

**Datasheet**

ALAXALA compact 10 gigabit multi-layer switch

**AX3800S Series****1. Overview**

The AX3800S series of ALAXALA compact, 10 gigabit multi-layer switches are available in the following three models.

The AX3800S series consists of a redundant power supply model that can be used with AC and DC power supplies and supports hot-swap power supply redundancy.

AX3830S-44XW/AX3830S-44X4QW have fan and power supply module options from which you can choose to achieve an appropriate air flow type (front-side air intake and rear-side air exhaust, or rear-side air intake and front-side air exhaust).

Figure 1 to 2 show the appearance of AX3800S series switches.



**Figure 1 AX3830S-44XW**



**Figure 2 AX3830S-44X4QW**

## 1.1 Product concept

The AX3800S series consists of a box-type multi-layer switch designed to balance costs with the functionality and switching performance required by data center or enterprise networks while inheriting the carrier-grade switch technologies developed by ALAXALA to implement its goal of a "guaranteed network."

## 1.2 Usage examples

The AX3800S consists of a high-performance multi-layer switch that inherits the functionality and reliability of the AX3650S series, combining this with AX6700S-class switching capacity. It can be used for a wide variety of purposes, for example as a small/medium-size network, a user aggregation switch for a provider, or as a server aggregation switch utilizing its high-capacity switching performance and 10G interface.

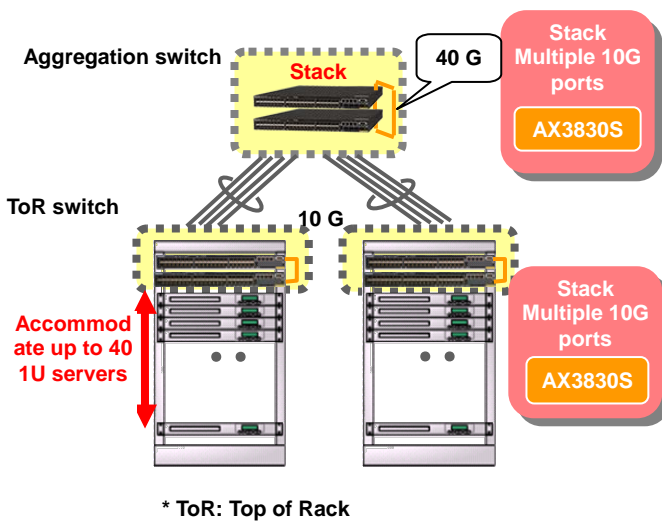


Figure 3 Usage example in data center

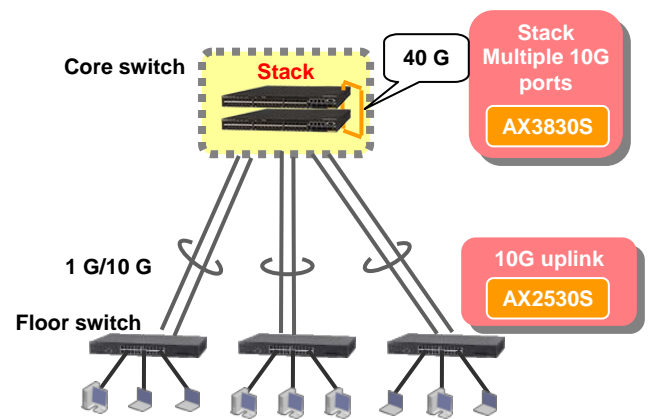


Figure 4 Usage example in enterprise network

Table 1 Switch usage example

Switch usage example		Point
(1) Data center	Aggregation switch	<ul style="list-style-type: none"> <li>• Switch accommodating multiple top-of-rack switches</li> <li>• Fault-tolerant 10G network, achieved by using stack functionality</li> <li>• TCO reduction (power consumption and operation manageability)</li> <li>• Compact 1U-size chassis (Note 1)</li> </ul>
	Top-of-rack switch	<ul style="list-style-type: none"> <li>• Switch accommodating many servers with increasing 10G support</li> <li>• Fault-tolerant 10G network, achieved by using stack functionality</li> <li>• TCO reduction (power consumption and operation manageability)</li> <li>• Compact 1U-size chassis (Note 1)</li> </ul>
(2) Enterprise network	Core switch	<ul style="list-style-type: none"> <li>• Enterprise-class 10G core switch with excellent cost performance</li> <li>• Fault-tolerant network including both 1G and 10G, achieved by using stack functionality</li> <li>• Operating stability of routing protocols such as OSPF and BGP</li> <li>• Integration of different networks by using network partitioning</li> <li>• Security functionality (flow monitoring, authentication, quarantine)</li> <li>• TCO reduction (power consumption and operation manageability)</li> <li>• Compact 1U-size chassis (Note 1)</li> </ul>

(Note 1) AX3830S-44XW/AX3830S-44X4QW

## 2. Features

### 2.1 AX3800S series features

#### (1) High-performance, high-density and compact design

- Packet processing capability with maximum switching capacity of 1208 Gbit/s (AX3830S-44X4QW)
  - Ideal for use as a core switch in an enterprise or a top-of-rack switch in a data center
- Support for 40 gigabit Ethernet
  - QSFP+ used as a 40 gigabit Ethernet transceiver (AX3830S-44X4QW)
  - Provision of low-cost connecting solutions by supporting direct attach cables
- Compact chassis
  - Up to 44 ports for 10 gigabit Ethernet (10GBASE-R (SFP+))  
Up to four ports for 40 gigabit Ethernet (40GBASE-R (QSFP+)) (AX3830S-44X4QW)
  - Up to 48 ports for gigabit Ethernet  
(four ports for fixed 10/100/1000BASE-T and 44 ports for 1000BASE-X (SFP))
  - Installation space saving, 4.3 cm height (1U) compact design (AX3830S-44XW/AX3830S-44X4QW)

#### (2) Stack functionality that enables fault-tolerant switches

- Highly scalable fault-tolerant switches
  - By configuring a device consisting of multiple devices, communication can continue even if a partial fault occurs.
  - By adding devices, the number of available ports can be increased.
- Traffic forwarding that is not dependent on the bandwidth of stack ports
  - If traffic is forwarded to a link aggregation where ports are on multiple member switches, the traffic can be forwarded from the link aggregation port of the member switch containing the line that received the traffic.
- Non-stop software update
  - Software can be updated without interrupting network communication by switching between the master and backup switches.
- Reduction in costs through centralized management
  - By using multiple devices as a single device, centralized management is possible.

#### (3) Network partitioning

- Horizontal and vertical network integration reduces costs.
  - By using the VRF functionality, which virtually combines logically separated switches into a single switch, networks that were once physically separate entities can exist within one physical network.
  - Networks can be easily constructed and managed by placing Layer 3 switches at a central location and then connecting them to Layer 2 switches at individual offices and sites.
  - Deploying Layer 3 box switches with VRF support in each location makes it possible to virtualize a wide-area network with many locations.

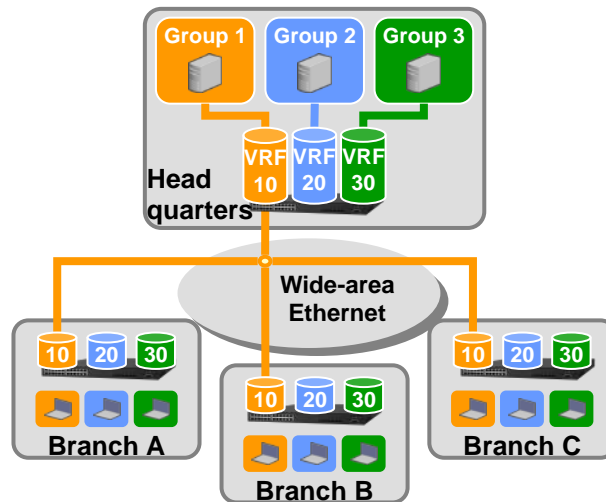


Figure 5 Network partitioning

(4) Proven routing functionality

- Sophisticated and stable routing
  - Each model provides a site-to-site connection based on wide-area Ethernet and IP-VPN services with reliable routing based on OSPF and BGP functionality and load distribution based on multipaths.
- Excellent support for IPv4 routing protocols
  - Supports a wealth of proven IPv4 routing protocols (Static, RIP, OSPF, BGP4, PIM-SM/SSM, and IGMP)

(5) Excellent support for IPv6 functionality

- IPv6 multicast support
  - The same peak performance for both IPv4 and IPv6
- IPv6 routing at full-wire speed over 10G Ethernet
- A variety of IPv6 routing protocols (Static, RIPng, OSPFv3, BGP4+, PIM-SM, PIM-SSM, and MLD) provide diverse, flexible IPv6 networks.
- Enhanced functionality are supported including IPv4/v6 dual stacks, network management supporting IPv6-only environments (SNMP over IPv6), and authentication management (RADIUS over IPv6).
- IPv6 Ready Logo Ph. 2 supported
  - In addition to phase 1 functionality, phase 2 functionality is supported to provide practical IPv6 that more strictly conforms to specifications.

(6) High reliability for configuring mission-critical networks

- High product quality
  - High reliability assured through exacting component selection and strict design and testing standards
  - Adding an additional power supply (for a total of two) provides power supply redundancy.
  - Stable routing through inheritance of software proven through use by carriers and ISPs
- Variety of redundant network configurations
  - High-speed path switching
    - Autonomous Extensible Ring Protocol, Rapid Spanning Tree Protocols (IEEE 802.1w, IEEE 802.1s), Uplink Redundant, GSRP (Note 1), Link Aggregation (IEEE 802.3ad), Hot Standbys (VRRP), Static/VRRP Polling (Note 2), and more
  - Load balancing
    - Equal traffic balancing at the IP level based on OSPF equal-cost multipath routing

- L2 loop avoidance
  - The UDLD functionality prevents loops at the spanning tree or frame loss at link aggregation.
  - The L2 loop detection functionality prevents loops by detecting improperly connected devices on the network.

(Note 1) GSRP (Gigabit Switch Redundancy Protocol)

For more information, see the manual on our website.

(Note 2) A monitoring functionality that uses polling to check access on a specified route for rerouting by dynamically interlocking VRRP and static routing.

#### (7) Power saving

- Power saving functionality
  - Provides power saving functionality that limits power supplied to ports, LEDs, and the Switch itself. Functionality can be selected according to the operational status of the user.
- Scheduling
  - The Switch can control power supply to ports and the Switch itself according to specified schedules for long holidays, Saturdays, Sundays, public holidays, or nighttime. Power supply control can be also automatically disabled.
- Graphic power consumption information
  - Consumed power and total consumption display with operation commands and MIBs.
- Low power consumption
  - Low power consumption is considered at the architecture design and part selection phases. This contributes to the reduced TCO after introduction.

#### (8) Easy-to-operate user interface (configuration commands)

- Industry-standard command line interface is supported.
  - Same format is used for the input commands and configuration information for improved ease of operation.
  - Copying and pasting of configuration information is supported.

#### (9) Excellent network management, maintenance, and operation

- CFM (Connectivity Fault Management) (Ether OAM)
  - Connectivity monitoring and failure management at the Layer 2 level are available based on Continuity Checks (CC), Loopbacks, and Link Traces.
- In addition to the basic MIB-II, many other MIBs including IPv6-MIB and RMON are supported.
- The mirror port functionality can be used to monitor and analyze traffic (at both of the receiving and sending ports).
- Online maintenance
  - It is possible to continue communication through partial reboot at the time of configuration change.
- Support for SD memory cards
  - Users can easily back up the configuration and save error information.
  - Maintenance tasks are simplified.
- Switch cooling to suit your operating environment
  - Allows air flow selection (front-side air intake and rear-side air exhaust, or rear-side air intake and front-side air exhaust) to increase flexibility regarding cooling system design for data centers.
- sFlow allows detailed flow statistic information to be retrieved.

#### (10) Guaranteed communication quality by using powerful hardware-based QoS functionality

- High-performance hardware-based QoS processing
- Precise QoS control by specification of detailed parameters (Layer 2/3/4 headers)
- Variety of QoS control functionality
  - L2-QoS (including IEEE 802.1p, bandwidth controls, priority controls, and discard controls) and IP-QoS (including Diff-Serv, bandwidth controls, priority controls, and discard controls)

## (11) Robust security

- Advanced and fine-grained packet filtering
  - Hardware-based high-performance filtering processes are available.
  - With the outbound filtering functionality, each model can efficiently consolidate security rules on a destination network basis.
  - Partial specification of Layer 2/3/4 headers
  - Scalability with multiple conditions acceptable
    - The maximum numbers of filter entries can be defined as 1024 for IN per device and 1024 for OUT per device.
- Layer 2 VPN based on VLAN tunneling
- IEEE 802.1X, which provides a high level of operation security, is supported.
- Various VLANs are supported (Port VLANs, protocol VLANs, MAC VLANs, and VLAN tags).
- It is possible to use RADIUS/TACACS+ to restrict issuable commands for each log-in password authentication and user.
- Unauthorized DHCP servers and terminals with fixed IP addresses are excluded from networks.
  - Each model provides robust security by eliminating unauthorized DHCP servers and terminals with fixed IP addresses using DHCP snooping.

## (12) Network authentication

- Eliminating unauthorized users
  - Brought-in PCs and other devices without the capability to be managed via security measures cannot be connected to a network.
  - Preventing outsiders from accessing the network
- Protecting server information
  - Department servers installed without authorization are not properly made inaccessible to unauthorized users (password protected) in many cases; such servers are disabled and cannot be connected to a network (unlimited use of servers that are not properly made inaccessible to unauthorized users may lead to information leaks; information leaks are prevented on the network side.)
  - Access to servers by users without access rights is limited (dynamic VLANs are used).
- Protecting client PCs
  - Client PCs, which are likely not to be properly blocked to unauthorized users, are protected from unauthorized access to prevent information leaks.
- Problem occurrence traceability
  - Based on the unsuccessful authentication history, when and by whom unauthorized access occurs is checked.
  - When improper network use is discovered, when and by whom the network access occurs is checked based on the successful authentication history.
- Authentication under an environment where different types of computers coexist
  - Even in a mixed network of different types of computers, the series models can perform network authentication by supporting three different authentic methods: the IEEE 802.1X functionality, Web authentication, and MAC-based authentication.
- Significant reduction in total cost
  - It is possible to perform network authentication even when access is made via an island hub in an environment where no terminal is directly housed in the floor switches. It is possible to increase user capacity at a low cost by using island hubs.

## (13) Quarantine network

- Security checks
  - The network prevents information leaks by quarantining PCs that violate the security policy, including PCs with unauthorized software installed or unpatched PCs.
  - The network prohibits access from infected PCs that may compromise information systems on business networks.
  - Quarantine networks reduce the operation cost by letting the quarantine server centrally manage the security policy for terminals.
- The network can work together with many quarantine systems:
  - Microsoft NAP
  - NOSiDE (NTT Data)
  - JP1 (Hitachi, Ltd.)
  - InfoCage (NEC)

## (14) Enhanced Layer 2 functionality supported

- Variety of VLAN functionality
  - Port VLAN, protocol VLAN, MAC VLAN, and VLAN tag implemented
  - Enables purpose-built VLANs
- Various Spanning Tree Protocols supported
  - STP (IEEE 802.1D), Rapid STP (IEEE 802.1w), PVST+, and MSTP (IEEE 802.1s) implemented
- Ring protocol
  - Autonomous Extensible Ring Protocol implemented, allowing a variety of ring network configurations. Fast and stable Layer 2 redundancy.

## 3. Specifications

### 3.1 Switch specifications

The AX3800S series offers the following models, which are based on a unified architecture. The AX3800S series only includes a redundant power supply model, and allows you to achieve power system redundancy by installing two power supplies. Table 2 shows the specifications of AX3800S series switches.

**Table 2 Switch specifications**

			Specifications			
Name			AX3830S-44XW		AX3830S-44X4QW	
Maximum switching capacity			888 Gbit/s		1208 Gbit/s	
Packet processing performance (Mpacket/s) (Note 1)	Maximum packet relay performance		660.7		896.5 (Note 2)	
	Number of network interfaces		n/a		4	
	40GBASE-SR4/LR4 (QSFP+)		n/a		4	
	40GBASE-CR4 (QSFP+)		n/a		4	
	10GBASE-SR/LR/ER (SFP+)		44 (Note 3)		44 (Note 3)	
	10GBASE-CU (SFP+)		44 (Note 3)		44 (Note 3)	
	1000BASE-SX/LX/BX/LH (SFP)		44 (Note 4)		44 (Note 4)	
	10BASE-T/100BASE-TX/1000BASE-T (SFP) (Note 5)		44 (Note 4)		44 (Note 4)	
10BASE-T/100BASE-TX/1000BASE-T (no PoE) (Note 6)		4		4 (Note 7)		
Standard memory size			1024 MB			
Number of memory card slots			SD memory card x 1			
Redundancy			AC or DC power supply			
Power supply requirements			AC power	DC power	AC power	DC power
	Voltage	Rated input voltage (V)	100 to 120 V AC/ 200 to 240 V AC	-48 V DC	100 to 120 V AC/ 200 to 240 V AC	-48 V DC
		Variation range (V) (Note 8)	90 to 127.2 V AC/ 180 to 254.4 V AC (Note 9)	-40 to -57 V DC	90 to 127.2 V AC/ 180 to 254.4 V AC (Note 9)	-40 to -57 V DC
	Frequency (Hz)		50/60	n/a	50/60	n/a
	Maximum input current (A)		2.5 @ 100 V AC 1.3 @ 200 V AC	5.3 @ -48 V DC	3.0 @ 100 V AC 1.5 @ 200 V AC	6.3 @ -48 V DC
	Maximum power consumption (W)		250		300	
Calorific power (kJ/h)			900		1080	
Equipment requirements	External dimensions W x D x H (mm) (height [U])		445 x 580 x 43 (1U)			
	Weight (kg) (power unit included)		No more than 11.0			
Environmental requirements (Note 10)	Temperature	Acceptable operating range	-10 to 50 °C (for front-side air intake and rear-side air exhaust) (Note 11) -10 to 45 °C (for rear-side air intake and front-side air exhaust) (Note 11)			
		When not operating (not energized)	-10 to 50 °C			
		During storage and transportation	-25 to 65 °C			
	Relative humidity	Acceptable operating range	10 to 90 % (non-condensing)			
		When not operating (not energized)	8 to 90 % (non-condensing)			
		During storage and transportation	5 to 90 % (non-condensing)			
Suspended particulates		Smaller than approx. 10 microns: 0.15 mg/m <sup>3</sup>				
Vibration (m/s <sup>2</sup> )		No more than 2.45				
Applicable standards	EMI standard		VCCI Class A			
	Harmonic current emission standard		JIS C61000-3-2			
	EMS standard		JEITA IT-3001A			
	Safety standard		UL60950-1 compliant			



(Note 1) The measurement conditions are as follows:

- Physical media: 1000BASE-T, 10GBASE-R, 40GBASE-R
- Packet type: Layer 2 forwarding without flooding
- Packet length: 64 bytes
- QoS and filtering: Not set

(Note 2) For AX3830S-44X4QW, wire-rate forwarding is possible on ports other than 10/100/1000BASE-T ports. Wire-rate forwarding is not possible on the four 10/100/1000BASE-T ports.

(Note 3) As these network interfaces are provided by using shared SFP/SFP+ ports, if you use the shared ports for 1000BASE-X/1000BASE-T (SFP), subtract the number of network interfaces used by these ports from this value.

(Note 4) These are SFP/SFP+ shared ports.

Therefore, the number of available ports is reduced by the number of shared ports used for 10GBASE-R (SFP+).

(Note 5) Only 1000BASE-T is supported.

(Note 6) UTP ports support 10/100/1000BASE-T full duplex only.

(Note 7) If 10/100/1000BASE-T for AX3830S-44X4QW is used for 1000BASE-T, the throughput is limited to approximately 600 Mbit/s depending on the packet length, and packets might be discarded regardless of the priority (the throughput value includes gap between frames and preamble).

(Note 8) This is the range within which normal operation is guaranteed.

(Note 9) Specifications for input voltage of 200 V AC.

(Note 10) Do not install the Switch in the following locations. Failure to observe this caution might shorten the life of the Switch.

- Locations where the Switch is exposed to hydrogen sulfide (as in a hot spring area) or salt (as in a sea shore area).

(Note 11) 0 °C to the maximum value at startup or when using an SFP-BX1U/1D or SFP-BX4U/4D.

## 3.2 Functionality

Table 3 shows the functionality supported along with the relevant standards.

It should be noted that the functionality supported vary depending on the software.

L3S advanced software

OSPF, BGP, VRF, IS-IS (Note1), and policy-based routing (Note 12) are supported.

L3S light software

OSPF, BGP, VRF, IS-IS, and policy-based routing are not supported.

**Table 3 AX3800S series functionality**

Category	Functionality		Relevant standards	Remarks	
LAN	Ethernet	10BASE-T/100BASE-TX/ 1000BASE-T	IEEE802.3 IEEE802.3u IEEE802.3ab	(Note 2)	
		10BASE-T/100BASE-TX/ 1000BASE-T(SFP)	IEEE802.3 IEEE802.3u IEEE802.3ab	(Note 3)	
		1000BASE-X (SX/LX)	IEEE802.3z		
		1000BASE-X (BX (40 km support version)/LH)	n/a		
		1000BASE-X (BX)	IEEE802.3ah		
		10GBASE-R (SR/LR/ER) (SFP+)	IEEE802.3ae		
		10GBASE-CU (SFP+)	n/a		
		40GBASE-R (SR4/CR4) (QSFP+)	IEEE802.3ba		
		40GBASE-R (LR4) (QSFP+)	IEEE802.3ba	[NEW]	
		IEEE 802.3ad link aggregation		IEEE802.3ad	(Note 14)
Jumbo frame		n/a			
Layer 2 functional ity	Transparent bridge		n/a		
	VLAN	Port VLAN	IEEE802.1Q		
		VLAN tagging	IEEE802.1Q		
		Protocol VLANs	n/a		
		MAC VLAN	n/a	(Note 13)	
		Tag translation	n/a		
		VLAN debounce	n/a		
	VLAN tunneling		n/a		
	Inter-port relay blocking functionality		n/a		
	Layer 2 relay blocking functionality		n/a		
	Spanning Tree Protocols	STP	IEEE802.1D	(Note 13)	
			IEEE802.1t		
			IEEE802.1w		
			IEEE802.1s		
			n/a		
			n/a		
			n/a		
	Autonomous Extensible Ring Protocol		n/a	(Note 13)	
	Uplink redundant functionality		n/a	(Note 13)	
	DHCP snooping		RFC2131	(Note 13)	
	IGMP/MLD snooping	IGMPv2 snooping	RFC4541	(Note 13)	
					IGMPv3 snooping
					IGMP snooping instant leave
					MLDv1 snooping
					MLDv2 snooping
	Storm control		n/a	(Note 20) [NEW]	
	IEEE802.3ah/UDLD		IEEE802.3ah	(Note 4)	
L2 loop detection		n/a			
CFM (Connectivity Fault Management) (Ether OAM)		IEEE802.1ag	(Note 13)		
Flush Request frame (VRRP) receiving functionality		n/a	(Note 13)		
Flush control frame (uplink redundancy) receiving functionality		n/a	(Note 13)		
Layer 3 functional ity	IPv4	IP, ARP, ICMP	RFC791 RFC792 RFC826 RFC922 RFC950 RFC1027 RFC1122 RFC1519 RFC1812 RFC2644		

Category	Functionality	Relevant standards	Remarks	
	RIP RIP2	RFC1058 RFC1519 RFC2453		
	VRF-enabled	n/a	Advanced software only	
	RIPv2 authentication	RFC4822		
	OSPF	RFC1519 RFC2328 RFC3101 RFC5309	Advanced software only	
	Stub router	RFC3137	Advanced software only	
	VRF-enabled	n/a	Advanced software only	
	Static routing	n/a		
	VRF-enabled	n/a	Advanced software only	
	Null interface	n/a		
	Local Proxy ARP	n/a		
	IPv6	IPv6, NDP, ICMPv6	RFC2373 RFC2460 RFC2461 RFC2462 RFC2463 RFC2710 RFC3587 RFC5095	
	RIPng	RFC2080		
	VRF-enabled	n/a	Advanced software only	
	OSPFv3	RFC2740 RFC5309	Advanced software only	
	Stub router	RFC3137	Advanced software only	
	VRF-enabled	n/a	Advanced software only	
	Static routing	n/a		
	VRF-enabled	n/a	Advanced software only	
	Null interface	n/a		
	BGP4 BGP4+	EBGP, IBGP peering	RFC1519 RFC1771 RFC2385 RFC2842 RFC2858 RFC2918 RFC3392 RFC4271 RFC4760 RFC5492 draft-ietf-idr-avoid-transition-04.txt	Advanced software only
	Community	RFC1997	Advanced software only	
	Route reflection	RFC2796 RFC4456	Advanced software only	
	Confederation	RFC1965 RFC3065 RFC5065	Advanced software only	
Route flap dampening	RFC2545	Advanced software only		
BGP Maximum Prefix	n/a	Advanced software only		
VRF-enabled	n/a	Advanced software only		
IS-IS		n/a	Advanced software only (Note 1)	
IPv4 multicast	IGMP	RFC2236		
	IGMP ver2			
	IGMP ver3	RFC3376		
	VRF-enabled (IGMPv2, v3, static)	n/a	Advanced software only	
	PIM-SM/-SSM		RFC2362 RFC4601 draft-ietf-pim-sm-bsr-07.txt	Only the Generation ID related part of the PIM-Hello option is followed.
			draft-ietf-pim-sm-v2-new-05.txt	Only the description about PIM-SSM is followed.
	BSR extended functionality	n/a	[NEW]	
VRF-enabled	n/a	Advanced software only		
IPv6 multicast	MLD ver1 ver2	RFC2710 RFC3810	(Note 13)	
	VRF-enabled (MLDv1, v2, static)	n/a	Advanced software only (Note 13)	
	PIM-SM/-SSM		RFC2362 RFC4601 draft-ietf-pim-sm-bsr-07.txt	(Note 13) Only the Generation ID related part of the PIM-Hello option is followed.
			draft-ietf-pim-sm-v2-new-03.txt draft-ietf-pim-sm-v2-new-05.txt	Only the descriptions about IPv6 and PIM-SSM are followed.
		VRF-enabled	n/a	Advanced software only (Note 13)

Category	Functionality		Relevant standards	Remarks		
	DHCP /BOOTP relay agent functionality		RFC1542 RFC1812 RFC2131			
		VRF-enabled	n/a	Advanced software only		
	IPv6 DHCP relay		RFC3315	(Note 5) (Note 13)		
	IPv4 DHCP server functionality		RFC2131 RFC2136 RFC3679	(Note 13)		
			RFC2132	DHCP option		
	IPv6 DHCP server functionality (Prefix Delegation)		RFC3315 RFC3319 RFC3633 RFC3646 RFC3736 RFC4075	(Note 13)		
	Multipath (Load balancing)	IPv4		n/a		
		VRF-enabled		n/a	Advanced software only	
		IPv6		n/a		
		VRF-enabled		n/a	Advanced software only	
	Policy-based routing	IPv4		n/a	Advanced software only (Note 13)	
			Tracking functionality	n/a	Advanced software only (Note 13)	
		VRF-enabled	n/a	Advanced software only (Note 13)		
Additional functionality	Filters		n/a			
	Flow detection conditions	Layer 2 conditions	n/a			
		Layer 3 conditions	n/a			
		Layer 4 conditions	n/a			
	QoS/Diff-serv	Contract bandwidth monitoring (UPC)		n/a		
		DSCP marking		RFC2474 RFC2475 RFC2597 RFC3246 RFC3260		
			CoS mapping		n/a	
			Output priority control		RFC2597 RFC3246 RFC3260	
		PQ + RR		n/a		
		PQ + WFQ		n/a		
		PQ + WRR		n/a	WRR: Weighted (number of frames) round robin	
		PQ + ERR		n/a	ERR: Weighted (ratio based on the byte count) round robin	
	Tail drop		n/a			
	Layer 2 authentication	IEEE 802.1X	Port-based authentication (static)	IEEE802.1X RFC2865 RFC2866 RFC2868 RFC2869 RFC3162 RFC3579 RFC3580 RFC3748	(Note 13)	
			VLAN-based authentication (static)			
			VLAN-based authentication (dynamic)			
		Web authentic ation	Fixed VLAN mode		n/a	(Note 6) (Note 13)
			URL redirection			
			Keep Alive functionality			
			Dynamic VLAN mode			
		URL redirection				
		Legacy mode				
MAC-bas ed authentic ation		Fixed VLAN mode		n/a	(Note 13)	
	Dynamic VLAN mode		n/a	(Note 13)		
Common to authentic ation	Limited number of authentications		n/a	(Note 7) (Note 13)		
	Forced authentication		n/a	(Note 8) (Note 13)		
Port mirroring	Local		n/a			
Network functionality	Network partitioning		n/a	Advanced software only (Note 15)		

Category	Functionality		Relevant standards	Remarks		
Stack	Stack functionality	Cross-switch LA	n/a			
		Stack port	Ethernet	n/a	(Note 19)	
			Grouping	n/a		
		Central management	Stack management IP address		n/a	
			Switch MAC address		n/a	
			Configuration		n/a	
		Availability	Version update	Non-stop update	n/a	
Reliability	Environmental monitoring		n/a			
	Self diagnosis		n/a			
	Redundant configuration (power supply)		n/a			
	Hot standby (VRRP)	IPv4	VRRP-enabled	RFC3768	(Note 13)	
				n/a	Advanced software only (Note 13)	
		IPv6		draft-ietf-vrrp-ipv6-spec-07.txt draft-ietf-vrrp-ipv6-spec-02.txt	(Note 13)	
			VRRP-enabled	n/a	Advanced software only (Note 13)	
	Redundancy switching functionality (GSRP)	Layer 2		n/a	(Note 9) (Note 13)	
		Layer 3		n/a	(Note 13)	
		VLAN group-only control functionality		n/a		
		GSRP aware		n/a		
	Graceful Restart (Helper functionality/receiving router functionality)			RFC3623	Advanced software only OSPF/OSPFv3	
				RFC2370	OSPF	
				RFC3847	IS-IS (Note 1)	
				draft-kompella-ospf-opaquev2-00.txt draft-ietf-ospf-ospfv3-graceful-restart-0.4.txt	OSPFv3	
			draft-ietf-idr-restart-13.txt	BGP4/BGP4+		
	VRRP-enabled	n/a	Advanced software only			
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				
	VRRP-enabled	n/a	Advanced software only			
MIB-II, RMON, IP Forwarding MIB, Interface MIB		RFC1158	RFC1213			
		RFC1354	RFC1757			
		RFC2233				
IPv6 MIB		RFC2452	RFC2454			
		RFC2465	RFC2466			
Private MIB	Statistical information		n/a			
	Related to L2 (VLAN, FDB, GSRP)		n/a			
	Related to neighborhood information (LLDP, OADP)		n/a			
	Related Filter/QoS		n/a	(Note 17)		
	Related to various protocols (OSPF, etc.)		n/a			
	System information (boot information, login)		n/a			
	Switch information		n/a	(Note 17)		
Related sFlow		n/a	(Note 13)			

Category	Functionality		Relevant standards	Remarks	
		Related to VRF	n/a	Advanced software only	
		dot1dBridge MIB	RFC1493 RFC2674		
		Ethernet MIB	RFC1643 RFC3621		
		IPv4 PIM MIB	RFC2934		
		MIBs for various protocols (OSPF, BGP, etc.)	RFC1657 RFC1850 draft-ietf-ospf-ospfv3-mib-03.txt	Advanced software only	
		VRRP MIB	IPv4	RFC2787	(Note 13)
			IPv6	draft-ietf-vrrp-unifid-mib-04	(Note 13)
		CFM-MIB		IEEE802.1ag	(Note 13)
		LLDP		IEEE802.1AB/D6.0	(Note 13)
		OADP (Octpower Auto Discovery Protocol)		n/a	(Note 13)
		CDP (Cisco Discovery Protocol)		n/a	(Note 10) (Note 13)
	sFlow		RFC3176	(Note 13)	
Operation and maintenance	Connection with operation terminals	Serial (console)	n/a		
	Configuration	CLI	n/a		
	Security	Login authentication (password, host address, RADIUS, TACACS+)		RFC2865 RFC2866 RFC3162 draft-grant-tacacs-02.txt	RADIUS relevant standards TACACS+ relevant standards
		SSH (Ver2)		draft-ietf-secsh-architecture-12.txt draft-ietf-secsh-connection-15.txt draft-ietf-secsh-dh-group-exchange-02.txt draft-ietf-secsh-transport-14.txt draft-ietf-secsh-public-keyfile-03.txt draft-ietf-secsh-userauth-15.txt draft-yllonen-ssh-protocol-00.txt	
		VRF-enabled	n/a	Advanced software only	
	Collection of management information	Display of switch/interface status		n/a	
		Operation message log		n/a	
		Statistical information on a line-by-line basis		n/a	
	NTP			RFC1305	
		VRF-enabled (IPv4 only)	n/a	Advanced software only	
	Command-free maintenance functionality			n/a	
	Power saving functionality	Dynamic power saving	Port power OFF	n/a	(Note 18)
			Switch sleep	n/a	(Note 13)
			Power saving functionality for link-down port	n/a	(Note 11) (Note 13)
			LED brightness control functionality	n/a	(Note 13)
Power consumption information indication		n/a			

Legend: n/a: No relevant standards

- (Note 1) IS-IS will be supported in the future.
- (Note 2) Only full-duplex communication is supported.
- (Note 3) Only 1000BASE-T is supported.
- (Note 4) Only Information OAMPDU is supported.
- (Note 5) To use IPv6 DHCP relay, the optional license OP-DH6R must be used.
- (Note 6) Encrypted communication based on SSL (Secure Socket Layer) is also available.
- (Note 7) IEEE 802.1X, MAC-based authentication, and Web authentication are supported.
- (Note 8) MAC-based authentication and Web authentication are supported.
- (Note 9) For more information, see the instruction manual provided on our website.
- (Note 10) Only reception supported.
- (Note 11) Applicable only to the ports on which 10BASE-T/100BASE-TX/1000BASE-T is running.
- (Note 12) Policy-based routing is supported in Ver.11.9 and later.
- (Note 13) This functionality does not work when stack functionality is used.
- (Note 14) LACP is not supported when stack functionality is used.
- (Note 15) Linkage with Layer 2 functionality is not supported when stack functionality is used.
- (Note 16) RMON is not supported when stack functionality is used.
- (Note 17) This functionality is partially supported when stack functionality is used.
- (Note 18) Suspending power supply to port by using shutdown is supported. Scheduling is not supported.
- (Note 19) Flow control and port mirroring are not enabled.
- (Note 20) It operates in Ver.11.11 and later even when stack functionality is used.

## 4. Ordering Information

Table 4 shows the ordering information for the AX3800S series switches.

**Table 4 Ordering information for AX3800S series**

No.	Model	Abbreviated name	Basic specifications
<b>LAN switch</b>			
1	AX-3830-44XW-LX	38L-44X	AX3830S-44XW light model (with no power supply unit, fan, or blank panel) <ul style="list-style-type: none"> <li>• Gigabit Ethernet: Up to 48 ports (4 ports for fixed 10/100/1000BASE-T + 44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 10 gigabit Ethernet: Up to 44 ports (44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• Equipped with L3S light software (without OSPF, BGP, VRF (network partitioning), or policy-based routing).</li> <li>• SSH supported.</li> <li>• Power supply unit slot x 2 (for internal power supply redundancy, hot-swap support)</li> <li>• Fan slot (with hot swap support) x 1</li> </ul>
2	AX-3830-44X4QW-LX	38L-44X4Q	AX3830S-44X4QW light model (with no power supply unit, fan, or blank panel) <ul style="list-style-type: none"> <li>• Gigabit Ethernet: Up to 48 ports (4 ports for fixed 10/100/1000BASE-T + 44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 10 gigabit Ethernet: Up to 44 ports (44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 40 gigabit Ethernet ports x 4 (40GBASE-R (QSFP+) x 4)</li> <li>• Equipped with L3S light software (without OSPF, BGP, VRF (network partitioning), or policy-based routing).</li> <li>• SSH supported.</li> <li>• Power supply unit slot x 2 (for internal power supply redundancy, hot-swap support)</li> <li>• Fan slot x 1 (hot-swap support)</li> </ul> Supported in Ver.11.9 and later
3	AX-3830-44XW-YX	38L-44X	AX3830S-44XW light model (with no power supply unit, fan, or blank panel) <ul style="list-style-type: none"> <li>• Gigabit Ethernet: Up to 48 ports (4 ports for fixed 10/100/1000BASE-T + 44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 10 gigabit Ethernet: Up to 44 ports (44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• Equipped with L3S light software (without OSPF, BGP, VRF (network partitioning), or policy-based routing).</li> <li>• SSH not supported.</li> <li>• Power supply unit slot x 2 (for internal power supply redundancy, hot-swap support)</li> <li>• Fan slot (with hot swap support) x 1</li> </ul>
4	AX-3830-44X4QW-YX	38L-44X4Q	AX3830S-44X4QW light model (with no power supply unit, fan, or blank panel) <ul style="list-style-type: none"> <li>• Gigabit Ethernet: Up to 48 ports (4 ports for fixed 10/100/1000BASE-T + 44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 10 gigabit Ethernet: Up to 44 ports (44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 40 gigabit Ethernet ports x 4 (40GBASE-R (QSFP+) x 4)</li> <li>• Equipped with L3S light software (without OSPF, BGP, VRF (network partitioning), or policy-based routing).</li> <li>• SSH not supported.</li> <li>• Power supply unit slot x 2 (for internal power supply redundancy, hot-swap support)</li> <li>• Fan slot x 1 (hot-swap support)</li> </ul> Supported in Ver.11.9 and later



No.	Model	Abbreviated name	Basic specifications
5	AX-3830-44XW-AX	38A-44X	AX3830S-44XW advanced model (with no power supply unit, fan, or blank panel) <ul style="list-style-type: none"> <li>• Gigabit Ethernet: Up to 48 ports (4 ports for fixed 10/100/1000BASE-T + 44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 10 gigabit Ethernet: Up to 44 ports (44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• Equipped with L3S advanced software (with OSPF, BGP, VRF (network partitioning), or policy-based routing). (Note 1) (Note 4)</li> <li>• SSH supported.</li> <li>• Power supply unit slot x 2 (for internal power supply redundancy, hot-swap support)</li> <li>• Fan slot (with hot swap support) x 1</li> </ul>
6	AX-3830-44X4QW-AX	38A-44X4Q	AX3830S-44X4QW advanced model (with no power supply unit, fan, or blank panel) <ul style="list-style-type: none"> <li>• Gigabit Ethernet: Up to 48 ports (4 ports for fixed 10/100/1000BASE-T + 44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 10 gigabit Ethernet: Up to 44 ports (44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 40 gigabit Ethernet ports x 4 (40GBASE-R (QSFP+) x 4)</li> <li>• Equipped with L3S advanced software (with OSPF, BGP, VRF (network partitioning), or policy-based routing). (Note 1)</li> <li>• SSH supported.</li> <li>• Power supply unit slot x 2 (for internal power supply redundancy, hot-swap support)</li> <li>• Fan slot x 1 (hot-swap support)</li> </ul> Supported in Ver.11.9 and later
7	AX-3830-44XW-ZX	38Z-44X	AX3830S-44XW advanced model (with no power supply unit, fan, or blank panel) <ul style="list-style-type: none"> <li>• Gigabit Ethernet: Up to 48 ports (4 ports for fixed 10/100/1000BASE-T + 44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 10 gigabit Ethernet: Up to 44 ports (44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• Equipped with L3S advanced software (with OSPF, BGP, VRF (network partitioning), or policy-based routing). (Note 1) (Note 4)</li> <li>• SSH not supported.</li> <li>• Power supply unit slot x 2 (for internal power supply redundancy, hot-swap support)</li> <li>• Fan slot (with hot swap support) x 1</li> </ul>
8	AX-3830-44X4QW-ZX	38Z-44X4Q	AX3830S-44X4QW advanced model (with no power supply unit, fan, or blank panel) <ul style="list-style-type: none"> <li>• Gigabit Ethernet: Up to 48 ports (4 ports for fixed 10/100/1000BASE-T + 44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 10 gigabit Ethernet: Up to 44 ports (44 ports for either 1000BASE-X (SFP) or 10GBASE-R (SFP+))</li> <li>• 40 gigabit Ethernet ports x 4 (40GBASE-R (QSFP+) x 4)</li> <li>• Equipped with L3S advanced software (with OSPF, BGP, VRF (network partitioning), or policy-based routing). (Note 1)</li> <li>• SSH not supported.</li> <li>• Power supply unit slot x 2 (for internal power supply redundancy, hot-swap support)</li> <li>• Fan slot x 1 (hot-swap support)</li> </ul> Supported in Ver.11.9 and later
<b>Common option</b>			
1	AX-F0110-SD1GX	SD1G	SD memory card (1 GB) (Note 2)
2	AX-F0110-3D1CU30CX	SFPP-CU30C	Direct attach cable for 10GBASE-CU (Cable length: 30 cm) Supported in Ver.11.9.A and later
3	AX-F0110-3D1CU1MX	SFPP-CU1M	Direct attach cable for 10GBASE-CU (Cable length: 1 m)
4	AX-F0110-3D1CU3MX	SFPP-CU3M	Direct attach cable for 10GBASE-CU (Cable length: 3 m)
5	AX-F0110-3D1CU5MX	SFPP-CU5M	Direct attach cable for 10GBASE-CU (Cable length: 5 m)
6	AX-F0110-3Q1CU35CX	QSFP-CU35C	Direct attach cable for 40GBASE-CR4 (Cable length: 35 cm) Supported in Ver.11.9 and later
7	AX-F0110-3Q1CU1MX	QSFP-CU1M	Direct attach cable for 40GBASE-CR4 (Cable length: 1 m) Supported in Ver.11.9 and later
8	AX-F0110-3Q1CU3MX	QSFP-CU3M	Direct attach cable for 40GBASE-CR4 (Cable length: 3 m) Supported in Ver.11.9 and later
9	AX-F0110-3Q1CU5MX	QSFP-CU5M	Direct attach cable for 40GBASE-CR4 (Cable length: 5 m) Supported in Ver.11.9 and later

No.	Model	Abbreviated name	Basic specifications
10	AX-F2430-PSA03X	PS-A03	100/200 V AC power supply for the AX3650S/AX3800S with hot-swap support (For front-side air intake and rear-side air exhaust only)
11	AX-F2430-PSA03RX	PS-A03R	100/200 V AC power supply for the AX3800S with hot-swap support (For rear-side air intake and front-side air exhaust only) (Note 5) Supported in Ver.11.7 and later
12	AX-F2430-PSD03X	PS-D03	-48 V DC power supply for the AX3650S/AX3800S with hot-swap support (For front-side air intake and rear-side air exhaust only) Supported in Ver.11.7 and later
13	AX-F2430-PSD03RX	PS-D03R	-48 V DC power supply for the AX3800S with hot-swap support (For rear-side air intake and front-side air exhaust only) (Note 5) Supported in Ver.11.7 and later
14	AX-F2430-FAN04X	FAN-04	Fan unit for AX3830S-44XW/AX3830S-44X4QW with hot-swap support (For front-side air intake and rear-side air exhaust only)
15	AX-F2430-FAN04RX	FAN-04R	Fan unit for AX3800S with hot-swap support (For rear-side air intake and front-side air exhaust only) (Note 5) Supported in Ver.11.7 and later
16	AX-F2430-BPNL01X	BPNL-01	Blank panel for the AX3650S/AX3800S power supply unit
<b>Optical transceiver</b>			
1	AX-F6244-3S1TX	SFP-T	SFP for 10GBASE-T/100GBASE-TX/1000BASE-T (UTP: 100 m) (Note 3)
2	AX-F6244-3S1SX	SFP-SX	SFP for 1000BASE-SX (MMF (LC2 core): 2 to 550 m)
3	AX-F6244-3S1LX	SFP-LX	SFP for 1000BASE-LX (MMF (LC2 core): 2 to 550 m) (SMF: 2 m to 5 km)
4	AX-F6244-3SB1UX	SFP-BX1U	SFP for 1000BASE-BX10-U, with single-core, bidirectional, single-mode optical fibers (upstream) (SMF: 0.5 m to 10 km)
5	AX-F6244-3SB1DX	SFP-BX1D	SFP for 1000BASE-BX10-D, with single-core, bidirectional, single-mode optical fibers (downstream) (SMF: 0.5 m to 10 km)
6	AX-F6244-3SB4UX	SFP-BX4U	SFP for 1000BASE-BX40-U, with single-core, bidirectional, single-mode optical fibers (upstream) (SMF: 0.5 m to 40 km)
7	AX-F6244-3SB4DX	SFP-BX4D	SFP for 1000BASE-BX40-D, with single-core, bidirectional, single-mode optical fibers (downstream) (SMF: 0.5 m to 40 km)
8	AX-F6244-3S1LHX	SFP-LH	SFP for 1000BASE-LH (SMF: 2 m to 70 km)
9	AX-F0110-3P1SX	SFPP-SR	SFP+ for 10GBASE-SR (MMF (LC2 core) : 2 to 300 m)
10	AX-F0110-3P1LX	SFPP-LR	SFP+ for 10GBASE-LR (SMF: 2 m to 10 km)
11	AX-F0110-3P1EX	SFPP-ER	SFP+ for 10GBASE-ER (SMF: 2 m to 40 km)
12	AX-F0110-3Q1SX	QSFP-SR4	QSFP+ for 40GBASE-SR4 (MMF (MPO12 core): 0.5 to 150 m) Supported in Ver.11.9 and later
13	AX-F0110-3Q1LX	QSFP-LR4	SFP+ for 40GBASE-LR4 (SMF: 2 m to 10 km) Supported in Ver.11.11 and later
<b>Software</b>			
1	AX-P3830-32AUX	OS-L3SA-U	L3 functionality upgrade software for the AX3800S (with SSH support) • Software for upgrading the L3S light software to the L3S advanced software
2	AX-P3830-31AUX	OS-L3SA-AU	L3 functionality upgrade software for the AX3800S (without SSH support) • Software for upgrading the L3S light software to the L3S advanced software
3	AX-P3650-32VX	OS-L3S-V	SSH functionality upgrade software for the AX3800S • To upgrade software without SSH to software with SSH
4	AX-P3630-F9X	OP-DH6R	IPv6 DHCP relay functionality license for AX3630S/AX3640S/AX3650S/AX3800S

(Note 1) IS-IS will be supported in the future.

(Note 2) The memory card does not include software such as switching software or scripts.

(Note 3) Only 1000BASE-T is supported.

(Note 4) Policy-based routing is supported in Ver.11.9 and later..

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**[Editions history]**

April, 2013 (Ver.11.11 Edition 1)

Note 1: SSH functionality is subject to export control regulations, and might be unavailable for use with exported products.

Note 2: The company names, product names, and names of company-specific features that are included in this document are the registered trademarks or trademarks of their respective owners.

Note 3: Product appearance and specifications are subject to change without notice.

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**ALAXALA Networks Corporation**

URL: <http://www.alaxala.com/en/>

**Shinkawasaki Mitsui Bldg. West Tower,  
1-1-2 Kashimada, Saiwai-ku, Kawasaki-shi,  
Kanagawa, Japan, 212-0058**

**Contact us:**

<http://www.alaxala.com/en/contact/>

Contact us