ASCENT
Communication Technology

ACT AS2348E
L2 GbE Switch

Hardware Installation Guide

Revision B

ACT AS2348E L2 Gigabit Ethernet Switch

Installation Guide

ACT Document Number: ACT AS2348E L2 Switch Hardware Installation

Quick Reference Guide Revision B

This document is produced to assist professional and properly trained personnel with installation and maintenance issues for the product. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice.

For more information, contact ACT: support@ascentcomtec.com

Revision History

Revision	Date	Reason for Change
A	12/13/2018	Initial release
B	12/16/2018	Updated sections

Table of Contents

1 AS2348E Introduction

The document describes the characteristics and parameters of AS2348E and gives an overview of AS2348E.

1.1 Standard Configuration

The accessory ports of AS2348E is consist of three parts: 48 gigabit Ethernet RJ45 ports, 8 gigabit Ethernet SFP ports and 1 console port. See table 1-1.

Table **Error! No text of specified style in document.**-1 Attributes of the necessary port

Port Name	Attribute
Gigabit Ethernet electrical port	Electrical port: 10/100/1000M auto-adaptation, MDI/MDIX auto-identification, UTP(RJ45) port and the LINK/ACT indicators
1000M Ethernet optical port	1000M SFP port with the LINK/ACT indicator
Console port	A mini USB port with a rate of 9600 bps

Figure **Error! No text of specified style in document.**-1 Front template of the AS2348E switch

Table **Error! No text of specified style in document.**-2 Parts at the front template of the AS2348E switch

No.	Abbrev.	Name	Description
1	SYS	System indicator	If the indicator is always on, the system is being started. If the indicator flickers, the system works normally.
2	PWR	Power indicator	If the switch is powered on, the indicator is on.
3	CONSOLE	Console port	Manages the switch locally.
4	49-56	8 1000M SFP ports	Forwards the 1000M Ethernet optical signals.
5	1-48	48 1000Base-T ports	Forward the 1000M-Ethernet electrical signals.

Besides, AS2348E has a grounding column, a power socket and a power on-off at its back.

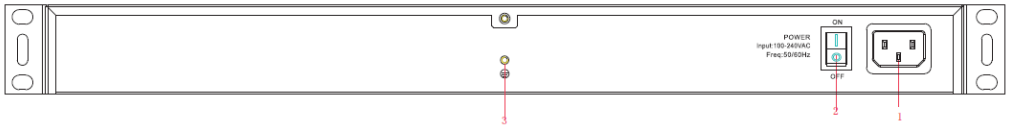


Figure **Error! No text of specified style in document.**-2 Back template of the AS2348E switch

Table **Error! No text of specified style in document.**-3 Parts at the back template of the AS2348E switch

No.	Abbrev.	Name	Description
1	/	AC power socket	AC100-240V
2	/	Power on-off	Pressing upward means opening power, while pressing downward means cutting off the power.
3	/	Grounding column	The grounding must be fine.

1.2 Characteristic Parameters of AS2348E

Protocol Standard	
Supported Standard	IEEE 802.1d Spanning Tree Protocol
	IEEE 802.1s multiple spanning trees
	IEEE 802.1p Class of Service
	IEEE 802.1q tagged VLAN
	IEEE 802.3x Flow control
	IEEE 802.3z asymmetric flow control
	IEEE 802.3ad Link aggregation
Network Management Standard	RFC 1157 SNMP v1/v2
	RFC 1213 MIB II
	RFC 1757 RMON 1, 2, 3, 9
Memory	Flash Memory: 16M Bytes;
	SDRAM: 256Mbytes;
Hardware Attributes	
Standard Configuration	48 10/100/1000 BASE-T ports
	8 gigabit Ethernet SFP ports
	1 console port
Specifications	442.50 mm × 315 mm × 44 mm
Working Temperature/Humidity	0 °C to +40 °C; 10 % to 85 % (non-condensing)
Storage Temperature/ Humidity	-40 °C to 80 °C; 5 % to 95 % (non-condensing)
Power Characteristics	Input voltage: 100 V_{AC} to 240 V_{AC}
	Input frequency: 47 Hz to 63 Hz
	Input current: 1.5 A (max.)
	Output voltage: 12 V_{DC}
	Output current: 6 A
Power Consumption	54 W
Weight	4.2 kg

1.3 ROHS Description

Part Name	Toxic or Hazardous Substances and Elements					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
PCBA	O	O	O	O	O	O
Mental Parts	O	O	O	O	O	O
Plastic & Polymer Parts	O	O	O	O	O	O
Cables & Cable Assembles	O	O	O	O	O	O
Packaging Materials & Assembles	O	O	O	O	O	O

This table is prepared in accordance with the provisions of SJ/T11364.

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T26572

X: Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T26572.

The referenced environment-friendly use period logo is determined based on the normal operating conditions (such as temperature and humidity)

(NOTE: These statements apply only to the China RoHS regulations.)

2 Installation Preparation

2.1 Cautions

Similar to other electronic products, the semiconductor chip easily gets damaged if you power on and off abruptly and frequently. To restart up the switch of AS2348E, you have to open the power on-off three or five seconds after the power is cut off.

Avoid severe collision or falling down from the height to protect the parts in the switch.

Use correct outside ports to connect the switch of AS2348E. Do not insert the Ethernet plug into the console port (RJ45 8-line socket). Similarly, do not insert the console cable into the console port (RJ45 8-line socket).

Note:

1) When you plug or dial out the power line, keep the power line horizontal with the power socket.

2) When the lifetime of our products ends, handle them according to national laws and regulations, or send these products to our company for collective processing.

2.2 Safety Advice

2.2.1 Safety Principles

- Keep dustless and clean during or after the installation.
- Put the cover at the safe place.
- Put tools at the right place where they are not easily falling down.
- Put on relatively tight clothes, fasten the tie or scarf well and roll up the sleeve, avoiding stumbling the machine box.
- Put on the protective glasses if the environment may cause damage to your eyes.
- Avoid incorrect operations that may cause damage to human or devices.

2.2.2 Safety Notices

- Read the installation guide carefully before you operate the system.
- Only professionals are allowed to install or replace the switch.
- Pull out the AC power socket and close the direct-current power before operating on the machine box or working beside the power supply.
- The final configuration of products must comply with relative national laws and regulations.

2.2.3 Safety Principles for Live Working

When you work under electricity, following the following principles:

- Put off ornaments, such as ring, necklace, watch and bracelet, before you operate under live working. When metal articles connect the power to the ground, short circuit happens and components may be damaged.
- Pull out the AC power socket and close the direct-current power before operating on the machine box or working beside the power supply.
- When the power is on, do not touch the power.
- Correctly connect the device and the power socket.
- Only professionals are allowed to operate and maintain the device.
- Read the installation guide carefully before the system is powered on.

Note:

1. Check potential dangers, such as the humid floor, ungrounded extensible power line and tatty power line.
2. Install the emergent on-off at the working room for turning off the power when trouble happens.
3. Turn off the power on-off of the switch and plug off the power line before installing or uninstalling the machine box or working beside the power.
4. Do not work alone if potential dangers exist.
5. Cut off the power before checkout.
6. If trouble happens, take the following measures:
   a. Cut off the system's power.
   b. Alarm.
   c. Take proper measures to help persons who are hit by the disaster. Artificial respiration is needed if necessary.
   d. Seek for medical help, or judge the loss and seek for available help.

2.2.4 Electrostatic Discharge Prevention

Electrostatic discharge may damage devices and circuits. Improper treatment may cause the switch to malfunction completely or discontinuously.

Move or locate the devices according to the measures of electrostatic discharge prevention, ensuring the machine box connects the ground. Another measure is to wear the static-proof hand ring. If there is no hand ring, use the metal clip with the metal cable to clip the unpainted metal part of the machine box. In this case, the static is discharged to the ground through the metal cable of the clip. You can also discharge the static to the ground through your body.

2.3 Requirements for Common Locations

This part describes the requirements for the installation locations.

2.3.1 Environment

The switch can be installed on the desk or the cabinet. The location of the machine box, cabinet planning and indoor cabling are very important for normal system's function. Short distance between devices, bad ventilation and untouchable control plate will cause maintenance problems, systematic faulty and breakdown.

For location planning and device locating, refer to section 2.3.2 "Location Configuration Prevention".

2.3.2 Location Configuration Prevention

The following preventive measures assist you to design the proper environment for the switch.

- Make sure that the workshop is well-ventilated, the heat of electrical devices is well-discharged and sufficient air circulation is provided for device cooling.
- Avoid to damage devices by following the electrostatic discharge prevention procedure.
- Put the machine box at the place where cool air can blow off the heat inside the machine box. Make sure the machine box is sealed because the opened machine box will reverse the cool air flow.

2.3.3 Cabinet Configuration

The following content assists you to make a proper cabinet configuration:

- Each device on the cabinet gives off heat when it runs. Therefore, the sealed cabinet must have the heat-discharge outlet and the cooling fan. Do not put the devices too close, avoiding bad ventilation.
- When you install the machine box at the open cabinet, prevent the frame of the cabinet from blocking the airway of the machine box.
- Ensure that nice ventilation is provided for the devices installed at the bottom of the cabinet.
- The clapboard separates exhaust gas and inflow air, and boost the cool air to flow in the machine box. The best location of the clapboard is decided by the air flow mode in the machine box, which can be obtained through different location tests.

2.3.4 Power Requirements

Make sure that the power supply has nice grounding and the power at the input side of the switch is reliable. The voltage control can be installed if necessary. At least a 240 V, 10A fuse or a breaker is provided in the phase line if you prepare the short-circuit prevention measures for a building.

Warning If the power supply system does not have good grounding, or the input power disturbs too much and excessive pulses exist, the error code rate of communication devices increases and even the hardware system will be damaged.

2.4 Installation Tools and Device

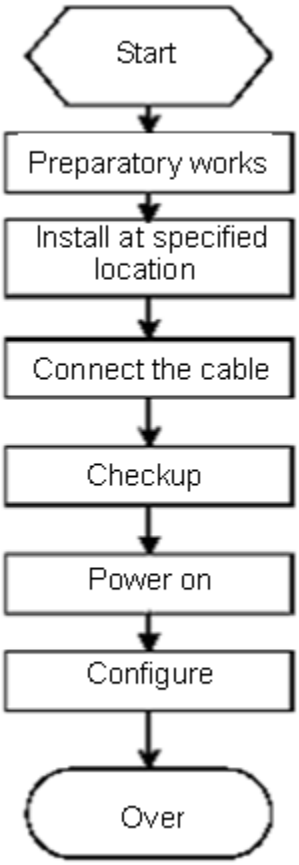
The tools and devices to install the AS2348E switch are not provided by the AS2348E switch. You yourself need to prepare them. The following are the tools and devices needed for the typical installation of the AS2348E switch:

- Screwdriver
- Static armguard
- Bolt
- Ethernet cable
- Other Ethernet terminal devices
- Control terminal

3 Installing the AS2348E Switch

Warning Only professionals are allowed to install or replace the devices of the router.

3.1 Installation Flow of AS2348E



3.2 Installing the Machine Box of the Switch

The machine box of the router can be installed on the desk or can be fixed to other cabinets.

- Installing the machine box on the Desk
- Installing the machine box on the Cabinet

3.2.1 Installing the Machine Box on the Desk

The AS2348E switch can be directly put on the smooth and safe desk.

Note Do not put things weighing 4.5 kg or over 4.5 kg on the top of the switch.

3.2.2 Installing the Machine Box on the Cabinet

The machine box of the switch is fixed on the cabinet through the brackets. When you fix the brackets, the front template of the switch faces forward. The detailed operations are shown in Figure 3-1.

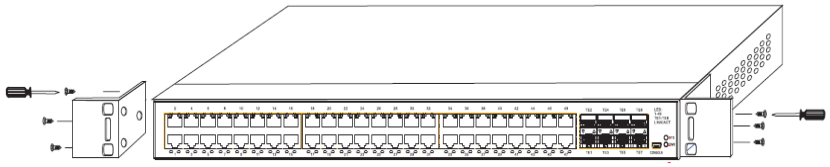


Figure **Error! No text of specified style in document.**-1 Fixing the machine box of the switch

Note The switch shown in figure 3-1 does not represent real AS2348E switch.

After the brackets are installed, install the switch on the cabinet. See Figure 3-1.

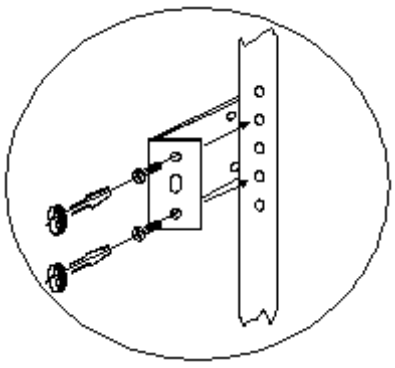


Figure **Error! No text of specified style in document.**-2 Installing the switch on the cabinet

3.3 Connecting the Port

3.3.1 Connecting the Console Port

The switch of AS2348E has a Console port.

The rate of the console port is a value ranging from 1200bps to 115200bps. It has a standard RJ45 plug. After you connect the console port to the serial port of PC through a console cable, you can configure and monitor the switch of AS2348E by running a terminal emulation software, such as super Windows terminal. The cable is provided according to the host. The communication parameters of the terminal serial port can be set to a rate of 9600bps, eight data bits, one stop bit, no sum check bit and traffic control.

The Mini USB connector for the Console port is shown below:

Figure 3-3 The Mini USB Connector for the Console Port

The other end of the console cable is 9-hole plug (DB9). The mini USB end and DB9 end connects as follows:

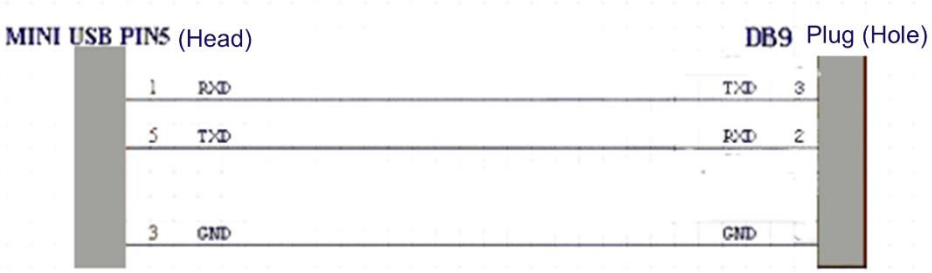


Figure 3-4 Mini USB Connector of the Console Port

The RJ45 connector of the console port is shown in the following figure. The RJ45 plug corresponds to the RJ45 socket, whose pins can be aligned from left to right with the value from 1 to 8.

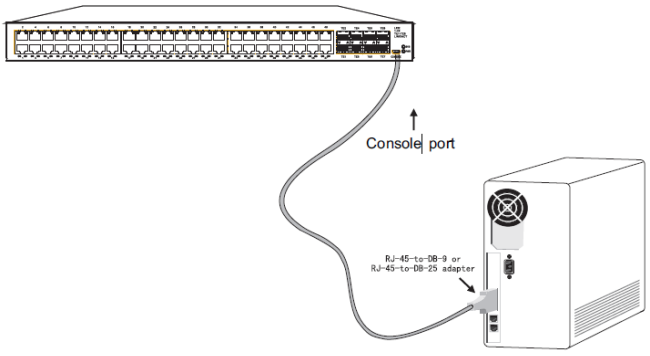


Figure **Error! No text of specified style in document.**-5 Connecting the console port of AS2348E and computer

Note

The switch shown in the above figure does not represent a real AS2348E switch.

Table **Error! No text of specified style in document.**-1 Definition of the pins of the UTP port

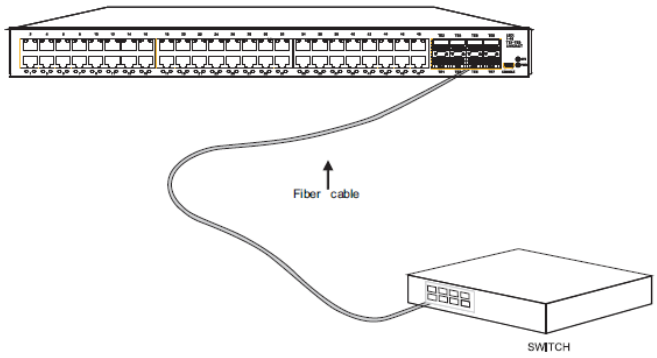
No.	Name	Symbol	Remarks
1	Data receiving	RXD	Input
2	/	/	No connect
3	Signal ground	SG	GND
4	/	/	No connect
5	Transmit Data	TXD	Output

Note

The console port of the AS2348E switch does not support traffic control. Therefore, you must set the option **data traffic control** to **none** when you configure the switch with the super terminal. Otherwise, the single-pass problem will arise on the super terminal.

3.3.2 Connecting the 1000M Ethernet SFP Port

AS2348E provides with 8 gigabit SFP ports. The indicators of the 8 SFP ports are 49 to 56. You can insert the SFP module and then connect it to other Ethernet terminal devices through the optical fiber if you want to use the 1000M SFP port.



Note

The switch shown in the above figure does not represent a real AS2348E switch.

3.3.3 Connecting 1000M Ethernet Electrical Port

The AS2348E switch has 48 10/100/1000 Base-T ports. The indicators are labeled with numbers 1-48, indicating the link/ACT state of the port. You can connect other Ethernet terminal devices to the UTP port through the cut-through or cross network cable. The numbering order of the pins in the UTP port is the same as the console port.

Because 48 10/100/1000Base-TX ports of BDCOM AS2348E support the MDI/MDIX auto-identification of the cable, BDCOM AS2348E can adopt five classes of direct-through/cross network cables when it connects other Ethernet terminals.

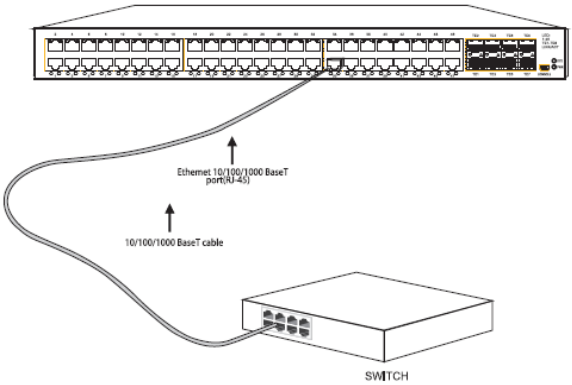


Figure **Error! No text of specified style in document.**-6 Connecting the 1000Base-TX port and other Ethernet terminals

Note The switch shown in the above figure does not represent a real AS2348E switch.

Table **Error! No text of specified style in document.**-2 Definition of the pins of the 1000M RJ45 port

No.	Pin Name	Symbol
1	Sending and receiving the normal phase of data 0	TP0+
2	Sending and receiving the paraphase of data 0	TP0-
3	Sending and receiving the normal phase of data 1	TP1+
4	Sending and receiving the normal phase of data 2	TP2+
5	Sending and receiving the paraphase of data 2	TP2-
6	Sending and receiving the paraphase of data 1	TP1-
7	Sending and receiving the normal phase of data 3	TP3+
8	Sending and receiving the paraphase of data 3	TP3-

3.4 Checking after Installation

Before electrically starting up the switch, perform the following checkups after the switch is installed:

- If the switch is installed on the cabinet, check whether the installation point between the cabinet and the switch is strong. If the switch is installed on the desk, check whether there is enough space for the switch to discharge its heat and whether the desk is stable.
- Check whether the connected power meets the power requirements of the switch.
- Check whether the grounding line is correctly connected.
- Check whether the switch is correctly connected to other terminal devices.

4 Maintaining the Switch

Warning Before opening the machine box, make sure that you have released the static you carried and then turn off the power on-off of the switch. Before operating any step in Appendix B, read the section “Safety Advice”.

Before performing operations beside the power supply or on the machine box, turn off the power on-off and plug out the power cable.

4.1 Opening the Machine Box

This section describes how to open the cover of the switch, required tools and operation methods.

Warning When the power cable still connects the power supply, do not touch it.

When you open the cover the switch, you may use the following tools:

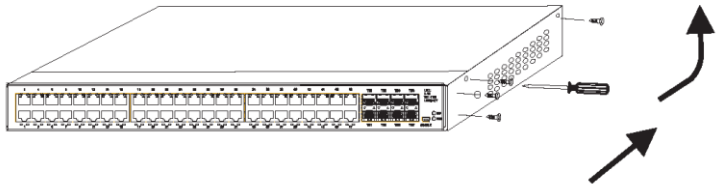
- Crossed screwdriver
- Static armguard

Perform the following steps to open the cover of the switch:

1. Turn off the power on-off of the switch.
2. Plug out all cables connected the back of the switch.
3. Take out the bolt from the machine box with the screwdriver.

Note The machine box comprises of two parts: cover and bottom.

4. Open the cover by holding two sides of the cover towards the direction of the arrow key shown in the following figure:



Note The switch shown in the above figure does not represent real AS2348E switch.

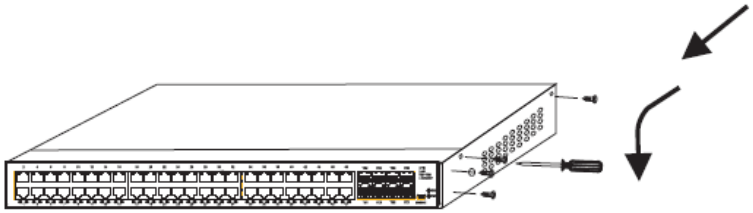
5. When the cover is opened, put it aside. The mainboard of the system appears.

Note After taking off the cover, put it horizontally and avoid it to be crushed or collided. Otherwise, the machine box is hard to install.

4.2 Closing Machine Box

The section mainly describes how to put the cover and close the machine box. Do as follows:

6. Put them well according to their locations and joint them together along their sides.



7. See the following figure.
8. When the cover and the bottom are closely tied, let the cover slide the slot of the front template at the bottom.
9. Nail the bolt and screw it tightly with the screwdriver.
10. Reinstall the switch on the cabinet or the desk.
11. Reconnect all cables of the switch.

5 Hardware Fault Analysis

The part describes how to remove the fault from the switch.

5.1 Fault Separation

The key for resolving the systematic faults is to separate the fault from the system. You can compare what the system is doing with what the system should do to detect the fault. You need to check the following subsystems:

- Power and cooling systems—power and fan
- Port, cable and connection—ports on the front template of the switch and the cables connecting these ports

5.1.1 Faults Relative with Power and Cooling System

Do the following checkups to help remove the fault:

- When the power on-off is at the “ON” location, check whether the fan works normally. If the fan does not work well, check the fan.
- If the switch is too hot, check whether the air outlet and air inlet are clean and then do relative operations in section 2.3 “Requirements for Common Locations”. The working temperature of the switch is from 0 to 40 Celsius degrees.
- If the switch cannot be started and the PWR indicator is off, check the power.

5.1.2 Faults Relative with Port, Cable and Connection

Do the following checkups to help remove the fault:

- If the port of the switch cannot be linked, check whether the cable is correctly connected and whether the peer connection is normal.
- If the power on-off is at the “ON” location, check the power supply and the power cable.
- If the console port does not work after the system is started up, check whether the console port is set to a baud rate of 9600 bps, eight data bits, no sum check bit, one stop bit and no traffic control.

5.2 Indicator Description

The LED indicator shows that the switch is running. The following table shows the indicators of the AS2348E switch and their description:

No.	Abbrev.	Name	Description
1	PWR	Power indicator	If the switch is powered on, the indicator is on.
2	SYS	System indicator	If the indicator is always on, the system is being started. If the indicator flickers, the system works normally.
3	LINK/ACT	Indicator at the top of each port	If the indicator is always on, the link on the port is normal. If the indicator is off, the port is not linked.

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