

# IS230 Series

## Industrial Managed Layer 2 Switches

Our ruggedized IS230 Industrial managed switches provide enduring performance in harsh environments, such as those found in outdoor IoT, transportation and industrial applications.

### Overview

The Allied Telesis IS230 Series is a multipurpose product line of managed Layer 2 switches ideal for industrial applications, including manufacturing, rail transportation (telecommunication and signaling), road transportation (traffic control), and Smart Cities.

With fanless operation and a wide operating temperature range of -40° to 75°C, the robust IS230 Series easily tolerates harsh and demanding environments, such as those found in industrial and outdoor deployments.

An integrated voltage regulator ensures the PoE output voltage always stays at the rated value, regardless of any fluctuations in the input voltage of powered devices. An extended input voltage range makes the IS230 Series ideal for deployment in traffic control cabinets.

### Network resiliency

The IS230 Series supports highly stable and reliable ICT network switching, with recovery times down to 50ms. The IS230 can be customized with the most appropriate mechanism and protocol to prevent network connection failure. Choices include Allied Telesis Ethernet Protection Switched Ring (EPSRing™), and the standards-based ITU-T G.8032.

### Securing the Network Edge

Ensuring data protection means controlling network access. Protocols such as IEEE 802.1X port-based authentication guarantee that only known users are connected to the network. Unknown users who physically connect can be segregated into a pre-determined part of the network. This offers network guests Internet access, while ensuring the integrity of private network data.

<sup>1</sup> PSU must be compliant with local/national safety and electrical code requirements. Select the supply with the most appropriate output power derating curve.

### Quality of Service

Comprehensive wire-speed QoS provides flow-based traffic management with Port/Tag Base and Type of Service prioritization. Bandwidth control limits ingress/egress traffic and broadcast/multicast/flooded unicast packets.

### Gigabit and Fast Ethernet support

The IS230 Series offers combo ports supporting both Gigabit and Fast Ethernet Small Form-Factor Pluggables (SFPs). Support for both SFP types allows organizations to stay within budget even as they migrate to faster technologies.

### Configurable power budget

On PoE-sourcing IS230 switches, all LAN ports source POE+ up to 30W. You can configure both the overall power budget and the power feeding limit on a per-port basis, to establish a close relationship between the power sourcing feature and the real capabilities of the external Power Supply Unit (PSU)<sup>1</sup>.

### Dual power inputs

The IS230 Series provides redundant power inputs for higher system reliability; the power inputs are protected against reverse polarity and over-current.

### ECO friendly

The IS230 Series are Energy Efficient Ethernet (EEE) devices. They facilitate power saving by switching off parts of the LAN that are not transmitting or receiving data. This sophisticated feature can significantly reduce operating costs, by reducing the power requirements of the switch and any associated cooling equipment.



## Key Features

- ▶ Full Gigabit, wire speed ports
- ▶ Uplink combo ports
- ▶ 100/1000Mbps SFP support
- ▶ Flexible management interface (GUI, SNMP, CLI, TELNET and SSH)
- ▶ Ethernet Protection Switched Ring (EPSRing™)
- ▶ Ethernet Ring Protection Switching (ITU-T G.8032)
- ▶ VLAN stacking (Q-in-Q)
- ▶ Multicast support (IGMP and MLD snooping)
- ▶ Loopback detection and storm control
- ▶ Port mirroring
- ▶ Port trunking/link aggregation (LACP)
- ▶ Link Layer Discovery (LLDP)
- ▶ IEEE 802.3at PoE+ sourcing (30W)
- ▶ -40 to +75°C wide-range operating temperature
- ▶ Dual power inputs with voltage boost converter
- ▶ Alarm output
- ▶ Fanless design

## Key Features

### ICT networks resiliency

- ▶ EPSRing™ and ITU-T G.8032 enable a protected ring capable of recovery within as little as 50ms; these features are perfect for high performance and high availability. For EPSRing™, the IS230 works as Transit node and will alert the Master about the link status (links go down or come up), then it waits for Master's consequent actions.
- ▶ Spanning Tree Protocol compatible, RSTP; MSTP; static Link Aggregation Group (LAG), and dynamic Link Aggregation Control Protocol (LACP) support.
- ▶ X-Ring protocol is a non-standard protocol preventing failure in ring network topology. X-Ring protocol recovers network faults within 20ms.

### Quality of Service (QoS)

- ▶ Low-latency wire-speed QoS provides flow-based traffic management with full classification, prioritization and bandwidth control limit.

### Link Layer Discovery Protocol (LLDP)

- ▶ LLDP performs the network endpoint discovery. That is useful for the automation of network management and network troubleshooting.

### Access Control Lists (ACLs)

- ▶ ACLs filter network traffic at MAC and IP protocol level, to control whether routed packets are forwarded or blocked at the port interface. This provides a powerful network security mechanism to select the types of traffic to be analyzed, forwarded, or influenced in some way.

### Dynamic Host Configuration Protocol (DHCP) Snooping

- ▶ DHCP servers allocate IP addresses to clients, and the switch keeps a record of addresses issued on each port. IP source guard checks against this DHCP snooping database to ensure only clients with specific IP and/or MAC address can access the network. DHCP Snooping can be combined with other features, like dynamic ARP inspection, to increase security in Layer 2 switched environments. It also provides a traceable history which meets the growing legal requirements placed on service providers.

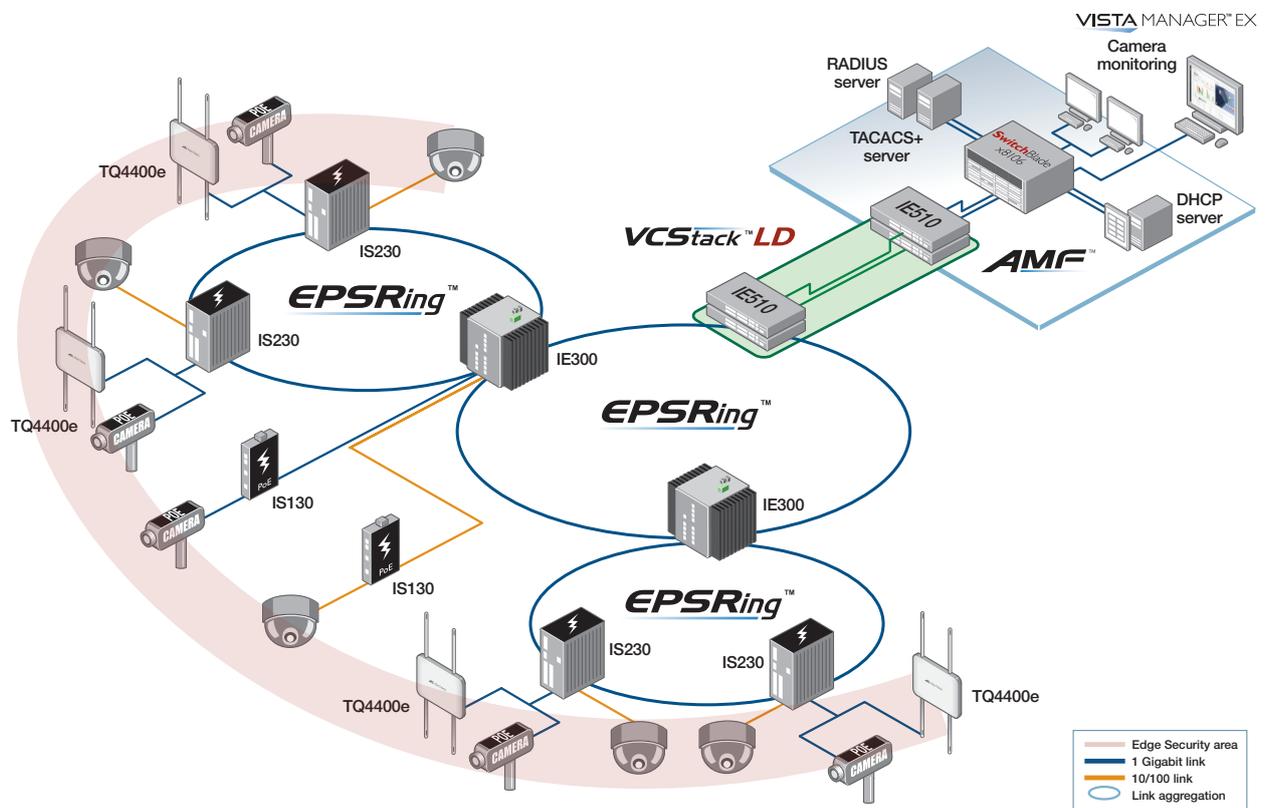
### Power over Ethernet Plus (PoE+)

- ▶ With PoE, a separate power connection to media endpoints such as IP phones and wireless access points is not necessary. PoE+ reduces costs and provides even greater flexibility, providing the capability to connect devices requiring more power (up to 30 Watts) such as pan, tilt and zoom security cameras.
- ▶ The IS230 series allows the configuration of the overall PoE power budget to match the real capabilities of the external Power Supply Unit (PSU). The PoE power budget is allocated to PDs statically, based on the requirement of each PD attached to the switch's ports.

### Alarm Input/Output

- ▶ Alarm Output support the ability to connect external devices such as audio sirens and alarm strobe lights to the switch, and control them upon an event.

## Key Solution



Specifications

PRODUCT	10/100/1000T (RJ45) COPPER PORTS	100/1000X SFP PORTS	POE+ ENABLED PORTS	SWITCHING FABRIC	FORWARDING RATE
IS230-10GP	8 + 2 (Combo)	2 (Combo)	8	20Gbps	14.88Mpps

ELECTRICAL/MECHANICAL APPROVALS	
Compliance Mark	CE, FCC, RCM, TUV, VCCI
Safety	CAN/CSA C22.2 No.60950-1 CAN/CSA C22.2 No.61010-2-201 CAN/CSA C22.2 No.62368-1 EN/IEC/UL 60950-1 EN/IEC/UL 61010-2-201 EN/IEC/UL 62368-1
EMC	AS/NZS CISPR 32, class A EN55024; EN55032, class A EN61000-6-2; EN61000-6-4, class A FCC part 15B, class A ICES-003, issue 6, class A VCCI, class A
Electrostatic Discharge (ESD)	EN61000-4-2, level 3
Radiated Susceptibility (RS)	EN61000-4-3, level 3
Electrical Fast Transient (EFT)	EN61000-4-4, level 3
Lighting/Surge immunity (Surge)	EN61000-4-5, level 3
Conducted immunity (CS)	EN61000-4-6, level 3
Magnetic field immunity	EN61000-4-8, level 4
Railway	EN50121-4
Traffic Control	NEMA-TS2
Freefall	IEC60068-2-31 Class T2.3 (1m drop)
Shock	IEC60068-2-27 operational: 15g 11ms, half sine MIL-STD-810G 516.6 operational: 15g 11ms, half sine
Vibration	IEC60068-2-6 operational: 1g @10~150Hz MIL-STD-810G 516.6 operational: Procedure 1, Category 4, per Figure 514.6C-1

Physical Specifications

PRODUCT	WIDTH X DEPTH X HEIGHT	WEIGHT	ENCLOSURE	MOUNTING	PROTECTION RATE
IS230-10GP	74 x 105 x 152 mm (2.91 x 4.13 x 5.98 in)	1.2 Kg (2.6 4 lb)	Metal shell	DIN rail, wall mount	IP30

Power Characteristics

PRODUCT	INPUT VOLTAGE	COOLING	NO POE LOAD			FULL POE LOAD*			POE POWER BUDGET	POE SOURCING PORTS	
			MAX POWER CONSUMPTION	MAX HEAT DISSIPATION	NOISE	MAX POWER CONSUMPTION	MAX HEAT DISSIPATION	NOISE		POE (15W)	POE+ (30W)
IS230-10GP	24~48Vdc	Fanless	13.2W	45.1 BTU/h	-	153.9W	115.7 BTU/h	-	120W	8	4

\* The Max Power consumption at full PoE load includes PD's consumption and margin. The cooling requirements of the switch are smaller than the power draw, because most of the load is dissipated at the PoE powered device (PD) and along the cabling. Use these wattage and BTU ratings for facility capacity planning.

Performance

- ▶ Up to 8K MAC addresses
- ▶ Packet buffer memory: 512KB (4Mb)
- ▶ 8 priority QoS queues
- ▶ 4094 configurable VLANs
- ▶ 256 simultaneous VLANs
- ▶ Supports 9KB jumbo frames
- ▶ Up to 255 Layer 2 multicast entries

Other Interfaces

- ▶ Type Serial console (UART)
  - Port no. 1
  - Connector RJ-45 female
- ▶ Type Alarm Output (1A @24Vdc)
  - Port no. 1
  - Connector 2-pin Terminal Block\*
- ▶ Type Power Input
  - Port no. 2
  - Connector 2-pin Terminal Block\*

\* A single 6-pin screw Terminal Block includes both power input and alarm output

Environmental Specifications

- ▶ Operating temperature range: -40°C to 75°C (-40°F to 167°F)
- ▶ Storage temperature range: -40°C to 85°C (-40°F to 185°F)
- ▶ Operating humidity range: 10% to 95%RH non-condensing
- ▶ Storage humidity range: 10% to 95%RH non-condensing
- ▶ Operating altitude: 3,000m maximum (9,843ft)

Mechanical

- ▶ EN 50022, EN 60715 Standardized mounting on rails

Environmental Compliance

- ▶ RoHS
- ▶ China RoHS
- ▶ WEEE

## Standards and Protocols

### Authentication

RFC 1321 MD5 Message-Digest algorithm  
 RFC 1828 IP authentication using keyed MD5

### Encryption (management traffic only)

FIPS 180-1 Secure Hash standard (SHA-1)  
 FIPS 186 Digital signature standard (RSA)  
 FIPS 46-3 Data Encryption Standard (DES and 3DES)

### Ethernet Standards

IEEE 802.2 Logical Link Control (LLC)  
 IEEE 802.3 Ethernet  
 IEEE 802.3ab 1000BASE-T  
 IEEE 802.3af Power over Ethernet (PoE)  
 IEEE 802.3at Power over Ethernet plus (PoE+)  
 IEEE 802.3az Energy Efficient Ethernet (EEE)  
 IEEE 802.3u 100BASE-X  
 IEEE 802.3x Flow control - full-duplex operation  
 IEEE 802.3z 1000BASE-X

### IPv4 Features

RFC 768 User Datagram Protocol (UDP)  
 RFC 791 Internet Protocol (IP)  
 RFC 792 Internet Control Message Protocol (ICMP)  
 RFC 793 Transmission Control Protocol (TCP)  
 RFC 826 Address Resolution Protocol (ARP)  
 RFC 894 Standard for the transmission of IP datagrams over Ethernet network  
 RFC 919 Broadcasting Internet datagrams  
 RFC 922 Broadcasting Internet datagrams in the presence of subnets  
 RFC 932 Subnetwork addressing scheme  
 RFC 950 Internet standard subnetting procedure  
 RFC 1027 Proxy ARP  
 RFC 1042 Standard for the transmission of IP datagrams over IEEE 802 networks  
 RFC 1071 Computing the Internet checksum  
 RFC 1122 Internet host requirements  
 RFC 1191 Path MTU discovery  
 RFC 1918 IP addressing  
 RFC 2581 TCP congestion control over Ethernet networks

### IPv6 Features

RFC 1981 Path MTU discovery for IPv6  
 RFC 2460 IPv6 specification  
 RFC 2464 Transmission of IPv6 packets over Ethernet networks  
 RFC 3484 Default address selection for IPv6  
 RFC 3587 IPv6 global unicast address format  
 RFC 4193 Unique local IPv6 unicast addresses  
 RFC 4291 IPv6 addressing architecture  
 RFC 4443 Internet Control Message Protocol (ICMPv6)  
 RFC 4861 Neighbor discovery for IPv6  
 RFC 4862 IPv6 Stateless Address Auto-Configuration (SLAAC)  
 RFC 5014 IPv6 socket API for source address selection

### Management

SNMPv1, v2c and v3  
 IEEE 802.1AB Link Layer Discovery Protocol (LLDP)  
 RFC 1155 Structure and identification of management information for TCP/IP-based Internets  
 RFC 1157 Simple Network Management Protocol (SNMP)  
 RFC 1212 Concise MIB definitions  
 RFC 1213 MIB for network management of TCP/IP-based Internets: MIB-II  
 RFC 1239 Standard MIB  
 RFC 2674 Definitions of managed objects for bridges with traffic classes, multicast filtering and VLAN extensions  
 RFC 2819 RMON MIB (groups 1,2,3 and 9)  
 RFC 2863 Interfaces group MIB  
 RFC 3164 The BSD Syslog protocol  
 RFC 3418 MIB for SNMP  
 RFC 3635 Definitions of managed objects for the Ethernet-like interface types  
 RFC 4022 MIB for the Transmission Control Protocol (TCP)  
 RFC 4113 MIB for the User Datagram Protocol (UDP)  
 RFC 4188 Definitions of managed objects for bridges

### Multicast Support

IGMP snooping (IGMPv1, v2 and v3)  
 IGMP snooping fast-leave  
 IGMP/MLD multicast forwarding (IGMP/MLD proxy)  
 MLD snooping (MLDv1 and v2)  
 RFC 2236 Internet Group Management Protocol v2 (IGMPv2)  
 RFC 2710 Multicast Listener Discovery (MLD) for IPv6  
 RFC 2715 Interoperability rules for multicast routing protocols  
 RFC 3376 IGMPv3  
 RFC 3810 Multicast Listener Discovery v2 (MLDv2) for IPv6  
 RFC 4541 IGMP and MLD snooping switches

### Quality of Service (QoS)

IEEE 802.1p Priority tagging  
 RFC 2211 Specification of the controlled-load network element service  
 RFC 2474 DiffServ precedence for eight queues/port  
 RFC 2475 DiffServ architecture  
 RFC 2597 DiffServ Assured Forwarding (AF)  
 RFC 3246 DiffServ Expedited Forwarding (EF)

### Resiliency Features

ITU-T G.8023 / Y.1344 Ethernet Ring Protection Switching (ERPS)  
 IEEE 802.1ag CFM Continuity Check Protocol (CCP)  
 IEEE 802.1AX Link aggregation (static and LACP)  
 IEEE 802.1D MAC bridges  
 IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)  
 IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)  
 IEEE 802.3ad Static and dynamic link aggregation

### Security Features

SSH remote login  
 SSLv2  
 TACACS+ Accounting, Authentication, Authorization (AAA)  
 IEEE 802.1X authentication protocols (TLS, TTLS, PEAP and MD5)  
 IEEE 802.1X multi-suplicant authentication  
 IEEE 802.1X port-based network access control  
 RFC 2818 HTTP over TLS ("HTTPS")  
 RFC 2865 RADIUS authentication  
 RFC 2866 RADIUS accounting  
 RFC 2986 PKCS #10: certification request syntax specification v1.7  
 RFC 3579 RADIUS support for Extensible Authentication Protocol (EAP)  
 RFC 3580 IEEE 802.1x RADIUS usage guidelines  
 RFC 3748 Extensible Authentication Protocol (EAP)  
 RFC 4251 Secure Shell (SSHv2) protocol architecture  
 RFC 4252 Secure Shell (SSHv2) authentication protocol  
 RFC 4253 Secure Shell (SSHv2) transport layer protocol  
 RFC 4254 Secure Shell (SSHv2) connection protocol  
 RFC 5246 Transport Layer Security (TLS) v1.2  
 RFC 5656 Elliptic curve algorithm integration for SSH  
 RFC 6668 SHA-2 data integrity verification for SSH  
 RFC 6818 Updates to the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile  
 RFC 6960 X.509 Internet Public Key Infrastructure Online Certificate Status Protocol - OCSP

### Services

RFC 854 Telnet protocol specification  
 RFC 855 Telnet option specifications  
 RFC 857 Telnet echo option  
 RFC 858 Telnet suppress go ahead option  
 RFC 1091 Telnet terminal-type option  
 RFC 1350 The TFTP protocol (revision 2)  
 RFC 1985 SMTP service extension  
 RFC 2030 Simple Network Time Protocol (SNTP) version 4  
 RFC 2131 Dynamic Host Configuration Protocol  
 RFC 2616 Hypertext Transfer Protocol - HTTP/1.1  
 RFC 2821 Simple Mail Transfer Protocol (SMTP)  
 RFC 3046 DHCP relay agent information option (DHCP option 82)  
 RFC 3315 Dynamic Host Configuration Protocol for IPv6 (DHCPv6)  
 RFC 3396 Encoding Long Options in the Dynamic Host Configuration Protocol (DHCPv4)  
 RFC 5905 Network Time Protocol (NTP) version 4

### VLAN Support

Generic VLAN Registration Protocol (GVRP)  
 IEEE 802.1ad Provider bridges (VLAN stacking, Q-in-Q)  
 IEEE 802.1Q Virtual LAN (VLAN) bridges  
 IEEE 802.3ac VLAN tagging

# IS230 Series | Industrial Managed Layer 2 Switches

## Ordering Information

### Switches

The DIN rail and wall mount kits are included.

#### AT-IS230-10GP-80

8x 10/100/1000T, 2x 100/1000X SFP combo, Industrial Layer 2 Switch, POE+ support (120W)

### Supported SFP Modules

Refer to the installation guide for the recommended Max. Operating Temperature according to the selected SFP module.

### 1000Mbps SFP Modules

#### AT-SPBD10-13

10 km, 1G BiDi SFP, LC, SMF (1310Tx/1490Rx)

#### AT-SPBD10-14

10 km, 1G BiDi SFP, LC, SMF (1490Tx/1310Rx)

#### AT-SPBD20-13/I

20 km, 1G BiDi SFP, SC, SMF, I-Temp (1310Tx/1490Rx)

#### AT-SPBD20-14/I

20 km, 1G BiDi SFP, SC, SMF, I-Temp (1490Tx/1310Rx)

#### AT-SPBD40-13/I

40 km, 1G BiDi SFP, LC, SMF, I-Temp (1310Tx/1490Rx)

#### AT-SPBD40-14/I

40 km, 1G BiDi SFP, LC, SMF, I-Temp (1490Tx/1310Rx)

#### AT-SPEX

2 km, 1000EX SFP, LC, MMF, 1310 nm

#### AT-SPLX10

10 km, 1000LX SFP, LC, SMF, 1310 nm

#### AT-SPLX10/I

10 km, 1000LX SFP, LC, SMF, 1310 nm, I-Temp

#### AT-SPLX40

40 km, 1000LX SFP, LC, SMF, 1310 nm

#### AT-SPSX

550 m, 1000SX SFP, LC, MMF, 850 nm

#### AT-SPSX/I

550 m, 1000SX SFP, LC, MMF, 850 nm, I-Temp

#### AT-SPZX80

80 km, 1000ZX SFP, LC, SMF, 1550 nm

### 100Mbps SFP Modules

#### AT-SPFX/2

2 km, 100FX SFP, LC, MMF, 1310 nm

#### AT-SPFX/15

15 km, 100FX SFP, LC, SMF, 1310 nm

#### AT-SPFXBD-LC-13

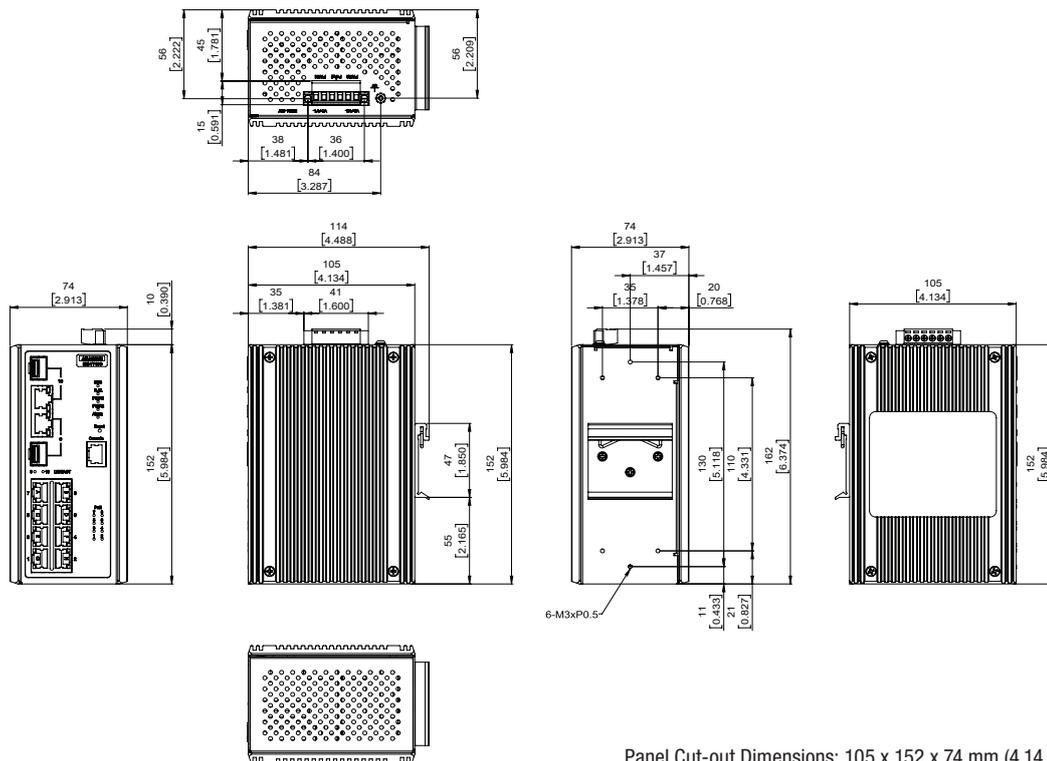
15 km, 100FX BiDi SFP, LC, SMF (1310 Tx/1550 Rx)

#### AT-SPFXBD-LC-15

15 km, 100FX BiDi SFP, LC, SMF (1550 Rx/1310 Tx)

## Dimensions

(mm)



Panel Cut-out Dimensions: 105 x 152 x 74 mm (4.14 x 5.98 x 2.91 in)



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