ALLOY

AS3 Series Gigabit Web Smart PoE+ Switches

AS3010-P
AS3026-P

Quick Install Guide

About this Guide

Purpose
This guide gives specific information on how to operate and use the management functions of the switch.

Audience
The guide is intended for use by network administrators who are responsible for operating and maintaining network equipment; consequently, it assumes a basic working knowledge of general switch functions, the Internet Protocol (IP), and Simple Network Management Protocol (SNMP).

Warranty
The AS series comes with a limited lifetime warranty. For full Alloy warranty terms and conditions please follow the link below:
https://www.alloy.com.au/support/warranty/

Conventions
The following conventions are used throughout this guide to show information:

NOTE: Emphasizes important information or calls your attention to related features or instructions.

WARNING: Alerts you to a potential hazard that could cause personal injury.

CAUTION: Alerts you to a potential hazard that could cause loss of data, or damage the system or equipment.

Compliances and Safety Statements

Federal Communications Commission (FCC) Statement

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

European Community (CE) Electromagnetic Compatibility Directive

This information technology equipment complies with the requirements of the Council Directive 89/336/EEC on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 73/23/EEC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC. For the evaluation of the compliance with these Directives, the following standards were applied:

RFI Emission: - Limit according to EN 55022:2010 AS/NZS CISPR 22:2009, Class A

                  - Limit for harmonic current emission according to EN 61000-3-
                    2:2006+A1:2009+A2:2009

                  - Limitation of voltage fluctuation and flicker in low-voltage supply
                    system according to EN 61000-3-3:2008

Immunity: - Product family standard according to EN 55024:2010

                  - Electrostatic Discharge according to IEC 61000-4-2:2008

- Radio-frequency electromagnetic field according to IEC 61000-4-
  3:2006+A1:2007+A2:2010

- Electrical fast transient/burst according to IEC 61000-4-4:2010

- Surge immunity test according to IEC 61000-4-5:2005

- Immunity to conducted disturbances, Induced by radio-frequency

  fields:IEC 61000-4-6:2008

- Power frequency magnetic field immunity test according to IEC

  61000-4-8:2009

- Voltage dips, short interruptions and voltage variations immunity test

  according to IEC 61000-4-11:2004

LVD: - EN60950-1:2006+A11:2009+A1:2010EMC:

Australian RCM Compliance.
This equipment is compliant with the required Australian RCM standards.

PLEASE READ THE FOLLOWING SAFETY INFORMATION CAREFULLY BEFORE INSTALLING THE SWITCH:
WARNING: Installation and removal of the unit must be carried out by qualified personnel only.

- This guide is intended for use by network administrators who are responsible for setting up and installing network equipment; consequently, it assumes a basic working knowledge of LANs (Local Area Networks).

- The unit must be connected to an earthed (grounded) outlet to comply with international safety standards.

- Do not connect unit to an A.C outlet (power supply) without an earth (ground) connection.

- The appliance coupler (the connector to the unit and not the wall plug) must have a configuration for mating with an EN 60320/IEC 320 appliance inlet.

- The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.

- This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 60950. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.

SAFETY PRECAUTIONS

Read the following information carefully before operating the device. Please follow the following precaution items to protect the device from risks and damage caused by fire and electric power:

- Use the power adapter that is included with the device package.

- Pay attention to the power load of the outlet or prolonged lines. An overburdened power outlet or damaged cords and plugs may cause electric shock or fire. Check the power cords regularly, if you find any damage, replace it at once.

- Proper space for heat dissipation is necessary to avoid any damage caused by device overheating. The ventilation holes on the device are designed for heat dissipation to ensure that the device works normally. Do not cover these ventilation holes.

- Do not put this device close to a place where a heat source exists or high temperature occurs. Avoid placing the device in direct sunshine.

- Do not put this device close to a place which is damp or wet. Do not spill any fluid on this device.

- Please follow the instructions in the user manual/quick install guide carefully to connect the device to your PC or other electronic product. Any invalid connection may cause a power or fire risk.

Do not place this device on an unstable surface or support.

CAUTION: Circuit devices are sensitive to static electricity, which can damage their delicate electronics. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electrical charge.

To protect your device, always:

- Touch the metal chassis of your computer to ground the static electrical charge before you pick up the circuit device.

- Pick up the device by holding it on the left and right edges only.

- If you are connecting a device mounted outdoors to this switch, please ensure you have installed an additional lightning arrestor between this device and the outdoor equipment.
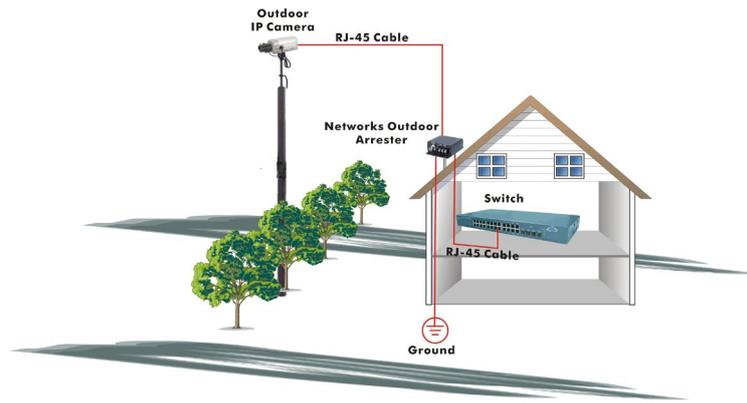
Fig. Additional arrester installed between outdoor device and this switch

NOTE: The switch is an indoor device; if it will be used in outdoor environment or connects with some outdoor device, then it must use a lightning arrester to protect the switch

WARNING:

- Self-demolition of Product is strictly prohibited. Damage caused by self-demolition will result in voiding the switches warranty.
- Do not place product in outdoor locations.
- Before installation, please make sure input power supply and product specifications are compatible to each other.
- To reduce the risk of electric shock. Disconnect all AC or DC power cords and RPS cables to completely remove power from the unit.
- Before importing / exporting configuration please make sure the firmware version is always the same.

1. Introduction

Overview of AS3 Series Web Smart PoE+ Switches

The Alloy AS3026-P Web Smart Gigabit POE+ Switch consists of 24x 10/100/1000Mbps Gigabit Copper UTP Ports and 2x paired dual speed 1000M/100M SFP Ports. With a comprehensive range of powerful Layer 2 features, the AS3026-P switch is ideal for businesses of all sizes.

The AS3026-P switch complies with both IEEE 802.3at and af Power over Ethernet standards. With all standalone RJ-45 ports supporting PoE+, devices such as IP Phones and Wireless Access Points can now be connected directly to the network with data and power supplied over a single UTP cable, reducing deployment and maintenance costs and making it much easier to install devices exactly where they are required.
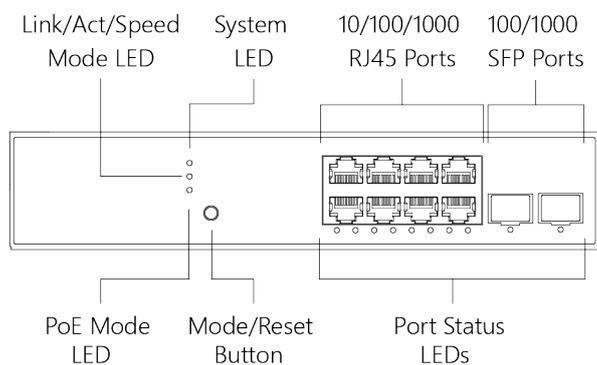
With support of 802.3at PoE+, up to 30 watts of power can be supplied per port, so power hungry devices such as Pan Tilt Zoom IP Security Cameras can be connected directly to the network.

All SFP Ports support both 100M and 1000M SFP modules allowing easy upgrade paths for existing cabling and network infrastructure.

The AS3026-P has an embedded Device Managed System (DMS) which provides users with complete control over their network connected devices. The AS3026-P is the ideal switch to deliver management simplicity, better user experience, and lowest total cost of ownership.

Features

- Web Smart+ features provide easy management, basic security and QoS

- Built in Device Management System (DMS)

- DHCP Server

- PoE Port configuration and scheduling

- IEEE 802.3af/at Power over Ethernet

- IEEE 802.3az EEE Energy Efficient Ethernet standard for green Ethernet

- Dual Speed SFP ports supporting both 100M and 1000M SFP Modules

- Limited Lifetime Warranty

Front View of AS3010-P

Link/Act/Speed
Mode LED

System
LED

10/100/1000
RJ45 Ports

100/1000
SFP Ports

PoE Mode
LED

Mode/Reset
Button

Port Status
LEDs

Rear View of AS3010-P

AC 100V to 240V
Power Connector

Switch Architecture

The switch performs at wire-speed, non-blocking switching fabric. This allows wire-speed transport of multiple packets at low latency on all ports simultaneously. The switch also features full-duplex capability on all ports, which effectively doubles the bandwidth of each connection.

This switch uses store-and-forward technology to ensure maximum data integrity. With this technology, the entire packet must be received into a buffer and checked for validity before being forwarded. This prevents errors from being propagated throughout the network.

Network Management Options

The switch can be managed over the network with a web browser. The switch includes a built-in network management agent that allows it to be managed in-band using SNMP or RMON (Groups 1, 2, 3, 9) protocols.

NOTE: For a detailed description of the management features, refer to the *User's manual*.

2. Description of Hardware

1000Base-T Ports

All RJ-45 ports on the AS3 series switches support automatic MDI/MDI-X operation, auto-negotiation and IEEE 802.3x auto-negotiation of flow control, so the optimum data rate and transmission can be selected automatically.
AS3010-P – 10x 10/100/1000Mbps 1000Base-T UTP Ports
AS3026-P – 26x 10/100/1000Mbps 1000Base-T UTP Ports

SFP Module Slots

The AS series switches are equipped with SFP slots for the installation of fibre optic SFP modules.
AS3010-P – 2x 100M/1000M SFP Ports
AS3026-P – 2x 100M/1000M SFP Ports

With a great range of flexible options the AS3 series can support 100M and 1G SFP modules in particular ports determined by the switch model being used.
The following table shows a list of some of the supported SFP modules.[*]

SFP Module	Speed	Fibre Diameter (µ)	Wavelength (nm)	Maximum Distance [#]
MGBIC-T	10/100/1000	N/A	N/A	100m
MGBIC-MLC	1G	50/125	850	550m
	1G	62.5/125	850	220m
MGBIC-SLC20	1G	9/125	1310	20Km
MGBIC-SLC4013	1G	9/125	1310	40Km
MGBIC-SLC4015	1G	9/125	1550	40Km
MGBIC-SLC80	1G	9/125	1550	80Km
MGBIC-SLC120	1G	9/125	1550	120Km
MGBICWDMS3.02	1G	N/A	TX-1310/RX-1550	2Km
MGBICWDMS5.02	1G	N/A	TX-1550/RX-1310	2Km
MGBICWDMS3.20	1G	N/A	TX-1310/RX-1550	20Km
MGBICWDMS5.20	1G	N/A	TX-1550/RX-1310	20Km
MGBICWDMS3.40	1G	N/A	TX-1310/RX-1550	40Km

MGBICWDMS5.40	1G	N/A	TX-1550/RX-1310	40Km
MGBICWDMS3.80	1G	N/A	TX-1310/RX-1550	80Km
MGBICWDMS5.80	1G	N/A	TX-1550/RX-1310	80Km
100SFP-M02	100M	62.5/125	1310	2Km
100SFP-S20	100M	9/125	1310	20Km
100SFP- S40	100M	9/125	1310	40Km
100SFP- S80	100M	9/125	1550	80Km
100SFP- S120	100M	9/125	1550	120Km
100SFP- S150	100M	9/125	1550	150Km

[*]Other SFP modules are available and compatible with the AS Series switches.
[#] Maximum distance may vary.

Port and System Status LED's

The AS3 Series switches include a display panel for system and port indications that simplify installation and network troubleshooting. There are three types of LEDs as follows:

• **System LED**

indicates if the switch is powered up correctly or not, or, indicates if there is a system alarm triggered for troubleshooting.

• **Mode LEDs**

indicates the mode of all ports on the switch. Users can press the Mode button sequentially to switch among the two different modes (Link/Activity/Speed mode and PoE mode).

• **Port Status LEDs**

indicates the current status of each port. Users can check these LEDs to understand the port status in different modes, after changing the mode by pressing Mode button.

The LEDs are located on the left hand side of the front panel or under the port sockets for easy viewing. Details are shown below and described in the following tables.

System Status LED's

LED	Colour	Status	Description
System	Green	On	The switch is powered ON correctly.
		Off	The switch is not receiving power.
	Red	On	An abnormal state, such as exceeding operating temperature range, has been detected in the switch.

Mode Status LED's

LED	Condition	Status	
Link/ACT/SPEED	Green	On	The Port Status LEDs are displaying link status, network activity and speed of each port.
PoE	Green	On	The RJ45 Port Status LEDs are displaying PoE powering status of each port.

By pressing the MODE button in less than 2 seconds to change LED modes (Link/Act/Speed Mode or PoE Mode), users can check the port status by reading the LED behaviors per the table below.

Port Status LED's

When Link/Act/Speed Mode LED Lit			
Port LED	**Colour**	**State**	**Description**
RJ45 Ports	Green	On	The port is enabled and established a link to connected device, and the connection speed is 1000Mbps.
	Green	Blinking	The port is transmitting/receiving packets, and the connection speed is 1000Mbps.
	Amber	On	The port is enabled and established a link to connected device, and the connection speed is 10/100Mbps.
	Amber	Blinking	The port is transmitting/receiving packets, and the connection speed is 10/100Mbps.
	--	Off	The port has no active network cable connected, or it is not established a link to connected device. Otherwise, the port may have been disabled through the switch user interface.
SFP Ports	Green	On	The port is enabled and established a link to connected device, and the connection speed is 1000Mbps.
	Green	Blinking	The port is transmitting/receiving packets, and the connection speed is 1000Mbps.
	Amber	On	The port is enabled and established a link to connected device, and the connection speed is 100Mbps.
	Amber	Blinking	The port is transmitting/receiving packets, and the connection speed is 100Mbps.
	--	Off	The port has no active network cable connected, or it is not established a link to connected device. Otherwise, the port may have been disabled through the switch user interface.
When PoE Mode LED Lit			
Port LED	**Colour**	**State**	**Description**
RJ45 Ports	Green	On	The port is enabled and supplying power to connected device.
	Amber	On	An abnormal state, such as overload status, has been detected in the switch.

	--	Off	The port has no active network cable connected, or it is not connected to a PoE PD device. Otherwise, the port may have been disabled through the switch user interface.

Mode/Reset Button

By pressing the Mode/Reset Button for certain period of time, users can perform the following tasks.

• *Change Port Status LED Mode*

to read the port status correctly in the two different modes (Link/Act/Speed mode or PoE mode).

• *Reset the Switch*

to reboot and get the switch back to the previous configuration settings saved.

• *Restore the Switch to Factory Defaults*

to restore the original factory default settings back to the switch.

Note:

According to the table below, users can easily judge which task is being performed by reading the LED behaviors while pressing the Mode/Reset button. Once the LED behaviors are correctly displayed, users may just release the button.

Task to be Performed	Time Period of Pressing Button	SYS LED Behaviour	Port Status LED Behavior
Change LED Mode	0 ~ 2 seconds	ON	LED status will be changed according the mode selected.
Reset the Switch	2 ~ 7 seconds	Green	ALL LEDs Light OFF
Restore to Defaults	7 ~ 12 seconds	Blinking	ALL LEDs Stay ON

3. Network Planning

Installing the Switch

Selecting a site

The AS3 Series switches can be rack mounted in a standard 19" equipment rack using the supplied Rack Mount Kit, or they can be installed on any flat surface. Be sure to follow the guidelines below when choosing a location.

The site should be:

- At the centre of all the devices you want to link and near a power outlet.

- Be able to maintain its temperature within 0 to 40°C (32 to 104 °F) and its humidity within 10% to 90%, non-condensing.

- Be accessible for installing, cabling and maintaining the device.

- Allow the status LEDs to be clearly visible.

Make sure the twisted-pair Ethernet cable is always routed away from power lines, radios, transmitters or any other electrical interference.

Make sure that AS3 Series switches are connected to a separate grounded power outlet that provides 100 to 240 VAC, 50 to 60 Hz.

Ethernet Cabling

To ensure proper operation when installing the switch into a network, make sure that the current cables are suitable for 100BASE-TX or 1000BASE-T operation. Check the following criteria against the current installation of your network:

- Cable type: Unshielded twisted pair (UTP) or shielded twisted pair (STP) cable with RJ-45 connectors; Category 5 or Category 5e with maximum length of 100 meters is recommend 100BASE-TX, and Category 5e or 6 and above with maximum length of 100 meters is recommend for 1000BASE-T.

- Protection from radio frequency interference emissions.

- Electrical surge suppression.

- Separation of electrical wires and data based network wiring.

- Safe connections with no damaged cables, connectors or shields.
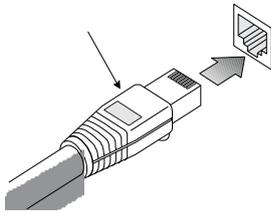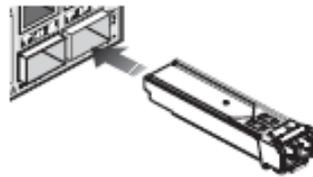
RJ-45 Connections   SFP Module

Equipment Checklist

After unpacking this switch, please check the contents to be sure you have received all the components. Then, before beginning the installation, be sure you have all other necessary installation equipment.

Package Contents

- AS3 Series Switch

- Four adhesive rubber feet

- Mounting Accessory (for 19" Rack Shelf)

- User Manual and QIG (available from the Alloy website http://www.alloy.com.au)

- AC Power Cord

> **NOTE:** Please notify your sales representative immediately if any of the aforementioned items are missing or damaged.

> **WARNING:** The SFP modules are Class 1 laser devices. Avoid direct eye exposure to the beam coming from the transmit port.

Mounting

The switch can be mounted in a standard 19-inch equipment rack or on a desktop or shelf. Mounting instructions for each type of installation type is as follows.
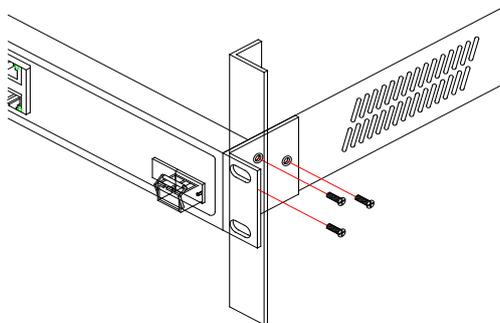
Rack Mounting

Before rack mounting the switch, please pay attention to the following factors:

- Temperature: Since the temperature within a rack assembly may be higher than the ambient room temperature, check that the rack-environment temperature is within the specified operating temperature range (0 to 40 °C).
- Mechanical Loading: Do not place any equipment on top of a rack-mounted unit.
- Circuit Overloading: Be sure that the supply circuit to the rack assembly is not overloaded.
- Grounding: Rack-mounted equipment should be properly grounded.

To Rack mount the AS Series Switches:

1. Attach the brackets to the device using the screws provided with the rack mount kit.

2. Mount the device in the rack using four rack-mounting screws (not provided). Be sure to secure the lower rack-mounting screws first to prevent the brackets from being bent by the weight of the switch.
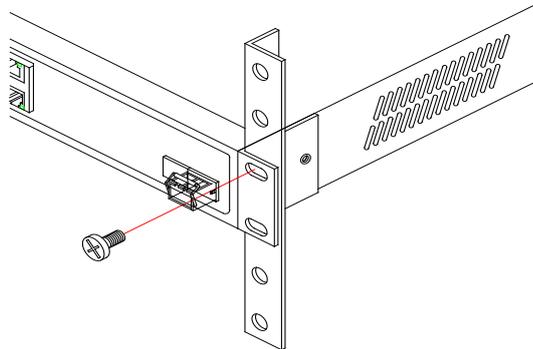
3. If installing a single switch, turn to "Connecting to a Power Source" at the end of this chapter.

4. If installing multiple switches, please follow steps 1 and 2 for installation of the other switches.

Desktop Mounting
1. Attach the four adhesive rubber feet to the bottom of the switch.
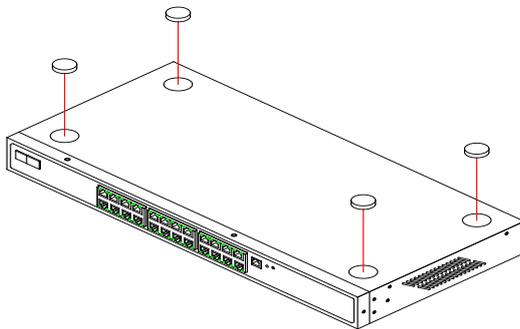
2. Set the device on a flat surface near an AC power source, making sure there are at least two inches of space on all sides for proper air flow.

3. If installing a single switch, turn to "Connecting to a Power Source" at the end of this chapter.

4. If installing multiple switches, please follow steps 1 and 2 for installation of the other switches.

Installing an optional SFP Module

All SFP modules are hot swappable and can be interchanged without having to power off the switch.
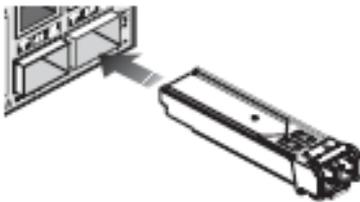
ⓘ	**NOTE:**
	■ Depending on the model being used the SFP slots are shared with 10/100/1000Base-T RJ-45 ports. If a SFP is installed in a slot, the associated RJ-45 port is disabled and cannot be used.
	■ The SFP ports operate only at full duplex. Half duplex operation is not supported.
	■ Ensure the network cable is NOT connected when you install or remove a SFP module.

⚠	**CAUTION:** Use only supported genuine Alloy SFP's with your switch. Non-Alloy SFP's might have compatible issues, and their use may result in product malfunction.

Inserting a SFP Module into a slot

1. Consider network and cabling requirements to select an appropriate SFP module type.

2. Insert the SFP module with the optical connector facing outward and the slot connector facing down. Note that SFP modules are keyed so they can only be installed in one direction.

3. Slide the SFP module into the slot until it clicks into place.

ⓘ	**NOTE:** SFP Modules are not provided in the switch package.

Connecting to a power source

To switch the power off, please remove the power cord from the switch. To turn the power on, please insert the power cable into the switch.
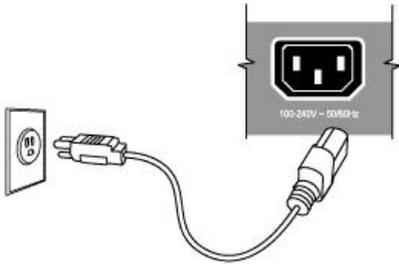
Inserting the power cord to switch and AC power socket

1. Insert the power cable plug directly into the AC Socket located at the back of the switch.

2. Plug the other end of the cable into a grounded, 3-Pin, AC power source.

3. Check the front-panel LEDs as the device is powered on to be sure the POWER LED is lit. If not, check that the power cable is correctly plugged in.

WARNING: For International use, you may need to change the AC line cord. You must use a line cord set that has been approved for the socket type in your country.

4. Initial Configuration of the Switch

The default values of the AS3 Series switches are listed in the table below:

IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.254
Username	admin
Password	

To access the web management of an AS3 Series switch enter the default IP Address in a web browser and hit enter. E.g. http://192.168.1.1

Once you have entered the IP Address into the web browser you will be prompted to enter a Username and Password in order to access the web management interface. Enter the default values as shown in the table above.

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| Username |
| Password |
| Login |

> ⓘ **NOTE:** For full configuration details of the AS Series switches please refer to the User Manual. There is also a simple help function supplied within the web management interface, this can be accessed by clicking on the question mark at the top right hand side of the web interface.

5. Making Network Connections

Connecting Network Devices

The AS3 Series switches are designed to be connected to 10, 100 or 1000Mbps network cards in PCs and servers, as well as to other switches and hubs. It may also be connected to remote devices using optional SFP transceivers.

Twisted-Pair Guidelines

Each device requires an unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable with RJ-45 connectors at both ends. Use Category 5, 5e or 6 cable for 1000BASE-T connections, Category 5 or better for 100BASE-TX connections.

Cabling Guidelines

The RJ-45 ports on the switch support automatic MDI/MDI-X pin out configuration, so you can use standard straight-through twisted-pair cables to connect to any other network device (PCs, servers, switches, routers, or hubs).
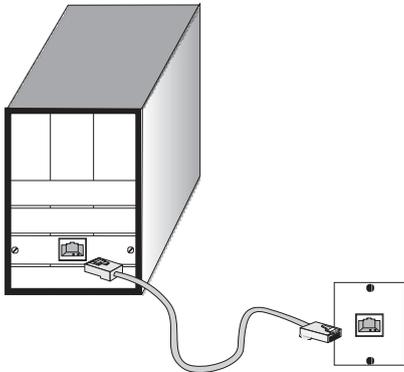
See Appendix B for further information on cabling.

CAUTION: Do not plug a phone jack connector into an RJ-45 port. This will damage the switch. Use only twisted-pair cables with RJ-45 connectors that conform to FCC standards.

Connecting to PC's, Servers and Switches

1. Attach one end of a twisted-pair cable segment to the device's RJ-45 connector.

2. If the device is a network card and the switch is in the wiring closet, attach the other end of the cable segment to a modular wall outlet that is connected to the wiring closet. (See the section "Network Wiring Connections.") Otherwise, attach the other end to an available port on the switch.

3. As each connection is made, the Link LED (on the switch) corresponding to each port will light green (1000 Mbps) or amber (100 Mbps) to indicate that the connection is valid.

NOTE: Avoid using flow control on a port connected to a hub unless it is actually required to solve a problem. Otherwise back pressure jamming signals may degrade overall performance for the segment attached to the hub.

Network Wiring Connections

Today, the punch-down block is an integral part of many of the newer equipment racks. It is actually part of the patch panel. Instructions for making connections in the wiring closet with this type of equipment follows.

1. Attach one end of a patch cable to an available port on the switch, and the other end to the patch panel.

2. If not already in place, attach one end of a cable segment to the back of the patch panel where the punch-down block is located, and the other end to a modular wall outlet.

3. Label the cables to simplify future troubleshooting. See "Cable Labeling and Connection Records".
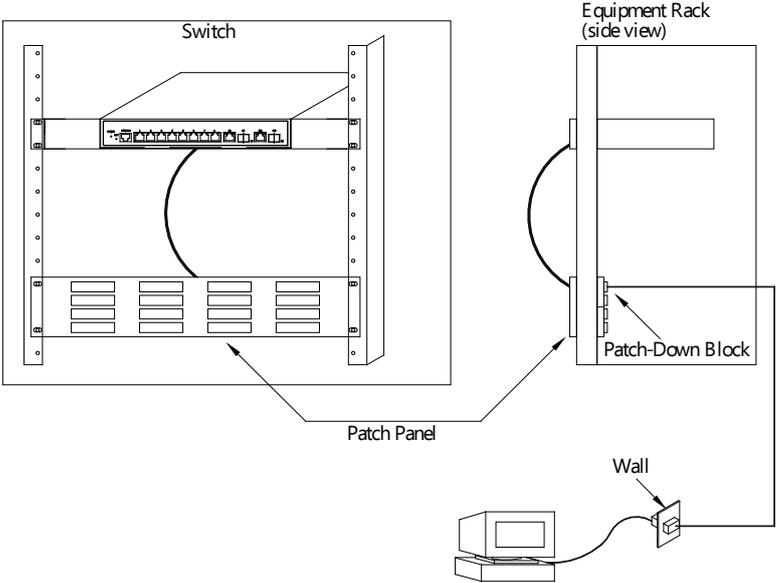
Fibre Optic SFP Devices

An optional Fast Ethernet or Gigabit SFP transceiver can be used for a backbone connection between switches, or for connecting to a high-speed server.

Each single-mode fibre port requires 9/125 micron single-mode fibre optic cable with an LC connector at both ends. Each multimode fibre optic port requires 50/125 or 62.5/125 micron multimode fibre optic cabling with an LC connector at both ends.

WARNING: This switch uses lasers to transmit signals over fibre optic cable. The lasers are inherently eye safe in normal operation. However, user should never look directly at a transmit port when it is powered on.

WARNING: When selecting a fibre SFP device, considering safety, please make sure that it can function at a temperature that is not less than the recommended maximum operational temperature of the product. You must also use an approved Laser SFP transceiver.

1. Remove and keep the LC port's rubber plug. When not connected to a fiber cable, the rubber plug should be replaced to protect the optics.

2. Check that the fibre terminators are clean. You can clean the cable plugs by wiping them gently with a clean tissue or cotton ball moistened with a little ethanol. Dirty fibre terminators on fibre optic cables will impair the quality of the light transmitted through the cable and lead to degraded performance on the port.

3. Connect one end of the cable to the LC port on the switch and the other end to the LC port on the other device. Since LC connectors are keyed, the cable can be attached in only one orientation.

4. As a connection is made, check the Link LED on the switch corresponding to the port to be sure that the connection is valid.

6. Cable Labeling and Connection Records

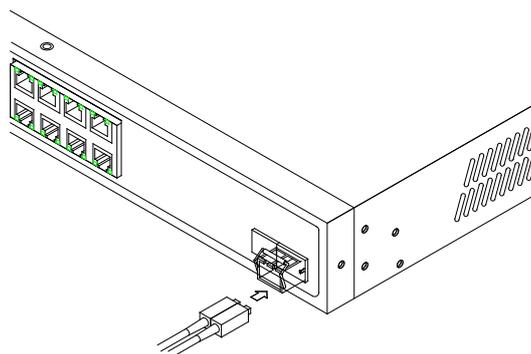When planning a network installation, it is essential to label the opposing ends of cables and to record where each cable is connected. This will allow users to easily locate inter-connected devices, isolate faults and change your topology without need for unnecessary time consumption.

To best manage the physical implementations of your network, follow these guidelines:

- Clearly label the opposing ends of each cable.

- Using your building's floor plans, draw a map of the location of all network-connected equipment. For each piece of equipment, identify the devices to which it is connected.

- Note the length of each cable and the maximum cable length supported by the switch ports.

- For ease of understanding, use a location-based key when assigning prefixes to your cable labeling.

- Use sequential numbers for cables that originate from the same equipment.

- Differentiate between racks by naming accordingly.

- Label each separate piece of equipment.

- Display a copy of your equipment map, including keys to all abbreviations at each equipment rack.

7. Troubleshooting

Basic Troubleshooting Tips

Most problems are caused by the following situations. Check for these items first when starting your troubleshooting:

Connecting to devices that have a fixed full- duplex configuration.

The RJ-45 ports are configured as "Auto". That is, when connecting to attached devices, the switch will operate in one of two ways to determine the link speed and the communication mode (half duplex or full duplex):

- If the connected device is also configured to Auto, the switch will automatically negotiate both link speed and communication mode.

- If the connected device has a fixed configuration, for example 100Mbps, at half or full duplex, the switch will automatically sense the link speed, but will default to a communication mode of half duplex.

Because the AS3 Series switches behave in this way (in compliance with the IEEE802.3 standard), if a device connected to the switch has a fixed configuration at full duplex, the device will not connect correctly to the switch. The result will be high error rates and very inefficient communications between the switch and the device.

Make sure all devices connected to the AS3 Series switches are configured to auto negotiate, or are configured to connect at half duplex (all hubs are configured this way, for example).

Faulty or loose cables.

Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.

Non-standard cables.

Non-standard or incorrectly wired cables may cause network collisions and other network problems, and can seriously impair network performance. Use a new correctly wired cable. For pin outs and correct cable wiring a category 5 cable tester, is a recommended tool for every 100Base-TX and 1000Base-T network installation.

Incorrect Network Topologies.

It is important to make sure you have a valid network topology. If you no longer experience the problems, the new topology is probably at fault. In addition, you should make sure that your network topology contains no data path loops.

Check the port configuration.

A port on your Switch may not be operating as you expect because it has been put into a "blocking" state by Spanning Tree, GVRP (automatic VLANs), or LACP (automatic trunking). (Note that the normal operation of the Spanning Tree, GVRP, and LACP features may put the port in a blocking state.) Or, the port just may have been configured as disabled through software.

Symptom	Action
Power LED is off	Check connections between the switch, the power cord and the wall outlet.
	Contact your dealer for assistance.
Link LED is off	Verify that the switch and attached device are powered on.
	Be sure the cable is plugged into the switch and corresponding device.
	If the switch is installed in a rack, check the connections to the punch-down block and patch panel.
	Verify that the proper cable types are used and its length does not exceed specified limits.
	Check the adapter on the attached device and cable connections for possible defects. Replace the defective adapter or cable if necessary.

8. Power and Cooling Problems

<u>Installation</u>

If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply. However, if the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet. If you still cannot isolate the problem, the internal power supply may be defective. Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (such as the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

<u>In-band Access</u>

You can access the management agent in the switch from anywhere within the attached network using Telnet, a web browser. However, you must first configure the switch with a valid IP address, subnet mask, and default gateway. If you have trouble establishing a link to the management agent, check to see if you have a valid network connection. Then verify that you entered the correct IP address. Also, be sure the port through which you are connecting to the switch has not been disabled. If it has not been disabled, then check the network cabling that runs between your remote location and the switch.

> **NOTE:** The management agent accepts up to four simultaneous Telnet sessions. If the maximum number of sessions already exists, an additional Telnet connection will not be able to log into the system.

9. Software Features

Layer 2+ Switching	
Spanning Tree Protocol	Provides Redundant links and prevents network loops. Supports; Standard Spanning Tree 802.1d Rapid Spanning Tree (RSTP) 802.1w Multiple Spanning Tree (MSTP) 802.1s
Port Aggregation	Link Aggregation Control Protocol (LACP) IEEE 802.3ad Static Aggregation
VLAN	Supports up to 4K VLANs simultaneously (4096 VLAN IDs) Port-based VLAN 802.1Q tag-based VLAN Protocol based VLAN IP subnet-based VLAN Private VLAN Edge (PVE) MAC-based VLAN Q-in-Q (double tag) VLAN Voice VLAN
IGMP	IGMP Snooping, Querier and Proxy support; Controls and manages the flooding of multicast packets in a layer 2 network, supports 512 multicast groups
MLD	Version 1 and 2, Snooping for IPv6; Controls and manages the flooding of IPv6 multicast packets in a layer 2 network
Multicast VLAN Registration (MVR)	It uses a dedicated manually configured VLAN, called the multicast VLAN, to forward multicast traffic over Layer 2 network in conjunction with IGMP snooping.
Device Management System	
Graphical Monitoring	Provides a graphical representation of your network displaying all devices that are connected. Three different layouts are available: Topology View - Logical diagram of your physical devices, includes information such as port numbers, devices connected, devices disconnected, allows access to device web management etc. Floor View - Allows you to upload floor plan of your building, allowing you to place devices in their physical positions. Map View - Google Maps type view, allowing you to place devices in their physical locations, perfect for IP Cameras that are installed schools, streets

	etc.
Device Management	Easy access to management of IP Phones, IP Cameras, Wireless Access Points and Switches via their built in web manager.
Traffic Monitoring	Visual display of traffic on your switch, per port analysis.
Troubleshooting	Network diagnostic between switch and connected device.
Find My Switch	Same functionality as the Find My Switch App. Allows you to click on a switch in your network, select find my switch and all LED's on the front panel of the switch will light allowing you to find your switch in racks that are full of devices and at most times difficult to locate.
Quality of Service (QoS)	
Hardware Queues	Supports 8 Hardware Queues
Scheduling	Strict Priority and weighted round-robin (WRR) Queue assignment based on DSCP and Class of Service (COS)
Classification	Port based 802.1p VLAN priority based
Rate Limiting	Ingress policer Egress shaping and rate control
Security	
Secure Shell (SSH)	SSH secures Telnet traffic in or out of the switch, supports SSH v1 and v2
Secure Sockets Layer (SSL)	SSL encrypts http traffic, allows secure access to the web GUI
IEEE 802.1X	IEEE802.1X: RADIUS authentication, authorization and accounting, MD5 hash, guest VLAN, single/multiple host mode and single/multiple sessions Supports IGMP-RADIUS based 802.1X Dynamic VLAN assignment
Private VLAN Edge	PVE (also known as protected ports) provides L2 isolation between clients in the same VLAN. Supports multiple uplinks
Port Security	Locks MAC addresses to ports, and limits the number of learned MAC address
IP Source Guard	Prevents illegal IP address from accessing specific ports on the switch

RADIUS / TACACS+	Supports RADIUS and TACACS+ authentication. Switch as a client
Storm Control	Prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm
DHCP Snooping	Eliminates unauthorized DHCP Servers from offering IP Addresses to DHCP clients
Loop Protection	To prevent unknown unicast, broadcast and multicast loops in Layer 2 switching configurations.
ACLs	Supports up to 512 entries. Drop or rate limitation based on: Source and destination MAC, VLAN ID or IP address, protocol, port, Differentiated services code point (DSCP) / IP precedence TCP/ UDP source and destination ports 802.1p priority Ethernet type Internet Control Message Protocol (ICMP) packets TCP flag
Management	
Port Mirroring	Traffic on a port can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to N-1 (N is Switch's Ports) ports can be mirrored to single destination port. A single session is supported.
IEEE 802.1ab (LLDP)	Used by network devices for advertising their identities, capabilities, and neighbors on an IEEE 802ab local area network Support LLDP-MED extensions
Web GUI	Built-in switch configuration utility for browser-based device configuration; IPv4 and IPv6 HTTP, HTTPS
Dual Firmware Images	Independent primary and secondary firmware images
UPnP	Supports UPnP to enable device to device interoperability
Remote Monitoring (RMON)	Embedded RMON agent supports RMON groups 1,2,3,9 (history, statistics, alarms, and events) for enhanced traffic management, monitoring and analysis
s-Flow	Supports s-Flow monitoring

SNMP	SNMP version1, 2c and 3 with support for traps, and SNMP version 3 user-based security model (USM)
Firmware Upgrade	Web browser upgrade (HTTP/ HTTPs) and TFTP
NTP	Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched
Other Management	HTTP/HTTPs DHCP Client Cable Diagnostics Syslog Telnet Client; SSH IPv6 Management
Power over Ethernet (PoE)	
Port Configuration	Supports per port PoE configuration; Set Priority; maximum power, enable/disable PoE
PoE Scheduling	Supports per port PoE scheduling to turn on/off the PoE devices (PDs)
PD Auto Checking	Check the link status of PDs. Reboot PDs if there is no response
Power Delay	Can setup time based delays on PD's to reduce PoE power overload due to power spike on boot up of PD
Soft-Reboot PoE Non-stop	The switch will keep providing power to the PDs while during soft-reboot.

10. Specifications

AS Series Model	AS3010-P	AS3026-P
Interface		
Total Ports, comprising	10x GbE	26x GbE
UTP (10/100/1000Mbps)	8	24
UTP/(100M/1G) SFP	2	2
Power Over Ethernet		
Total IEEE 802.3af/at PoE Ports	8	24
PoE compliant Ports	UTP Ports 1-8	UTP Ports 1-24
Max AF/AT Power Per Port (watts)	15.4W 802.3af / 30W 802.3at	
Maw PoE Per Port (Full Load)	16.25W	7.7W
Total Power Budget (watts)	130W	185W
PoE Pins	1, 2, 3 & 6	
Hardware Performance		
Jumbo Frames	9K	9K
MAC Table	8K	8K
Switching Capacity	20Gbps	52Gbps
Forwarding Capacity	14.88 mpps	38.68 mpps
Latency	1GB Copper: < 2.7ms, 1GB SFP: < 1.1ms	1GB Copper: < 3ms, 1GB SFP: < 1.9ms
Memory and Processor		
SDRAM	128MB	128MB
Flash	32MB	32MB
Environmental Specifications		

Dimensions (W x H x D mm)	220 x 44 x 242	442 x 44 x 211
Weight	2Kg	3Kg
Case	Desktop / 1RU rackmount (mounting kit included), all metal case	
Temperature	0° to 50° operating; -20° to 70° storage	
Humidity	10% to 90% , relative, non-condensing	
Power Supply	100-240VAC 50-60Hz, internal, universal	
Certification	CE Mark, FCC Part 15 (CFR47) Class A, RCM	