Foxboro Evo™ Process Automation System
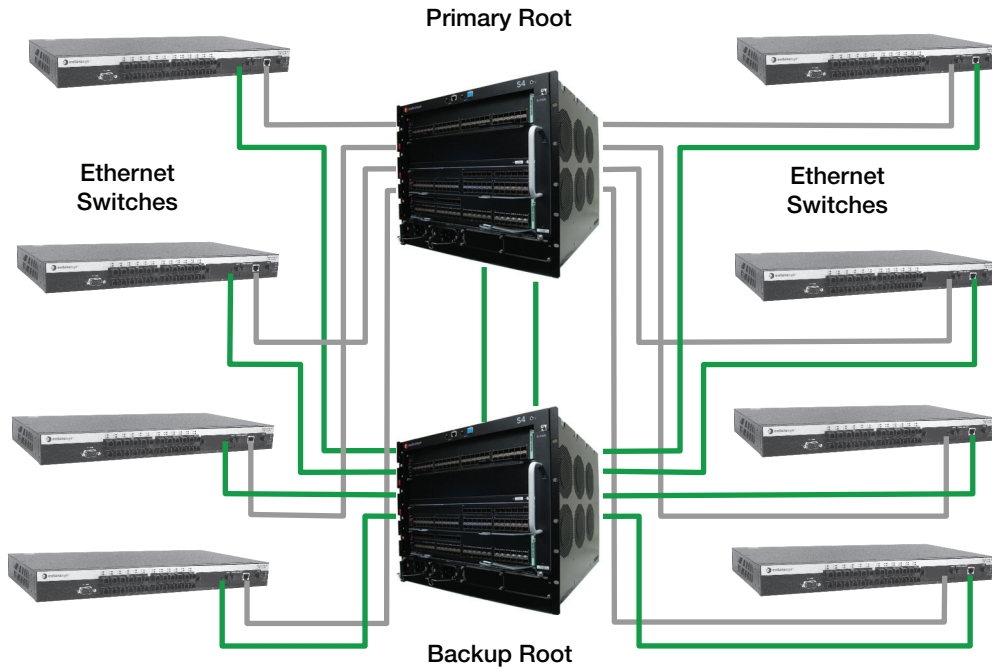
Product Specifications

The Foxboro Evo Control Network Ethernet Equipment

The Foxboro Evo™ Control Network (the control network) (formerly known as "The MESH Control Network") utilizes Foxboro® qualified Ethernet equipment to allow you to configure your system to meet your functional, performance, and plant requirements.

OVERVIEW

The control network equipment described herein has been tested and qualified by Foxboro for use with Foxboro Evo system products.

The qualified Ethernet switches offered are listed in Table 1. The qualified Media Converter offered is listed in Table 2.

Table 1. Qualified Ethernet Switches

Switch	Page
(A4-Series) 24-Port Copper managed switch (P0973JM) with two RJ-45 uplink ports and two ports for Mini-GBIC modules	page 3
(A4-Series) 24-Port Fiber managed switch (P0973JN) with two RJ-45 uplink ports and two ports for Mini-GBIC modules	page 7

Table 1. Qualified Ethernet Switches (Continued)

Switch	Page
(A4-Series) 8-Port Copper/ 8-Port Fiber managed switch (P0973JP) with two RJ-45 uplink ports and two ports for Mini-GBIC modules	page 11
(I-Series) Industrial managed switch, hardware consists of eight or sixteen fiber, twenty-four copper, or eight fiber with twelve copper ports (P0973GA/HB/HC) with two SFP[a] ports for Mini-GBIC modules	page 15
(C-Series) 26-Gigabit (SFP[a]) Port managed switch (P0973KJ (C5)) provides up to twenty-six 1Gb copper/fiber uplinks (ISL) or alternatively, a combination of Gigabit and 100Mb ports with up to twenty-four 100Mb end device fiber connections using the 100Base-FX Mini-GBIC (P0973JE).	page 20
(B-Series) 24-Gigabit (RJ-45) Port managed switch (P0973LK) provides up to twenty-four 10/100/1000Base-TX Gigabit ports. Four SFP[a] ports can be populated with 1000Base-X Mini-GBIC uplink (ISL) connector modules.	page 23
(S-Series) SSA S150 Chassis managed switch (P0973KK) with standalone power supply (P0973KL) or SSA S180 Chassis managed switch (P0973LN) with standalone power supply (P0973LQ), each with 48-port 1000Base-T 1 Gb SFP uplink ports and 4-port 10G SFP uplink ports configurable as 1 Gb uplink ports or alternatively, a combination of Gigabit and 100Mb ports with up to forty-eight 100Mb end device fiber connections using the 100Base-FX Mini-GBIC (P0973JE)	page 31
(S-Series) S4 Chassis managed switch (P0973KD) with up to 192 1 Gb SFP uplink ports, configured as fiber or copper uplinks or alternatively, a combination of Gigabit and 100Mb ports with up to 190 100Mb end device fiber connections using the 100Base-FX Mini-GBIC (P0973JE)	page 36

(a) Small Form Factor Pluggable

Table 2. Qualified Media Converters

Media Converter	Page Reference
Media Converter 100Base-FX to 100Base-TX (P0972XH)	page 42
Media Converter 100Base-FX to 100Base-TX (P0972XH_D)	page 43

FEATURES

▸ System scalability by interconnecting Ethernet switches, each having 8-ports or more in various increments

▸ Support for Fast Ethernet (100 Mbps) and Gigabit (uplink only) Ethernet (1000 Mbps)

▸ Modular uplinks to high-speed backbones using 1 Gb 1000Base-T, 1000Base-SX, 1000Base-LX, 1000Base-LX/LH, 1000Base-BX, 1000Base-TX, and 1000Base-ZX standards

▸ Full duplex operation based on the IEEE 802.3 standards

▶ Rapid Spanning Tree Protocol (RSTP), manages redundant paths, prevents loops, and provides high speed convergence time for a network

▶ System Management software for monitoring the health of the control system and managing equipment in the system

▶ Network management and configuration via local port

▶ Virtual Local Area Networks (VLANs), separating the control network into multiple segments. A total of 6 VLANs can be configured; VLANs configured for non-Foxboro Evo communication can only be configured for TCP and UDP protocol use.

▶ Ethernet switches and converters are European Union (EU) Low Voltage and EMC directives safety certificated ("CE" logo marked on product).

(A4-SERIES) 24-PORT COPPER MANAGED SWITCH (P0973JM)
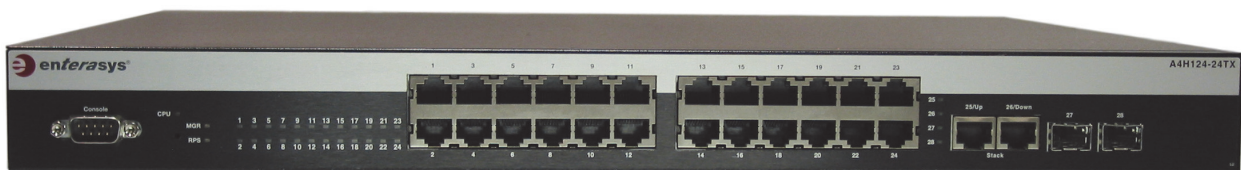
OVERVIEW

The 24-Port Copper managed switch (P0973JM) provides twenty-four 100Base-TX ports with RJ-45 connectors, two fixed 10/100/1000 stacking / uplink (ISL) ports and two 1000Base-X uplink (ISL) Gigabit (SFP) ports.

The two 1000Base-X uplink (ISL) Gigabit (SFP) ports can be populated with MGBIC uplink (ISL) connector modules listed in Table 3.

The switch allows high-performance, full-featured layer-2 Ethernet switching in small to medium-sized network applications, as well as high-performance direct end-station connectivity.

FEATURES

The 24-Port Copper managed switch features:

▶ 24-ports of 100Base-TX

▶ Two fixed RJ-45 10/100/1000 ports, configurable for uplink

▶ Two 1000Base-X uplink Gigabit (SFP) ports

▶ Full duplex operation

▶ Supports VLAN configurations

▶ Monitoring and configuration tasks via local console port, or any SNMP/RMON based management application.

▶ Port mirroring technology and diagnostics that allow local network traffic to be redirected to an external probe for detailed analysis

▶ Compliance with industry standards, including IEEE 802.3u Fast Ethernet, 802.1w Rapid Spanning Tree Protocol (RSTP)

▶ Optional redundant power supply

▶ Shelf, desk, or 19-inch rack mounting.

OPTIONAL REDUNDANT POWER SUPPLY

See "REDUNDANT POWER SUPPLY (P0973BP)" on page 27.

INSTALLATION GUIDELINES

The following guidelines must be observed when a site is selected for this switch. If the guidelines are not followed, unsatisfactory network performance may result.

▸ To ensure proper ventilation and prevent overheating, leave a minimum clearance space of 5.1 cm (2.0 in) at the left, right, and rear of the switch. Do not connect the switch to the ac power source until instructed to do so later in the installation process.

▸ Ambient temperature at the air inlet for each switch must be maintained between 0° and 50°C (32° to 122°F). Temperature changes must be maintained within 10°C (18°F) per hour.

UPLINK/SWITCH INTERFACES

Table 3 lists the 24-Port Copper switch and the uplink interfaces that can be added to the switch. The uplink connectors are added to specific uplink interfaces.

Table 3. 24-Port Copper Managed Switch (P0973JM) Interfaces

Switch		Uplink Ports (on Switch)	Uplink Connectors (Add to Interfaces)	
Description	Foxboro Part No.	Description	Description	Foxboro Part No.
24-Port Copper managed switch with two RJ-45 ports for uplink and two ports for Mini-GBIC modules	P0973JM	Two 1 Gb uplink RJ-45 ports, 1000Base-T for Cat5 copper cables	n/a	
		Two 1 Gb uplink ports, 1000Base-X, for Mini-GBIC modules	Uplink module 1000Base-SX with LC connector	P0972WT - MMF - Refer to Table 11 on page 45 to determine maximum range for your specific application.
			Uplink module 1000Base-LX with LC connector	P0972WU - 10 km (6.2 mi) with SMF
			Uplink module 1000Base-LX/LH with LC connector	P0972YQ - MMF - Refer to Table 11 on page 45 to determine maximum range for your specific application.
			Uplink module 1000Base-ZX with LC connector	P0973FT - 80 km (49.6 mi) with SMF

Table 3. 24-Port Copper Managed Switch (P0973JM) Interfaces (Continued)

Switch		Uplink Ports (on Switch)	Uplink Connectors (Add to Interfaces)	
Description	Foxboro Part No.	Description	Description	Foxboro Part No.
24-Port Copper managed switch with two RJ-45 ports for uplink and two ports for Mini-GBIC modules (Cont.)	P0973JM	Two 1 Gb uplink ports, 1000Base-X, for Mini-GBIC modules (Cont.)	Uplink module 1000Base-T with RJ-45 connectors	P0972YL - 100 m (330 ft)
			Bi-directional downlink/uplink Mini-GBIC Kit - includes both P0973JB and P0973JC modules	P0973JD[a] - 10 km (6.2 mi) with SMF Mini-GBIC Kit
			Bi-directional downlink/uplink Mini-GBIC Kit - includes both P0973KM and P0973KN modules	P0973KP[b] - 40 km (25 mi) S-SMF Mini-GBIC Kit
			Bi-directional downlink/uplink Mini-GBIC Kit - includes both P0973KQ and P0973KR modules	P0973KS[c] - 120 km (74.6 mi) S-SMF Mini-GBIC Kit

(a) Kit P0973JD is comprised of two Mini-GBICs (P0973JB and P0973JC). P0973JC transmits "downstream" (from the core of the network to the edge) uses the 1490 nm wavelength, and the "edge" P0973JB transmits "upstream" uses the 1310 nm wavelength.

(b) Kit P0973KP (40 km (25 mi)) is comprised of two Mini-GBICs (P0973KM and P0973KN). P0973KN transmits "downstream" (from the core of the network to the edge) uses the 1490 nm wavelength, and the "edge" P0973KM transmits "upstream" uses the 1310 nm wavelength over Simplex Single Mode Fiber (S-SMF).

(c) Kit P0973KS (120Km) is comprised of two Mini-GBICs (P0973KQ and P0973KR). P0973KR transmits "downstream" (from the core of the network to the edge) uses the 1590 nm wavelength, and the "edge" P0973KQ transmits "upstream" uses the 1490 nm wavelength over Simplex Single Mode Fiber (S-SMF) at a minimum distance of 30 km (19 mi).

FUNCTIONAL SPECIFICATIONS

24-PORT COPPER MANAGED SWITCH (P0973JM)

Power

INTERNAL
ac Input power (auto-sensing)
100 V ac to 240 V ac, 50 to 60 Hz

EXTERNAL
Supports connection for redundant power supply

MAXIMUM POWER CONSUMPTION
31 Watts

MAXIMUM HEAT DISSIPATION
105 BTUs/Hr

MAXIMUM CURRENT
0.5 A at 110 V ac, 0.47 A at 220 V ac

ENVIRONMENTAL SPECIFICATIONS

Operating Conditions

TEMPERATURE
0 to +50°C (32 to +122°F)

RELATIVE HUMIDITY
5 to 95% (noncondensing)

Storage Conditions

TEMPERATURE
-40 to +70°C (-40 to +158°F)

RELATIVE HUMIDITY
5 to 95% (noncondensing)

PHYSICAL SPECIFICATIONS

Mounting
Desk or Enclosure - 48.3 cm (19-inch) equipment
rack,1U high

Dimensions - Nominal

HEIGHT
4.4 cm (1.7 in)

WIDTH
44.1 cm (17.36 in)

DEPTH
36.85 cm (14.5 in)

Weight - Approximate
2.61 kg (5.8 lb)

Cable Connectors

SWITCH PORTS
RJ-45

UPLINK PORTS
RJ-45 copper and LC fiber

Vibration
Vibration - IEC 68-2-36, IEC 68-2-6
Shock - IEC 68-2-29
Drop - IEC 68-2-32

REGULATORY COMPLIANCE AND CERTIFICATION

Electromagnetic Compatibility (EMC)
47 CFR Parts 2 and 15, CSA C108.8, 89/336/EEC,
(EMI) (Class A) EN 55022, EN 61000-3-2, EN 61000-
3-3, EN 55024,
AS/NZS CISPR 22, VCCI V-3

Product Safety
UL 60950, CSA C22.2 No. 60950, 73/23/EEC, EN
60950,
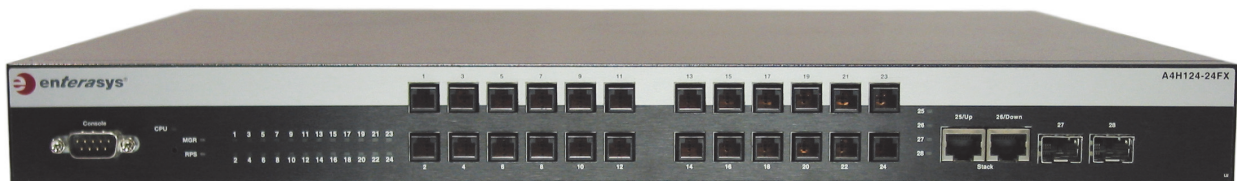IEC 60950, EN 60825, 21 CFR 1040.10

Location
UL/UL-C listed as suitable for use in ordinary
locations and meets ordinary safety standards for fire
and shock hazards.

Contamination
Class G1 (Mild) as defined in ISA Standard S71.04

(A4-SERIES) 24-PORT FIBER MANAGED SWITCH (P0973JN)

OVERVIEW

The 24-Port Fiber managed switch (P0973JN) provides twenty-four 100Base-FX ports with MT-RJ connectors, two fixed 10/100/1000 stacking / uplink (ISL) ports and two 1000Base-X uplink (ISL) Gigabit (SFP) ports.

The two 1000Base-X uplink (ISL) Gigabit (SFP) ports can be populated with Mini-GBIC uplink (ISL) connector modules listed in Table 4.

The switch allows high-performance, full-featured layer-2 Ethernet switching in small to medium-sized network applications, as well as high-performance direct end-station connectivity.

FEATURES

The 24-Port Fiber managed switch features:

- 24-ports of 100Base-FX
- Two fixed RJ-45 10/100/1000 ports, configurable for uplink
- Two 1000Base-X uplink Gigabit (SFP) ports
- MT-RJ connectors on switch ports
- Full duplex operation
- Supports VLAN configurations
- Monitoring and configuration tasks via local console port, or any SNMP/RMON based management application.

- Port mirroring technology and diagnostics that allow local network traffic to be redirected to an external probe for detailed analysis
- Compliance with industry standards, including IEEE 802.3u Fast Ethernet, 802.1w Rapid Spanning Tree Protocol (RSTP)
- Optional redundant power supply.

OPTIONAL REDUNDANT POWER SUPPLY

See "REDUNDANT POWER SUPPLY (P0973BP)" on page 27.

INSTALLATION GUIDELINES

The following guidelines must be observed when a site is selected for this switch. If the guidelines are not followed, unsatisfactory network performance may result.

- To ensure proper ventilation and prevent overheating, leave a minimum clearance space of 5.1 cm (2.0 in) at the left, right, and rear of the switch. Do not connect the switch to the ac power source until instructed to do so later in the installation process.
- Ambient temperature at the installation site must be maintained between 0° and 50°C (32° to 122°F). Temperature changes must be maintained within 10°C (18°F) per hour.

UPLINK/SWITCH INTERFACES

Table 4 lists the 24-Port Fiber managed switch and the uplink interfaces that can be added to the switch. The uplink connectors are added to specific uplink interfaces.

Table 4. 24-Port Fiber Managed Switch (P0973JN) Interfaces

Switch		Uplink Ports (on Switch)	Uplink Connectors (Add to Interfaces)	
Description	Foxboro Part No.	Description	Description	Foxboro Part No.
24-Port Fiber managed switch with two RJ-45 ports for uplink and two ports for Mini-GBIC modules	P0973JN	Two 1 Gb uplink RJ-45 ports, 1000Base-T for Cat5 copper cables	n/a	
		Two 1 Gb uplink ports, 1000Base-X, for Mini-GBIC modules	Uplink module 1000Base-SX with LC connector	P0972WT - MMF - Refer to Table 11 on page 45 to determine maximum range for your specific application.
			Uplink module 1000Base-LX with LC connector	P0972WU - 10 km (6.2 mi) with SMF
			Uplink module 1000Base-LX/LH with LC connector	P0972YQ - MMF - Refer to Table 11 on page 45 to determine maximum range for your specific application.
			Uplink module 1000Base-ZX with LC connector	P0973FT - 80 km (49.6 mi) with SMF
			Uplink module 1000Base-T with RJ-45 connectors	P0972YL - 100 m (330 ft)

Table 4. 24-Port Fiber Managed Switch (P0973JN) Interfaces (Continued)

Switch		Uplink Ports (on Switch)	Uplink Connectors (Add to Interfaces)	
Description	Foxboro Part No.	Description	Description	Foxboro Part No.
24-Port Fiber managed switch with two RJ-45 ports for uplink and two ports for Mini-GBIC modules (Cont.)	P0973JN	Two 1 Gb uplink ports, 1000Base-X, for Mini-GBIC modules (Cont.)	Bi-directional downlink/uplink Mini-GBIC Kit - includes both P0973JB and P0973JC modules	P0973JD[a] - 10 km (6.2 mi) with SMF Mini-GBIC Kit
			Bi-directional downlink/uplink Mini-GBIC Kit - includes both P0973KM and P0973KN modules	P0973KP[b] - 40 km (25 mi) S-SMF Mini-GBIC Kit
			Bi-directional downlink/uplink Mini-GBIC Kit - includes both P0973KQ and P0973KR modules	P0973KS[c] - 120 km (74.6 mi) S-SMF Mini-GBIC Kit

(a) Kit P0973JD is comprised of two Mini-GBICs (P0973JB and P0973JC). P0973JC transmits "downstream" (from the core of the network to the edge) uses the 1490 nm wavelength, and the "edge" P0973JB transmits "upstream" uses the 1310 nm wavelength.

(b) Kit P0973KP (40 km (25 mi)) is comprised of two Mini-GBICs (P0973KM and P0973KN). P0973KN transmits "downstream" (from the core of the network to the edge) uses the 1490 nm wavelength, and the "edge" P0973KM transmits "upstream" uses the 1310 nm wavelength over Simplex Single Mode Fiber (S-SMF).

(c) Kit P0973KS (120Km) is comprised of two Mini-GBICs (P0973KQ and P0973KR). P0973KR transmits "downstream" (from the core of the network to the edge) uses the 1590 nm wavelength, and the "edge" P0973KQ transmits "upstream" uses the 1490 nm wavelength over Simplex Single Mode Fiber (S-SMF) at a minimum distance of 30 km (19 mi).

FUNCTIONAL SPECIFICATIONS

24-PORT FIBER MANAGED SWITCH (P0973JN)

Power

INTERNAL
ac Input power (auto-sensing)
100 V ac to 240 V ac, 50 to 60 Hz

EXTERNAL
Supports connection for redundant power supply

MAXIMUM POWER CONSUMPTION
66 Watts

MAXIMUM HEAT DISSIPATION
224 BTUs/Hr

MAXIMUM CURRENT
0.5 A at 110 V ac, 0.47 A at 220 V ac

ENVIRONMENTAL SPECIFICATIONS

Operating Conditions

TEMPERATURE
0 to +50°C (32 to +122°F)

RELATIVE HUMIDITY
5 to 95% (noncondensing)

Storage Conditions

TEMPERATURE
-40 to +70°C (-40 to +158°F)

RELATIVE HUMIDITY
5 to 95% (noncondensing)

PHYSICAL SPECIFICATIONS

Mounting
Desk or Enclosure - 48.3 cm (19-inch) equipment
rack,1U high

Dimensions

HEIGHT
4.4 cm (1.7 in)

WIDTH
44.1 cm (17.36 in)

DEPTH
36.85 cm (14.5 in)

Weight - Approximate
2.7 kg (5.95 lb)

Cable Connectors

SWITCH PORTS
MT-RJ fiber

UPLINK PORTS
RJ-45 copper and LC fiber

Vibration
Vibration - IEC 68-2-36, IEC 68-2-6
Shock - IEC 68-2-29
Drop - IEC 68-2-32

REGULATORY COMPLIANCE AND CERTIFICATION

Electromagnetic Compatibility (EMC)
I47 CFR Parts 2 and 15, CSA C108.8, 89/336/EEC,
(EMI) (Class A) EN 55022, EN 61000-3-2, EN 61000-
3-3, EN 55024, AS/NZS CISPR 22, VCCI V-3

Product Safety
UL 60950, CSA C22.2 No. 60950, 73/23/EEC, EN
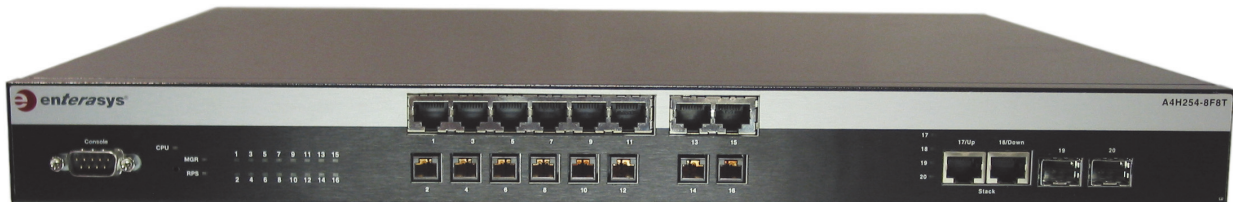60950,
IEC 60950, EN 60825, 21 CFR 1040.10

Location
UL/UL-C listed as suitable for use in ordinary
locations and meets ordinary safety standards for fire
and shock hazards.

Contamination
Class G1 (Mild) as defined in ISA Standard S71.04

(A4-SERIES) 8-PORT COPPER / 8-PORT FIBER MANAGED SWITCH (P0973JP)

OVERVIEW

The 8-Port Copper/8-Port Fiber managed switch (P0973JP) provides eight 100Base-TX ports with RJ-45 connectors, eight 100Base-FX ports with MT-RJ connectors, two fixed 10/100/1000 stacking / uplink (ISL) ports and two 1000Base-X uplink (ISL) Gigabit (SFP) ports.

The two 1000Base-X uplink (ISL) Gigabit (SFP) ports can be populated with Mini-GBIC uplink (ISL) connector modules listed in Table 5.

The switch allows high-performance, full-featured layer-2 Ethernet switching in small to medium-sized network applications, as well as high-performance direct end-station connectivity.

FEATURES

The 8-Port Copper/8-Port Fiber managed switch features:

- 8-ports of 100Base-FX
- 8-ports of 100Base-TX
- Two fixed RJ-45 10/100/1000 ports, configurable for uplink
- Two 1000Base-X uplink Gigabit (SFP) ports
- RJ-45 Category 5 connectors on switch copper ports
- MT-RJ connectors on switch fiber ports
- Full duplex operations

- Supports VLAN configurations
- Monitoring and configuration tasks via local console port, or any SNMP/RMON based management application.
- Port mirroring technology and diagnostics that allow local network traffic to be redirected to an external probe for detailed analysis
- Compliance with industry standards, including IEEE 802.3u Fast Ethernet, 802.1w Rapid Spanning Tree Protocol (RSTP)
- Optional redundant power supply
- Shelf, desk, or 19-inch rack mounting.

OPTIONAL REDUNDANT POWER SUPPLY

See "REDUNDANT POWER SUPPLY (P0973BP)" on page 27.

INSTALLATION GUIDELINES

The following guidelines must be observed when a site is selected for this switch. If the guidelines are not followed, unsatisfactory network performance may result.

- To ensure proper ventilation and prevent overheating, leave a minimum clearance space of 5.1 cm (2.0 in) at the left, right, and rear of the switch.

Do not connect the switch to the ac power source until instructed to do so later in the installation process.

▸ Ambient temperature at the installation site must be maintained between 0° and 50°C (32° to 122°F). Temperature changes must be maintained within 10°C (18°F) per hour.

UPLINK/SWITCH INTERFACES

Table 5 lists the 8-Port Copper/8-Port Fiber switch and the uplink interfaces that can be added to the switch. The uplink connectors are added to specific uplink interfaces.

Table 5. 8-Port Copper / 8-Port Fiber Managed Switch (P0973JP) Interfaces

Switch		Uplink Ports (on Switch)	Uplink Connectors (Add to Interfaces)	
Description	Foxboro Part No.	Description	Description	Foxboro Part No.
8-Port Copper/ 8-Port Fiber managed switch with two RJ-45 ports for uplink and two ports for Mini-GBIC modules	P0973JP	Two 1 Gb uplink RJ-45 ports, 1000Base-T for Cat5 copper cables	n/a	
		Two 1 Gb uplink ports, 1000Base-X, for Mini-GBIC modules	Uplink module 1000Base-SX with LC connector	P0972WT - MMF - Refer to Table 11 on page 45 to determine maximum range for your specific application.
			Uplink module 1000Base-LX with LC connector	P0972WU - 10 km (6.2 mi) with SMF
			Uplink module 1000Base-LX/LH with LC connector	P0972YQ - MMF - Refer to Table 11 on page 45 to determine maximum range for your specific application.
			Uplink module 1000Base-ZX with LC connector	P0973FT - 80 km (49.6 mi) with SMF
			Uplink module 1000Base-T with RJ-45 connectors	P0972YL - 100 m (330 ft)

Table 5. 8-Port Copper / 8-Port Fiber Managed Switch (P0973JP) Interfaces (Continued)

Switch		Uplink Ports (on Switch)	Uplink Connectors (Add to Interfaces)	
Description	Foxboro Part No.	Description	Description	Foxboro Part No.
8-Port Copper/ 8-Port Fiber managed switch with two RJ-45 ports for uplink and two ports for Mini-GBIC modules (Cont.)	P0973JP	Two 1 Gb uplink ports, 1000Base-X, for Mini-GBIC modules (Cont.)	Bi-directional downlink/uplink Mini-GBIC Kit - includes both P0973JB and P0973JC modules	P0973JD[a] - 10 km (6.2 mi) with SMF Mini-GBIC Kit
			Bi-directional downlink/uplink Mini-GBIC Kit - includes both P0973KM and P0973KN modules	P0973KP[b] - 40 km (25 mi) S-SMF Mini-GBIC Kit
			Bi-directional downlink/uplink Mini-GBIC Kit - includes both P0973KQ and P0973KR modules	P0973KS[c] - 120 km (74.6 mi) S-SMF Mini-GBIC Kit

(a) Kit P0973JD is comprised of two Mini-GBICs (P0973JB and P0973JC). P0973JC transmits "downstream" (from the core of the network to the edge) uses the 1490 nm wavelength, and the "edge" P0973JB transmits "upstream" uses the 1310 nm wavelength.

(b) Kit P0973KP (40 km (25 mi)) is comprised of two Mini-GBICs (P0973KM and P0973KN). P0973KN transmits "downstream" (from the core of the network to the edge) uses the 1490 nm wavelength, and the "edge" P0973KM transmits "upstream" uses the 1310 nm wavelength over Simplex Single Mode Fiber (S-SMF).

(c) Kit P0973KS (120Km) is comprised of two Mini-GBICs (P0973KQ and P0973KR). P0973KR transmits "downstream" (from the core of the network to the edge) uses the 1590 nm wavelength, and the "edge" P0973KQ transmits "upstream" uses the 1490 nm wavelength over Simplex Single Mode Fiber (S-SMF) at a minimum distance of 30 km (19 mi).

FUNCTIONAL SPECIFICATIONS

8-PORT COPPER / 8-PORT FIBER MANAGED SWITCH (P0973JP)

Power

INTERNAL
ac Input power (auto-sensing)
100 V ac to 240 V ac, 50 to 60 Hz

EXTERNAL
Supports connection for redundant power supply

MAXIMUM POWER CONSUMPTION
47 Watts

MAXIMUM HEAT DISSIPATION
160 BTUs/Hr

MAXIMUM CURRENT
0.5 A at 110 V ac, 0.47 A at 220 V ac

ENVIRONMENTAL SPECIFICATIONS

Operating Conditions

TEMPERATURE
0 to +50°C (32 to +122°F)

RELATIVE HUMIDITY
5 to 95% (noncondensing)

Storage Conditions

TEMPERATURE
-40 to +70°C (-40 to +158°F)

RELATIVE HUMIDITY
5 to 95% (noncondensing)

PHYSICAL SPECIFICATIONS

Mounting
Desk or Enclosure - 48.3 cm (19-inch) equipment rack,1U high

Dimensions

HEIGHT
4.4 cm (1.7 in)

WIDTH
44.1 cm (17.36 in)

DEPTH
36.85 cm (14.5 in)

Weight - Approximate
2.7 kg (5.95 lb)

Cable Connectors

SWITCH PORTS
RJ-45 copper and MT-RJ fiber

UPLINK PORTS
RJ-45 copper and LC fiber

Vibration
Vibration - IEC 68-2-36, IEC 68-2-6
Shock - IEC 68-2-29
Drop - IEC 68-2-32

REGULATORY COMPLIANCE AND CERTIFICATION

Electromagnetic Compatibility (EMC)
47 CFR Parts 2 and 15, CSA C108.8, 89/336/EEC, (EMI) (Class A) EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024, AS/NZS CISPR 22, VCCI V-3

Product Safety
UL 60950, CSA C22.2 No. 60950, 73/23/EEC, EN 60950,
IEC 60950, EN 60825, 21 CFR 1040.10

Location
UL/UL-C listed as suitable for use in ordinary locations and meets ordinary safety standards for fire and shock hazards.

Contamination
Class G1 (Mild) as defined in ISA Standard S71.04

(I-SERIES) MANAGED INDUSTRIALLY HARDENED SWITCH (P0973GA/HB/HC)

OVERVIEW

The Industrially Hardened managed switches provide the following ports:

▸ P0973GA - twenty-four 100Base-TX ports with RJ-45 connectors

▸ P0973HB - sixteen 100Base-FX ports with LC connectors

▸ P0973HC - eight 100Base-FX ports and twelve 100Base-TX ports with LC/RJ-45 connectors

As well, each has two 1000Base-X uplink Gigabit (SFP) ports, which can be populated with Mini-GBIC uplink connector modules (P0973GH, or P0973GJ).

This switch, part of the I-Series line of switches, is an industrially hardened Ethernet switch especially designed to handle networking in physically demanding environmental conditions. I-Series switches feature convection cooling, dc power, and industrial-grade components that ensure continued uptime. I-Series switches are unique for hardened switches because they embed advanced security features that protect the confidentiality, integrity and availability of industrial automation applications.

High-availability features include support for redundant dc-power connections, rapid re-convergence (802.1w RSTP). I-Series switches provide the automation industry with a fully hardened switch without sacrificing features and security.

An I-series switch is powered via an external 24 V dc power supply (P0922YU).

The switch allows high-performance, full-featured Layer-2 Ethernet switching in small to medium-sized network applications, as well as high-performance direct end-station connectivity.

FEATURES

The hardware configurable Industrial Fiber managed switch features:

▸ 16-ports of 100Base-FX, or 24-ports of 100Base-TX, or 8-ports 100Base-FX and 12-ports of 100Base-TX (depending on hardware configuration)

▸ Two 1000Base-X uplink Gigabit (SFP) ports

▸ Fully Hardened Ethernet Switch

▸ Redundant DC power connections

▸ Convection cooled

▸ Full duplex operation

▸ Supports VLAN configuration

- Monitoring and configuration tasks via local console port, or any SNMP/RMON based management application.
- Port mirroring technology and diagnostics that allows local network traffic to be redirected to an external probe for detailed analysis
- Compliance with industry standards, including IEEE 802.3u Fast Ethernet and 802.1w Rapid Spanning Tree Protocol (RSTP)
- Tabletop mounting (as shipped), DIN rail with kit P0973GE, or 19-inch rack mounted with kit P0973GG.

EXTERNAL POWER SUPPLY

Refer to *Standard 200 Series Power Supply - FPS400-24* (PSS 31H-2W3) for the product specifications for the FPS400-24 power supply (P0922YU).

INSTALLATION GUIDELINES

NOTE

When installing switches within the same enclosure as Foxboro Evo Control Processors, it is recommended that the I-series switches be utilized. These switches have been developed for this purpose.

The following guidelines must be observed when a site is selected for this switch. If the guidelines are not followed, unsatisfactory network performance may result.

WARNING

Install only in accordance with the Local and National Codes of the authorities having jurisdiction over your site. Utilize proper wiring method for all power input and output wiring that complies with the governing electrical codes in accordance with the authority having jurisdiction over the Class I, Div. 2 installations.

Class I, Div 2 installations require that all devices connected to this product must be UL approved for the area in which it is installed. Only UL approved wiring with temperature ratings greater than 90°C (194°F) are permitted for Class I, Div 2 installations operating at temperatures up to 60°C (140°F) ambient.

The dc power to the I-series switch must be provided by a reliably grounded dc power source that complies with the Safety Extra Low Voltage (SELV) requirements of IEC 60950 based safety standards. Use 14 to 20 AWG supply solid copper wires suitable for 30°C (86°F) above surrounding ambient temperature. The switch must be properly grounded utilizing a 14 to 20 AWG cable to comply with emission and immunity requirements. When installing the switch, always make the ground connection first and disconnect last. A readily accessible disconnect device that is suitably approved and rated shall be incorporated in the field wiring.

SWITCH HARDWARE CONFIGURATION

Table 6 lists the Industrial Fiber switch and the (IOM) Input Output Modules that can interface with the switch, increasing the switch's functionality and/or port capacity. The uplink connectors (GBICs) are added to the two 1000Base-X uplink Gigabit (SFP) ports providing gigabit interface to the control network backbone.