

RuggedNet® GLAPS/Si Single Pair Ethernet Switch Unmanaged 10BASE-T1L Ethernet-APL Interoperable PSE Switch

The RuggedNet GLAPS/Si is an unmanaged industrial Single Pair Ethernet (SPE) switch that features copper or fiber uplink ports and four single-pair 10BASE-T1L copper ports designed for digital instrumentation solutions used for Industrial process automation applications. The SPE switch can be deployed in a spur or trunk topology.

The GLAPS/Si switch features four 10BASE-T1L 3-pin terminal or IEC 63171-2 ports and two 10/100/1000 RJ-45 or 100/1000 fiber SFP uplink ports.

The switches are interoperable with Ethernet-APL Class A and C edge/field devices, and Class 3 and 4 trunk SPE switches. These switches are capable of delivering up to 92 watts per Single Pair Ethernet port, depending on the power class model type.

The GLAPS/Si SPE switches support 1.0V or 2.4V peak-to-peak signal amplitude voltage when connecting to Class A and C edge/field devices or Class 3 and 4 Trunk devices, respectively.

Depending on the model number, the SPE switch can be connected to a spur segment or to a trunk segment. A Spur segment has a maximum distance of 200 meters and data signal amplitude of 1.0 volt peak-to-peak. A trunk segment has a maximum distance of 1000 meters and data signal amplitude of 2.4 volts peak-to-peak.

The switch supports Dual Device mode, Directed Switch mode and Redundant Uplinks.

Dual Device mode enables the module to operate as two independent and isolated Ethernet switches. In Dual Device mode, the GLAPS/Si provides separate and independent data traffic paths between the two uplink ports and four SPE ports.

Directed Switch mode directs process automation multicast traffic only to the appropriate uplink port, preventing the multicast process automation traffic from flooding to other network ports.

Redundant fiber or copper uplinks provide protection and restoration for critical applications. In the event of a failure on the primary uplink port, the switch will automatically switchover to the secondary uplink port. Once the failed uplink port has been restored, the switch will return to the primary uplink port.

For daisy-chain applications, the second uplink port can be used to cascade multiple switches.



KEY FEATURES

- Unmanaged Industrial 4-Port Single Pair Ethernet PSE Switch
- Dual Device mode for operating as two separate switches
- Directed Switch mode prevents flooding of multicast traffic
- Uplink redundancy
- Supports four 3-pin terminal or IEC 63171-2 connector
- Interoperable with Class A and C spur edge/field devices with 1.0 V peak-to-peak signal amplitude
- Interoperable with Class 3 and 4 trunk edge/field devices with 2.4 V peak-to-peak signal amplitude
- Provides up to 92 watts to edge/field devices
- SFP transceiver uplink port or 10/100/1000 copper port
- 100/1000 SFP standard/CWDM/DWDM fiber transceiver uplink port
- Uplink port supports copper and fiber SFP transceivers
- Dual DC power for redundancy
- Wall, Rack and DIN-rail mountable
- Industrial (-40° to 75°C) operating temperature
- TAA, BAA and NDAA compliant, and Made in the USA
- Free 24/7/365 Technical Support

The GLAPS/Si modes of operation can be configured using easily accessible DIP-switches. Each DIP-switch function is labeled on the top of the SPE switch for ease of identification and use.

The switch is available with Small Form Pluggable (SFP) transceiver receptacle ports or 10/100/1000 RJ-45 ports. The SFP ports support 10/100/1000BASE-T and 1000BASE-T

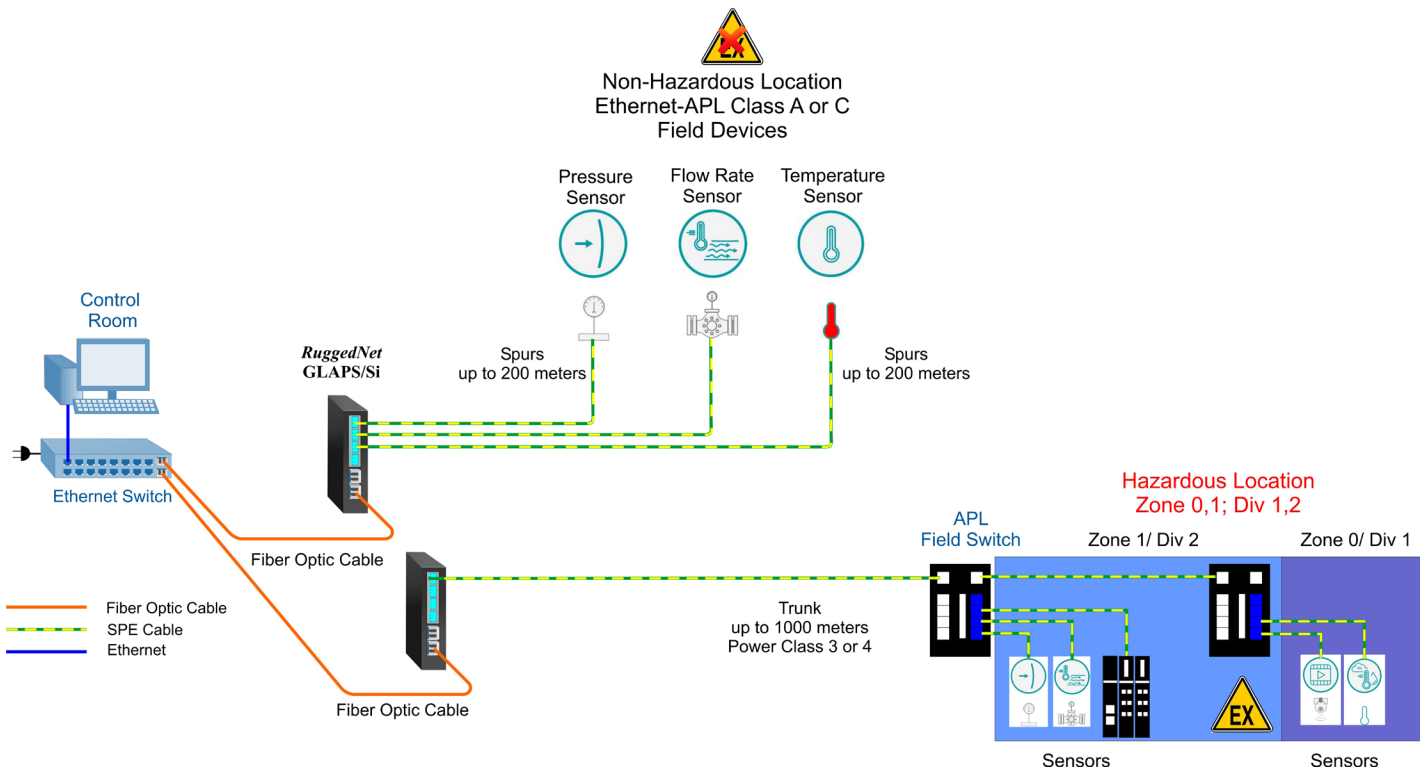
copper transceivers and 100Mbps and 1000Mbps standard, CWDM and DWDM fiber transceivers in a variety of distances and fiber types.

The switch can be wall or rack mounted using a wall mount bracket (8260-3) and shelf (8260-0) or DIN-rail mounted using the included DIN-rail mounting clip. The switch is available with dual DC input power.

APPLICATIONS

Industrial Process Automation

For applications where the industrial processing sensors exceed the copper Ethernet distance from the Environmental Control Room, an RuggedNet GLAPS/Si Single Pair Ethernet switch can be used to extend a fiber connection to within the copper distance of the sensors. The RuggedNet GLAPS/Si extends a 10Mbps Ethernet copper connection to the industrial processing sensors using SPE cabling. Three Ethernet-APL Field Devices are connected up to 200 meters across a spur connection in a non-hazardous area. A second RuggedNet GLAPS/Si extends a trunk connection up to 1000 meters to an Ethernet-APL Field Switch in a hazardous area. The class of the Field Device and Field Switch will depend on the model number of the RuggedNet switch.



Hazardous Area Use Disclaimer:

This product is not certified for use in hazardous (classified) locations, including Zone 0, Zone 1, or Zone 2 as defined by IEC 60079-10-1 or equivalent national standards. It is intended for installation in non-hazardous (safe) areas only.

The product supports interoperability with Ethernet-APL networks and devices, including those installed in hazardous zones, provided that all connections are made through certified intrinsically safe interfaces as part of a compliant system architecture.

When connecting to devices located in hazardous areas, appropriate energy-limiting devices, field switches, or barriers must be used to ensure compliance with all applicable safety standards.

SPECIFICATIONS

Description	RuggedNet® GLAPS/Si 10T/T1L to 100/1000 Fiber or 10/100/1000 Copper Uplinks Unmanaged Industrial PSE Ethernet Switch					
Base Model Number	2957	2945	2959	2947	2949	2951
Standard Compliances	IEEE 802.3, 10BASE-T1L compliant					
Regulatory Compliances (Pending)	<p>Safety: UL 62368-1, UL 60950-1, IEC 62368-1, IEC 60950-1, CUL CSA C22.2 No. 60950, EN 60950-1:2006, CE Mark, UKCA</p> <p>EMI: FCC 47CFR, Part 15 Class A, AS/NZS 3548, AS/NZS 4417.1 and AS/NZS 4417.2, ICES-003 Issue 3, EN 55032/CISPR 22 and EN55035, EN61000-3-2, VCCI V3/2001.04 (CISPR 22A:1997, Class A)</p> <p>EMC: IEC/EN61000-4-2, IEC/EN61000-4-3, IEC/EN61000-4-4, IEC/EN61000-4-5, IEC/EN61000-4-6, IEC/EN61000-4-8, IEC/EN61000-4-11</p> <p>IP Rating: IP40 Protection ACT: TAA, BAA, NDAA</p>					
Environmental	REACH, RoHS and WEEE					
Frame Size	Up to 2,048 bytes					
Port Types	10BASE-T1L:	3-Pin Terminal or IEC 63171 Connector Model 2957 Class A edge/field device: 24 to 48 VDC 1.0 V peak-to-peak; 0.5 W Model 2945 Class A edge/field device: 12 to 15 VDC 1.0 V peak-to-peak; 0.5 W	3-Pin Terminal or IEC 63171 Connector Model 2959 Class C edge/field device: 24 to 48 VDC 1.0 V peak-to-peak; 1.0 W Model 2947 Class C edge/field device: 12 to 15 VDC 1.0 V peak-to-peak; 1.0 W	3-Pin Terminal or IEC 63171 Connector Class 3 edge/field device: 46 to 50 VDC 2.4 V peak-to-peak, 36 W	3-Pin Terminal or IEC 63171 Connector Class 4 edge/field device: 46 to 50 VDC 2.4 V peak-to-peak, 92 W	
	Uplink:	RJ-45: 10/100/1000BASE-T SFP: 100BASE-X and 1000BASE-X Fiber Transceivers, 1000BASE-T Copper Transceivers 10/100/1000BASE-T SGMII Copper Transceivers				
Cable Types	10BASE-T1L:	Single-Pair Ethernet (SPE) cable, IEC 61156-13 (fixed) or IEC 61156-14 (flexible) 18AWG cable or better				
	RJ-45 Copper:	EIA/TIA 568A/B, Cat 3 UTP and higher				
	Fiber:	Multimode: 50/125, 62.5/125µm Single-mode: 9/125µm				
DC Power Requirements	+24 to +48VDC; 0.36A @ 48VDC 2 Pin Terminal	+12 to +15VDC; 0.78A @ 12VDC 2 Pin Terminal	+24 to +48VDC; 0.52A @ 48VDC 2 Pin Terminal	+12 to +15VDC; 0.94A @ 12VDC 2 Pin Terminal	+46 to +50VDC; 5.16A @ 48VDC 2 Pin Terminal	+46 to +50VDC; 8.20A @ 48VDC 2 Pin Terminal
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)	224,000	224,000	224,000	224,000	215,000	215,000
Warranty	5 year warranty with 24/7/365 free Technical Support					

ORDERING INFORMATION

Step 1: Choose a Base Part Number (29xx-x-4c-2Z)

Model Number	Description
2957-0-4c-2Z	2 x SFP(100/1G) Uplink + 4 x 10BASE-T1L APS, 1.0V, Class A , Dual Direct DC input, +24 to +48VDC, Industrial Temperature
2957-1-4c-2Z	2 x RJ-45 (10/100/1G) Uplink + 4 x 10BASE-T1L APS, 1.0V, Class A , Dual Direct DC input, +24 to +48VDC, Industrial Temperature
2945-0-4c-2Z	2 x SFP(100/1G) Uplink + 4 x 10BASE-T1L APS, 1.0V, Class A , Dual Direct DC input, +12 to +15VDC, Industrial Temperature
2945-1-4c-2Z	2 x RJ-45 (10/100/1G) Uplink + 4 x 10BASE-T1L APS, 1.0V, Class A , Dual Direct DC input, +12 to +15VDC, Industrial Temperature
2959-0-4c-2Z	2 x SFP(100/1G) Uplink + 4 x 10BASE-T1L APS, 1.0V, Class C , Dual Direct DC input, +24 to +48VDC, Industrial Temperature
2959-1-4c-2Z	2 x RJ-45 (10/100/1G) Uplink + 4 x 10BASE-T1L APS, 1.0V, Class C , Dual Direct DC input, +24 to +48VDC, Industrial Temperature
2947-0-4c-2Z	2 x SFP(100/1G) Uplink + 4 x 10BASE-T1L APS, 1.0V, Class C , Dual Direct DC input, +12 to +15VDC, Industrial Temperature
2947-1-4c-2Z	2 x RJ-45 (10/100/1G) Uplink + 4 x 10BASE-T1L APS, 1.0V, Class C , Dual Direct DC input, +12 to +15VDC, Industrial Temperature
2949-0-4c-2Z	2 x SFP(100/1G) Uplink + 4 x 10BASE-T1L APS, 2.4V, Class 3 , Dual Direct DC input, +46 to +50VDC, Industrial Temperature
2949-1-4c-2Z	2 x RJ-45 (10/100/1G) Uplink + 4 x 10BASE-T1L APS, 2.4V, Class 3 , Dual Direct DC input, +46 to +50VDC, Industrial Temperature
2951-0-4c-2Z	2 x SFP(100/1G) Uplink + 4 x 10BASE-T1L APS, 2.4V, Class 4 , Dual Direct DC input, +46 to +50VDC, Industrial Temperature
2951-1-4c-2Z	2 x RJ-45 (10/100/1G) Uplink + 4 x 10BASE-T1L APS, 2.4V, Class 4 , Dual Direct DC input, +46 to +50VDC, Industrial Temperature

Step 2: Choose a SPE Connector Type (29xx-x-4c-2Z)

0 = 3-pin SPE Terminal Connector
2 = IEC 63171-2 SPE Connector (check with factory for availability)

Power Option (29xx-x-4c-2Z)

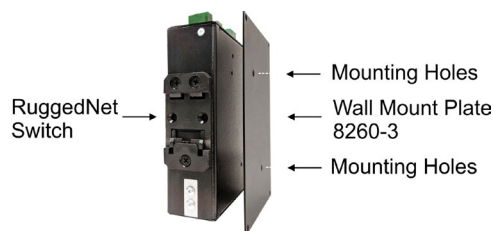
2 = Dual DC 2-Pin Terminal Power Connectors

Operating Temperature Option (29xx-x-4c-2Z)

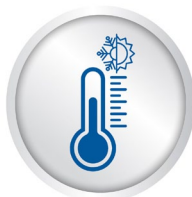
Z = Extended temperature (-40 to 75°C)
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ACCESSORIES

Model Number	Description
8260-3	Wall Mounting Plate
8260-0	19" rack mount shelf (up to 2 modules)



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



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