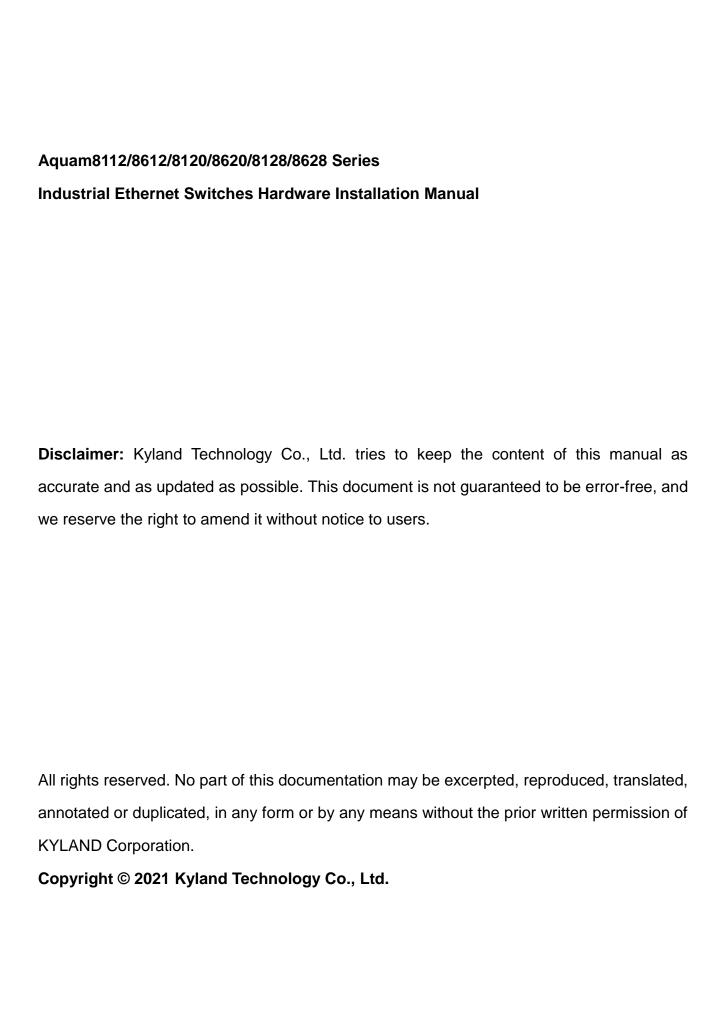# Aquam8112/8612/8120/8620/8128/8628 Series Industrial Ethernet Switches Hardware Installation Manual

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No.: 112023104

KYLAND

Aquam8112/8612/8120/8620/8128/8628 Series

Industrial Ethernet Switches Hardware Installation Manual

Disclaimer: Kyland Technology Co., Ltd. tries to keep the content of this manual as accurate and as updated as possible. This document is not guaranteed to be error-free, and we reserve the right to amend it without notice to users.

Notice for Safety Operation

The product performs reliably as long as it is used according to the guidance. Artificial damage or destruction of the device should be avoided. Before using the device, read this manual carefully for personal and equipment safety. Please keep the manual for further reference. Kyland is not liable to any personal or equipment damage caused by violation of this notice.

- Do not place the device near water sources or damp areas. Keep the ambient relative humidity within the range from 5% to 95% (non-condensing).
- Do not place the device in an environment with high magnetic field, strong shock, or high temperature. Keep the working and storage temperatures within the allowed range.
- Install and place the device securely and firmly.
- Please keep the device clean; if necessary, wipe it with a soft cotton cloth.
- Do not place any irrelevant materials on the device or cables. Ensure adequate heat dissipation and tidy cable layout without knots.
- Wear antistatic gloves or take other protective measures when operating the device.
- Avoid any exposed metal wires because they may be oxidized or electrified.
- Install the device in accordance with related national and local regulations.
- Before power-on, make sure the power supply is within the allowed range of the device. High voltage may damage the device.
- Power connectors and other connectors should be firmly interconnected.
- Do not plug in or out the power supply with wet hands. When the device is powered on, do not touch the device or any parts with wet hands.
- Before operating a device connected to a power cable, remove all jewelry (such as rings, bracelets, watches, and necklaces) or any other metal objects, because they may cause electric shock or burns.
- Do not operate the device or connect or disconnect cables during an electrical storm.
- Use compatible connectors and cables. If you are not sure, contact our sales or technical support personnel for confirmation.

- Do not disassemble the device by yourself. When an anomaly occurs, contact our sales or technical support personnel.

- If any part is lost, contact our sales or technical support personnel to purchase the substitute. Do not purchase parts from other channels.

- Dispose of the device in accordance with relevant national provisions, preventing environmental pollution.

In the following cases, please immediately shut down your power supply and contact your Kyland representative:

- Water gets into the equipment.

- Equipment damage or shell damage.

- Equipment operation or performance has abnormally changed.

- The equipment emits odor, smoke or abnormal noise.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Contents

1 Product Overview

Aquam8112/8612/8120/8620/8128/8628 includes a series of high-performance industrial Ethernet switches developed by Kyland particularly for rail transportation industry. The series devices are applicable to PIS, CCTV, video monitoring system, train control system, and the industrial field with strict requirements on vibration, shock, and EMC compatibility due to the solid closed housing, fanless but heat dissipation-capable chassis, overcurrent, overvoltage protection for power input, sound EMC protection of M12 ports, and IP65 protection class. All the devices meet the requirements stipulated in the EN50155, EN50121 and other industrial standards. The series switches support Bypass power-off direct-connection function and redundancy protocol, guaranteeing the reliable operation of the system. The series switches provide powerful network management functions. The devices can be managed through CLI, Telnet, Web, and SNMP-based network management software. Aquam8612 , Aquam8620 and Aquam8628 series are layer 3 switch that supports the layer 3 routing protocol, and some models of device hardware support NAT conversion. ETBN model type complies with IEC61375-2-3 and IEC61375-2-5, supporting TTDP, TTDB, TRDP functions with high performance NAT function.

The switches support panel mounting. They provide up to four 10/100/1000Base-T(X) Ethernet ports, and twenty-four 10/100Base-T(X) Ethernet ports. The 10/100Base-T(X) Ethernet ports support IEEE802.3at (compatible with IEEE802.3af) POE output. Each POE port can provide a maximum of 30 W feed and the entire PSE is capable of providing a maximum of 120 W feed (Additional 120W can be increased by adding isolated external power supply).

Table 1 Aquam8112/Aquam8612 Models

Model	**Aquam8112-PORT-PS1-PS2**
	Aquam8112-B-PORT-PS1-PS2
	Aquam8612-PORT-PS1-PS2
	Aquam8612-B-PORT-PS1-PS2

	Aquam8612-NAT-PORT-PS1-PS2 **Aquam8612-NAT-B-PORT-PS1-PS2** **Aquam8612-NAT-B-PORT-PS1-PS2-ETBN**
Code definition	Code option
B	Support Bypass function（Gigabit model support only）
NAT	Hardware supports NAT function
Ports: GE, T, P	8T，4GE8T，8P，4GE8P
	Note: *8T: eight 10/100Base-T(X) M12 ports.* *4GE8T: four 10/100/1000Base-T(X) M12 ports; eight 10/100Base-T(X) M12 ports.* *8P: eight 10/100Base-T(X) M12 POE ports.* *4GE8P: four 10/100/1000Base-T(X) M12 ports; eight 10/100Base-T(X) M12 POE ports.*
PS1: power input 1	L2(24-48VDC)、H6(72-110VDC)
PS2: power input 2	L2(24-48VDC)、H6(72-110VDC)
ETBN	TRDP,TTDP,TTDB functions

Table 2 Aquam8120/Aquam8620 Models

	Aquam8120-PORT-PS1-PS2 **Aquam8120-B-PORT-PS1-PS2** **Aquam8620-PORT-PS1-PS2** **Aquam8620-B-PORT-PS1-PS2** **Aquam8620-NAT-PORT-PS1-PS2** **Aquam8620-NAT-B-PORT-PS1-PS2** **Aquam8620-NAT-B-PORT-PS1-PS2-ETBN**
Model	
Code definition	Code option
B	Support Bypass function（Gigabit model support only）
NAT	Hardware supports NAT function

Ports: GE, T, P	16T，4GE16T，16P，4GE16P
	Note:
	16T: sixteen 10/100Base-T(X) M12 ports.
	4GE16T: four 10/100/1000Base-T(X) M12 ports; sixteen 10/100Base-T(X) M12 ports.
	16P: sixteen 10/100Base-T(X) M12 POE ports.
	4GE16P: four 10/100/1000Base-T(X) M12 ports; sixteen 10/100Base-T(X) M12 POE ports.
PS1: power input 1	L2(24-48VDC)、H6(72-110VDC)
PS2: power input 2	L2(24-48VDC)、H6(72-110VDC)
ETBN	TRDP,TTDP,TTDB functions

Table 3 Aquam8128/Aquam8628 Models

Model	**Aquam8128-PORT-PS1-PS2**
	Aquam8128-B-PORT-PS1-PS2
	Aquam8628-PORT-PS1-PS2
	Aquam8628-B-PORT-PS1-PS2
	Aquam8628-NAT-PORT-PS1-PS2
	Aquam8628-NAT-B-PORT-PS1-PS2
	Aquam8628-NAT-B-PORT-PS1-PS2-ETBN
Code definition	Code option
B	Support Bypass function（Gigabit model support only）
NAT	Hardware supports NAT function
Ports: GE, T, P	24T，4GE24T，24P，4GE24P
	Note:
	24T: twenty-four 10/100Base-T(X) M12 ports.
	4GE24T: four 10/100/1000Base-T(X) M12 ports; twenty-four 10/100Base-T(X) M12 ports.

	24P: twenty-four 10/100Base-T(X) M12 POE ports. *4GE24P: four 10/100/1000Base-T(X) M12 ports; twenty-four 10/100Base-T(X) M12 POE ports.*
PS1: power input 1	L2(24-48VDC)、H6(72-110VDC)
PS2: power input 2	L2(24-48VDC)、H6(72-110VDC)
ETBN	TRDP,TTDP,TTDB functions

Table 4 Optional Accessories

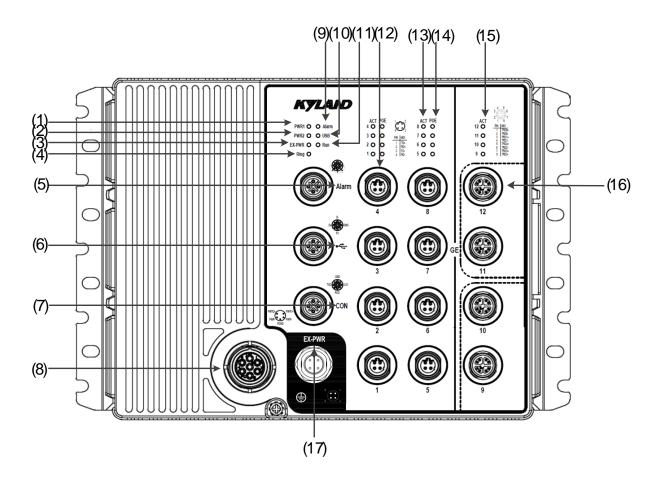| Model	Description	Remarks
M23-A-5P-F-Crimp	Female cable connector with M23, A-Coding, 5 Pin	Power interface Connector
M12-A-4P-M	Male cable connector with M12, A-Coding, 4 Pin	Console or USB interface Connector
M12-A-4P-M	Male cable connector with M12, A-Coding, 4 Pin	Alarm connector
M12-D-4P-M-Crimp	Male cable connector with M12, D-Coding, 4 Pin	10/100Base-TXinterface Connector
M12-X-8P-M-Crimp	Male cable connector with M12, X-Coding, 8 Pin	10/100/1000Base-TX Connector
Power200-M23-M12	Power Adapter	External power supply

> **Note:**
>
> We reserve the right to amend the product information listed in this table without notice. To obtain the latest information, you can contact our sales or technical support personnel.

2 Structure and Interface

> ⚠️ **Caution:**
>
> It is recommended to purchase the port dustproof shield (optional) to keep ports clean and ensure switch performance.
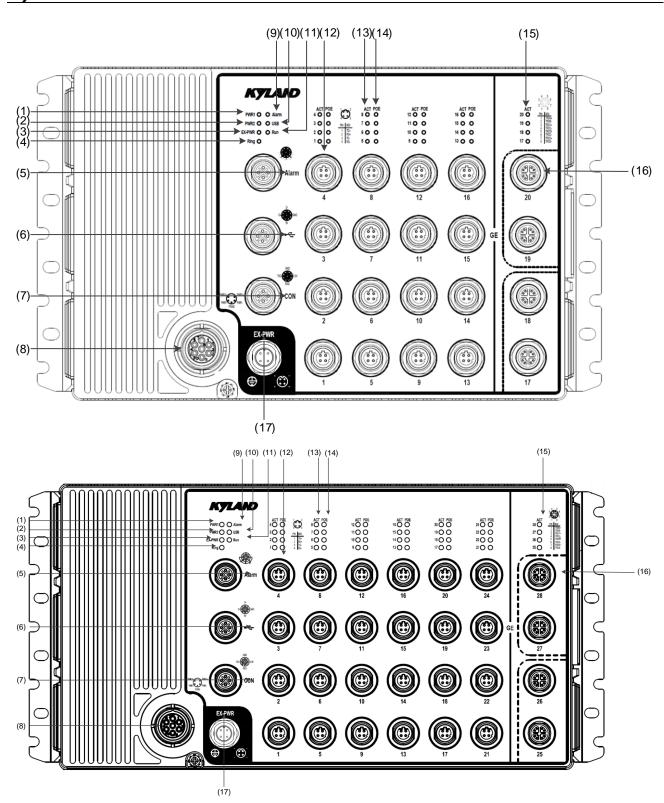
Figure 1 Front Panel

(1) Power 1 LED   (2) Power 2 LED   (3) External power LED

(4) Ring LED   (5) Alarm port   (6) USB Port

(7) Console port   (8) Main Power port   (9) Alarm LED

(10) USB LED	(11) Ring LED

(12)   10/100Base-T(X) Ethernet port

(13)   10/100Base-T(X) Ethernet port connection status LED

(14)   10/100Base-T(X) Ethernet Port POE LED

(15)   10/100/1000Base-T(X) Ethernet port connection status LED

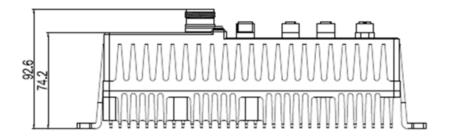(16)   10/100/1000Base-T(X) Ethernet port

(17)   External Power Port*

Note:

● Non-POE products have no POE indicator and no external power interface and indicator.

● For products that support the Bypass function, the two gigabit ports enclosed in the dashed

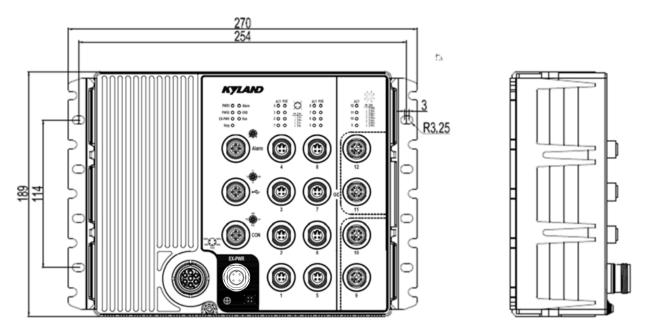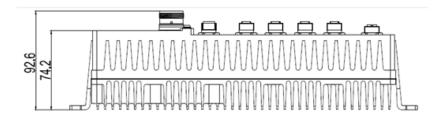lines are one pair of Bypass ports.
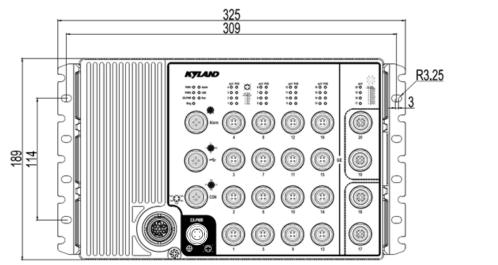
3 Mounting

3.1 Dimension Drawing

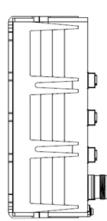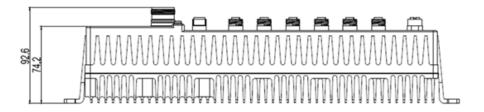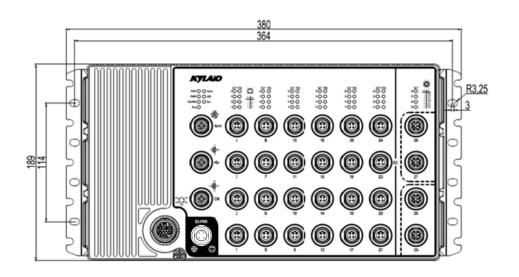Figure 2 Aquam8112/8612 Series Dimensions (unit: mm)
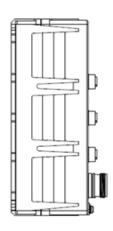
Figure 3 Aquam8120/8620 Series Dimensions (unit: mm)

Figure 4 Aquam8128/8628 Series Dimensions (unit: mm)

> **Caution:**
>
> ● As part of the heat dissipation system, the switch housing becomes hot during operation. Please use caution when coming in contact and avoid covering the switch housing when the switch is running.
>
> ● The figures in this manual are only for reference.

3.2 Mounting Modes and Steps

The series devices support panel mounting. Before installation, make sure that the following requirements are met.

1) Environment: temperature (-40℃ to 70℃), ambient relative humidity (5% to 95%, non-condensing).

2) Power requirement: The power input is within the voltage range of the switch.

3) Grounding resistance: <5Ω

4) No direct sunlight, distant from heat source and areas with strong electromagnetic interference.

5) Devices are to be installed in an authority certified enclosure and accessible only by the use of a tool.

6) Devices should be installed and accessed by service personnel or users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.

● Mounting

Step 1: Select the mounting position (on a wall or inner wall of a cabinet) for the device and guarantee adequate space and heat dissipation.

Step 2: Punch four holes in the selected position according to the dimensions of the device. Put the screw holes of device in alignment with the corresponding punched holes. Then use four screws to secure the device to the wall or inner wall of a cabinet.
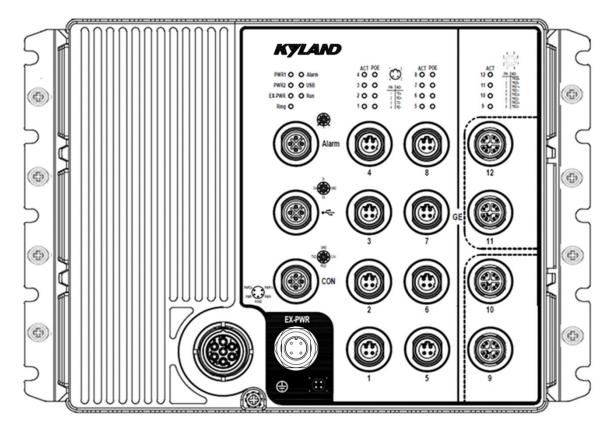
Figure 5 Panel Mounting

● Dismounting

Loosen the screws with a screwdriver, remove the screws and device from the wall or inner wall of a cabinet to complete dismounting.

4 Connection

10/100Base-T(X) port connector, 10/100/1000Base-T(X) port connector, console port connector, USB port connector, power port connector, and external power port connection cable are all optional (For details, see Table 4). That is, these components need to be purchased separately as required.

4.1 10/100Base-T(X) Ethernet Port

4.1.1 Functions

● Data Transmission

10/100Base-T(X) Ethernet port is equipped with M12 connector, which is dustproof, waterproof, and anti-vibration. The port is self-adaptive. It can automatically configure itself to work in 10M or 100M state, full or half duplex mode. The port can also adapt to MDI or MDI-X connection automatically. You can connect the port to a terminal or network device with a straight-through or cross-over cable.

● POE

Serving as the Power Sourcing Equipment (PSE), the switches can provide power supply for PDs through 10/100Base-T(X) Ethernet ports. The 10/100Base-T(X) Ethernet ports support IEEE802.3at (compatible with IEEE802.3af) POE output. Each POE port can provide a maximum of 30 W feed and the entire PSE is capable of providing a maximum of 240 W feed (External power supply is needed).

1. POE Definition

POE indicates that the device can provide power supply for PDs through Ethernet ports. The device supports a maximum distance of 100m for power supply.

2. POE Power Supply

The device supports data wires to provide power supply for PDs.

4.1.2 Pin Definitions and Wiring Sequence

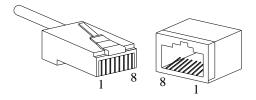● Pin Definition

Figure 6 M12 Port (female)

Figure 7 RJ45 Port

You can use an M12-M12 or M12-RJ45 cable to connect the port for communication. The preceding figures show the pin numbers of an M12 port and an RJ45 port. For pin definitions, see the following table.

Table 5 Pin Definitions of M12/RJ45 Port

Pin	MDI-X Signal	MDI Signal	POE
M12 Port			
1	Receive Data+ (RD+)	Transmit Data+ (TD+)	V+
2	Transmit Data+ (TD+)	Receive Data+ (RD+)	V-
3	Receive Data- (RD-)	Transmit Data- (TD-)	V+
4	Transmit Data- (TD-)	Receive Data- (RD-)	V-
RJ45 Port			
1	Receive Data+ (RD+)	Transmit Data+ (TD+)	--
2	Receive Data- (RD-)	Transmit Data- (TD-)	--
3	Transmit Data+ (TD+)	Receive Data+ (RD+)	--
6	Transmit Data- (TD-)	Receive Data- (RD-)	--
4，5，7，8	Unused	Unused	--

	Note:
✏️ NOTE	"+" and "-" indicate level polarities.

● Wiring Sequence

Figure 8 Connection Using Straight-through/Cross-over Cable

	Note:
✏️ NOTE	● The color of the cable for RJ45 connector meets the 568B standard: 1-orange and white, 2-orange, 3-green and white, 4-blue, 5-blue and white, 6-green, 7-brown and white, and 8-brown.
	● The 1 and 3, 2 and 4 pins on the M12 interface are differentiated signal pins in pairs. The orange-and-white and orange pair, green-and-white and green pair, blue-and-white and blue pair, and brown-and-white and brown pair in twist pair cables must be used in correct pairs while being connected with the signal pins. For example, the above figure, the orange-and-white and orange and green-and-white and green pairs are used.
	● POE ports will not deliver any power for a certain time when a 10ms interruption occurs on the power input. A suggested workaround is to connect a UPS to prevent power interruption of the

PSE.

4.2 10/100/1000Base-T(X) Ethernet Port

10/100/1000Base-T(X) Ethernet port is equipped with M12 connector, which is dustproof, waterproof, and anti-vibration. The port is self-adaptive. It can automatically configure itself to work in 10M or 100M state, full or half duplex mode. The port can also adapt to MDI or MDI-X connection automatically. You can connect the port to a terminal or network device with a straight-through or cross-over cable.

● Pin Definition

Figure 9 M12 Port (female)

Figure 10 RJ45 Port

You can use an M12-M12 or M12-RJ45 cable to connect the port for communication. The preceding figures show the pin numbers of an M12 port and an RJ45 port. For pin definitions, see the following table.

Table 6 Pin Definitions of M12/RJ45 Port

Pin	MDI-X Signal	MDI Signal
M12 Port		
1	Transmit/Receive Data (TRD1+)	Transmit/Receive Data (TRD0+)
2	Transmit/Receive Data (TRD1-)	Transmit/Receive Data (TRD0-)
3	Transmit/Receive Data (TRD0+)	Transmit/Receive Data (TRD1+)
4	Transmit/Receive Data (TRD0-)	Transmit/Receive Data (TRD1-)

5	Transmit/Receive Data (TRD3+)	Transmit/Receive Data (TRD2+)
6	Transmit/Receive Data (TRD3-)	Transmit/Receive Data (TRD2-)
7	Transmit/Receive Data (TRD2+)	Transmit/Receive Data (TRD3+)
8	Transmit/Receive Data (TRD2-)	Transmit/Receive Data (TRD3-)
RJ45 Port		
1	Transmit/Receive Data (TRD1+)	Transmit/Receive Data (TRD0+)
2	Transmit/Receive Data (TRD1-)	Transmit/Receive Data (TRD0-)
3	Transmit/Receive Data (TRD0+)	Transmit/Receive Data (TRD1+)
4	Transmit/Receive Data (TRD3+)	Transmit/Receive Data (TRD2+)
5	Transmit/Receive Data (TRD3-)	Transmit/Receive Data (TRD2-)
6	Transmit/Receive Data (TRD0-)	Transmit/Receive Data (TRD1-)
7	Transmit/Receive Data (TRD2+)	Transmit/Receive Data (TRD3+)
8	Transmit/Receive Data (TRD2-)	Transmit/Receive Data (TRD3-)

Note:

"+" and "-" indicate level polarities.

● Wiring Sequence

Facing the A
direction →

Facing the B
direction ←

M12   Straight-through cable   M12 RJ45
1 ——————————————— 1   1
2 ——————————————— 2   2
3 ——————————————— 3   3
4 ——————————————— 4   6
5 ——————————————— 5   4
6 ——————————————— 6   5
7 ——————————————— 7   7
8 ——————————————— 8   8

M12   Cross-over cable   M12 RJ45
1 ——————————————— 3   3
2 ——————————————— 4   6
3 ——————————————— 1   1
4 ——————————————— 2   2
5 ——————————————— 7   7
6 ——————————————— 8   8
7 ——————————————— 5   4
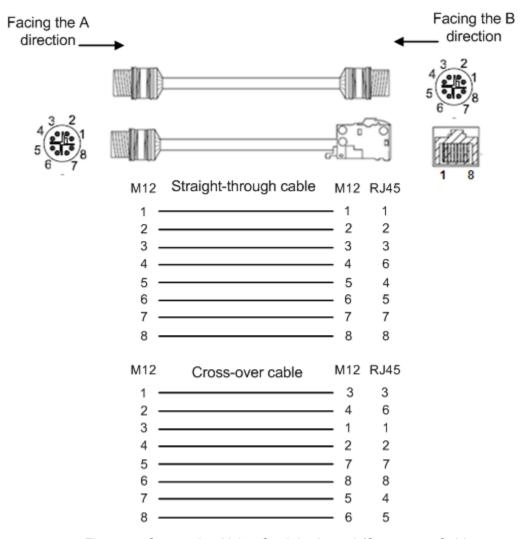8 ——————————————— 6   5

Figure 11 Connection Using Straight-through/Cross-over Cable

Note:

The color of the cable for RJ45 connector meets the 568B standard: 1-orange and white, 2-orange, 3-green and white, 4-blue, 5-blue and white, 6-green, 7-brown and white, and 8-brown.

4.3 Console Port

There is a console port on the front panel. The port is equipped with M12 connector. Connect the console port of the switch to the 9-pin serial port of a PC with an M12-DB9 console cable. You can configure, maintain, and manage the switch by running Hyper Terminal in Windows OS of a computer.
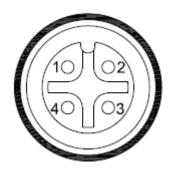
Figure 12 Console Port (female)

● M12-DB9 Console Cable

One end of the M12-DB9 cable is an M12 connector to be inserted into the console port of the device, and the other end is the DB9 connector to be inserted into the 9-pin serial port of a PC.
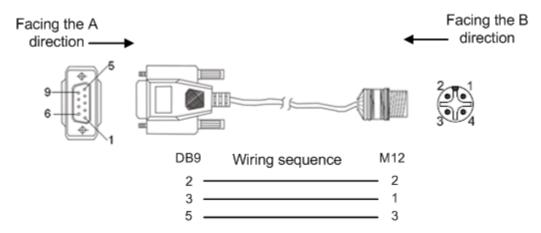

Figure 13 Wiring Sequence M12-DB9 Console Cable

Table 7 Pin Definition of DB9 Port (9-Pin Serial Port) and M12 Port (Console Port)

DB9 Port (9-Pin Serial Port)		M12 Port (Console Port)	
Pin	Signal	Pin	Signal
2	RXD (Receive Data)	1	RXD (Receive Data)
3	TXD (Transmit Data)	2	TXD (Transmit Data)
5	GND (Grounding)	3	GND (Grounding)

4.4 Grounding

Grounding protects the device from lightning and interference. Therefore, you must ground the device properly. You need to ground the device before it is powered on and disconnect

the grounding cable after the device is powered off. There is a grounding screw (see
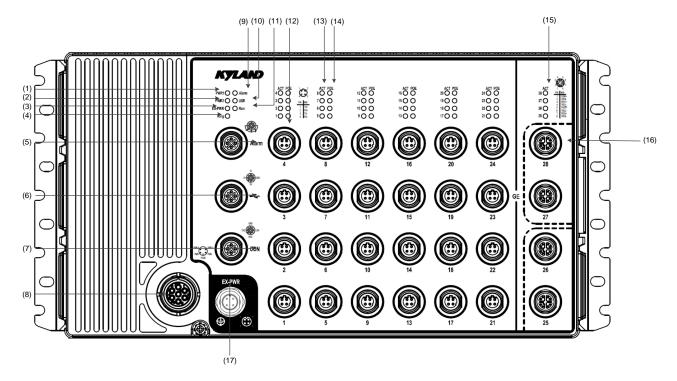

Figure 1) on the front panel of the device. The screw is for chassis grounding. After crimping

one end of the grounding cable to a cold pressed terminal, secure the end of the grounding

cable to the grounding screw and firmly connect the other end to ground.

Note:

Cross-sectional area of the chassis grounding cable>2.5mm^2; Grounding resistance<5Ω.

4.5 Power Port

There is a main power port on the front panel of the device. You need to connect the power

cable to the power port to provide power to the device. The main power port is equipped with

5 Pin M23 connector, which is dustproof, waterproof, and anti-vibration. The device supports

redundant power input, when one power input is faulty, the device can continue operating

properly, thereby improving network reliability.

Note:

0.75mm^2<Cross-sectional area of the power cable<2.5mm^2; grounding resistance<5Ω.

● Pin Definition

Figure 14 Main Power Port (male)

Table 8 Pin Definitions of Power Port

Pin	DC Wiring Definition
1	PWR1：+
2	PWR1：-
3	PGND
4	PWR2：-
5	PWR2：+

● Wiring and Mounting

Step 1: Ground the device properly according to section 4.4.

Step 2: Insert one end of the power cable into the M23 connector firmly.

Step 3: Insert the M23 connector with the connected cable into the power port on the device.

Step 4: Connect the other end of the power cable to an external power supply system according to the power supply requirements of the device. View the status of the power LED. If the LED is on, the power is connected properly.

Caution:

● Before connecting the device to power supply, make sure that the power input meets the power requirement. If connected to an incorrect power input, the device may be damaged.

Warning:

● Do not touch any exposed conducting wire, terminal, or component with a voltage warning sign, because it may cause personal injury.

● Do not remove any part or plug in or out any connector when the device is powered on.

4.6 Alarm Port

The device provides an alarm terminal block on the front panel for alarm output. When the switch works properly, the normally-open contacts of the alarm relay are closed and the normally-closed contacts are open; when an alarm occurs, the normally-open contacts are open and the normally-closed contacts are closed. The alarm is outputted through a M12-A-4P-M terminal block.

● Pin Definition

Figure 15 Main Power Port (male)

Table 9 Pin Definitions of Power Port

Pin	Wiring Definition
1	COM
2	Open
3	NC
4	Close

> **Note：**
>
> Pin 1 and pin 2 are normally-open contacts; pin 1 and pin 4 are normally-closed contacts. When the switch works properly, pin 1 and pin 2 are closed, pin 1 and pin 4 are open; when an alarm occurs, pin 1 and pin 2 are open; pin 1 and pin 4 are closed.

● Wiring and Mounting

Step 1: Remove the alarm terminal block from the switch.

Step 2: Secure the four wires for alarm into the alarm terminal block in the required sequence.

Step 3: Insert the alarm terminal block into its socket.

4.7 Bypass Port

The series Gigabit switches can provide two pairs of Bypass ports, as shown in Figure 16, port 11 and port 12 are one pair of Bypass ports. When the power is interrupted, the Bypass function is enabled, the relay switch jumps to the 2 state so that switch A and switch B are directly connected physically. After the power is restored and the device runs properly, the Bypass function is disabled and the relay switch jumps to the 1 state so that switch A and switch B communicate with each other through the switch Aquam8112/8612/8120/8620/8128/8628.

Figure 16 Bypass

4.8 USB Port

There is a USB port on the front panel. The port is equipped with M12 connector. The custom U disk is M12 interface, which is dustproof, waterproof and shockproof. The device can recognizes the files inserted in the U Disk and performs a series of operations based on the files, such as automatically importing configuration files, manually exporting configuration files and system logs, and manually importing configuration files.

● Pin Definition

Figure 17 M12 Port (female)

Table 10 Pin Definitions of M12 Port

PIN	Signal
1	+5V
2	D+
3	D-
4	GND

You can run the commands in Table 11 to perform operations.

Table 11 CLI Commands for the device

View	Command	Description
General mode	SWITCH#usb auto SWITCH#save	Enable the U disk to automatically load the configuration file when the system starts.
General mode	SWITCH#usb backup SWITCH#save	Turn off the U disk to automatically load the configuration file when the system starts.
General mode	SWITCH#usb config-file	Copy the switch configuration file to the U disk.
General mode	SWITCH#usb warning	Enable the usb alarm indicator function.

4.9 External power Port

There is an external power port on the front panel of the device. You need to connect the power cable to the power port to provide power to the device. The external power port is

equipped with 4 Pin M12 connector. Additional 120W can be increased by adding isolated external power supply.

Note:

For devices that only support POE, there is an external power port. Non-POE models do not have this interface.
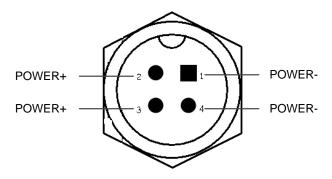

Figure 18 External Power Port (male)

Table 12 Pin Definitions of M12

Pin	DC Wiring Definition
1	POWER-
2	POWER+
3	POWER+
4	POWER-

● Wiring and Mounting

Step 1: Ground the device properly according to section 4.4.

Step 2: Insert one end of the power cable into the M12 connector firmly.

Step 3: Insert the M12 connector with the connected cable into the power port on the device.

Step 4: Connect the other end of the power cable to an external power supply system according to the power supply requirements of the device. View the status of the power LED. If the LED is on, the power is connected properly.

Caution:

● Before connecting the device to power supply, make sure that the power input meets the power requirement. If connected to an incorrect power input, the device may be damaged.

Warning:

● Do not touch any exposed conducting wire, terminal, or component with a voltage warning sign, because it may cause personal injury.

● Do not remove any part or plug in or out any connector when the device is powered on.

5 LEDs

Table 13 Front Panel LEDs

LED	State	Description
Power 1 LED-PWR1	On	The power 1 is connected and operates properly.
	Off	The power 1 is not connected or operates abnormally.
Power 2 LED-PWR2	On	The power 2 is connected and operates properly.
	Off	The power 2 is not connected or operates abnormally.
External Power LED-EX-PWR	On	The external power is connected and operates properly.
	Off	The external power is not connected or operates abnormally.
Running LED-Run	On	The device is starting up
	Blinking	The CPU operates properly.
	Off	The device does not start up
Alarm LED-Alarm	On	An alarm occurs.
	Off	No alarm occurs.
Ring LED-Ring	On	Root (DRP mode)
	Blinking	B-Root or Normal (DRP mode)
	Off	No ring
USB LED-USB	On	U disk works fine
	Blinking	U disk transmission failed
	Off	Disable or no U disk
Ethernet port connection status LED-ACT	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
Ethernet port POE LED-POE	On	The POE port provides power supply normally
	Blinking	The POE port provides power supply abnormally

	Off	The POE port provides no power supply

Note:

Non-POE products have no POE indicator and no external power interface and indicator.

6 Switch Access

You can access the switch in any of the following ways.

6.1 Access through Console Port

Step 1: Connect the console port of the switch to the 9-pin serial port of a PC with the

M12-DB9 console cable.

Step 2: Open Hyper Terminal in Windows OS. On the computer's desktop, click Start → All

Programs → Accessories → Communications → Hyper Terminal.

Step 3: Create a connection "Switch", as shown in the following figure.

Figure 19 Creating a Connection

Step 4: Connect the communication port in use, as shown in the following figure.

Figure 20 Selecting a Serial Port

	Note:
🖊 NOTE	To confirm the communication port in use, right-click [My Computer] and select [Property]. Click [Hardware] → [Device Manager] → [Port] to view the communication port.

Step 5: Set port parameters (Bits per second: 115200, Data bits: 8, Parity: None, Stop bits: 1 and Flow control: None), as shown in the following figure.

Figure 21 Setting Port Parameters

Step 6: Click OK to enter the switch CLI. Then you can run the commands in Table 14 to
perform operations.

Table 14 CLI Commands for the device

View	Command	Description
General mode	SWITCH>enable	Enter the privileged mode
Privileged mode	SWITCH#show interface vlan 1	Query the IP address of the switch
Privileged mode	SWITCH#show version	Query the version of the switch
Privileged mode	SWITCH#reboot	Restart the switch
Privileged mode	SWITCH# reload defaults SWITCH#save	Restore the factory default settings
Privileged mode	SWITCH#config terminal	Enter the configuration mode

6.2 Access through Telnet

Step 1: Connect the network port of the PC to the Ethernet port of the device with a network
cable.

Step 2: On the Windows desktop, click Start and Run. The Run Dialog box is displayed. Enter "telnet *IP address*". For example, if the IP address of the switch is 192.168.0.2 (default IP address of a Kyland switch), enter "telnet 192.168.0.2" in the dialog box.
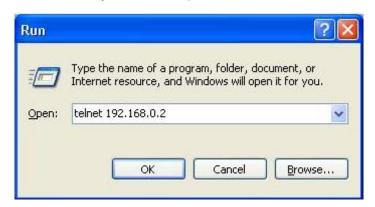
Figure 22 Access through Telnet

Step 3: Click OK. The Telnet CLI is displayed. Then you can run the commands in Table 14 to perform operations.

6.3 Access through Web

Step 1: Connect the network port of the PC to the Ethernet port of the device with a network cable.

Step 2: Enter the IP address(default IP address:192.168.0.2) of the switch in the address box of the browser. The user login interface is displayed. You can log in to the Web UI by using default user name "admin" and password "123".

Note:

● IE8.0 or a later version is recommended.

● For details about how to access the switch and other operation, refer to the Web operation manual in the delivered CD.

7 Basic Features and Specifications

Power Requirements

Power Identifier	Rated Voltage Range	Maximum Voltage Range
L2	24-48VDC	16.8-60VDC
H6	72-110VDC	50.4-137.5VDC
External Power Supply	54.5VDC	54-57VDC
Terminal Block	Main Power Supply: 5-pin M23 connector External Power Supply: 4-pin M12 connector	

Rated Power Consumption

Rated Power Consumption	Aquam8112/8612 without POE: 24W (MAX) Aquam8112/8612 with POE: 174.1W (MAX) Aquam8612-NAT without POE: 25.88W(MAX) Aquam8612-NAT with POE: 184W(MAX) Aquam8120/8620 without POE: 30.5W (MAX) Aquam8120/8620 with POE: 179.2W (MAX) Aquam8620-NAT without POE: 31.75W(MAX) Aquam8620-NAT with POE: 180.6W(MAX) Aquam8128/8628 without POE：37.9W (MAX) Aquam8128/8628 with POE：183.5(MAX) Aquam8128/8628-NAT without POE：39.13W (MAX) Aquam8128/8628-NAT with POE：185(MAX)
Rated Current	Aquam8112/8612 without POE: MAX 1.0A @ 24VDC MAX 0.55A @ 48VDC MAX 0.35A @ 72VDC MAX 0.25A @ 110VDC Aquam8112/8612 with POE: MAX 6.72A @ 24VDC

MAX   3.25A @ 48VDC

MAX   2.38A @ 72VDC

MAX   1.52A @ 110VDC

Aquam8612-NAT without POE: MAX   1.01A @ 24VDC

MAX   0.53A @ 48VDC

MAX   0.36A @ 72VDC

MAX   0.23A @ 110VDC

Aquam8612-NAT with POE：   MAX   6.78A @ 24VDC

MAX   3.29A @ 48VDC

MAX   2.41A @ 72VDC

MAX   1.55A @ 110VDC

Aquam8120/8620 without POE: MAX   1.25A @ 24VDC

MAX   0.65A @ 48VDC

MAX   0.45A @ 72VDC

MAX   0.3A @ 110VDC

Aquam8120/8620 with POE: MAX   7.1A @ 24VDC

MAX   3.5A @ 48VDC

MAX   2.49A @ 72VDC

MAX   1.62A @ 110VDC

Aquam8620-NAT without POE: MAX   1.25A @ 24VDC

MAX   0.65A @ 48VDC

MAX   0.44A @ 72VDC

MAX   0.28A @ 110VDC

Aquam8620-NAT   with POE: MAX   7.13A @ 24VDC

MAX   3.38A @ 48VDC

MAX   2.5A @ 72VDC

MAX   1.64A @ 110VDC

Aquam8128/8628 without POE: MAX   2.35A @ 24VDC

	MAX 0.78A @ 48VDC
	MAX 0.5A @ 72VDC
	MAX 0.35A @ 110VDC
	Aquam8128/8628 with POE: MAX 6.28A @ 24VDC
	MAX 3.19A @ 48VDC
	MAX 2.38A @ 72VDC
	MAX 1.67A @ 110VDC
	Aquam8628-NAT without POE: MAX 2.38A @ 24VDC
	MAX 0.81A @ 48VDC
	MAX 0.51A @ 72VDC
	MAX 0.34A @ 110VDC
	Aquam8628-NAT with POE: MAX 6.36A @ 24VDC
	MAX 3.28A @ 48VDC
	MAX 2.5A @ 72VDC
	MAX 1.69A @ 110VDC

Physical Characteristics

Housing:	Metal, fanless
Installation	Panel mounting
Dimensions(W×H×D)	Aquam8112/8612: 270mm×189mm×92.6mm Aquam8120/8620: 325mm×189mm×92.6mm Aquam8128/8628: 380mm×189mm×92.6mm (Including the power supply protruding from the casing surface)
Weight:	< 5.1 Kg

Environmental Limits

Ambient temperature	-40℃～+70℃
Storage temperature	-40℃～+85℃
Ambient relative humidity	5%～95% (non-condensing)

MTBF

MTBF	Aquam8112/8612：535254h
	Aquam8120/8620：602392h
	Aquam8128/8628：496657h

Warranty

Warranty	Five years

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