

Datasheet

ALAXALA compact gigabit layer2 switch

AX2300S Series

1. Outline

ALAXALA Gigabit Layer 2 Switch Series, AX2300S, is available in seven models.



Figure 1 AX2340S-24T4X



Figure 2 AX2340S-24TH4X



Figure 3 AX2340S-48T4X



Figure 4 AX2340S-24P4X



Figure 5 AX2340S-24PH4X



Figure 6 AX2340S-48P4X



Figure 7 AX2340S-16P8MP2X

The **AX2300S Series** are intelligent edge switches excelling in TCO reduction that realize secure, safe, comfortable, and convenient networking with enhanced capabilities and capacities of 10G uplink, PoE power supply (among the highest in the industry), operation automation, failure monitoring, and anti-tampering functions.

It upgrades uplink bandwidth, enhances PoE feeding capacity, and executes script language and **Secure Boot** to meet various market needs.

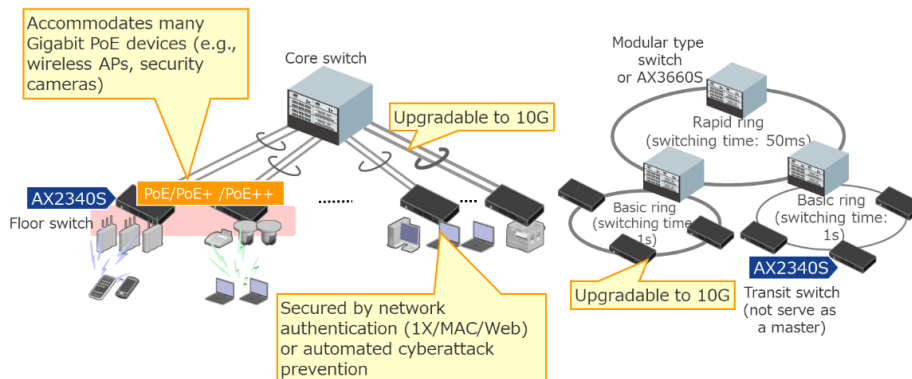


Figure 8 Network configuration using AX2340S

Table 1 Applicable positions

Applicable position		Points
Campus network	Core switch	<ul style="list-style-type: none"> • Option license to upgrade 1G uplink (4 ports) to 10G uplink (4 ports) • Authentication (triple authentication, multistep authentication) • PoE capacity of max. 815W capable of connecting many WiFi access points and high-performance network cameras. • Telemetry function that enables real-time transmission of mirror data periodically or when an event occurs • Settings automated by Python or Ansible • Secure Boot to check and start up the device / OS after verifying that they had not been tampered
Ring network	Transit switch	<ul style="list-style-type: none"> • Option license to upgrade 1G uplink (4 ports) to 10G uplink (4 ports) • Stable operation and high availability (Autonomous Extensible Ring Protocol (transit node)) • TCO reduction (power consumption, operation manageability) • Compact 1U size body

2. Features

2.1 Features of the AX2300S series

(1) Uplink performance of max.40Gbps

- By applying the uplink 10G option license, you can upgrade 1G uplink (4 port) to 10G (10GBASE-R SFP + 4 ports). 10G link aggregation expands bandwidth up to 40G.
- Operable as a transit switch for 10G rings, and can configure a highly reliable broadband backbone.

(2) Multi-Gigabit Ethernet (mGig)

- Supports 100BASE-TX/1000BASE-T/2.5GBASE-T ports, which allows you to accommodate high-speed wireless LAN devices while still using your system with a twisted-pair cable (UTP).

(3) Industry-leading PoE capacity

- **PoE/PoE+/PoE ++** is supported, and 15W/30W/60W power can be supplied per port. The power of the entire system is 815W (the highest in the industry) *1.
- **Peak shift power supply function**
Time-shifting power supply to PoE ports ensures stable power supply to the power-receiving equipment and prevents unstable communication during recovery from a power failure.

*1: Industry's highest level achieved by a 1U box-type switch through its main body only (according to ALAXALA's research).

(4) Easy-to-operate function that greatly reduces the workload of network managers

• Easy operation/automation

Supports various tools to automate operations. The advanced script language **Python** monitors logs and timers and executes commands when events occur, and the configuration management tool **Ansible** automatically performs routine processes and settings. In addition, **MC operation mode** reduces the burden of device replacement and restoration by synchronizing the edge switch's software / device data with a switch memory card in advance.

• Zero Touch Provisioning

AX-Network Manager (operation control product) eases the replacement of an edge switch for maintenance and failure recovery. If only the name of the device is set on the substitute machine, you can automatically set the preset data and software without inputting commands.

(5) Cyberattack-resistant security

• Secure Boot

Confirms that the hardware and software have not been tampered with. Each time the device is started, the system prevents unauthorized access and information theft/leakage, which may be caused through a backdoor in the system.

• Zero Trust Security

Realizes zero-trust security of campus networks (e.g., automatically detecting and blocking malware infected terminals, and detecting anomalies such as cyberattacks) with various security solutions: access control by network authentication, automatic cyberattack prevention, network visualization, failure detection solution, etc.

• Network authentication

IEEE802.1X, MAC authentication, and Web-based authentication are supported and required to connect to the network. In addition, multi-step authentication, which allows access only when permitted by a combination of terminal authentication and user authentication, is supported. Furthermore, fine-grained access control can be achieved by applying the dynamic VLAN (option for network authentication) according to the system configuration.

(6) Superior network management, maintenance and operation**•USB memory card**

USB memory card can be used to easily back up the configuration and collect error messages.

•MC operation mode

By inserting USB memory card into AX2340S, the software and device information is saved. After that, if configuration settings are changed, the changes are saved automatically. In addition, when a factory-shipped AX2340S is started with USB memory card inserted therein, the device starts with the previously saved software and device information (including the configuration), and the transition time from the active device to the backup device can be shortened.

(7) Communication quality assurance through QoS**•High-performance hardware-based QoS****•Variety of QoS control functions**

L2-QoS (IEEE802.1p, bandwidth control, priority control, discard control, etc.),

IP-QoS (Diff-Serv, bandwidth control, priority control, discard control, etc.)

(8) Compactness and reduced environmental impact**•Compact body**

1U-height device capable of accommodating up to 48 ports of 10BASE-T/100BASE-TX/1000BASE-T.

•Reduces environmental impact by complying with RoHS.**(9) Telemetry function****•Monitoring and automation to reduce the burden on network managers**

Supports the PUSH type telemetry function*2, which sends a large amount of data at one time.

*2: To be supported in the future.

(10) Fanless design and environmental resistance**•Fanless (AX2340S-24T4X/-24TH4X/-24PH4X)**

In addition to reducing the problems caused by dust sucked into the device, a quiet, noise-free office environment is realized.

•Improved thermal conditions for fanless devices (AX2340S-24TH4X/-24PH4X)

-Achieves operation under severe temperature conditions

-AX2340S-24PH4X supports PoE

3. Specifications

3.1 Switch specifications

Table 2 Switch specifications (1/2)

Specifications					
		AX2340S-24T4X	AX2340S-24TH4X	AX2340S-48T4X	
Max. switching capacity (Gbit/s)		132		180	
Packet processing performance (Mpacket/s) (Note 1)	Max. packet forwarding rate		98.2	133.9	
Network interface	10GBASE-SR/LR/ER/BR/CU (SFP+)		4 (Note 2)	4 (Note 2)	
	1000BASE-SX/LX/LH/BX (SFP)		2+4 (Note 2)	2+4 (Note 2)	
	100BASE-TX/1000BASE-T/2.5GBASE-T (UTP) [PoE/PoE+/PoE++]		-	-	
	10/100/1000BASE-T (UTP)		24	48	
	10/100/1000BASE-T (UTP) [PoE/PoE+]		-	-	
Amount of memory installed (MB)		2048			
Number of memory card slots		USB Type-A storage port × 1			
Redundancy		-			
Cooling system		Fanless	Fanless	Fan	
Power supply conditions	Voltage	Rated voltage (V)	AC100 to 120 / AC200 to 240		
		Fluctuation range (V) (Note 3)	AC90 to 132 / AC180 to 264		
	Frequency (Hz)		50 / 60		
	Max. input current (A)		0.8@AC100V 0.4@AC200V	0.9@AC100V 0.5@AC200V	
	Max. apparent power (VA)		80	90	
	Max. power consumption (W)		45	80	
	PoE capacity (W)		-	-	
	AC wall outlet		Grounding type: 2-pole plug (Note 4)		
Heating value (kJ/h)		162		288	
Noise		-	-	51 dB or less	
Equipment conditions	Dimensions: W x D x H (mm) (height: U)		440 x 350 x 44 (1U)		
	Weight (kg) (including power supply units)		4.0	4.2	4.5
Energy saving efficiency measured according to Energy Conservation Act (Note: 5)	Energy efficiency (W/(Gbit/s))		Category A 0.5 (reference value 1.5)		Category A 0.7 (reference value 1.6)
	Max. effective transmission rate (Gbit/s)		66	90	
	Transmission rate and port count	10Gbit/s	4	4	
		2.5Gbit/s	-	-	
		1Gbit/s	26	50	
Environmental conditions	Temperature	Allowable operating range	0°C to 45°C (Note 6)	-10°C to 50°C (0°C to 50°C when starting up) (Note 6) (Note 7)	0°C to 50°C
		Non-operating (when powered off)	-10°C to 50°C		
		Storage/transportation temperature	-25°C to 65°C		
	Relative humidity	Allowable operating range	10% to 90% (non-condensing)		
		Non-operating (when powered off)	8% to 90% (non-condensing)		
		Storage/transportation temperature	5% to 90% (non-condensing)		
	Floating dust		Floating dust of about 10 microns or less: 0.15mg/m ³		
Vibration (m/s ²)		2.45 or less			
Applied standards	EMI		VCCI Class A		
	Harmonic current		IEC 61000-3-2		

	EMS	EN55035
	Safety standards	IEC62368-1 compliant
	Related laws and regulations	Electrical Appliance and Material Safety Law (Power Cables)

Table 3 Switch specifications (2/2)

				Specifications							
		AX2340S-24P4X		AX2340S-24PH4X		AX2340S-48P4X		AX2340S-16P8MP2X			
Max. switching capacity (Gbit/s)		132		180		180		112			
Packet processing performance (Mpacket/s)(Note 1)	Max. packet forwarding rate		98.2		133.9		83.3				
	Network interface		10GBASE-SR/LR/ER/BR/CU (SFP+)		4 (Note 2)		4 (Note 2)		2 (Note 2)		
		1000BASE-SX/LX/LH/BX (SFP)		2+4 (Note 2)		2+4 (Note 2)		2 (Note 2)			
		100BASE-TX/1000BASE-T/2.5GBASE-T (UTP) [PoE/PoE+/PoE++]		-		-		8 (Note 8)			
		10/100/1000BASE-T (UTP)		-		-		-			
		10/100/1000BASE-T (UTP) [PoE/PoE+]		24 (Note 9)		24 (Note 10)		48 (Note 11)		16 (Note 8)	
Amount of memory installed (MB)		2048									
Number of memory cards slots		USB Type-A storage port x 1									
Redundancy		-									
Cooling system		Fan		Fanless		Fan		Fan			
Power supply conditions	Voltage	Rated voltage (V)		AC100 to 120 / AC200 to 240							
		Fluctuation range (V) (Note 3)		AC90 to 132 / AC180 to 264							
	Frequency (Hz)		50 / 60								
	Max. input current (A)		8.5@AC100V 4.3@AC200V		4.2@AC100V 2.1@AC200V		12@AC100V 6.5@AC200V		12@AC100V 6.5@AC200V		
	Max. apparent power (VA)		850		420		1250		1250		
	Max. power consumption (W)		700		360		1100		1100		
	PoE capacity (W)		535 per device (Note 9)		250 per device (Note 10)		785 per device (Note 11)		815 per device (Note 8)		
	AC wall outlet		Grounding type: 2-pole plug (Note 4)								
Heating value (kJ/h)		594 (Note 12)		396 (Note 12)		1134 (Note 12)		1026 (Note 12)			
Noise		38 to 70 dB or less		-		49 to 71 dB or less		50 to 72 dB or less			
Equipment conditions	Dimensions: W x D x H (mm) (height: U)		440 x 350 x 44 (1U)								
	Weight (kg) (including power supply units)		5.0		5.3		5.6		5.2		
Energy saving efficiency measured according to Energy Conservation Act (Note: 5)	Energy efficiency (W/(Gbit/s))		Category A 0.7 (reference value: 2.0)		Category A 0.6 (reference value: 1.7)		Category A 0.9 (reference value: 2.1)		Category A 1.1 (reference value: 3.0)		
	Max. effective transmission rate (Gbit/s)		66		90		56				
	Transmission rate and port count	Transmission rate and port count		4		4		2			
		2.5Gbit/s		-		-		8			
		1Gbit/s		26		50		16			
Environmental conditions	Temperature	Allowable operating range		0°C to 50°C		-10°C to 50°C (0°C to 50°C when starting up) (Note 6) (Note 7)		0°C to 50°C			
		Non-operating (when powered off)		-10°C to 50°C							
		Storage/transportation temperature		-25°C to 65°C							
	Relative humidity	Allowable operating range		10% to 90% (non-condensing)							
		Non-operating (when powered off)		8% to 90% (non-condensing)							
		Storage/transportation temperature		5%~90% (non-condensing)							
	Floating dust		Floating dust of about 10 microns or less: 0.15mg/m ³								
Vibration (m/s ²)											
Applied standards	EMI		VCCI Class A								
	Harmonic current		IEC 61000-3-2								
	EMS		EN55035								
	Safety standards		IEC62368-1 compliant								
	Related laws and regulations		Electrical Appliance and Material Safety Law (Power Cables)								

[Notes for Table 2 and Table 3]

Note 1: The measurement conditions are as follows.

- Physical Medium: 1000BASE-T,1000BASE-X
- Packet type: Layer 2 relay, no flooding
- Packet Length: 64 bytes
- QoS, filtering: not configured

Note 2 : These ports are shared by 10GBASE-R(SFP+) and 1000BASE-X(SFP). You cannot use 10GBASE-R(SFP+) and 1000BASE-X(SFP) simultaneously. An uplink 10G option license is required if you want to use 10GBASE-R or a direct attach cable. Note that AX2340S-16P8MP2X does not require an uplink 10G optional license. Direct attach cables can also be used on two ports.

Note 3 : The range to guarantee normal operation.

Note 4 : The AC100V power cord attached to the equipment. The AC200V power cord is available as a common option. For the power supply connector form of the AC200V power supply cable, refer to the Hardware Instruction Manual.

Note 5 : Values are based on the measurement method specified by the Energy Saving Law.

Note 6 : The upper limit is 40°C when using a SFPP-ER.

Note 7 : The upper limit is 45°C when using a SFPP-SR/LR/BR.

Note 8 : When the power of the power receiving equipment is Class6 (60W), the maximum number of ports that can be fed simultaneously is 8. The remaining 16 ports can be powered by Class3 (15.4W) or Class4 (30W).

Note 9 : When the power of the power receiving equipment is Class3 (15.4W), the maximum number of ports that can be fed simultaneously is 24. For Class4 (30.0W), the maximum port count is 17,.

Note 10 : When the power of the power receiving equipment is Class3 (15.4W), the maximum number of ports that can be fed simultaneously is 16. For Class4 (30.0W), the maximum port count is 8.

Note 11 : When the power of the power receiving equipment is Class3(15.4W), the maximum number of ports that can be fed simultaneously is 48. For Class4 (30.0W), the maximum port count is 26.

Note 12 : Heating value of this device only. This does not include the calorific value of PD (power receiving device).

3.2 Function list

Table 4 lists the supported functions and their standards.

Table 4 AX2300S series functions

Category	Function		Compliance standards	Remarks
LAN	Ethernet	10BASE-T/100BASE-TX/ 1000BASE-T/2.5GBASE-T	IEEE802.3 IEEE802.3u IEEE802.3ab IEEE802.3bz	
		10BASE-T/100BASE-TX/ 1000BASE-T/2.5GBASE-T (PoE/PoE+/PoE++)	IEEE802.3af IEEE802.3at IEEE802.3bt	
		1000BASE-X(SX/LX)	IEEE802.3z	
		1000BASE-X(BX)	IEEE802.3ah	
		1000BASE-X(LH)	-	
		10GBASE-R(SR/LR/ER)(SFP+)	IEEE802.3ae	Option license OP-ULTG is needed.
		10GBASE-R(BR)(SFP+)	-	Option license OP-ULTG is needed.
		10GBASE-CU(SFP+)	-	Option license OP-ULTG is needed.
	Flow control	IEEE802.3x		
	Link debounce/link up debounce	-		
	Auto negotiation extension	10BASE-T/100BASE-TX/ 1000BASE-T downshift	-	
	PoE time-shifting power supply		-	
	Link aggregation		IEEE802.3ad (IEEE802.1AX)	
	Jumbo frame		-	
Layer 2 function	Transparent bridge		-	
	VLAN	Port VLAN	IEEE802.1Q	
		VLAN tagging	IEEE802.1Q	
		Protocol VLAN	-	
		MAC VLAN	-L	
		Tag translation	-	
		VLAN debounce	-	
	VLAN tunneling		-	
	Inter-port relay blocking		-	
	Spanning tree	STP	IEEE802.1D IEEE802.1t	
		RSTP	IEEE802.1w	
		MSTP	IEEE802.1s	
		PVST+	-	
		BPDU filter	-	
		Loop guard	-	
		Root guard	-	
	Autonomous Extensible Ring Protocol	Transut node	-	
	Uplink redundant feature		-	
	DHCP snooping		RFC2131	
	IGMP / MLD snooping	IGMPv1 snooping	RFC4541	
		IGMPv2 snooping	RFC2236	
		IGMPv3 snooping	RFC2710	
		IGMP snooping Fast-Leave feature	RFC3376	
		IGMP snooping multicast router port auto-learning		
		MLDv1 snooping		
	MLDv2 snooping			
	Storm control		-	
	IEEE802.3ah/UDLD		IEEE802.3ah	(Note 1)
	L2 loop detection		-	
	CFM (Connectivity Fault Management) (Ether OAM)		IEEE802.1ag	
	LLDP		IEEE Std 802.1AB-2009 IEEE802.1AB Draft 6	
	Flush Request frame (GSRP) reception		-	
Flush control frame (uplink redundant) reception		-		

Category	Function		Compliance standards		Remarks
Layer 3 function	IPv4	IP, ARP, ICMP		RFC791 RFC826 RFC950 RFC1122 RFC1812	RFC792 RFC922 RFC1027 RFC1519 RFC2644
	IPv4 DHCP server		RFC2131 RFC2136 RFC4702	RFC2132 RFC3046	
	IPv6	IPv6, NDP, ICMPv6		RFC2474 RFC4291 RFC4861 RFC8200	RFC2710 RFC4443 RFC4862
Additional functions	Filter	Flow detection	Layer 2 conditions	-	
			Layer 3 conditions (IPv4)		
			Layer 3 conditions (IPv6)		
			Layer 4 conditions		
	QoS / Diff-Serv	Flow detection	Layer 2 conditions	-	
			Layer 3 conditions (IPv4)		
			Layer 3 conditions (IPv6)		
			Layer 4 conditions		
	Marker		User priority rewrite	-	
			DSCP marking	RFC2474 RFC2597 RFC3260	RFC2475 RFC3246
	Prioritization		CoS mapping	RFC2597	RFC3246
			Output priority control	RFC3260	
	Shaper		PQ	-	
			PQ+RR	-	
			PQ+DRR	-	
		Tail drop	-		
	Layer 2 authentication	IEEE 802.1X	Fixed VLAN (per-port authentication)	IEEE802.1X RFC2865 RFC2868 RFC3162	RFC2866 RFC2869 RFC3579
Dynamic VLAN			RFC3580	RFC3748	
Web authentication		Fixed VLAN	URL redirection	-	
			Keep Alive		
			Dynamic VLAN		
MAC authentication		Fixed VLAN	URL redirection	-	
			Dynamic VLAN		
Common features			IPv4 access list for authentication	-	
			MAC access list for authentication		
		Multi-step authentication	-		
Port mirroring	Local		-		
		802.1Q Tag assignment	-		
Reliability	Environmental monitor		-		
	Self-diagnosis		-		
	Gigabit switch redundancy protocol (GSRP)	GSRP aware	-		

Category	Function		Compliance standards		Remarks	
Network management	SNMP (v1/v2c/v3)		RFC1155	RFC1157		
			RFC1901	RFC1902		
			RFC1903	RFC1904		
			RFC1905	RFC1906		
			RFC1907	RFC1908		
			RFC2578	RFC2579		
			RFC2580	RFC3410		
			RFC3411	RFC3412		
			RFC3413	RFC3414		
			RFC3415	RFC3416		
			RFC3417	RFC3418		
			RFC3584			
	MIB-II, RMON, IP Forwarding MIB, Interface MIB		RFC1158	RFC1213		
			RFC1354	RFC1757		
			RFC2233			
	dot1dBridge MIB		RFC1493		RFC2674	
	Ethernet MIB		RFC1643		RFC3621	
	CFM-MIB		IEEE802.1ag			
	LLDP MIB		IEEE Std 802.1AB-2009			
	LLDP-EXT-DOT1-V2-MIB		IEEE Std 802.1AB-2009			
sFlow		RFC3176				
Private MIB	Statistical information		-			
	L2 (VLAN, FDB) data		-			
	Neighbor discovery protocol (LLDP) data		-			
	Filter/QoS data		-			
	System data (startup information, login)		-			
	Device data		-			
	sFlow data		-			
SYSLOG		RFC5424				
AX-Security-Controller		-				
Operation & management	Operation terminal device connection	Serial (console)	-			
		TELNET, FTP, TFTP	RFC854	RFC855		
			RFC959			
	Configuration	CLI	-			
	Security	Login authentication (password, host address, RADIUS, TACACS+)		RFC2865	RFC2866	RADIUS compliant standards
				RFC2869	RFC3162	
				RFC3579	RFC3580	
				RFC3748		draft-grant-tacacs-02-txt
	SSH	Version 1 (Note 2)		draft-ylonen-ssh-protocol-00.txt		
		Version 2		RFC4251	RFC4252	
			RFC4253	RFC4254		
			RFC4344	RFC4419		
			RFC4716	RFC5656		
			RFC6668	RFC8268		
			draft-ietf-secsh-filexfer-13			
	Collection of management information	Device/interface status display		-		
		Operation message log		-		
		Statistics for each link		-		
	Advanced script (Python)	Basic function		-		
		Command script		-		
Resident script		-				
Event monitoring function		System message monitoring		-		
		Timer monitoring		-		
Applet function		Event startup script				
Applet function		-				
MC operation mode		-				
Zero touch provisioning		-				
NTP		RFC5905				
Commandless maintenance		-				
Energy saving function	Port power saving	EEE (Energy-Efficient Ethernet)		IEEE 802.3az		
		Power consumption data display		-		

Category	Function		Compliance standards	Remarks
	Long life solution	Temperature log	-	
		Fan control	-	
	Secure boot	-		

[Legend] - : No compliant standard

Note 1: Only Information OAMPDU is supported.

Note 2: For software delivered after 2022, SSH Version 1 may be discontinued.

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[Issue]

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