

# Fully Managed Industrial Ethernet Switch

## All Gigabit, PoE+, SNMP, Modbus/TCP, Rackmount

SEG528-4SFP-T, SEGP528-4SFP-T

B+B SMARTWORX

Powered by **ADVANTECH**

[www.advantech-bb.com](http://www.advantech-bb.com)



SEG528-4SFP-T  
SEGP528-4SFP-T



### Features & Benefits

- 24-port 10/100/1000 Mbps + 4-port Gigabit Combo (RJ45 or SFP) Uplink
- Full suite of Layer 2 functionality and advanced diagnostic tools
- IEEE802.3af/at PoE/PoE+ standard compliant, up to 685W total PoE power budget
- Smart PoE Management allowing reboot of PD (Powered Device) device remotely
- Energy Efficient Ethernet (EEE), IEEE 802.3az for low energy consumption
- Jumbo Frame support - up to 9,216 bytes
- IXM™ function enables the cross management for fast deployment
- X-Ring™ function offers self-healing recovery time less than 20 ms
- Redundant Power Inputs
- Wide Temperature Range -40 to 70°C
- EMS Level 3 Radiated/Conducted noise protection
- Designed for UL508 (Industrial Control Panel), NEMA TS2 (Traffic Control), EN50121-4 (Rail Signal Control)



### Introduction

The SEG528 series is a 19" rackmount fully managed Gigabit Ethernet switch with industrial, ruggedized features designed to work in harsh environment applications. This switch offers all the features expected in a managed switch such as VLAN, IGMP Snooping, Network Redundancy, Link Aggregation, SNMP V1,V2c,V3, Web and Telnet support. Smart PoE Management features allow advanced PoE settings and monitoring. Comprehensive network security features such as SSH, HTTPS/SSL, TLS, TTLS, PEAP and Radius are also offered.

The SEGP528 series also support Power over Ethernet, simplifying deployments with PTZ cameras, wireless access points (APs), and other standards-compliant powered devices. The products comply with the 802.3af/at PoE+ standards, supporting up to 30W on each PoE port, not to exceed the switches specific power budget. Using the management interface, an administrator can control various PoE functions, such as remotely rebooting cameras or access points, from anywhere on the network, including over the Internet.

Both SEG528 series switches features a powerful suite of diagnostic, monitoring, network performance capabilities and the industry leading eWorx IXM™ cross management technology: Cable diagnostics, IPv4/IPv6 ping, fiber SFP monitoring (DDMI), port utilization, traffic statistics, QoS and rate limiting - all available from the Web GUI. Also IXM™ allows the installer to auto synchronize firmware updates and push configuration settings to either individual or groups of switches.

### Outstanding L2 Managed Feature Design

**IEEE802.3az** – Energy-Efficient Ethernet (EEE) is a set of enhancements to the twisted-pair and backplane Ethernet family of computer networking standards that allows for less power consumption during periods of low data activity.

**Smart PoE Management** – The PoE management features allow the user to use the management interface, an administrator can control various PoE functions such as the power budget per port, priority, classification and monitor of PoE status such as the voltage, current, power and Temp per port.

**IXM™** – Offers auto synchronization function of both firmware and configuration settings to make middle/large-scale deployment of multiple switches fast and easy. A built-in Web GUI feature, no need for extra software to be installed on a computer.

**X-Ring™** – Sub-20ms self-healing/ring recovery technology. X-Ring™ supports different topology options and allows different ring healing methods to coexist in one switch - Couple Ring, Dual Homing and Multi-couple Ring - reduce redundant network cabling and planning costs and ensure high reliability of your industrial network applications.

**Multiple Account Access** – This feature allows the network manager to create user accounts with differing permissions. User ID's can be created with a wide variety of access - from simple device monitoring to full maintenance accessibility, thus ensuring security and offering flexibility for field deployment.

**IPv6** – A future-proof feature, IPv6 (Internet Protocol version 6) is a set of specifications from the Internet Engineering Task Force (IETF) that is an upgrade of existing IP version 4 (IPv4). The basics of IPv6 are similar to those of IPv4 - devices can use IPv6 as source and destination addresses to pass packets over a network.

**IGMP Snooping** – The Internet Group Management Protocol is a feature that allows the managed switch to forward and filter multicast traffic intelligently, designed for the video streaming and automation control network applications.

**DDM** – Digital-diagnostic-monitoring (also known as "digital optical monitoring" or DOM) provides a user with critical information concerning the status of transmitted and received signals. This approach allows for better fault isolation and error detection.

**Cable Diagnostics** – This feature will enable you to verify the length of a cable right from the switch to the other end. This is essential in diagnosing faults as a break in the cable can be easily identified on a single wire within the cable, as well as shorts and crossed-pairs.

**Dual Image** – Considering possible failures during FW upgrades, such as power failure or human error, dual image provides a backup image in case the system can't boot up through the primary image. The system automatically switches to the backup image to reduce downtime.

**Embedded Watchdog Timer** – This feature, embedded into our managed switches, when the user cannot easily access the field switch or would be unable to react to faults in a timely manner. It's used to detect and recover from switch malfunctions.

**Ease of Use** – 10/100BaseTX or 10/100/1000Mbps ports are auto sensing and auto configuring. Each copper port is automatically negotiated for maximum speed and performance by default, but can also be configured individually via the user interface. A powerful inside processor allows wire speed capability on all.

### Specifications

| COMMUNICATIONS        |  |
|-----------------------|--|
| Standards             | IEEE 802.3, 802.3u, 802.3x, 802.3ab, 802.3z, 802.1p, 802.3az, 802.1w, 802.1s, 802.1Q, 802.1X, 802.1ad, 802.3af, 802.3at  |
| LAN                   | 10/100/1000Base-T(X), Optional 100Base-FX, 1000Base-SX/LX/LHX/XD/ZX/EZX  |
| Transmission Distance | Ethernet: 100m (4-wire Cat.5e, Cat.6 RJ-45 cable suggested for GB port)<br>SFP: 110km (depends on SFP)   |
| Transmission Speed    | Ethernet: 10/100/1000 Mbps Auto-Negotiation<br>Gigabit Copper: 10/100/1000Mbps, Auto-Negotiation<br>Gigabit Fiber: Up to 1000Mbps                                      |
| INTERFACE             |  |
| Connectors            | 24 x RJ45 + 4 x (RJ45/SFP) combo ports<br>1 x RS-232 console port (RJ45 connector)<br>4-pin removable screw terminal (Power)<br>3-pin removable screw terminal (Relay) |
| Ethernet              | Auto Sensing, 10/100BaseTX, 10/100/1000BaseTX, Duplex and MDIX   |
| LED Indicators        | PWR1, PWR2, SYS, Alarm and R.M.<br>10/100/1000 T(X): Link/Activity, Speed, PoE<br>Gigabit Copper: Link/Activity, Speed<br>SFP: Link/Activity                           |

All product specifications are subject to change without notice.

SE500series\_Full GB-RackMount\_5016ds

# Fully Managed Industrial Ethernet Switch

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SEG528-4SFP-T, SEGP528-4SFP-T

### Software Specifications

| SWITCH PROPERTIES              |   |
|--------------------------------|---|
| MAC Table Size                 | 8K  |
| Packet Buffer Size             | 4.1Mbit   |
| Switching Capacity             | 56 Gbps   |
| Jumbo Frame                    | 9,216 bytes   |
| Priority Queues                | 8   |
| Max. Number of Available VLANs | 256   |
| VLAN ID Range                  | VID 1 to 4094   |
| IGMP Groups                    | 256   |
| SOFTWARE                       |   |
| Management                     | Web interface, Serial interface (Console), WebAccess NMS™, Multiple user accounts, LLDP, SNMP v1/v2c/v3, Traps, SMTP, RMON, Smart PoE management, SNT, Standard MIB, Private MIB  |
| Configuration                  | HTTP/TFTP, Command line interface (CLI), IPv4/IPv6, TELNET, DHCP server/ client, DHCP option 66/67/82, Flow control, Ingress/Egress Rate limit, Jumbo frame                       |
| Security                       | 802.1x, IP Security (Trusted Host), DoS prevention, HTTPS/SSL, SSH, PEAP, RADIUS, Multiple account setting, Storm control, Port-IP Binding, SNMPv3 (Encryption)                   |
| Redundancy                     | X-Ring™ (Self-Recovery time < 20 ms), STP/RSTP/MSTP, LACP(Link Aggregation Control Protocol)  |
| Monitoring                     | Port statistics & utilization, LLDP/IGMP/MLD statics, Loop detection, Power status  |
| Filter                         | Multicast (IGMP Snooping/Querier), Unknown multicast filtering, 802.1Q VLAN, Port-based VLAN, GVRP, GARP, Q in Q, QoS (IEEE 802.1p) with 8 classes and TOS/DiffServ, Flow control |
| Industrial Protocol            | Modbus/TCP  |
| Diagnostics                    | Cable Diagnostic, IPv4/IPv6 Ping Test, Syslog, Port Mirror, DDM (Digital-Diagnostic-Monitoring), Port Mirroring 1:1 and N:1   |
| Enhanced Provisioning          | IXM™ Cross management platform for fast deployment, Configuration backup manager, Import/ Export configuration files, Firmware upgrades   |
| Miscellaneous                  | Remote reboot/reset device, Dual Image, Embedded watchdog timer, Multiple account setting (Admin/User)  |

### Hardware Specifications

| POWER                       |  |
|-----------------------------|--|
| Power Consumption           | Max. 20W (SEG528-4SFP-T)<br>Max. 705W (PoE on), 20W (PoE off) (SEGP528-4SFP-T)   |
| Power Input                 | 12~48 VDC (16.8~57.6 VDC) dual inputs (SEG528-4SFP-T)<br>48 VDC (46~57 VDC) dual inputs (SEGP528-4SFP-T)   |
| Fault Output                | 2 Relay Output   |
| Reverse Polarity Protection | Present  |
| Overload Current            | Present  |
| POE (POWER OVER ETHERNET)   |  |
| PoE Standard                | IEEE802.3af/at (Alternative A)   |
| PoE Pins                    | With data pairs, 1, 2 and 3, 6   |
| PoE Power Budget            | Max. 685W - SEGP528-4SFP-T<br>Max. 30W - each Port   |
| PHYSICAL                    |  |
| Dimensions (WxHxD)          | 438 x 43.6 x 259.20 mm (17.24 x 1.72 x 10.21 inches)   |
| Protection Class            | IP30   |
| Weight                      | Net: 5.62 kg. Gross: 6.32 kg   |
| Enclosure                   | Metal Shell  |
| Mounting                    | 1U 19" Rack mount  |
| ENVIRONMENT                 |  |
| Operating Temperature       | -40 to +70 °C (-40 to +158°F)  |
| Storage Temperature         | -40 to +85°C (-40 to +185°F)   |
| Operating Humidity          | 10 to 95% (non-condensing)   |
| Storage Humidity            | 10 to 95% (non-condensing)   |
| MTBF                        | 787,940 hours (SEG528-4SFP-T)<br>424,517 hours (SEGP528-4SFP-T)  |
| CERTIFICATIONS              |  |
| Safety                      | UL508  |
| Traffic Control             | NEMA TS2   |
| Rail Signal Control         | EN50121-4  |
| EMI                         | FCC Part 15 Subpart B Class A, EN 55011/55022, Class A   |
| EMS                         | EN 61000-4-2 (Level 3), EN 61000-4-3 (Level 3)<br>EN 61000-4-4 (Level 3), EN 61000-4-5 (Level 3)<br>EN 61000-4-6 (Level 3), EN 61000-4-8 (Level 3) |
| Shock                       | IEC 60068-2-27   |
| Freefall                    | IEC 60068-2-32   |
| Vibration                   | IEC 60068-2-6  |

### Product Ordering Information

| MODEL #        | DESCRIPTION  | OPERATING TEMPERATURE | RJ45             |                    | FIBER            |  | CONNECTOR |
|----------------|--|-----------------------|------------------|--------------------|------------------|--|-----------|
|                |  |                       | 10/100/1000 MBPS | POE/POE+ (PSE)     | 100/1000BASE-SFP | COMBO PORT, 10/100/1000BASE-T(X) OR 100/1000BASE-SFP |           |
| SEG528-4SFP-T  | 24-port 10/100/1000Mbps + 4 GbE Combo Full Managed Ethernet Switch                       | -40~70 °C             | 24               | -                  | -                | 4  | LC (SFP)  |
| SEGP528-4SFP-T | 24-port 10/100/1000Mbps + 4 GbE Combo Full PoE+ Managed Ethernet Switch, 685W PoE Budget | -40~70 °C             | 24               | Up to 30W per port | -                | 4  | LC (SFP)  |

### Accessories - Optional (sold separately)

| MODEL #    | DESCRIPTION                             | OPERATING TEMPERATURE |
|------------|---|-----------------------|
| MDR-40-24  | DIN Rail Power Supply, 24VDC, 40W, 1.7A | -20~70 °C             |
| SDR-120-24 | DIN Rail Power Supply, 24VDC, 120W, 5A  | -20~70 °C             |
| SDR-240-48 | DIN Rail Power Supply, 48VDC, 240W, 5A  | -20~70 °C             |
| SDR-480-48 | DIN Rail Power Supply, 48VDC, 480W, 10A | -20~70 °C             |

### Accessories - WebAccess/NMS, Networking Management Software (sold separately)

| MODEL #       | DESCRIPTION  |
|---------------|--|
| Trial Version | 6 Months Free Trial -- ask your local sales representative |
| NMS-U050-ULE  | Supports maximum 50 nodes                                  |
| NMS-U300-ULE  | Supports maximum 300 nodes                                 |
| NMS-U01K-ULE  | Supports maximum 1,000 nodes                               |
| NMS-U04K-ULE  | Supports maximum 4,000 nodes                               |

### Package Checklist

Ethernet Switch, RJ45 to DB9 console port cable, Protective caps for unused ports, Quick Start Guide, Rackmount ears

### Warranty

Limited lifetime warranty for B+B SmartWorx designed and/or manufactured products.

# Small Form Pluggable (SFP) Modules

Copper SFP (10/100/1000 and 1000 Mbps)

Fiber SFP (155 Mbps, 1.25 Gbps)

- Future-proof network equipment
- Available in SM, MM fiber types
- Maximize network hardware
- Troubleshooting diagnostics
- Plug-and-play operation



Copper

Fiber LC

SFPs are compact transceivers that function as modular connectors. Available for copper (RJ-45) and all common fiber modes, wavelengths and data rates, these modules allow network operators to connect different interface types to the same network equipment via an SFP port. The cost of cable upgrades is greatly reduced, preserving the networking equipment investment – all for the price of a relatively inexpensive module.

More and more network equipment is being designed with SFP ports to take advantage of the inherent flexibility and to eliminate the guesswork and uncertainty of expensive equipment purchases. Remember to select an SFP to match the speed of your designated port. All modules from B+B SmartWorx carry a limited lifetime warranty.

## Standard Diagnostics

- SFP Type
- Fiber Link Length
- Wavelength
- Bit Rate
- Date Code

## DDMI/Extended Diagnostics

- Temperature
- Voltage
- Bias Current
- TX Power
- RX Power

## Fiber SFP Modules

### Robust Industrial Performance

- Extended operating temperature range
- Hot swappable

### Feature Friendly

- Available in a wide range of fiber types, wavelengths and transmission rates to meet almost any networking need

### Extended Diagnostics

- Powerful troubleshooting Digital Diagnostics Monitoring Interface (DDMI)

### Standard Compliances

- MSA compliant: available in dual- or single-strand, SC or LC connector
- Eye Safety meets Laser Class 1 Compliance with IEC 60825-1
- Complies with Telecordia GR-468-CORE
- RoHS compliant

### Voltage/Temperature

- Input Voltage: 3.3V
- Operating Temperature: -40° to +85° C
- Operating Temperature, CWDM: 0° to +70° C
- Storage Temperature: -40° to +85° C

### Data Rates

- 155 Mbps
- ITU-T G.957, G.958 and IEEE 802.3u
  - Applications: Fast Ethernet, OC-3/STM-1 and other optical links
- 1.25 Gbps
- Compliant with specifications for IEEE 802.3z
  - Applications: Gigabit Ethernet and other optical links

## Copper SFP Models

| MODEL NUMBER | PORT DESCRIPTION | CONNECTOR | DISTANCE |
|--------------|------------------|-----------|----------|
| 808-39001    | 10 - 1250, TX    | RJ45      | 100 m    |
| 808-39010    | 1250, TX         | RJ45      | 100 m    |

## IE-SFP Modules: 100 to 155 Mbps, DDMI (OC-3)

| MODEL NUMBER        | PORT DESCRIPTION | FIBER | DISTANCE | POWER BUDGET |
|---------------------|------------------|-------|----------|--------------|
| <i>W/ DDMI (db)</i> |                  |       |          |              |
| 808-38101           | MM850            | LC    | 2 km     | 14.5         |
| 808-38102           | MM1300           | LC    | 2 km     | 11           |
| 808-38103           | SM1310           | LC    | 20 km    | 21           |
| 808-38104           | SM1310/PLUS      | LC    | 40 km    | 31           |
| 808-38105           | SM1550/LONG      | LC    | 80 km    | 31           |

## IE-SFP Modules: 1.25 Gbps GB Ethernet, DDMI (OC-24)

| MODEL NUMBER        | PORT DESCRIPTION | FIBER | DISTANCE  | POWER BUDGET |
|---------------------|------------------|-------|-----------|--------------|
| <i>W/ DDMI (db)</i> |                  |       |           |              |
| 808-38201           | MM850            | LC    | 220/550 m | 7.5          |
| 808-38206           | MM1300           | LC    | 2 km      | 10           |
| 808-38200           | SM1310           | LC    | 20 km     | 14           |
| 808-38203           | SM1310/PLUS      | LC    | 30 km     | 17           |
| 808-38204           | SM1550/LONG      | LC    | 40 km     | 18           |
| 808-38205           | SM1550/XLONG     | LC    | 70 km     | 21           |
| 808-38208           | SM1550/XXLONG    | LC    | 120 km    | 30           |

## IE-SFP Modules: CWDM (155 Mbps/1.25 Gbps), DDMI

| MODEL NUMBER    | DESCRIPTION      | FIBER           | DISTANCE         | POWER BUDGET (db)         |
|-----------------|------------------|-----------------|------------------|---------------------------|
| <i>155 Mbps</i> | <i>1.25 Gbps</i> | <i>155 Mbps</i> | <i>1.25 Gbps</i> | <i>155 Mbps 1.25 Gbps</i> |
| 808-38141       | 808-38241        | CWDM-SM1270     | LC 80 km         | 40 km 29 22               |
| 808-38142       | 808-38242        | CWDM-SM1290     | LC 80 km         | 40 km 29 22               |
| 808-38143       | 808-38243        | CWDM-SM1310     | LC 80 km         | 40 km 29 22               |
| 808-38144       | 808-38244        | CWDM-SM1330     | LC 80 km         | 40 km 29 22               |
| 808-38145       | 808-38245        | CWDM-SM1350     | LC 80 km         | 40 km 29 22               |
| 808-38146       | 808-38246        | CWDM-SM1370     | LC 80 km         | 40 km 29 22               |
| 808-38147       | 808-38247        | CWDM-SM1390     | LC 80 km         | 40 km 29 22               |
| 808-38148       | 808-38248        | CWDM-SM1410     | LC 80 km         | 40 km 29 22               |
| 808-38149       | 808-38249        | CWDM-SM1430     | LC 80 km         | 70 km 29 22               |
| 808-38150       | 808-38250        | CWDM-SM1450     | LC 80 km         | 70 km 29 22               |
| 808-38151       | 808-38251        | CWDM-SM1470     | LC 80 km         | 70 km 29 22               |
| 808-38152       | 808-38252        | CWDM-SM1490     | LC 80 km         | 70 km 29 22               |
| 808-38153       | 808-38253        | CWDM-SM1510     | LC 80 km         | 70 km 29 22               |
| 808-38154       | 808-38254        | CWDM-SM1530     | LC 80 km         | 70 km 29 22               |
| 808-38155       | 808-38255        | CWDM-SM1550     | LC 80 km         | 70 km 29 22               |
| 808-38156       | 808-38256        | CWDM-SM1570     | LC 80 km         | 70 km 29 22               |
| 808-38157       | 808-38257        | CWDM-SM1590     | LC 80 km         | 70 km 29 22               |
| 808-38158       | 808-38258        | CWDM-SM1610     | LC 80 km         | 70 km 29 22               |

### NOTES: Fiber SFP Form Factors & Distances

Fiber SFP (OC-3, OC-24) form factors have virtually identical dimensions and are not typically interchangeable; this will depend on the device type.

For each fiber product listed in the tables, DISTANCE represents an approximate fiber distance based on industry-standard fiber attenuation specifications. Actual distances will vary for each installation. For complete power budgets and additional information on calculating specific distances, contact B+B SmartWorx Technical Support specialists at (815) 433-5100 (USA).

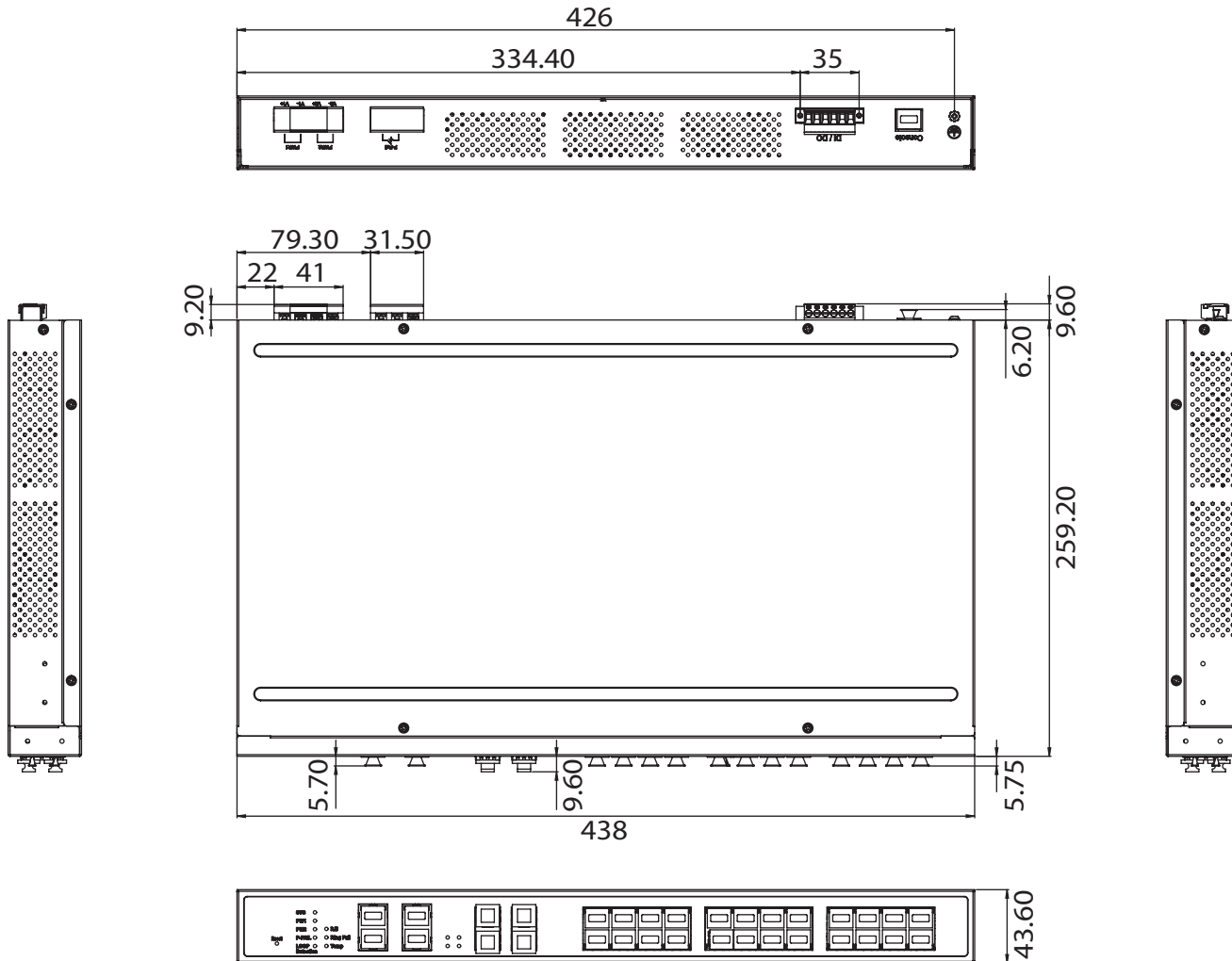
# Fully Managed Industrial Ethernet Switch

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### Mechanical Diagram

Units = [inches] mm



### Mechanical Diagram | Detail: Rackmount Ears

Units = [inches] mm

