL FEATURES

- Two 10/100/1000 copper or 100M*/1G fiber uplink ports
- Four 10/100/1000 copper PoE user ports
- ST, SC and LC fixed fiber ports or standard, CWDM or DWDM Gigabit SFP transceivers

*100Mbps supported with 100M SGMII SFP Transceivers

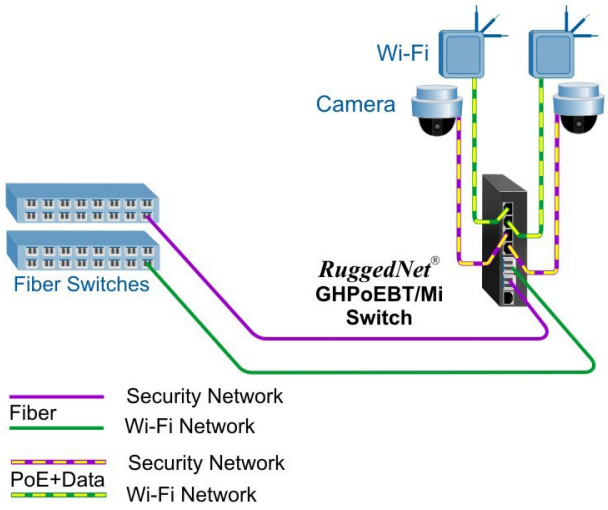
- Single or dual DC power for redundancy
- Alarm contacts and sensors
- Wall, Rack and DIN-rail mountable
- Fan-less design for long life
- Industrial (-40 to 75º C) operating temperature
- TAA, BAA and NDAA compliant, and Made in the USA

APPLICATIONS

Dual Device Mode Application

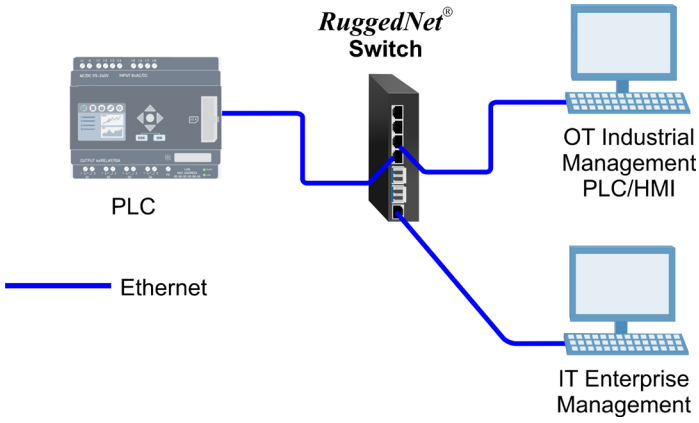
This Dual Device feature is extremely useful when two isolated networks domains share a single network distribution location.

The example below depicts a scenario where a surveillance security (purple) network and a Wi-Fi (green) network are sharing a single hub distribution location. Using the two uplinks and the Dual Switch mode facilitates using a single PoE switch driving both the Cameras and the Wi-Fi Access Points while maintaining isolation between the networks.



Modbus Application

Modbus is one of the oldest and most popular communication protocols used in industrial automation. Modbus-TCP is the Modbus RTU protocol with a TCP interface running on Ethernet. Omnitron's Modbus-aware switches seamlessly connect IT (Information Technology Networks) and OT (Operational Technology Networks).



SPECIFICATIONS

Description	**RuggedNet® GHPoEBT/Mi (60/100W BT)** 10/100/1000BASE-T with Fiber or Copper Uplinks Industrial Managed 6 Port IEEE 802.3bt PoE Ethernet Switch
Standard Compliances	IEEE 802.3, IEEE 802.1Q, IEEE 802.1ad, IEEE 802.1ab, IEEE 802.1ax, IEEE 802.1w RSTP/MSTP, RFC 5424, RFC 4541, RFC 2710, IEC 624339-2, SMTP, SNTP, RADIUS, TACACS+, IEEE 802.1x, IEEE 802.3af (15.40 watts max), IEEE 802.3at (30 watts max), IEEE 802.3bt (60 and 100 watts max)
Regulatory Compliances	Safety: UL 62368-1, UL 60950-1, IEC 62368-1, IEC 60950-1, EN 62368-1, EN 60950-1, CAN/CSA C22.2 No. 62368-1-14, CAN/CSA C22.2 No. 60950-1, CE Mark, UKCA EMC: EN 55032/24 CE Emissions/Immunity, IEC 61000-6-4 Industrial Emissions, IEC 61000-6-2 Industrial Immunity 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: 10 V/m (on UTP cabling) and 20 V/m (on STP cabling) IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV, IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV, IEC 61000-4-6 CS: Signal: 10 V, IEC 61000-4-8 (Magnetic Field), 30A/m, IEC 61000-4-11 (General Immunity in Industrial Environments) IP Rating: IP40 Protection ACT: TAA, BAA, NDAA
Environmental	REACH, RoHS and WEEE
PoE Modes	IEEE Alternate A (Alt A) and 4-Pair
Management	IPv4 and IPv6 address, Web, Telnet, SSH, SNMPv1/v2c/v3 In-Band management via Ethernet port. Out-of-band management via serial port
Frame Size	Up to 10,240 bytes
Port Types	Copper: RJ-45: 10/100/1000BASE-T Fiber: Fixed: ST, SC, LC 1000BASE-X Fiber SFP: 10/100/1000BASE-T SGMII Copper Transceiver or 100BASE-X SGMII Fiber Transceiver or 1000BASE-X SERDES Fiber Transceivers Serial: RJ-45 RS-232
Cable Types	Copper: EIA/TIA 568A/B, Cat 5 UTP and higher Fiber: Multimode: 50/125, 62.5/125µm Single-mode: 9/125µm Serial: Category 3 and higher
DC Power Requirements	60W BT Models: +46 to +57VDC; 4.46A @ 56VDC 2 Pin Terminal (isolated) 100W BT Models: +46 to +57VDC; 7.31A @ 56VDC 2 Pin Terminal (isolated)
Alarm Contact (Output)	2 form C Relay for Normally Open and Normally Closed Operation 110VDC/125VAC Maximum Voltage, 2A Maximum Current
Alarm Sensor (Input)	2.0ma @ 3.3VDC Closure Detection
Dimensions (W x D x H)	1.5" x 5.5" x 5.5" (38.1 mm x 139.7 mm x 139.7 mm)
Weight	1.70 lb. (772 grams)
Operating Temperature	Extended: -40 to 75°C Storage: -40 to 80°C
Humidity	5 to 95% (non-condensing)
Altitude	-100m to 4,000m (operational)
MTBF (hours)	262,000
Warranty	5 year product warranty with 24/7/365 free Technical Support

Power / Voltage Requirements and Specifications per IEEE

Description	IEEE 802.3af PoE	IEEE 802.3at PoE+	IEEE 802.3.bt PoE (60W Type 3)	IEEE 802.3bt PoE (100W Type 4)
Power Supply Voltage Range	46.0 to 57.0 VDC	51.0 to 57.0 VDC	51.0 to 57.0 VDC	53.0 to 57.0 VDC
Voltage Range at PSE port Output	44.0 to 56.0 VDC	50.0 to 56.0 VDC	50.0 to 56.0 VDC	52.0 to 56.0 VDC
Maximum Power from PoE/PSE port	15.4 watts	30 watts	60 watts	100 watts
Minimum Voltage at PoE/PD port input (at 100 meters using Cat5 Cable)	37.0 VDC	42.5 VDC	42.5 VDC	41.1 VDC
Minimum Power at PoE/PD port (at 100 meters using Cat5 Cable)	12.95 watts	25.5 watts	51 watts	71 watts

ORDERING INFORMATION

Step 1: Choose the Base Part Number (xxxx-x-xx-pZ)

RuggedNet GHPoEBT/Mi IEEE 802.3bt 60W Models													
Fiber Type	Distance	Connector Type					Tx / Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Atten (dB)	Link Budget (dB)
		ST	SC	LC	SFP	RJ-45							
MM/DF	220/550m[1]	3300B-0-14-pZ	3302B-0-14-pZ	3306B-0-14-pZ	-	-	850 / 850	-10	-4	-17	-3	-	7
MM/DF	2km	-	3302B-6-14-pZ	-	-	-	1310 / 1310	-9.5	-3	-19.5	-3	-	10
SM/DF	12km	3301B-1-14-pZ	3303B-1-14-pZ	3307B-1-14-pZ	-	-	1310 / 1310	-9.5	-3	-19.5	-3	-	10
SM/DF	34km	-	3303B-2-14-pZ	-	-	-	1310 / 1310	-5	0	-23	-3	3	18
SM/DF	80km	-	3303B-3-14-pZ	-	-	-	1550 / 1550	-5	0	-23	-3	3	18
SM/DF	110km	-	3303B-4-14-pZ	-	-	-	1550 / 1550	0	5	-24	-3	8	24
SM/DF	140km	-	3303B-5-14-pZ	-	-	-	1550 / 1550	2	5	-28	-8	13	30
MM/SF[2]	220/550m[1]	-	3310B-0-14-pZ	-	-	-	1310 / 1550	-9	-3	-18	-3	-	9
MM/SF[2]	220/550m[1]	-	3311B-0-14-pZ	-	-	-	1550 / 1310	-9	-3	-18	-3	-	9
SM/SF[2]	20km	-	3310B-1-14-pZ	-	-	-	1310 / 1550	-9.5	-3	-20	-3	-	10.5
SM/SF[2]	20km	-	3311B-1-14-pZ	-	-	-	1550 / 1310	-9.5	-3	-20	-3	-	10.5
SM/SF[2]	40km	-	3310B-2-14-pZ	-	-	-	1310 / 1550	-3	0	-20	-3	3	17
SM/SF[2]	40km	-	3311B-2-14-pZ	-	-	-	1550 / 1310	-3	0	-20	-3	3	17
SFP (x1)	-	-	-	-	3319B-0-14-pZ	-	-	-	-	-	-	-	-
SFP (x2)	-	-	-	-	3319B-0-24-pZ	-	-	-	-	-	-	-	-
RJ-45 (x2)	100m	-	-	-	-	3319B-1-24-pZ	-	-	-	-	-	-	-

[1] 62.5/125µm, 100/140µm multimode fiber up to 220m. 50/125µm multimode fiber up to 550m.
[2] When using single-fiber (SF) models, the Tx wavelength on one end has to match the Rx wavelength on the other.
MM = Multimode, SM = Single-mode, DF = Dual Fiber, SF = Single-fiber

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

Step 2: Choose the Power Option (xxxx-x-xx-pZ)

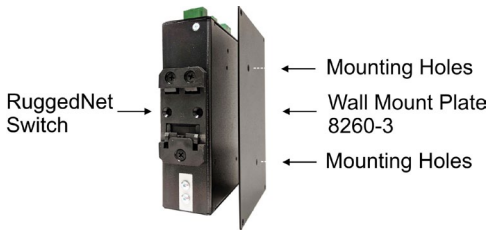
1 = Single DC 2-Pin Terminal Power Connector
2 = Dual DC 2-Pin Terminal Power Connectors

Operating Temperature Range

Z = Extended temperature (-40 to 75°C)

ACCESSORIES

Model Number	Description
8260-3	Wall Mounting Plate
8260-0	19" rack mount shelf (up to 2 modules with wall mounting plate installed



Wall Mount Plate used to wall or rack mount the RuggedNet switch

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Fiber Type	Distance	Connector Type					Tx / Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Atten (dB)	Link Budget (dB)
		ST	SC	LC	SFP	RJ-45							
MM/DF	220/550m[1]	3340B-0-14-pZ	3342B-0-14-pZ	3346B-0-14-pZ	-	-	850 / 850	-10	-4	-17	-3	-	7
MM/DF	2km	-	3342B-6-14-pZ	-	-	-	1310 / 1310	-9.5	-3	-19.5	-3	-	10
SM/DF	12km	3341B-1-14-pZ	3343B-1-14-pZ	3347B-1-14-pZ	-	-	1310 / 1310	-9.5	-3	-19.5	-3	-	10
SM/DF	34km	-	3343B-2-14-pZ	-	-	-	1310 / 1310	-5	0	-23	-3	3	18
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MM/SF[2]	220/550m[1]	-	3350B-0-14-pZ	-	-	-	1310 / 1550	-9	-3	-18	-3	-	9
MM/SF[2]	220/550m[1]	-	3351B-0-14-pZ	-	-	-	1550 / 1310	-9	-3	-18	-3	-	9
SM/SF[2]	20km	-	3350B-1-14-pZ	-	-	-	1310 / 1550	-9.5	-3	-20	-3	-	10.5
SM/SF[2]	20km	-	3351B-1-14-pZ	-	-	-	1550 / 1310	-9.5	-3	-20	-3	-	10.5
SM/SF[2]	40km	-	3350B-2-14-pZ	-	-	-	1310 / 1550	-3	0	-20	-3	3	17
SM/SF[2]	40km	-	3351B-2-14-pZ	-	-	-	1550 / 1310	-3	0	-20	-3	3	17
SFP (x1)	-	-	-	-	3359B-0-14-pZ	-	-	-	-	-	-	-	-
SFP (x2)	-	-	-	-	3359B-0-24-pZ	-	-	-	-	-	-	-	-
RJ-45 (x2)	100m	-	-	-	-	3359B-1-24-pZ	-	-	-	-	-	-	-

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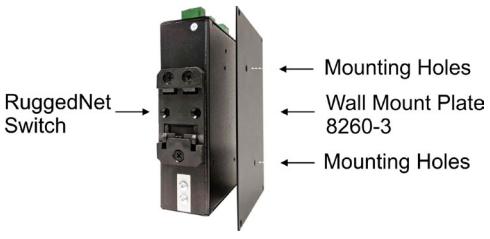

Wall Mount Plate used to wall or rack mount the RuggedNet switch

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