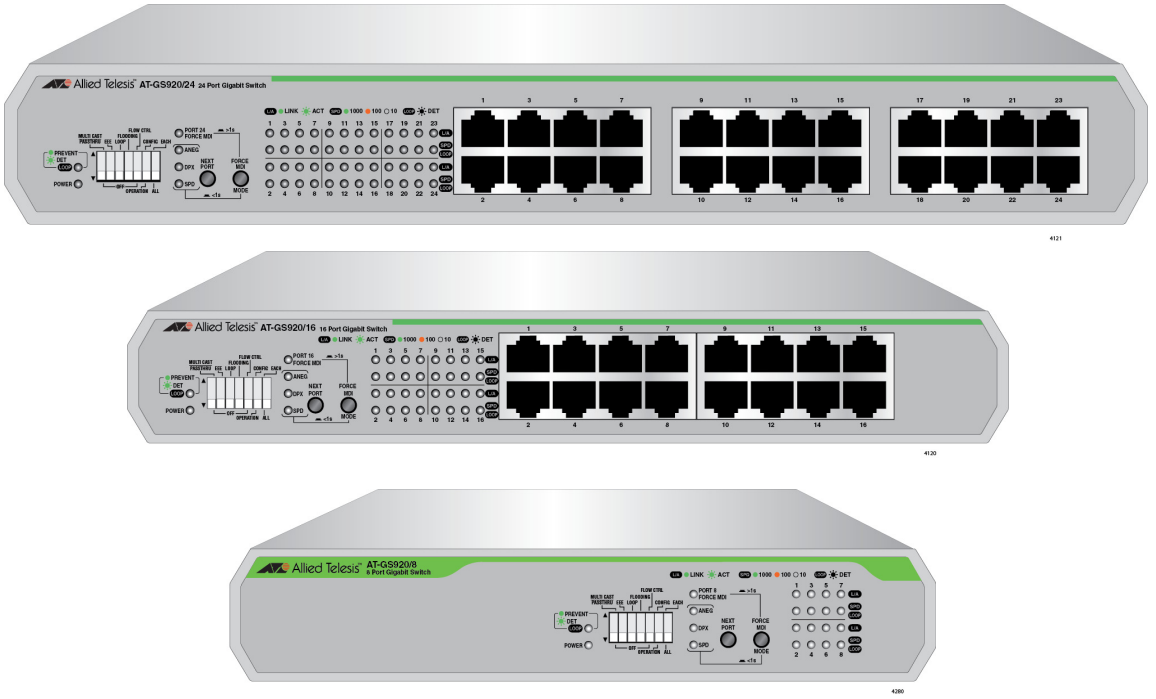
GS920 Series

GIGABIT ETHERNET UNMANAGED SWITCHES

AT-GS920/24

AT-GS920/16

AT-GS920/8



Installation and User's Guide

the solution : the network

613-002385 Rev A

Electrical Safety and Emissions Standards

This section contains the following:

US Federal Communications Commission

Radiated Energy for the AT-GS920/24

Note
This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of 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 this 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.

Radiated Energy for the AT-GS920/16 and AT-GS920/8

Note
This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of 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 instructions, may 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:

- Increase the separation between the equipment and the 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.

Industry Canada

Radiated Energy

- This Class A digital apparatus complies with Canadian ICES-003.
- Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.
- This Class B digital apparatus complies with Canadian ICES-003.
- Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
-

Translated Safety Statements

Important: The ✍ indicates that translations of the safety statement are available in the PDF document ***Translated Safety Statements*** posted on the Allied Telesis website at ***alliedtelesis.com/support***.

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Preface

This Preface contains the following sections:

This manual is the installation and user’s guide for the GS920 Series Gigabit Ethernet Unmanaged Switches. The switch models included in this manual are:

- – AT-GS920/24
- – AT-GS920/16
- – AT-GS920/8

Safety Symbols Used in this Document

This document uses the following conventions:

Note
Notes provide additional information.

Caution
Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.

Warning
Warnings inform you that performing or omitting a specific action may result in bodily injury.

Contacting Allied Telesis

If you need assistance with this product, you may contact Allied Telesis technical support by going to the Support & Services section of the Allied Telesis web site at **www.alliedtelesis.com/support**. You can find links for the following services on this page:

- 24/7 Online Support - Enter our interactive support center to search for answers to your questions in our knowledge database, check support tickets, learn about Return Merchandise Authorization (RMA), and contact Allied Telesis technical experts.
- USA and EMEA phone support - Select the phone number that best fits your location and customer type.
- Hardware warranty information - Learn about Allied Telesis warranties and register your product online.
- Replacement Services - Submit an RMA request via our interactive support center.
- Documentation - View the most recent installation guides, user guides, software release notes, white papers and data sheets for your product.
- Software Updates - Download the latest software releases for your product.

For sales or corporate contact information, go to **www.alliedtelesis.com/purchase** and select your region.

Chapter 1

Product Description

This chapter contains the follows sections:

Key Features

The GS920 Series switches have the following key features:

- Complies with IEEE802.3,IEEE802.3u,IEEE802.3ab, IEEE802.3x
- Supports 8 auto-negotiation 10/100/1000Mbps ports for AT-GS920/8
- Supports 16 auto-negotiation 10/100/1000Mbps ports for AT-GS920/16
- Supports 24 auto-negotiation 10/100/1000Mbps ports for AT-GS920/24
- Supports Store-and-forward packet forwarding
- Supports HOL blocking prevention
- Supports jumbo frames of 9216 bytes (inclusive) without frame loss and drops packets that are larger than 9216 bytes (exclusive)
- MAC address entries:
  - AT-GS920/8: up to 4K
  - AT-GS920/16: up to 8K
  - AT-GS920/24: up to 8K
- Supports link down and cable length power saving function
- Supports Multicast Frame Pass-Through which can be enabled or disabled by setting a DIP switch
- Supports AUTO MDI/MDI-X on all ports. All ports are capable of being configured for Fixed MDI-X except the last port which is configured for Fixed MDI. This feature is enabled and disabled by setting DIP switches and using a front panel push button.
- Supports IEEE 802.3x flow control in full-duplex operation and backpressure flow control in half-duplex operation. This feature is enabled or disabled by setting a DIP switch
- Supports loop detection and prevention function - can be enabled or disabled by setting a DIP switch
- Supports IEEE 802.3az EEE function only for 100M/1000M link speed - can be enabled or disabled by setting a DIP switch (EEE for 10M is not supported)
- Supports Flooding mode - can be enabled or disabled by setting a DIP switch
- Supports port speed and half/full duplex configurable function by setting the DIP switches and using a front panel push button.
- Each chassis has no fan.
- Internal switching power supply

- RoHS Compliant
- 0 to 50 degree C operating temperature
- Wall/Rack mount kit is provided within the AT-GS920/24 ship kit
- Support both wall mount and rack mount functions for RoW

GS920 Series Overview

The GS920 Series switch includes the following models and hardware features:

- ❒ "AT-GS920/24 Switch"
- ❒ "AT-GS920/16 Switch" on page 19
- ❒ "AT-GS920/8 Switch" on page 19
- ❒ "Wall and Rack Mount Brackets" on page 20
- ❒ "10/100/1000 Base-TX Twisted Pair Ports" on page 21
- ❒ "Power Connector" on page 22

Each model uses an internal high efficiency PSU and a low power chipset to conform with the Allied Telesis commitment to environmentally friendly processes. They can all be installed on a desktop, mounted on a wall or mounted in a 19" rack.

Each switch features support for Multi-Cast Frame Pass-Through, IEEE802.3az Energy Efficiency power savings, Loop Detection and Prevention, Flooding Mode and Flow Control. These features are each configurable by dedicated front panel DIP switches. See "AT-GS920 Feature Descriptions" on page 26 and "Feature Configuration" on page 61 for more information.

In addition, the switch ports can be individually or collectively configured for auto-negotiation or manual duplex and speed settings. The highest number port's default setting is MDI/MDI-X and can be forced to fixed MDI while all of the other ports can be forced to MDI/MDI-X. These port settings are configured by a combination of the front panel DIP switches and push buttons. See "Ethernet Port Configuration" on page 72 for more information.

AT-GS920/24 Switch

The AT-GS920/24 switch can be installed on a desktop, a wall, or in a 19-inch equipment rack. To mount the switch on the wall or in an equipment rack, use the brackets that are provided with the switch.

The AT-GS920/24 switch has 24 each 10/100/1000Base-TX twisted pair ports as shown in Figure 1.

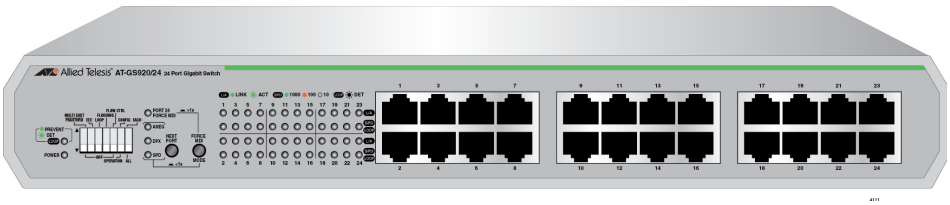


Figure 1. AT-GS920/24 Front Panel

The AT-GS920/24 switch has an internal power supply with a single AC power supply socket on the rear panel as shown in Figure 2.

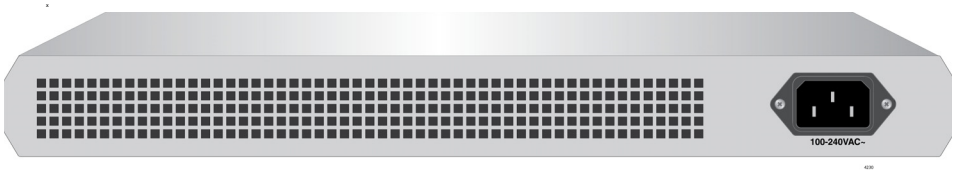


Figure 2. AT-GS920/24 Rear Panel

AT-GS920/16 Switch

The AT-GS920/16 switch can be installed on a desktop, mounted on a wall, or in a 19-inch equipment rack. To mount the switch on the wall or an equipment rack, you must order separate bracket kits. For more information, see Table 1, “Wall and Rack Mount Brackets” on page 20.

The AT-GS920/16 switch has 16 each 10/100/1000Base-TX twisted pair ports on the front panel as shown in Figure 3.

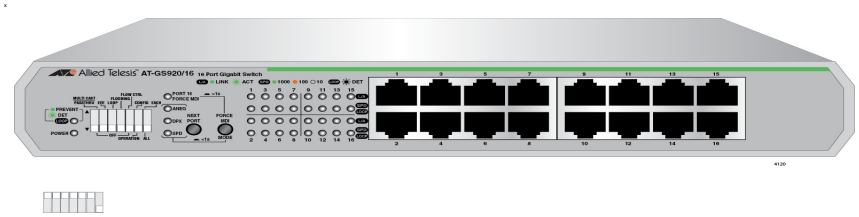


Figure 3. AT-GS920/16 Front Panel

The AT-GS920/16 switch has an internal power supply with a single AC power supply socket on the rear panel as shown in Figure 4.

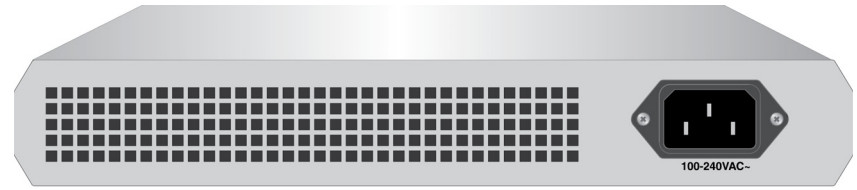


Figure 4. AT-GS920/16 Rear Panel

AT-GS920/8 Switch

The AT-GS920/8 switch can be installed on a desktop, mounted on a wall, or mounted in a 19-inch equipment rack. To mount the switch on the wall or in an equipment rack, use the brackets that are provided with the switch.

The AT-GS920/8 switch has 8 each 10/100/1000Base-TX twisted pair ports as shown in Figure 5.

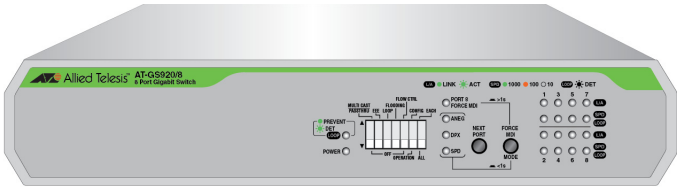


Figure 5. AT-GS920/8 Front Panel

The AT-GS920/8 switch has an internal power supply with a single AC power supply socket on the rear panel as shown in Figure 6.

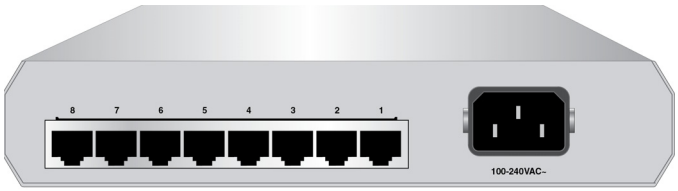


Figure 6. AT-GS920/8 Rear Panel

Wall and Rack Mount Brackets

Table 1 shows brackets options for the GS920 Series switches.

Table 1. Wall and Rack Mount Brackets

Model	Wall Mount	Rack Mount
AT-GS920/24	Use the Wall/Rack Mount Kit provided in the shipping box for all installations except in Japan. NOTE: For Japan installations only, use the optional AT-BRKT-J22 Wall Mount Kit instead which must be ordered separately.	Use the Wall/Rack Mount Kit provided in the shipping box for all installations.
AT-GS920/16	Use AT-BRKT-J23 wall mount kit. NOTE: This kit must be ordered separately.	Optional AT-RKMT-J05 optional 19" rack mount kit. NOTE: This kit must be ordered separately.
AT-GS920/8	Use AT-BRKT-J23 wall mount kit. NOTE: This kit must be ordered separately.	Optional AT-RKMT-J08 optional 19" rack mount kit. NOTE: This kit must be ordered separately.

10/100/1000 Base-TX Twisted Pair Ports

The GS920 Series switches are equipped with multiple 10/100/1000Base-TX twisted pair ports

Connector

All twisted pair ports feature 8-pin RJ-45 connectors. For the port pinouts, see “RJ-45 Twisted Pair Port Connectors” on page 85.

Speed

The ports are 10Base-T, 100Base-TX, and 1000Base-T compliant and capable of 10 Mbps, 100 Mbps, and 1000 Mbps speeds. The ports default configuration is IEEE 802.3u Auto-Negotiation compliant. With Auto-Negotiation enabled, the switch automatically matches the highest possible common speed between the switch port and its end-node. For example, if an end-node is capable of only 10 Mbps, the switch sets the port connected to the end-node to 10 Mbps.

Alternatively, each port can be manually configured to 10 Mbps, 100 Mbps, and 1000 Mbps via the switches and push buttons. See “MDI/MDI-X” for the corresponding description of the MDI-X configuration.

Duplex Mode

Each twisted pair port on the switch can operate in either half- or full-duplex mode at 100/10 Mbps and full-duplex mode only when operating at 1000 Mbps. The duplex default settings of the twisted pair ports are IEEE 802.3u-compliant and automatically negotiate the duplex mode setting.

> **Note**
> In order for the switch to automatically set the duplex mode for each port correctly at 100/10 Mbps, the end-nodes that you connect to the switch ports also need to be configured for Auto-Negotiation. Otherwise, a duplex mode mismatch can occur, affecting network performance. For further information, refer to “Duplex Mode” on page 26.

With the DIP switches and push buttons, each port can be manually configured for one of the following duplex modes: Auto-Negotiation, 1000M/Full, 100M/Full, 100M/Half, 10M/Full, 10M/Half.

MDI/MDI-X

The default configuration for all of the twisted pair ports on the switch is auto-MDI/MDI-X where the ports automatically configure themselves as MDI or MDI-X when connected to an end-node. Auto-MDI/MDI-X is in effect when the ports are configured for Auto-Negotiation or 1000M/FULL. In this mode, you can use a straight-through twisted pair cable to connect any network device to a port.

Note
See "Ethernet Port Configuration" on page 72 for the port configuration procedures.

You can manually force the highest numbered port to fixed MDI by using one of the front panel push buttons. When all of the ports are configured at once, then the configuration for all other ports is fixed MDI-X.

When a port is manually configured for a speed of 10M or 100M, then that port is also configured for fixed MDI-X except in the case of the highest numbered port, which is set to fixed MDI.

Cabling

Table 2 contains the cabling specifications for the twisted pair ports.

Table 2. Twisted Pair Cabling and Distances

Speed	Type of Cable	Maximum Operating Distance
10 Mbps	Two-pair Category 3 or better unshielded twisted pair cable	100 m (328 ft)
100 Mbps	Two-pair Category 5 or better unshielded twisted pair cable	100 m (328 ft)
1000 Mbps	Four-pair Category 5e or better unshielded twisted pair cable	100 m (328 ft)

Power Connector

The AT-GS920 switches have a single AC power supply socket on the back panel. Use the AC power cord that is supplied with the switch.

Note
To power the switch ON or OFF, connect or disconnect the power cord from the switch.

Configuration Switches and LED Descriptions

The LEDs display status information when the switch is in a Normal operating mode or in a Configuration mode.

The GS920 Series LEDs and configuration switches are located on the front panel of the chassis. Refer to Figure 7, “AT-GS920/8 Front Panel Configuration DIP Switches and LEDs” for their locations.

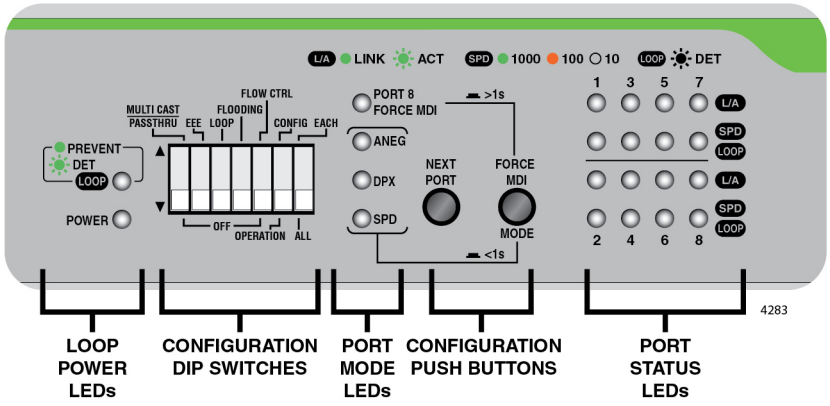


Figure 7. AT-GS920/8 Front Panel Configuration DIP Switches and LEDs

Note
The front panel Configuration switches and LED locations are shown for the AT-GS920/8 switch. Similar switch and LED layouts can also be found on the AT-GS920/24 and AT-GS920/16 front panels.

The following tables describe the LED groups on the GS920 Series switches:

- “Power LED”
- “Loop Prevention LED” on page 24
- “Port Mode LEDs” on page 24
- “Port Status LEDs” on page 25

Power LED

The Power LED indicates the status of the chassis power being ON or OFF. See Table 3, “Power LED”.

Table 3. Power LED

LED	State	Description
PWR	Green ON	Power ON
	OFF	Power OFF

Loop Prevention LED

The Loop Prevention LED indicates if the Loop Prevention feature is enabled or disabled and if a loop condition has been detected and blocked on one of the Ethernet ports. See Table 4, "Loop Prevention LED".

Table 4. Loop Prevention LED

LED	State	Description
LOOP Prevention	Green ON	Enable Loop Prevention
	Green Blinking	Loop condition detected
	OFF	Disable Loop Prevention

Port Mode LEDs

See "Ethernet Port Configuration" on page 72 for the configuration procedures and more information.

When the Ethernet ports are being configured, the Port Mode LEDs indicate their configuration. See Table 5, "Port Mode LEDs".

Table 5. Port Mode LEDs

LED	State	Description
Force MDI[a,b]	Green ON	Select Enabled - FORCE MDI for the highest Ethernet port and fixed MDI-X for all other Ethernet ports.
	OFF	Select Auto MDI/MDI-X
Auto-Negotiation	Green ON	Select Enabled - Auto-Negotiation
	OFF	Select Disabled - Auto-Negotiation
Duplex	Green ON	Select Full Duplex Mode
	OFF	Select Half Duplex Mode
Speed	Green ON	Select 1000M speed
	Amber ON	Select 100M speed
	OFF	Select 10M speed
ALL Mode LEDs	Green Blinking	Reset to default indication when blinking on all 4 MODE LEDs

a. When the port speed is configured for Auto Negotiation or 1000M/Full, the MODE/FORCE MDI push button affects the FORCE MDI LED as described above.

b. When the port speed is configured individually or altogether for 100M or 10M, the respective ports are always configured as follows:
AT-GS920/8: Ports 1-7 => MDI-X, Port 8 => MDI
AT-GS920/16: Ports 1-15 => MDI-X, Port 16 => MDI
AT-GS920/24: Ports 1-23 => MDI-X, Port 24 => MDI

Port Status LEDs

Two ports status LEDs are assigned to each port. When the switch is in the Normal operating mode, the upper port LED indicates the Link/Activity status, and the lower LED indicates the port speed and loop detection status. When the switch is in the Configuration mode, the upper port LED is OFF and the lower LED indicates if the specific port is selected to be configured. See Table 6, “Port Status LEDs for Normal and Configuration Modes”.

Table 6. Port Status LEDs for Normal and Configuration Modes

Mode	Port LED Position	LED	State	Description
Normal Mode	Upper LEDs	Link/Activity	Green ON	Valid Link has been established
			Green Blinking	Transmitting or Receiving Data
			OFF	No Link
	Lower LEDs	SPEED	Green ON	1000Mbps Link
			Amber ON	100Mbps Link
			OFF	10Mbps Link or No Link
		LOOP Indication	Green Blinking	1000Mbps Link. A loop condition is detected and the port is automatically blocked by switch to relieve the loop.
			Amber Blinking	100Mbps or 10Mbps Link. A loop condition is detected and the port is automatically blocked by switch to relieve the loop.
Configuration Mode	Lower LEDs[a]	Port Select	Green Blinking[b]	Indicates the port is selected and eligible to be configured with front panel DIP switches.
			OFF	Port is not selected.

a. The Upper LED for each port is not used in the Configuration Mode.
b. When all of the Lower LEDs are blinking together in the Configuration Mode, then all of the Ethernet ports are eligible to be configured at once. When only one of the Lower LEDs is blinking, then that port is eligible to be individually configured.

AT-GS920 Feature Descriptions

An Ethernet switch interconnects network devices, such as workstations, printers, routers, and other Ethernet switches, so that they can communicate with each other by sending and receiving Ethernet frames. This section discusses the following features:

- "Duplex Mode"
- "Store and Forward"
- "Multicast Frame Pass-Through"
- "Energy Efficiency Ethernet (EEE)"
- "Loop Prevention"
- "Flooding"
- "Backpressure and Flow Control"

Duplex Mode

Duplex mode refers to how an end node receives and transmits data. If an end node can receive or transmit data, but not both simultaneously, it is operating in half-duplex mode. If an end node can both receive and transmit data simultaneously, the end node is operating in full-duplex mode. As such an end node capable of operating in full-duplex can handle data much faster than an end node that can only operate in half-duplex mode.

The twisted pair ports on the GS920 Series switch can operate in half- or full-duplex mode for 10/100 Mbps. They are IEEE 802.3u-compliant and use Auto-Negotiation to set the duplex mode setting for you automatically.

Note
In order for a switch port to successfully Auto-Negotiate its duplex mode with a 10 or 100 Mbps end-node, the end-node should also be configured for Auto-Negotiation. Otherwise, a duplex mode mismatch can occur. A switch port using Auto-Negotiation defaults to half-duplex if it detects that the end-node is not using Auto-Negotiation. This results in a mismatch if the end-node is operating at a fixed duplex mode of full-duplex.

Store and Forward

The GS920 Series switch uses store-and-forward as the method for receiving and transmitting frames. When an Ethernet frame is received on a switch port, the switch does not retransmit the frame out the destination port until it has received the entire frame and stored the frame in a port buffer. It then examines the frame to determine if it is a valid frame. Invalid frames such as fragments or runts are discarded by the switch. This insures that only valid frames are transmitted out the switch ports and that damaged frames are not propagated on your network.

Multicast Frame Pass-Through

The Multicast Frame Pass-Through function includes EAP, BPDU frame types and others.

> **Note**
> When Multicast Frame Pass-Through is enabled, the Flooding feature must be disabled.

This feature can be enabled or disabled by setting DIP switch # 1 (MULTICAST PASSTHRU). See “Multicast Frame Pass-Through” on page 61 for the procedure to enable and disable this feature.

Energy Efficiency Ethernet (EEE)

The GS920 Series switches support IEEE 802.3az Energy Efficiency Ethernet (EEE) when the twisted pair ports are operating at a speed of 100Mbps or 1000Mbps. When EEE is enabled on the switch, the power consumption to keep links at a these speeds is reduced during periods of low data activity.

> **Note**
> When a GS920 Series switch is operating 10Mbps, EEE is not supported.

This feature can be enabled or disabled by setting DIP switch # 2 (EEE). See “Energy Efficiency Ethernet (EEE)” on page 64 for the procedure to enable and disable this feature.

Loop Prevention

The GS920 Series switches support Loop Prevention. When a physical network has more than one path between two endpoints, a network loop occurs. This results is a broadcast storm which slows all other Ethernet traffic on the network. With Loop Prevention enabled, the GS920 Series switches blocks the specific switch port that is associated with the excessive traffic.

Please refer to Appendix C, “Loop Prevention Feature” on page 95 for a more detailed explanation of this feature,

> **Note**
> Flow Control must be disabled when Loop Prevention is enabled. Loop Prevention is not supported when Flow Control is also enabled.

This feature can be enabled or disabled by setting DIP switch # 3 (Loop). See “Loop Prevention” on page 66 for the procedure to enable and disable this feature.

Flooding

The Flooding mode allows all received legal frames to be switched through the GS920 Series switch.

> **Note**
> The Flooding mode has a higher priority and takes precedence over the Multicast Frame Pass-Through feature. If the Multicast Frame Pass-Through feature is desired, then the Flooding feature must be disabled.

This feature can be enabled or disabled by setting DIP switch # 4 (Flooding). See "Flooding" on page 68 for the procedure to enable and disable this feature.

> **Note**
> The GS920 series switches DO NOT SUPPORT the combination of Flooding & Flow Control. If both the flooding and flow control features are enabled at once, traffic will be stopped by pause packet.
> For example: 1G traffic --> 10Mbps,100Mbps, then 1G traffic will be 10Mbps because of pause packet.

Backpressure and Flow Control

To maintain the orderly movement of data between the end-nodes, an Ethernet switch may periodically need to signal an end-node to stop sending data. This can occur under several circumstances. For example, if two end-nodes are operating at different speeds, the switch, while transferring data between the end-nodes, might need to instruct the faster end-node to stop transmitting data to allow the slower end-node to catch up. An example of this would be when a server operating at 100 Mbps is sending data to a workstation operating at only 10 Mbps.

How a switch signals an end-node to stop transmitting data differs depending on the duplex mode of the end-node and switch port. A twisted pair port operating in half-duplex mode stops an end-node from transmitting data by forcing a collision. A collision on an Ethernet network occurs when two end-nodes attempt to transmit data using the same data link at the same time. A collision causes an end-node to stop sending data, wait for a brief period of time, and then retransmit the same data. Once the switch is ready to receive data again, the switch stops forcing collisions. This is referred to as backpressure.

A port operating in full-duplex mode uses PAUSE frames, as specified in the IEEE 802.3x standard, to stop the transmission of data from an end-node. Whenever the switch wants an end-node to stop transmitting data, it issues this frame. The frame instructs the end-node to cease transmission for a period of time specified within the frame. The switch continues to issue PAUSE frames until it is ready again to receive data from the end-node. This is referred to as flow control. Refer to Table 7, "Flow Control - Supported Speeds" on page 29 for Backpressure and Flow

control support vs. port speed.

Table 7. Flow Control - Supported Speeds

Speed Configuration	Flow Controllable	
	Pause Frame	Back Pressure
Auto Negotiation	Support	Support
1G Full Auto	Support	Not Support
100M Full	Not Support	Not Support
100M Half	Not Support	Support
10M Full	Not Support	Not Support
10M Half	Not Support	Support

This feature can be enabled or disabled by setting DIP switch # 5 (FLOW CTRL). See “Flow Control” on page 70 for the procedure to enable and disable this feature.

Note
The GS920 series switches DO NOT SUPPORT the combination of Flooding & Flow Control. If both the flooding and flow control features are enabled at once, traffic will be stopped by pause packet.
For example: 1G traffic --> 10Mbps,100Mbps, then 1G traffic will be 10Mbps because of pause packet.

Chapter 2

Hardware Installation

This chapter contains the following sections:

Reviewing Safety Precautions

Review the following safety precautions before you begin to install the switch.

Note
Important: The ✍ indicates that translations of the safety statement are available in the PDF document ***Translated Safety Statements*** posted on the Allied Telesis website at **alliedtelesis.com/support**.

Warning
To prevent electric shock, do not remove the cover. No user-serviceable parts inside. This unit contains hazardous voltages and should only be opened by a trained and qualified technician. To avoid the possibility of electric shock, disconnect electric power to the product before connecting or disconnecting the cables. ✍ E1

Warning
Do not work on equipment or cables during periods of lightning activity. ✍ E2

Warning
Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. ✍ E3

Warning
Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts. ✍ E4

Caution
Air vents must not be blocked and must have free access to the room ambient air for cooling. ✍ E6

Note
All Countries: Install product in accordance with local and National Electrical Codes. ✍ E8

Note
Operating Temperature. This product is designed for a maximum ambient temperature of 50 degrees C. ✍ E57

Warning
An insecurely attached device on a wall may fall and the falling device may lead to damaging itself or causing injuries. E96

Warning
Do not install the device on an unstable wall or a wall affected by vibration or impact. The device may fall and falling device may lead to damaging itself or causing injuries. E97

Warning
Do not install the device high on a wall. The device may fall and the falling device may lead to damaging itself or causing injuries. E98

Warning
Disconnecting the Device: If the device becomes damaged or you encounter abnormality with the device, disconnect the power plug from the AC wall outlet immediately. E100

Warning
Use appropriate screws to attach the device and brackets to a 19-inch rack. If a device is installed insecurely in a rack, it may fall, potentially causing injuries or damage to the device. E104

Selecting a Site for the Switch

Observe the following requirements when choosing a site for the GS920 Series switch:

- If you plan to install the switch on a table, make sure that the table is level and secured.
- If you plan to install the switch on a wall, make sure that the wall is straight and secured.
- If you plan to install the switch in an equipment rack, make sure that the rack is safely secured to the floor and will not tip over. Devices in a rack should be installed starting at the bottom, with the heavier devices near the bottom of the rack.
- The power outlet for the switch should be located near the unit and should be easily accessible.
- The site should provide for easy access to the ports and the LEDs on the front of the switch should be easily viewed.
- To allow proper cooling off the switch, air flow around the unit and through its vents on the side should not be restricted.
- Do not place objects on top of the switch.
- Do not expose the switch to moisture or water.
- Ensure that the site is a dust-free environment.
- Use dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.

Planning the Installation

Table 8 contains the cabling specifications for the twisted pair ports.

Table 8. Twisted Pair Cabling and Distances

Speed	Type of Cable	Maximum Operating Distance
10 Mbps	Category 3 or better unshielded twisted pair cable	100 m (328 ft)
100 Mbps	Category 5 or unshielded twisted pair cable	100 m (328 ft)
1000 Mbps	Four-pair Category 5e unshielded twisted pair cable	100 m (328 ft)

Note
The twisted pair ports on the switch feature Auto-MDI when operating at either 10/100 Mbps. Each port is individually configured as MDI or MDI-X when connected to an end-node. Consequently, you can use a straight-through twisted pair cable when connecting any network device to a twisted pair port on the switch. A port operating at 10 or 100 Mbps uses four of the eight strands in twisted pair wiring.

Unpacking the Switch

To unpack a GS920 Series switch, perform the following procedure:

1. Remove all components from the shipping package.

> **Note**
> Store the packaging material in a safe location. Allied Telesis recommends that you use the original shipping material to return the unit to Allied Telesis if required.

2. Place the switch on a level, secure surface.
3. Verify that the hardware components are included in your switch package.

AT-GS920/24 Shipping Contents

The contents of the AT-GS920/24 shipping box as shown in Table 9:

Table 9. AT-GS920/24 Shipping Box Contents

Description	Illustration
AT-GS920/24 Switch	
AC Power cord	
Rubber feet (Set of 4)	
Four mounting screws	

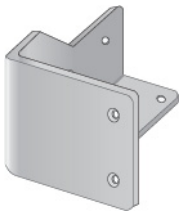
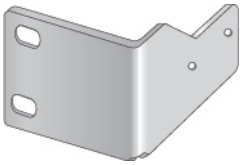
Unpacking the AT-GS920/24 Bracket Kit

The AT-GS920/24 also comes with the AT-GS920/24 Bracket Kit. Verify that all hardware components in your Bracket Kit are included as listed in Table 10.

Note
If you plan to install the AT-GS920/24 on a wall or in an equipment rack, use the AT-GS920/24 Bracket Kit provided in the shipping box with the switch.

Note
If you plan to install the AT-GS920/24 on a wall in Japan, you must order an AT-BRKT-J22 optional wall mount kit separately from the switch. If you are installing the AT-GS920/24 in an equipment rack in Japan, use the AT-GS920/24 Bracket Kit provide with the unit.

Table 10. Components in the AT-GS920/24 Bracket Kit

Bracket Description	AT-GS920/24
Bracket for the right side of the switch	
Bracket for the left side of the switch	
Extension	
Four M3x6mm screws for attaching the brackets to the switch	
Two M4x6mm screws for attaching the right side bracket and extension	

AT-GS920/16 Shipping Contents

The contents of the AT-GS920/16 shipping box as shown in Table 11:

Note
If you plan to install the AT-GS920/16 on a wall, you must order an AT-BRKT-J23 optional wall mount kit separately from the switch.

Note
If you plan to install the AT-GS920/16 in an equipment rack, you must order an AT-RKMT-J05 optional 19" rack mount kit separately from the switch.

Table 11. AT-GS920/16 Shipping Box Contents

Description	Illustration
AT-GS920/16 Switch	
AC Power cord	
Rubber feet	
Four mounting screws	

AT-GS920/8 Shipping Contents

The contents of the AT-GS920/8 shipping box as shown in Table 12:

Note
If you plan to install the AT-GS920/8 on a wall, you must order an AT-BRKT-J23 optional wall mount kit separately from the switch.

Note
If you plan to install the AT-GS920/8 in an equipment rack, you must order an AT-RKMT-J08 optional 19” rack mount kit separately from If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

Table 12. AT-GS920/8 Shipping Box Contents

Description	Illustration
AT-GS920/8 Switch	
AC Power cord	
Rubber feet	
Four mounting screws	

Installing the Switch on a Table or Desktop

To install the switch on a table or desktop, perform the following procedure:

1. Remove all the items from the packaging.
2. Store the packaging material in a safe place.

   In the event a problem occurs and you need to return the unit, use as much of the original shipping material as possible.
3. Install the four rubber feet with the four screws provided on the bottom of the switch chassis. See Figure 8.

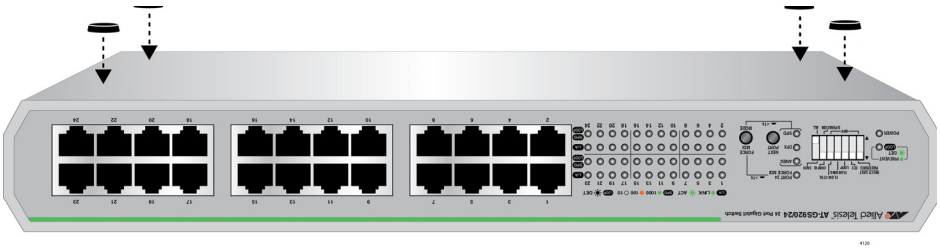


Figure 8. Installation of Rubber Feet

4. Place the switch on a flat and secure surface with the rubber feet firmly on the table or desktop, leaving a minimum of 4" around the switch for ventilation.
5. Proceed to "Cabling the Switch" on page 54 for the cable installation.

Installing the Switch on a Wall

All three AT-GS920 switches can be mounted on a wall.

Guidelines for Installing the Switch on a Wall

Before planning to install the switch on a wall, review the following guidelines:

- To install the AT-GS920/24 switch, use the brackets included in the shipping box in all locations except in Japan where you must purchase the AT-BRKT-J22 Wall Mount Kit separately.
- To install the AT-GS920/16 or AT-GS920/8 switch, you must purchase the AT-BRKT-J23 wall mount brackets separately.
- Any of the AT-GS920 switch models can be mounted on the wall with the front panel facing left, right, up or down.
- Before you begin to install the switch, review “Reviewing Safety Precautions” on page 32.

Items Need for Wall Installation

You need the following items to install the switch on a wall:

- A switch
- One pair of brackets (For more information, see ”Guidelines for Installing the Switch on a Wall”.)
- Four screws to attach the brackets to a wall
- Four plastic anchors for the screws
- Phillips-head screwdriver
- Pencil

Note
The screws, plastic anchors, Phillip-head screwdriver and pencil are not included in the shipping box. You must provide these items.

Wall Installation of AT-GS920/24

To install the AT-GS920/24 switch on a wall for all installations everywhere except in Japan, perform the following procedure:

Note
To install the AT-GS920/24 switch on a wall in Japan, see "AT-GS920/24 Switch Wall Mount Installation" on page 87 for the installation instructions using the AT-BRKT-J22 Wall Mount Kit separately.

1. Place all the items from the packaging on a work table.
2. If the rubber feet were previously installed, turn the switch over with the top side down and remove the rubber feet on the bottom of the switch using a Phillips-head screwdriver.

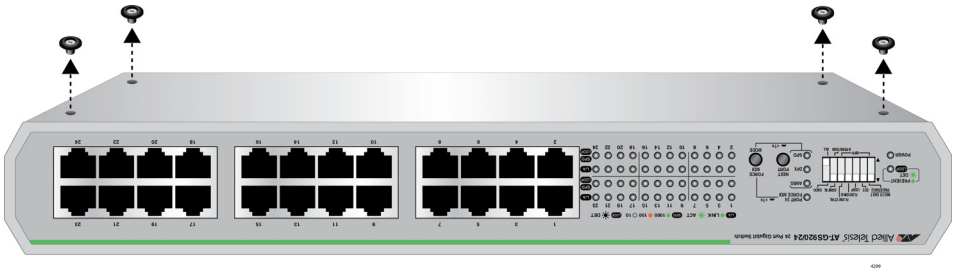


Figure 9. Removing Feet From the Chassis Bottom

3. Turn the switch over with the top side up.
4. Orient the brackets against the sides of the switch and secure them to the switch with the four screws provided as shown in Figure 10.

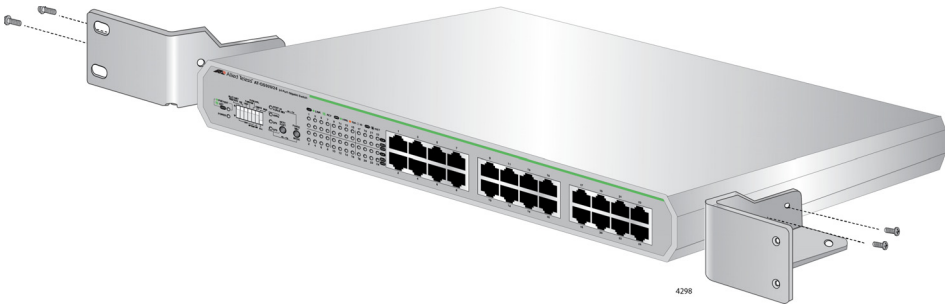


Figure 10. Attaching the Brackets to the AT-GS920/24 Switch

5. Have another person hold the switch with the brackets at the wall location where the switch is to be installed, while you use a pencil to mark the wall with the locations of the four holes in the brackets. See Figure 11 as an example.

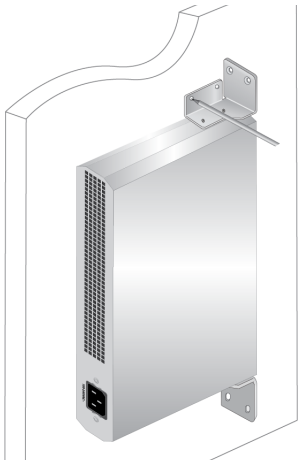


Figure 11. Marking the Screw Hole Locations

Note
Figure 11 shows the front panel oriented toward the right side. However, the switch can be mounted on the wall with the front panel facing left, right, up or down.

6. Pre-drill the marked locations on the wall.
7. Install the four plastic anchors into the wall in the holes drilled in previous step.
8. Position the switch on the wall and drive screws through the holes to attach the brackets on the wall. See Figure 12.

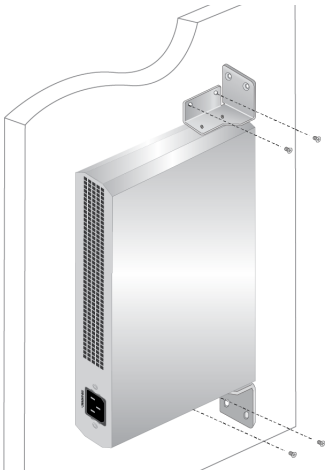


Figure 12. Driving the Screws through the Holes

9. Make sure that the two brackets are installed securely.
10. Proceed to "Cabling the Switch" on page 54.

Wall Installation of AT-GS920/16 or AT-GS920/8

This section explains the procedure for the installation either a AT-GS910/16 switch or a AT-GS910/8 switch on a wall using the AT-BRKT-J23 wall mount kit.

Note
You must purchase the AT-BRKT-J23 wall mount brackets separately.

Unpacking the AT-BRKT-J23 Wall Mount Kit

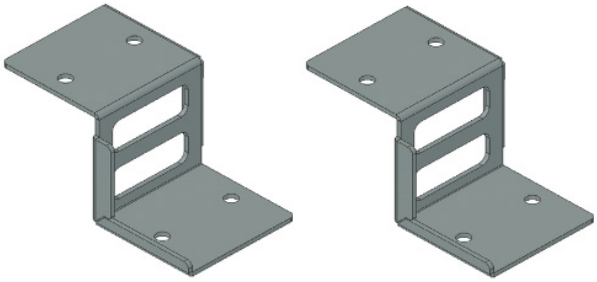
To unpack the AT-BRKT-J23 wall mount kit, perform the following procedure:

1. Remove all components from the shipping package.

Note
Store the packaging material in a safe location. You must use the original shipping material if you need to return the unit to Allied Telesis.

2. Verify that one pair of brackets is included in your wall mount package listed in Table 10.

Table 13. Components in the AT-BRKT-J23 Wall Mount Kit

	Components
One pair of brackets	

3. If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

Installing a Switch Using the AT-BRKT-J23 Wall Mount Kit

This section shows you steps to install a switch on a wall using the AT-BRKT-J23 kit. To install the switch on a wall, perform the following procedure:

1. If the rubber feet were previously installed, turn the switch upside down and remove them as shown in Figure 13.

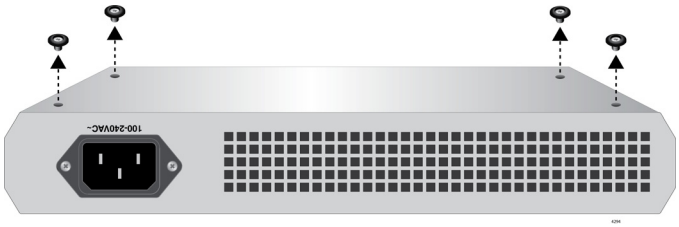


Figure 13. Removing the Rubber Feet

2. Orient the brackets against the sides of the switch.
3. Have another person hold the switch with the brackets at the wall location where the switch is to be installed, while you use a pencil to mark the wall with the locations of the four holes in the brackets. See Figure 14 as an example.

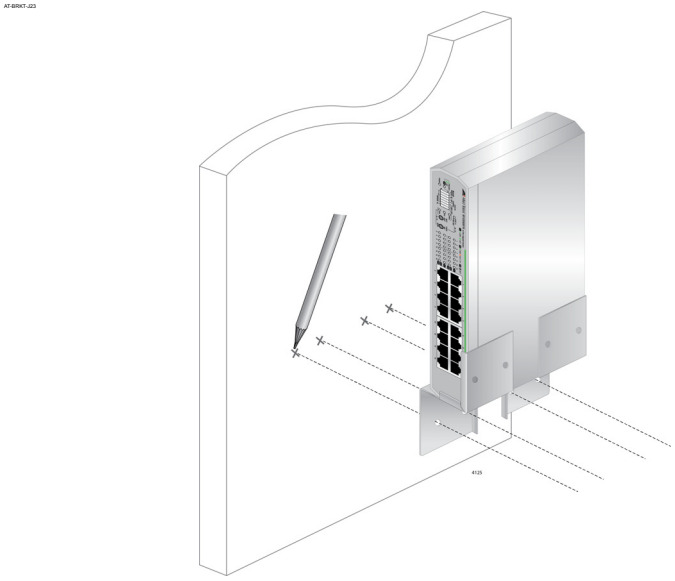


Figure 14. Marking the Screw Hole Locations

Note
Figure 14 shows the front panel oriented toward the left side. However, the switch can be mounted on the wall with the front panel facing left, right, up or down.

4. Pre-drill the marked locations on the wall at the locations marked in Step 3.
5. Install the four plastic anchors into the wall in the holes drilled in Step 4.
6. Position brackets on the wall and drive screws through the holes to attach the brackets on the wall. See Figure 15.

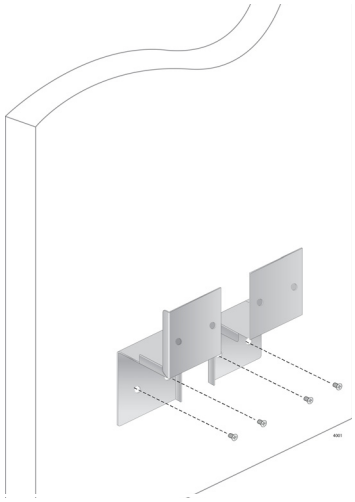


Figure 15. Driving the Screws through the Holes

7. Make sure that the two brackets are installed securely.
8. Slide the switch into the brackets on the wall as shown in Figure 16.

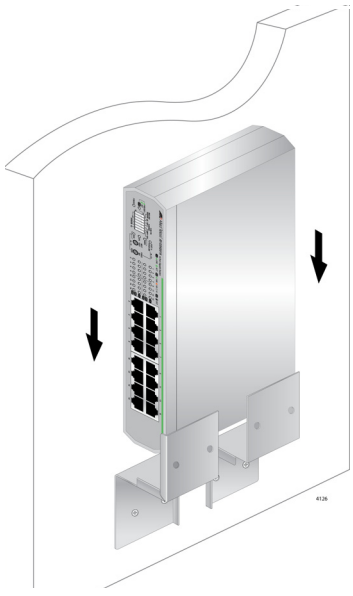


Figure 16. Placing the Switch into the Brackets

9. Proceed to "Cabling the Switch" on page 54.

Installing the Switch in an Equipment Rack

The AT-GS920 switches can be mounted on a 19-inch equipment rack.

Guidelines for Installing the Switch in a Rack

Before installing the switch on an equipment rack, review the following guidelines:

- To install the AT-GS920/24 switch, use the brackets included in the shipping box.
- To install the AT-GS920/16 or AT-GS910/8 switch, you must purchase the rack mount brackets separately. The AT-RKMT-J05 Rack Mount Kit is for the AT-GS920/16 switch and the AT-RKMT-J08 Rack Mount Kit is for the AT-GS920/8.
- Before you begin to install the switch, review “Reviewing Safety Precautions” on page 32

What to Prepare for Installation in a Rack

You need the following items to install the switch in an equipment rack:

- A switch
- One pair of brackets (For more information, see ”Guidelines for Installing the Switch on a Wall” above.)
- 19-inch equipment rack (not provided)
- Four screws for the equipment rack (not provided)
- Phillips-head screwdriver (not provided)

Rack Installation of AT-GS920/24

To install the AT-GS920/24 switch in an equipment rack, perform the following procedure:

1. Place all the items from the packaging on a work table.
2. Attach the extension to the bracket with the M4x6mm screws using a Phillips-head screw driver as shown in See Figure 17.

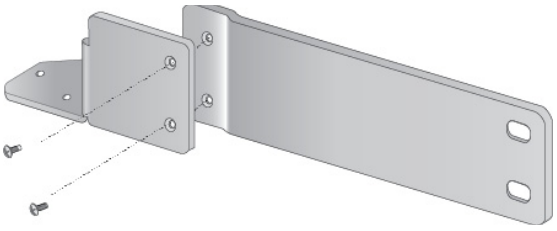


Figure 17. Attaching the Extension to the Bracket

3. If the rubber feet were previously installed, turn the switch upside down and place it on a table. Remove the rubber feet from the bottom of the switch using a Phillips-head screwdriver.

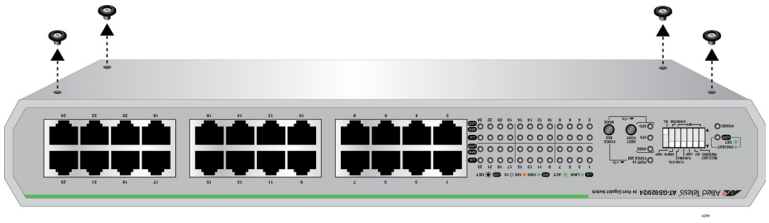


Figure 18. Removing Rubber Feet

4. Turn the switch over.
5. Attached the brackets to the switch with the M3x6mm screws using a Phillips-head screwdriver. See Figure 19.

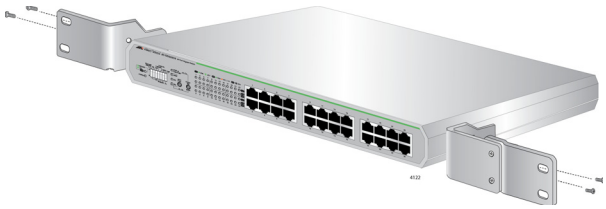


Figure 19. Attaching the Brackets to the Switch

6. Mount the switch in a standard 19-inch equipment rack with four equipment rack screws as shown in Figure 20.

Note
The screws for an equipment rack are not included in the shipping box.

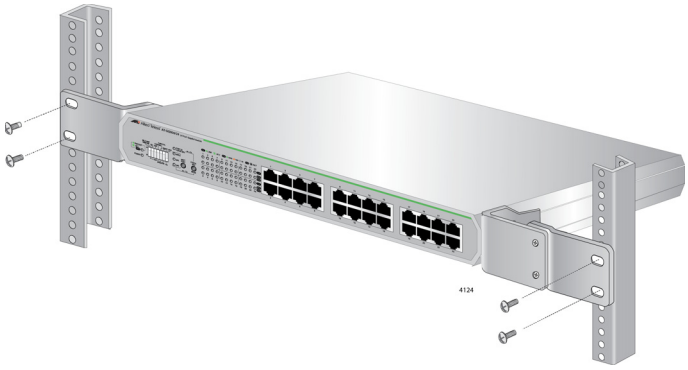


Figure 20. Attaching the Switch to an Equipment Rack

7. Proceed to "Cabling the Switch" on page 54.

Rack Installation of AT-GS920/16 or AT-GS920/8

To install the AT-GS920/16 or AT-GS920/8 switch in an equipment rack using the AT-RKMT-J05 or AT-RKMT-J08 rack mount kit respectively, perform the following procedures:

Note
You must purchase theAT-RKMT-J05 or AT-RKMT-J08 rack mount kit separately.

Unpacking the AT-RKMT-J05 or AT-RKMT-J08 Rack Mount Kit

To unpack the AT-RKMT-J05 or AT-RKMT-J08 rack mount kit, perform the following procedure:

1. Remove all components from the shipping package.

Note
Store the packaging material in a safe location. You must use the original shipping material if you need to return the unit to Allied Telesis.

---

2. Verify that all hardware components are included in your rack mount package listed in Table 10.

Table 14. Components in Rack Mount Kit

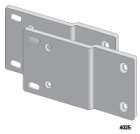
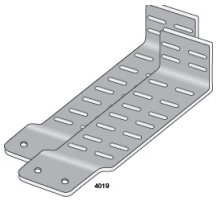
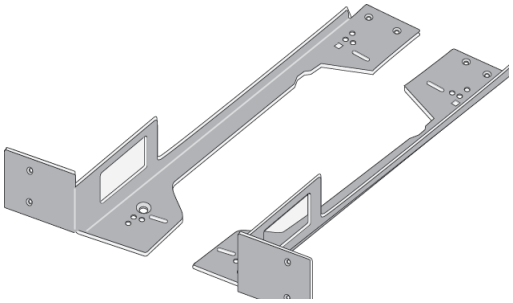
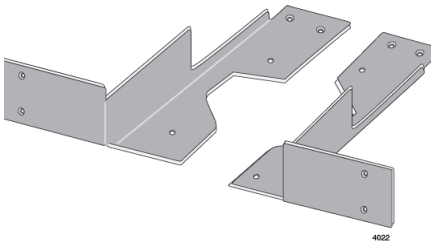
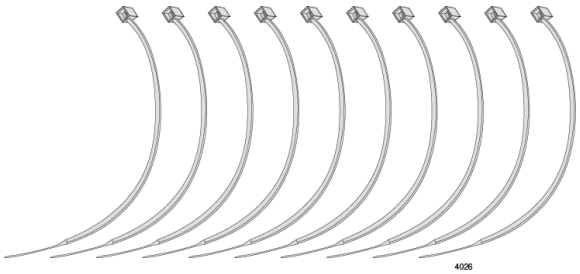
	Rack Mount Kit	
	AT-RKMT-J05	**AT-RKMT-J08**
Two Short Brackets		
Two Handles		
Two Cable Brackets		

Table 14. Components in Rack Mount Kit (Continued)

	Rack Mount Kit	
	AT-RKMT-J05	**AT-RKMT-J08**
Two Long Brackets		
Eight M3x6mm screws		
Eight M4x6mm screws		
Ten Tie-wrap		

3. If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

Install a AT-GS920/16 or AT-GS920/8 Switch Using the AT-RKMT-J05 or AT-RKMT-J08 Rack Mount Kit

This section gives the steps to install a switch in an equipment rack using the AT-RKMT-J05 or AT-RKMT-J08 kit.:

Note
The installation procedures are illustrated using the AT-RKMT-J05 rack mount kit as an example.

---

1. Place all the items from the packaging on a work table.
2. Remove the rubber feet if previously installed.
3. Attach the handle to the short bracket with M3x6mm screws using a Phillip-head screw driver as shown in Figure 21.

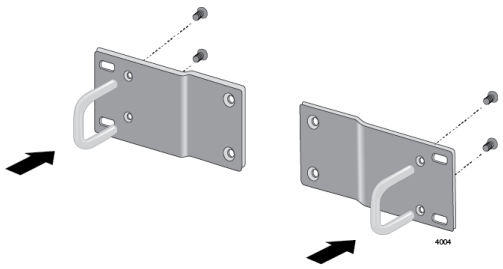


Figure 21. Attaching Handles to Brackets

4. Attach the short bracket and handle to the long bracket with M4x6mm screws using a Phillip-head screw driver as shown in Figure 22.

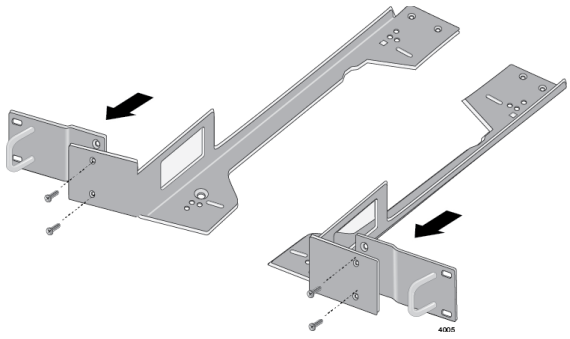


Figure 22. Attaching Brackets to Plates

5. Attach the cable bracket to the unit that you assembled in Step 4 with M4x6mm screws using a Phillip-head screw driver as shown in Figure 23.

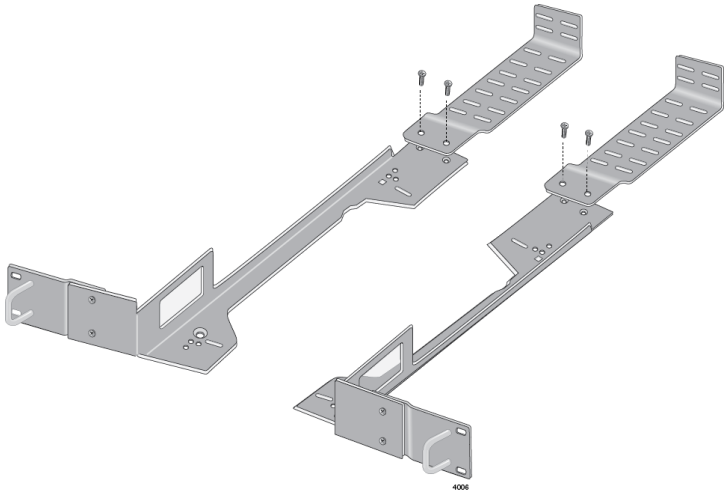


Figure 23. Attaching Cable Tray to Plates

6. Turn the switch over and place it on the work table.
7. Attach the units in Step 5 to the switch with M3x6mm screws using a Phillip-head screw driver as shown in Figure 24.

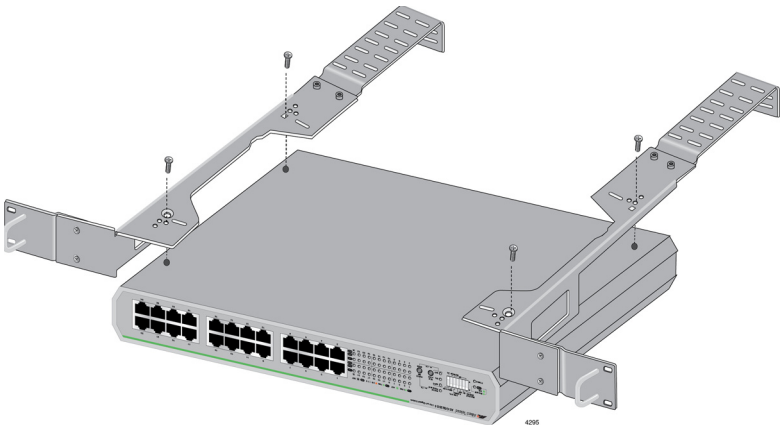


Figure 24. Attaching the Plates to the Switch

8. Mount the switch in a standard 19-inch equipment rack with four equipment rack screws as shown in Figure 25.

Note
The screws are not included in the AT-RKMT-J05 rack mount kit.

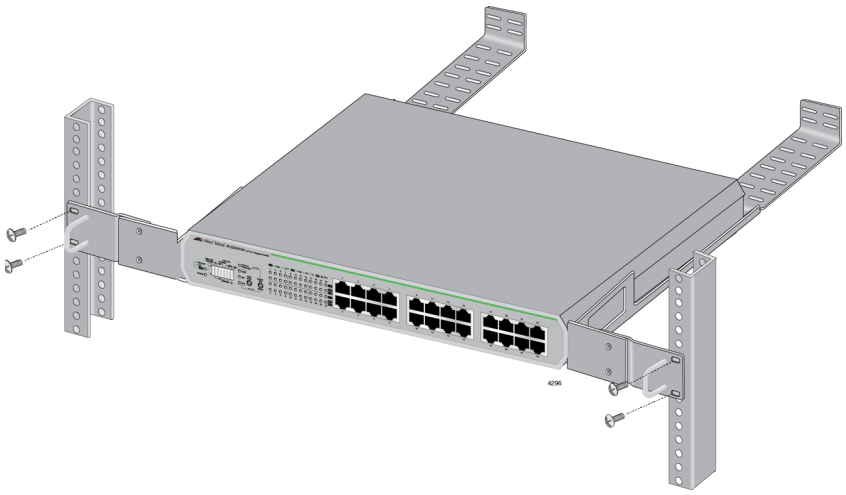


Figure 25. Attaching the Switch to Equipment Rack

9. Attach the power cord to the back panel of the switch.
10. Proceed to “Cabling the Switch” on page 54.

Cabling the Switch

After installing the switch on the desktop, connect twisted pair cables to the ports on the GS920 Series switch.

When connecting a twisted pair cable to a port, observe the following guidelines:

- An RJ-45 connector should fit snugly into the port on the switch. The tab on the connector should lock the connector into place.
- The ports on the switch are configure for auto-MDI/MDI-X out of the shipping box. You can use a straight-through twisted pair cable to connect any type of network device to a port on the switch.
- The network should not contain data loops, which can adversely affect network performance. A data loop exists when two or more network devices can communicate with each other over more than one data path.

Powering On the Switch

To power on the switch, perform the following procedure:

1. Plug the power cord into the power connector on the back of the switch.

2. Plug the other end of the power cord into a wall outlet.

Warning
Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. E3

Note
Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible. E5

3. The switch LEDs display an initial Power-ON sequence. See Figure 26.

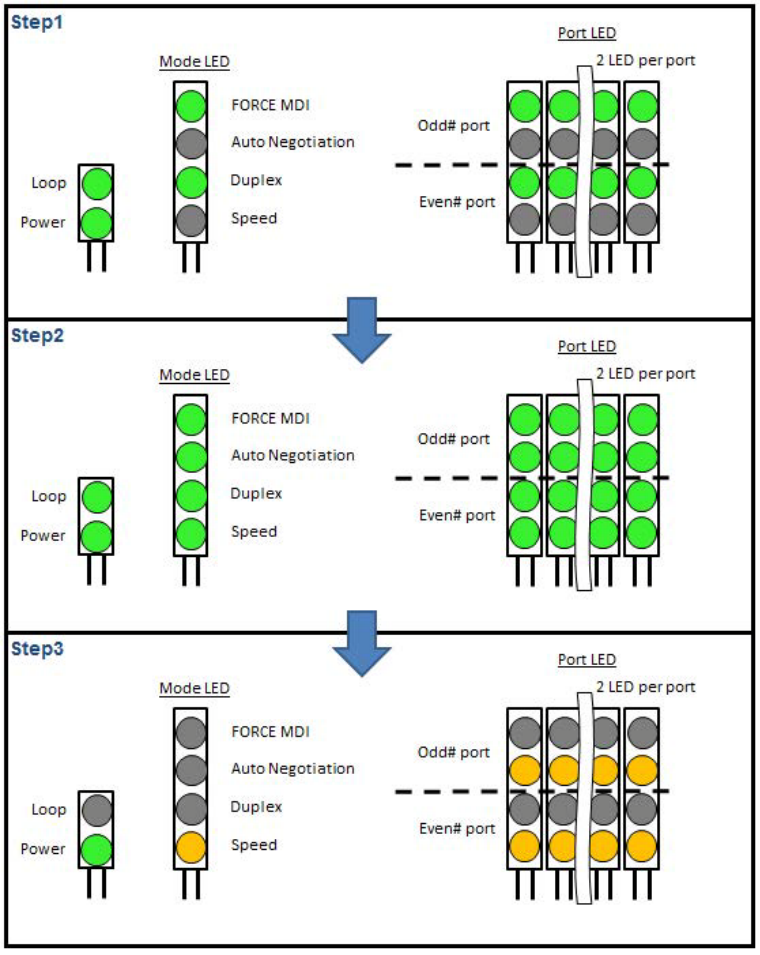


Figure 26. Initial Power-ON Sequence

4. After the Power-ON sequence completes, verify that the POWER LED is green. If the LED is OFF, see "Troubleshooting" on page 79.

   The switch is now powered on and ready for network operations.

Warning
Disconnecting the Device: If the device becomes damaged or you encounter abnormality with the device, disconnect the power plug from the AC wall outlet immediately. E100

5. If the switch is installed in a rack, use the tie-warps provided to secure the power cord, as shown in Figure 27.

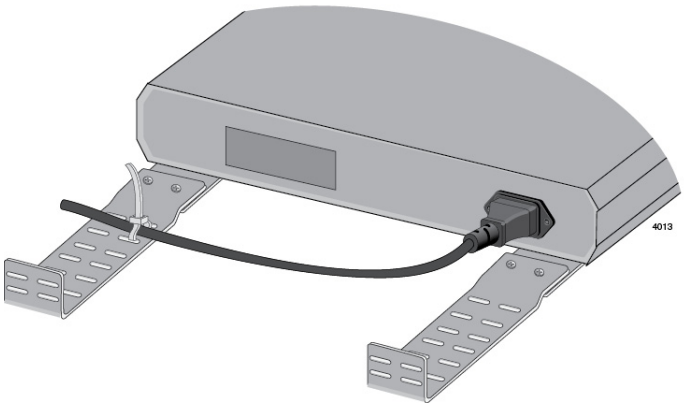


Figure 27. Securing the Power Cord Using Tie-wraps

Chapter 3

Switch Configuration

This chapter includes the following topics:

Configuration Switch and LED Locations

The GS920 Series switch is configured with the DIP switches and push buttons shown in Figure 28, "Front Panel Configuration Switches and LEDs".

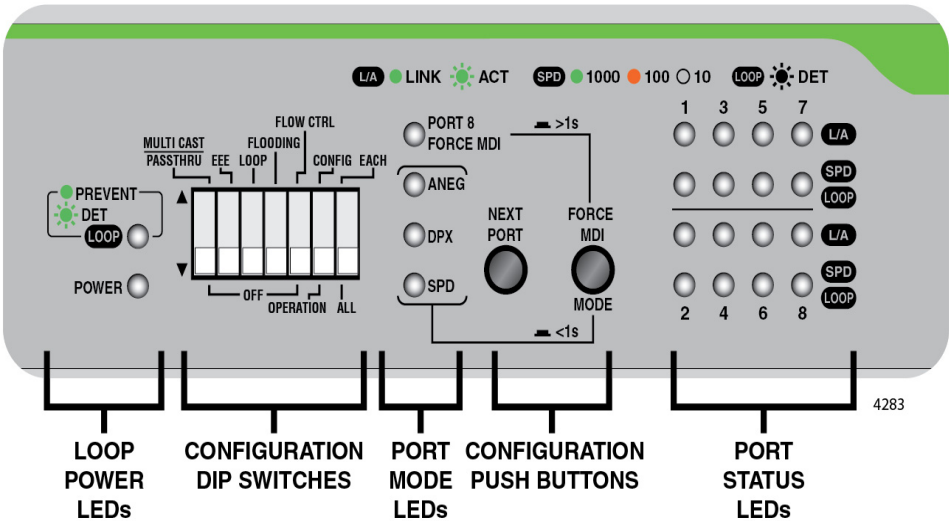


Figure 28. Front Panel Configuration Switches and LEDs

Reset Ports to Factory Default Configuration

The factory default configuration for the speed and duplex settings on all ports is Auto-Negotiation and Auto MDI/MDI-X. If the switch ports are configured differently and you want to return to the default configuration, perform the following procedure:

1. Set DIP switch # 6 (OPERATION/CONFIG) to the UP (CONFIG) position. See Figure 29. The switch is now in the port configuration mode.

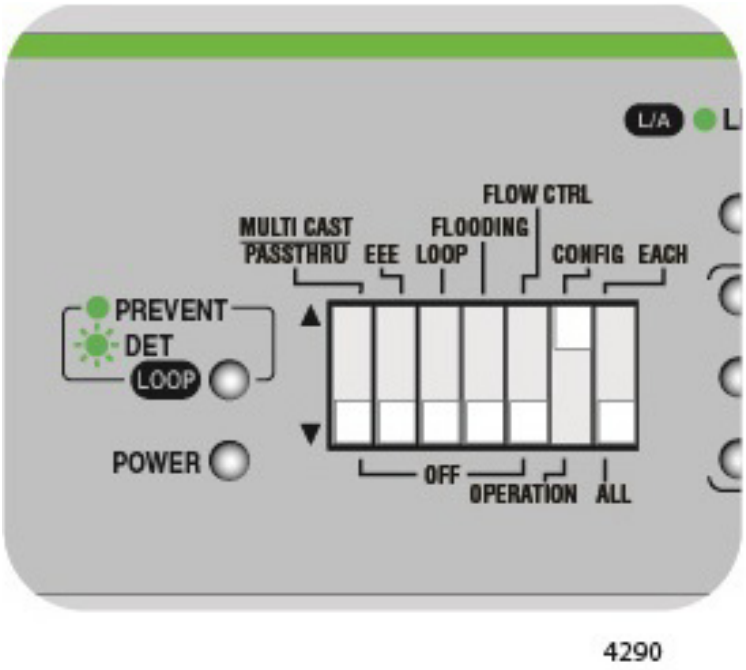


Figure 29. Setting the Switch to Port Configuration Mode

2. Set DIP switch # 7 (ALL/EACH) to the DOWN (ALL) position. The SPD/LOOP port LEDs will continually flash with the DIP switches in these positions.
3. Push the "NEXT PORT" button for 3 seconds or more. The four MODE LEDs will begin to flash until the button is released.
4. Set DIP switch # 6 (OPERATION/CONFIG) to the DOWN (OPERATION) position. The switch is now in the port operational mode. This new port configuration is now temporarily stored in flash memory, but is not yet implemented.
5. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new switch setting is now implemented and effective and the configuration of the ports is set to the factory default settings of Auto-Negotiation and Auto MDI/MDI-X.

Note
A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

Feature Configuration

The following features are configurable and are assigned to individual DIP switches:

- ”Multicast Frame Pass-Through”
- “Energy Efficiency Ethernet (EEE)” on page 64
- “Loop Prevention” on page 66
- “Flooding” on page 68
- “Flow Control” on page 70

Multicast Frame Pass-Through

DIP switch # 1 enables or disables the Multicast Frame Pass-Through feature. See Figure 28, “Front Panel Configuration Switches and LEDs” on page 58 for the DIP switch location on the front panel.

Note
The Flooding feature has priority over Multicast Frame Pass-Through feature when both are enabled. If you prefer to have the Multicast Frame Pass-Through feature enabled, the ATI recommends that you disable the Flooding feature. See “Disabling Flooding” on page 69 for more information.

Enabling Multicast Frame Pass-Through

Perform the following procedure to enable the Multicast Frame Pass-Through feature:

1. Set DIP switch # 1 to the UP position to enable this feature. See Figure 30.

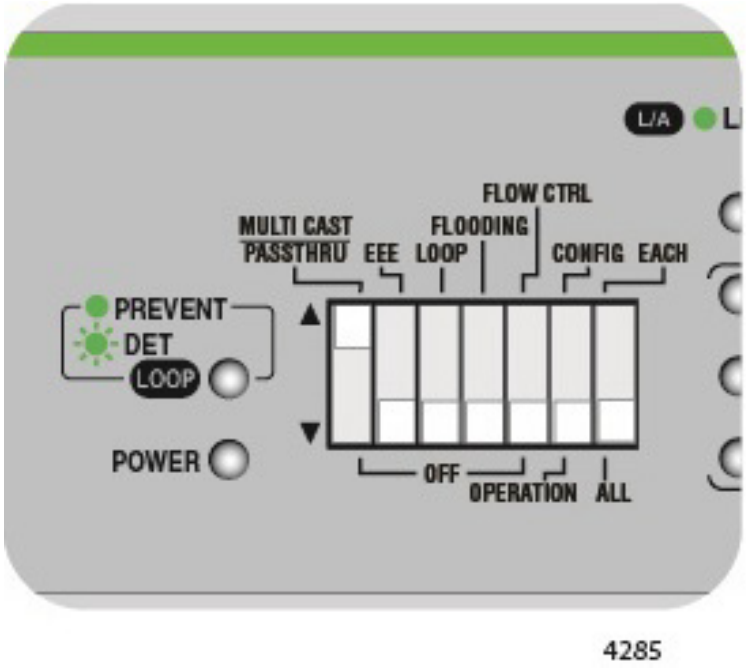


Figure 30. DIP Switch Setting for Enabling Multicast Frame Pass-Through

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new switch setting is now implemented and effective and the Multicast Frame Pass-Through feature is enabled.

Note
A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

In this configuration, other packet types such as EAP, BPDU and others are allowed to pass through the switch. The following multicast addresses are filtered out and are NOT allowed to pass through the switch:

01-80-C2-00-00-01
01-80-C2-00-00-02

Disabling Multicast Frame Pass-Through

Perform the following procedure to disable the Multicast Frame Pass-Through feature:

1. Set DIP switch # 1 to the DOWN position to disable this feature. See Figure 31.

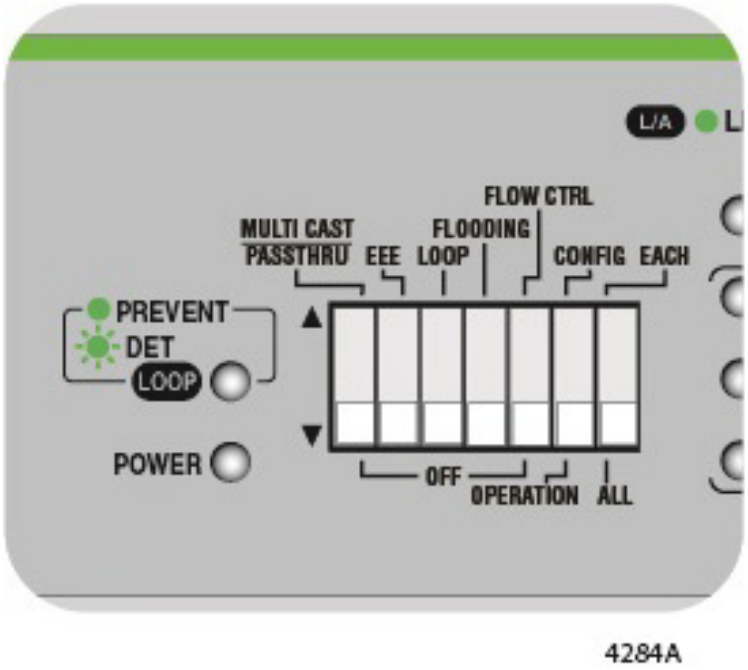


Figure 31. DIP Switch Settings for Disabling Multicast Frame Pass-Through

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new switch setting is now implemented and effective and the Multicast Frame Pass-Through is disabled.

Note
A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

Note
When this feature is disabled, the following multicast addresses are filtered out and are NOT allowed to pass through the switch:
01-80-C2-00-00-00
01-80-C2-00-00-01
01-80-C2-00-00-02
01-80-C2-00-00-03
01-80-C2-00-00-10
01-80-C2-00-00-20
01-80-C2-00-00-21

Energy Efficiency Ethernet (EEE)

DIP switch # 2 enables or disables the EEE feature. See Figure 28, "Front Panel Configuration Switches and LEDs" on page 58 for the DIP switch location on the front panel.

Enabling EEE

Perform the following procedure to enable the EEE feature:

1. Set DIP switch # 2 to the UP position to enable this feature. See Figure 32.

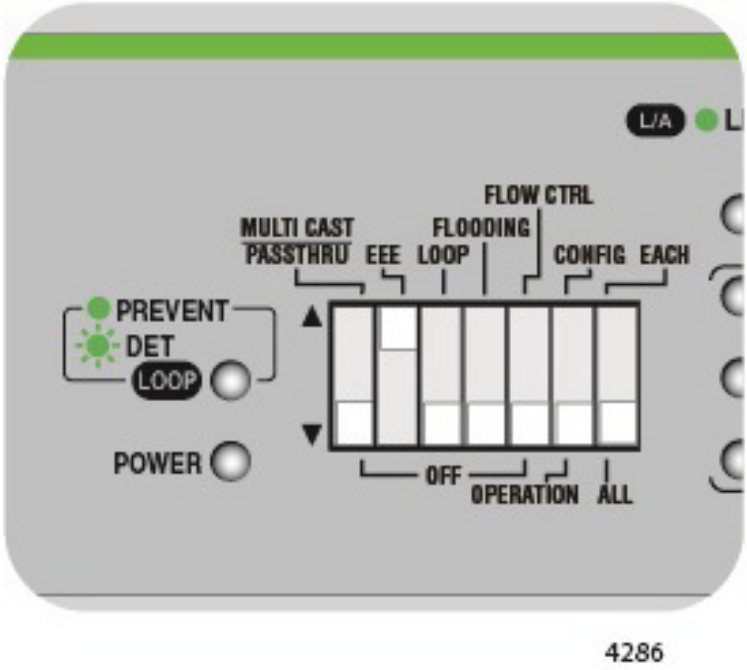


Figure 32. DIP Switch Settings for Enabling EEE

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new switch setting is now implemented and effective and the EEE energy saving behavior is now enabled for all the Ethernet ports.

Note
A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

EEE is supported only at 100M/1000M link speed with Auto-Negotiation enabled. For supported and unsupported speed/link port configurations, see Table 15, "EEE Support for Port Speed/Link Configuration" on page 65.

Table 15. EEE Support for Port Speed/Link Configuration

Supported Speed/Link	Unsupported Speed/Link
1000M Auto-Negotiation 100M Auto-Negotiation	100M Full Duplex 100M Half Duplex 10M Full Duplex 10M Half Duplex

Disabling EEE

Perform the following procedure to disable the EEE feature:

1. Set DIP switch # 2 to the DOWN position to disable this feature. See Figure 33.

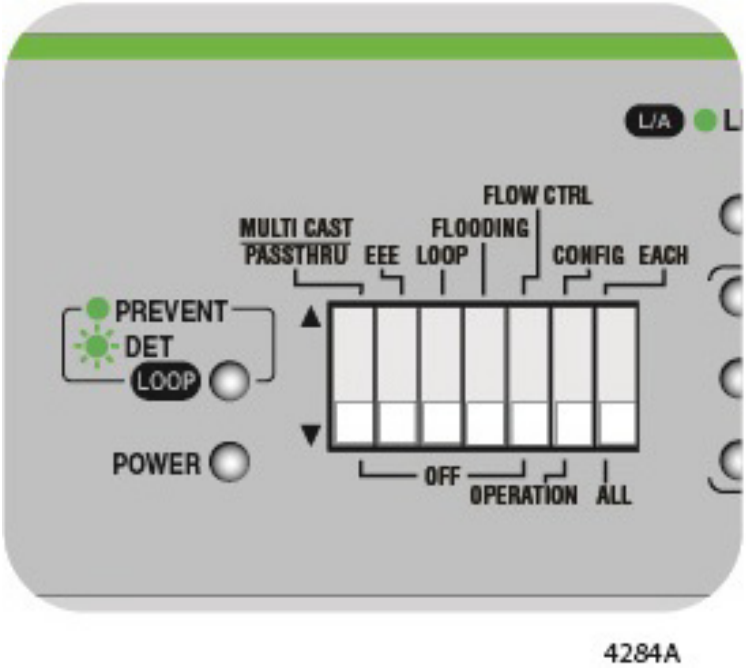


Figure 33. DIP Switch Settings for Disabling EEE

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new configuration is now implemented and effective and the EEE feature is disabled.

Note
A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

Loop Prevention

DIP switch # 3 enables or disables the Loop Prevention feature. See Figure 28, "Front Panel Configuration Switches and LEDs" on page 58 for the DIP switch location on the front panel.

Enabling Loop Prevention

Perform the following procedure to enable the Loop Prevention feature:

> **Note**
> Flow Control must be disabled by when the Loop Prevention feature is enabled. See "Disabling Flow Control" on page 71

1. Set DIP switch # 3 to the UP position to enable Loop Prevention. See Figure 34.

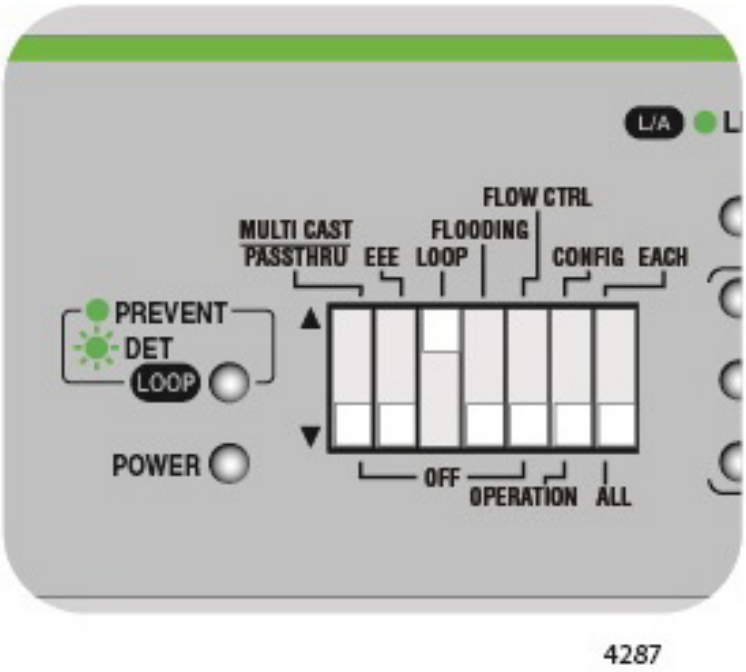


Figure 34. DIP Switch Settings for Enabling Loop Prevention

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new switch setting is now implemented and effective and the Loop Prevention feature is enabled for all the Ethernet ports.

> **Note**
> A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

The Loop Prevention LED should be a Solid Green or Blinking Green indicating that the feature is enabled.

Disabling Loop Prevention

Perform the following procedure to disable the Loop Prevention feature:

1. Set DIP switch # 3 to the DOWN position. See Figure 35.

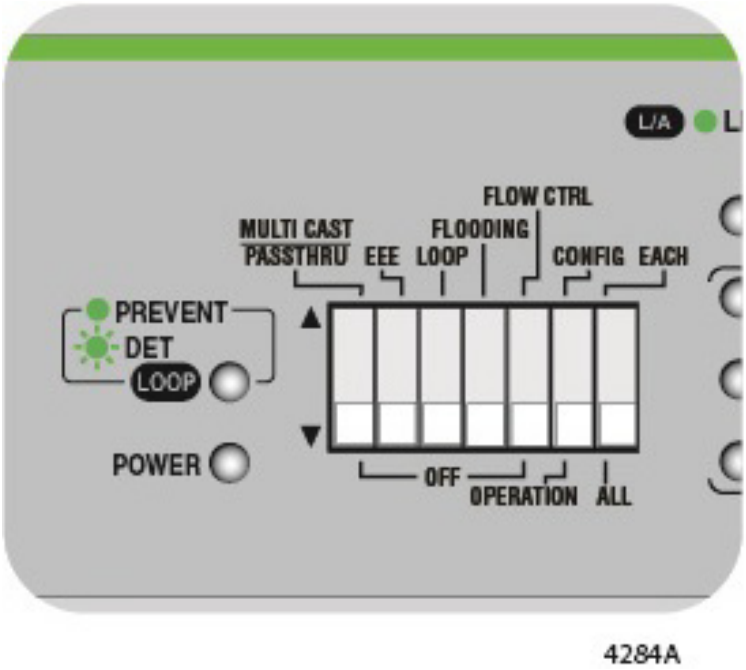


Figure 35. DIP Switch Settings for Disabling Loop Prevention

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new configuration is now implemented and effective and the Loop Prevention feature is disabled.

> **Note**
> A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

The Loop Prevention LED should be OFF indicating that the feature is disabled.

Flooding

DIP switch # 4 enables or disables the Flooding feature. See Figure 28, "Front Panel Configuration Switches and LEDs" on page 58 for the DIP switch location on the front panel.

Note
The Flooding feature has priority over Multicast Frame Pass-Through feature when both are enabled.

Note
When Flooding is enabled, all packet types including BPDU packets are allowed to pass through the switch with the following exceptions:
a. Any MAC address containing Ether-type 0x8808 is filtered on the AT-GS920/8 only.
b. 802.3x Pause Frames are filtered.

ATI recommends disabling the Multicast Frame Pass-Through feature when the Flooding feature is enabled.

Enabling Flooding

Perform the following procedure to enable the Flooding feature:

1. Set DIP switch # 4 to the UP position to enable this feature. See Figure 36.

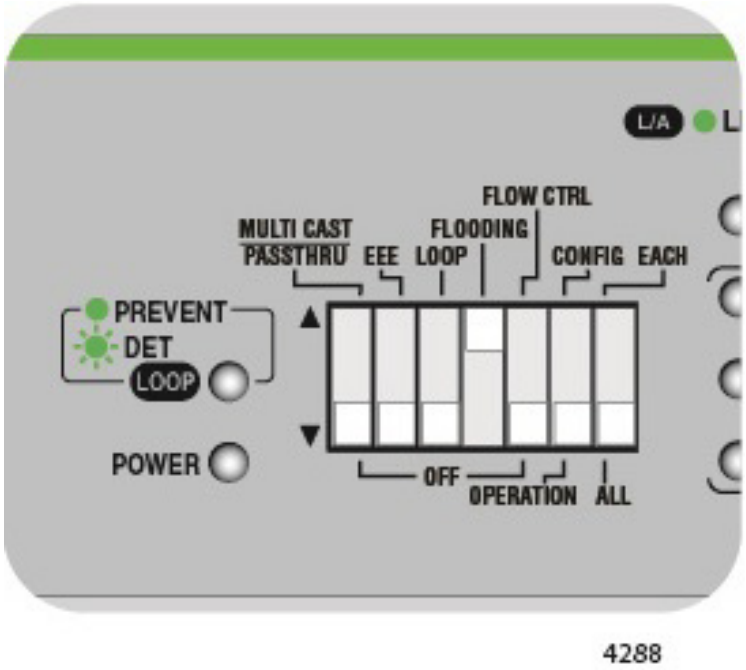


Figure 36. DIP Switch Settings for Enabling Flooding

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new switch setting is now implemented and effective and Flooding is enabled on all of the Ethernet ports.

Note
A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

Disabling Flooding

Perform the following procedure to disable the Flooding feature:

1. Set DIP switch # 4 to the DOWN position. See Figure 37.

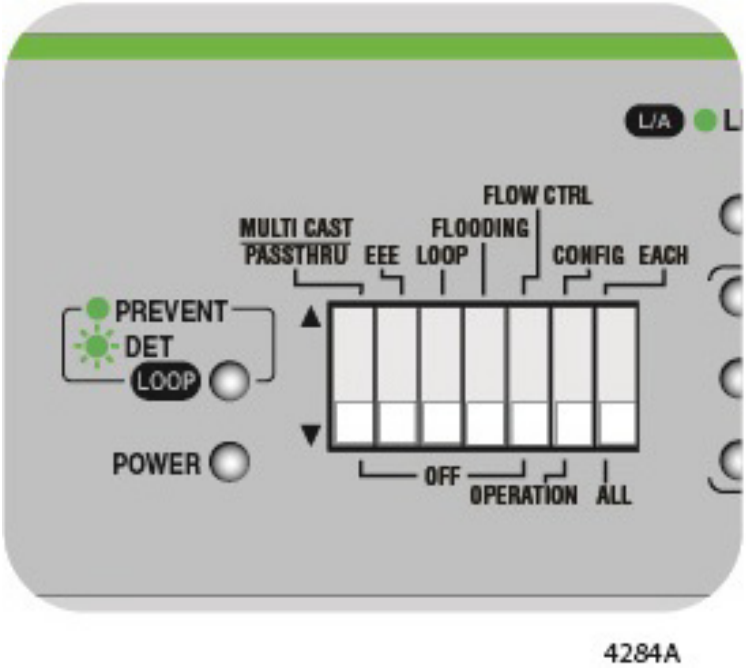


Figure 37. DIP Switch Settings for Disabling Flooding

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new configuration is now implemented and effective and the Flooding feature is disabled.

Note
A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

Flow Control

DIP switch # 5 enables or disables the Flow Control feature. See Figure 28, "Front Panel Configuration Switches and LEDs" on page 58 for the DIP switch location on the front panel.

Note
Loop Detection must be disabled when the Flow Control feature is enabled. See "Disabling Loop Prevention" on page 67

Enabling Flow Control

Perform the following procedure to enable the Flow Control feature:

1. Set DIP switch # 5 to the UP position to enable this feature. See Figure 38.

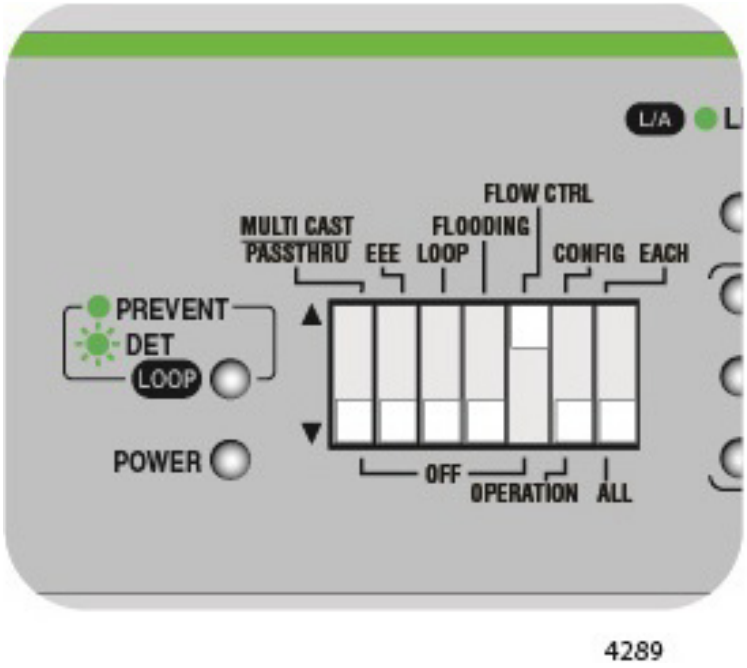


Figure 38. DIP Switch Settings for Enabling Flow Control

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new switch setting is now implemented and effective and the Flow Control feature is enabled.

Note
A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

Disabling Flow Control

Perform the following procedure to disable the Flooding feature:

1. Set DIP switch # 5 to the DOWN position to disable this feature. See Figure 39.

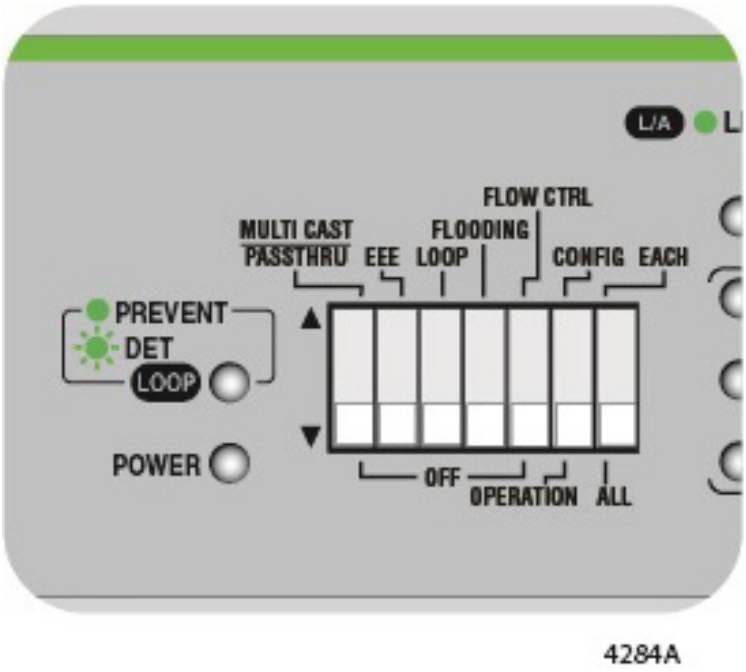


Figure 39. DIP Switch Settings for Disabling Flow Control

2. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new configuration is now implemented and effective and the Flow Control feature is disabled.

Note
A recently changed DIP switch setting becomes effective ONLY after you turn the switch's AC power OFF and then back ON.

Ethernet Port Configuration

The following Ethernet port configuration procedures are contained in this section:

- ”ALL Ports Configuration”
- “EACH Individual Port Configuration” on page 75

The AT-GS920 switch ports can be configured all together or individually for speed, duplex and MDI/MDI-X. This is done with a combination of the Configuration DIP switches (#’s 6 and 7) and the configuration push buttons on the front panel.

When configuring ALL the ports at once, toggling the FORCE MDI/MODE button for less than 1 second selects a specific speed and duplex setting. With the ports are specifically configured for either Auto Negotiation or 1000M/Full and the FORCE MDI/MODE button is pushed for more than 1 second, all the ports are set to MDI-X except for the highest numbered port which is set to MDI.

Note
As part of the ports being configured for 100M or 10M, all the ports are configured for MDI-X except for the highest numbered port, which is set to MDI. Pushing the FORCE MDI/MODE button for more than 1 second does not change these MDI/MDI-X settings when the ports are configured for these speeds.

When configuring EACH port individually, pushing the FORCE MDI/MODE button for less than 1 second selects a specific speed and duplex setting for the port that is selected. When a port is specifically configured for either Auto Negotiation or 1000M/Full and the FORCE MDI/MODE button is pressed for more than 1 second then the port is configured for MDI-X except if it is the highest numbered port which is set to MDI.

Note
When a selected port is configured for 100M or 10M, then that port is configured for MDI-X except if it is the highest numbered port and it is set to MDI. Pushing the FORCE MDI/MODE button for more than 1 second does not change these MDI/MDI-X settings when the ports are configured to these speeds.

Note
The highest numbered port cannot be forced to MDI-X and the other ports cannot be forced to MDI.

See Figure 28, “Front Panel Configuration Switches and LEDs” on page 58 for the DIP switch and push button location on the front panel.

ALL Ports Configuration

Perform the following procedure to simultaneously set all of the ports to the same speed and duplex configuration:

1. Set DIP switch # 6 (OPERATION/CONFIG) to the UP (CONFIG) position. The switch is now in the port configuration mode.

2. Set DIP switch # 7 (ALL/EACH) to the DOWN (ALL) position. All of the port LEDs will begin to flash indicating that all of the ports are ready to be configured. See Figure 40.

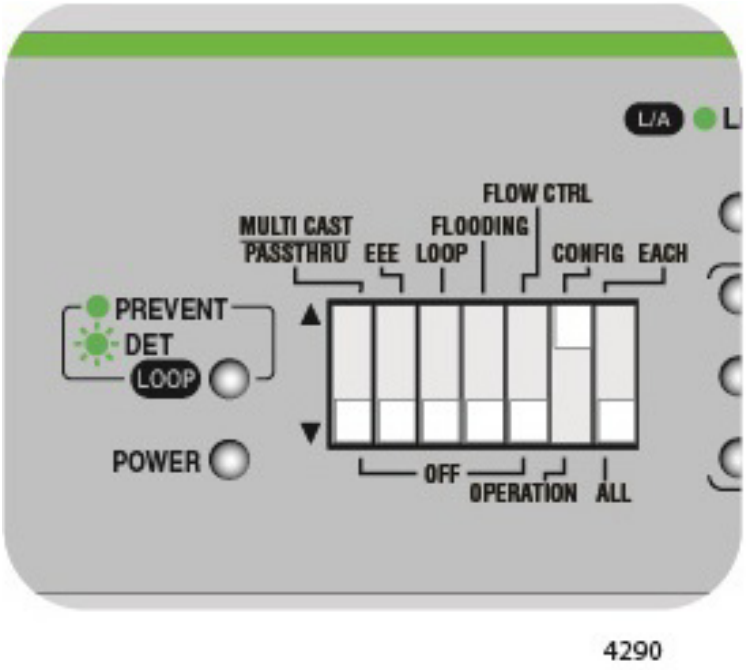


Figure 40. DIP Switch Settings for Configuring All Ports

3. Push the MODE button for less than 1 second to select a pre-configured port configuration setting. Figure 41 shows the port configuration vs. the MODE LED display when you press this button - starting with “Auto-Negotiation”. Each time you press this button, the port configuration will advance through this sequence to the next pre-configured setting and then repeat as shown. Select the speed and duplex configuration that you require for all of the ports.

Note
When the ports are set to a fixed speed of 100M or 10M, they are also configured for Fixed MDI-X except if it is the highest numbered port which is set to MDI.

Note
The FORCE_MDI / MODE push button is a dual purpose button. When it is pressed for less than one second, it advances the configuration port settings for speed, duplex and MDI/MDI-X. When it is pressed for more than one second, the configuration of the highest numbered port is toggled between MDI and MDI-X.

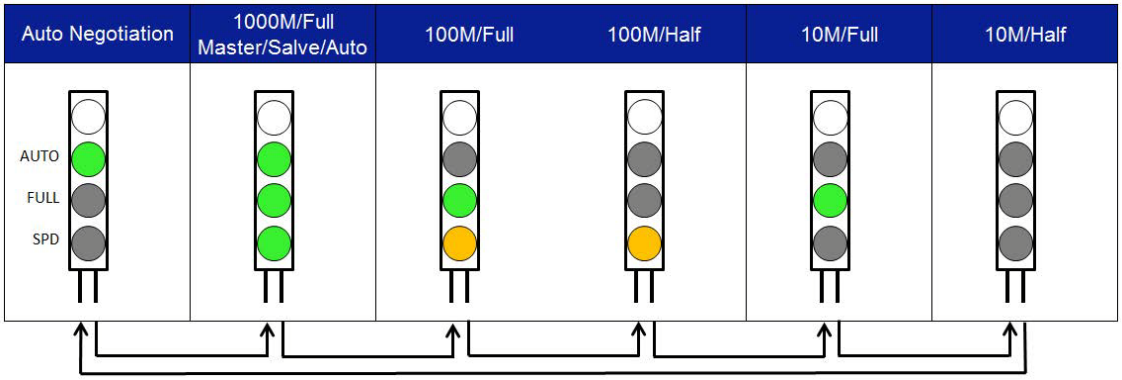


Figure 41. Port Configuration

4. Set DIP switch # 6 (OPERATION/CONFIG) to the DOWN (OPERATION) position. The switch is in the port operational mode. This new port configuration is temporarily stored in flash memory, but is not yet implemented.
5. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new port configuration for all of the Ethernet ports is implemented and effective.

Note
This new configuration will ONLY take effect after turning the switch OFF and then back ON.

EACH Individual Port Configuration

Perform the following procedure to set an individual port to a specific speed and duplex configuration:

1. Set DIP switch # 6 (OPERATION/CONFIG) to the UP (CONFIG) position. The switch is now in the port configuration mode.
2. Set DIP switch # 7 (ALL/EACH) to the UP (EACH) position. The SPD/LOOP LED begins to flash for Port # 1 indicating that this port is ready to be configured. See Figure 42.

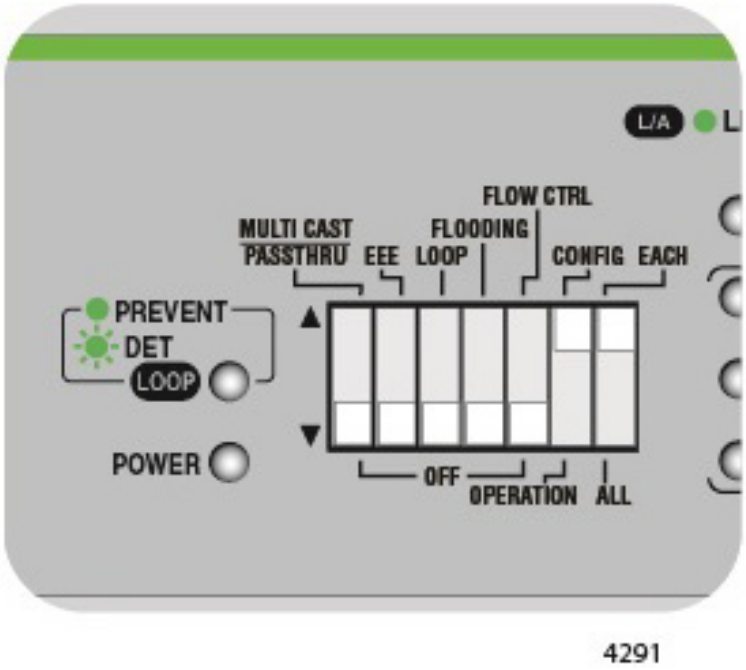


Figure 42. DIP Switch Settings for Configuring An Individual Port

3. If you want to individually configure other ports, press the NEXT PORT push button to advance to another port indicated by its flashing SPD/LOOP LED.
4. Push the MODE button for less than 1 second to select a pre-configured port configuration setting. Figure 41 shows the configuration setting when you press this button - starting with “Auto-Negotiation”. Each time you press this button, the port configuration will advance in this sequence to the next pre-configured setting. Select the port configuration that you require.

Note
When a port is set to a fixed speed of 100M or 10M, it is also configured for Fixed MDI-X except if it is the highest numbered port which is set to MDI.

5. Repeat Step 3 and Step 4 if you want to configure other ports.
6. After all the ports are individually configured, set DIP switch # 6 (OPERATION/CONFIG) to the DOWN (OPERATION) position. The switch is now in the port operational mode. This new port configuration is now temporarily stored in flash memory, but is not yet implemented.
7. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new new port configurations are now implemented and effective.

Note
This new configuration will ONLY take effect after turning the switch OFF and then back ON.

MDI/MCI-X Configuration

When a port's speed is configured for Auto Negotiation or to 1000M/Full, the default MDI/MDI-X configuration is Auto MDI/MDI-X. Under these speed selections, the FORCE MDI push button may be used to force the configuration of the any of the ports to MDI-X except for configuration of the highest numbered port to MDI.

Note
When any of the ports are configured for a speed of 100M or 10M, then they are configured for MDI-X except for the highest numbered port which is configured for MDI. The FORCE MDI push button is not functional for the ports where these speeds are selected.

The ports can be configured for Forced MDI or Forced MDI-X all at once or on an individual basis. Perform the following procedures when using the FORCE MDI push button:

Setting ALL Ports to Forced MDI/MDI-X

1. Set DIP switch # 6 (OPERATION/CONFIG) to the UP (CONFIG) position. The switch is now in the port configuration mode.
2. Set DIP switch # 7 (ALL/EACH) to the DOWN (ALL) position. All of the port SPD/LOOP LEDs will begin to flash indicating that all of the ports are ready to be configured. See Figure 43.

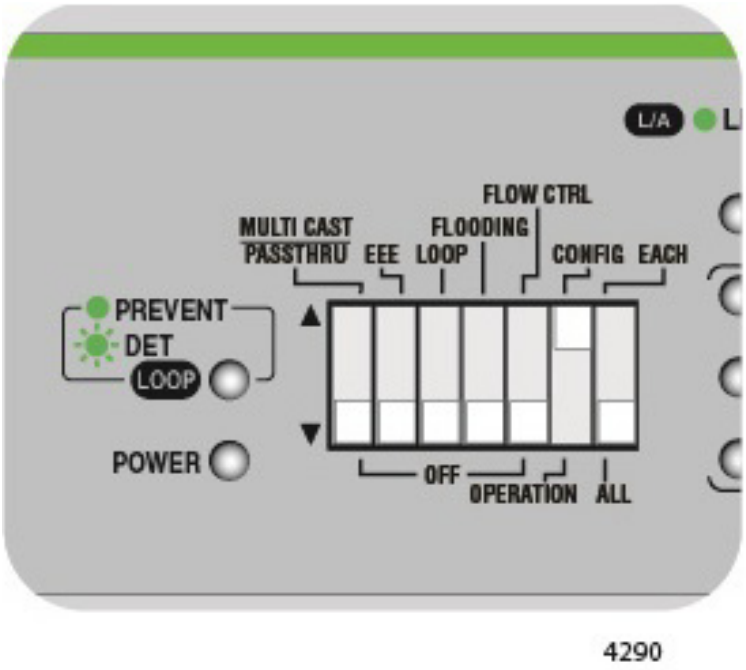


Figure 43. DIP Switch Settings for ALL Port Configuration

3. Push the MODE button for more than 1 second to enable or disable the force MDI/MDI-X feature. The FORCE MDI mode status LED will be either ON or OFF respectively.
4. After all the ports are configured, set DIP switch # 6 (OPERATION/ CONFIG) to the DOWN (OPERATION) position. The switch is now in the port operational mode. This new port configuration is now temporarily stored in flash memory, but is not yet implemented.
5. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new new port configurations are now implemented and effective.

Note
This new configuration will ONLY take effect after turning the switch OFF and then back ON.

Setting Individual Ports to Forced MDI or Forced MDI-X

1. Set DIP switch # 6 (OPERATION/CONFIG) to the UP (CONFIG) position. The switch is now in the port configuration mode.
2. Set DIP switch # 7 (ALL/EACH) to the UP (EACH) position. The SPD/ LOOP LED begins to flash for Port # 1 indicating that this port is ready to be configured. See Figure 44.

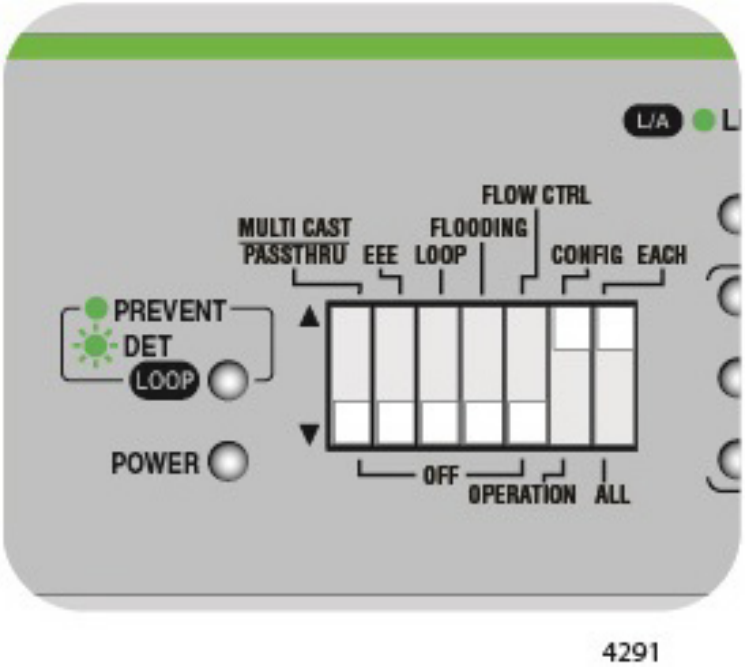


Figure 44. DIP Switch Settings for Individual Port Configuration

3. Push the MODE button for more than 1 second to enable or disable this feature. The FORCE MDI mode status LED will be either ON or OFF respectively for the port you selected.
4. Repeat Step 3 and Step 4 if you want to configure other ports in the same way.
5. After you have configured all the ports individually, set DIP switch # 6 (OPERATION/CONFIG) to the DOWN (OPERATION) position. The switch is now in the port operational mode. This new port configuration is now temporarily stored in flash memory, but is not yet implemented.
6. Turn the power OFF by unplugging the AC power cord and then back ON again by reconnecting it to the AC outlet on the switch. The new new port configurations are now implemented and effective.

Note
This new configuration will ONLY take effect after turning the switch OFF and then back ON.

Chapter 4

Troubleshooting

This chapter contains information on how to troubleshoot the switch in the event a problem occurs.

> **Note**
> If you are still unable to resolve the problem after following the instructions in this chapter, contact Allied Telesis Technical Support for assistance. Refer to “Contacting Allied Telesis” on page 13.

Check the POWER LED on the front of the switch. If the LED is OFF, indicating that the unit is not receiving power, do the following:

- Verify that the power cord is securely connected to the power source and to the connector on the back panel of the switch.
- Verify that the power outlet or power supply has power by connecting another device to it.
- Try connecting the unit to another power source.
- Try using a different power cord.
- Verify that the voltage from the power source is within the required levels for your region.

Verify that the L/A LED for each port is green. If an L/A LED is OFF, do the following:

- Verify that the end-node connected to the port is powered ON and is operating properly.
- Verify that the twisted pair cable is securely connected to the port on the switch and to the port on the end-node.
- Ensure that the twisted pair cable does not exceed 100 meters (328 feet).
- Verify that you are using the appropriate category of twisted pair cable: Category 3 or better for 10 Mbps operation, Category 5 for 100 Mbps operation, and four-pair Category 5e for 1000 Mbps.

Appendix A

Technical Specifications

This appendix contains the following sections:

Physical Specifications

Dimensions:

AT-GS920/8	210 mm x 121 mm x 38 mm
AT-GS920/16	263 mm x 179 mm x 38 mm
AT-GS920/24	341 mm x 210 mm x 44 mm

Weight:

AT-GS920/8	0.8 Kg
AT-GS920/16	1.4 Kg
AT-GS920/24	2.1 Kg

Environmental Specifications

Operating Temperature:	0° C to 50° C (32° F to 122° F)
Storage Temperature:	-20° C to 70° C (-4° F to 158° F)
Operating Humidity:	5% to 80% non-condensing
Storage Humidity:	5% to 95% non-condensing

Safety

60950-1 (cULus)	UL, cULus
CE	
IEC/EN60950-1	UL-CB
EN60950-1	UL-EU

Electromagnetic Emissions Certifications

EMI (Electro Magnetic Interference)	(Class B) (Class B) (Class A)	AT-GS920/8 AT-GS920/16 AT-GS920/24 US
ICES-003 Class A or B	(Class B) (Class B) (Class A)	AT-GS920/8 AT-GS920/16 AT-GS920/24 CA
EN55032: 2012/AC: 2013 Class A or B	(Class B) (Class B) (Class A)	AT-GS920/8 AT-GS920/16 AT-GS920/24 EU
CISPR 32	(Class B) (Class B) (Class A)	AT-GS920/8 AT-GS920/16 AT-GS920/24 JP
RCM AS/NZS CISPR 32: 2013	(Class B) (Class B) (Class A)	AT-GS920/8 AT-GS920/16 AT-GS920/24 AU/NZ
ANATEL	(Class B) (Class B) (Class A)	AT-GS920/8 AT-GS920/16 AT-GS920/24 Brazil
Immunity	EN55024, EN61000-3-2, EN61000-3-3	
Electrical Safety	UL 60950-1 (cULus), UL-CB, UL-EU	

Warning

In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. E84

EMS (Electromagnetic Susceptibility) EN55024:2010

IEC 61000-4-2:2009	Electrostatic Discharge
IEC 61000-4-3:2006 + A1:2008 + A2:2010	RF Radiated Immunity
IEC 61000-4-4:2012	First Transient Burst
IEC 61000-4-5:2014	Surge
IEC 61000-4-6:2014	RF Conducted Immunity
IEC 61000-4-8:2010	Power Frequency Magnetic Field Immunity
IEC 61000-4-11:2004	Short Interruptions and Voltage Variations
IEC 61000-3-2:2014	Harmonic Current Emission
IEC 61000-3-3:2013	Voltage Fluctuations and Flicker

Power Specifications

Model	Power Ratings	Frequency
AT-GS920/8	100 - 240 VAC, 0.20 A	50/60 Hz
AT-GS920/16	100 - 240 VAC, 0.30 A	50/60 Hz
AT-GS920/24	100 - 240 VAC, 0.40 A	50/60 Hz

RJ-45 Twisted Pair Port Connectors

This section lists the connectors and connector pinouts for the AT-GS920 series switch and its components.

Figure 45 illustrates the physical pin layout to an RJ-45 connector and port.

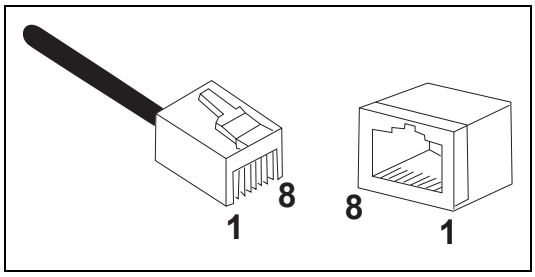


Figure 45. RJ-45 Connector and Port Pin Layout

Table 16 lists the RJ-45 pin signals when a twisted pair port is operating in the MDI configuration.

Table 16. MDI Pin Signals (10Base-T or 100Base-TX)

Pin	Signal
1	TX+
2	TX-
3	RX+
6	RX-

Table 17 lists the RJ-45 port pin signals when a twisted pair port is operating in the MDI-X configuration.

Table 17. MDI-X Pin Signals (10Base-T or 100Base-TX)

Pin	Signal
1	RX+
2	RX-
3	TX+
6	TX-

Table 18 lists the pin signals when a port is operating at 1000 Mbps.

Table 18. Pin Signals (1000 Mbps)

Pin	Pair	Signal Name
1	1	TX+_D1
2	1	TX-_D1
3	2	RX+_D2
4	3	BI+_D3
5	3	BI-_D5
6	2	RX-_D2
7	4	BI+_D4
8	4	BI-_D4

Appendix B

AT-GS920/24 Switch Wall Mount Installation

This appendix explains the procedures for this installation using the AT-BRKT-J22 wall mount kit. It contains the following sections:

Note
When you are installing the AT-GS920/24 switch in a rack in Japan, you need to use the AT-BRKT-J22 wall mount kit which must be purchased separately from the switch.

Note
Before you begin to install the switch using the AT-BRKT-J22 wall mount kit, review “Reviewing Safety Precautions” on page 32.

Unpacking the AT-BRKT-J22 Wall Mount Kit

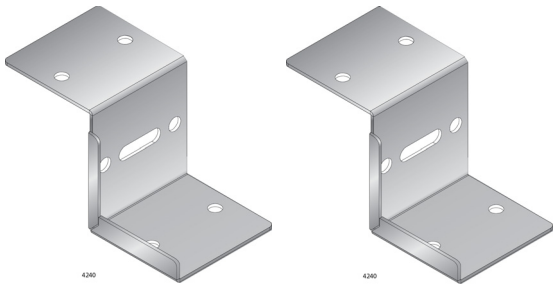
To unpack the AT-BRKT-J22 wall mount kit, perform the following procedure:

1. Remove all components from the shipping package.

> **Note**
> Store the packaging material in a safe location. You must use the original shipping material if you need to return the unit to Allied Telesis.

2. Verify that One pair of brackets is included in your wall mount package listed in Table 19.

Table 19. Components in the AT-BRKT-J22 Wall Mount Kit

Description	Components
Two pairs of brackets	

3. If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

Installing a Switch Using the AT-BRKT-J22 Wall Mount Kit

This section shows you steps to install a switch on a wall using the AT-BRKT-J22 kit.

What to Prepare

Before installing a switch on a wall, make sure that the following items are ready.

- An AT-BRKT-J22 wall mount kit
- Eight screws to attach the brackets to a wall
- Eight plastic anchors for the screws
- Phillips-head screwdriver
- Pencil

Note
Screws and plastic anchors are not included in the shipping box. You must provide screws that hold the switch securely to the wall.

Installing a Switch Using the AT-BRKT-J22 Brackets

To install the switch on a wall, perform the following procedure:

1. If the rubber feet were previously installed, remove them as shown in Figure 46.

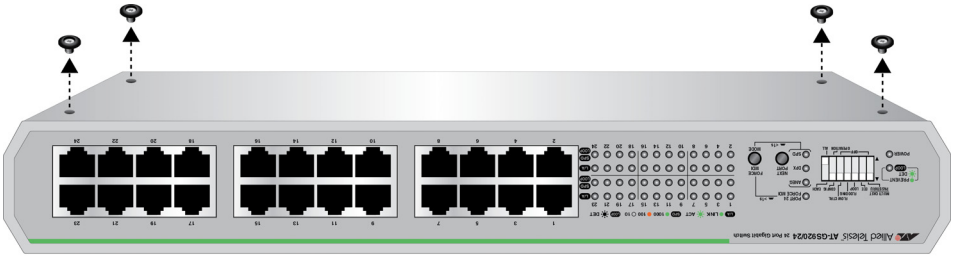


Figure 46. Removing AT-GS920/24 Rubber Feet

2. Orient the brackets against the sides of the switch.

3. Have another person hold the switch with the brackets at the wall location where the switch is to be installed. Use a pencil to mark the wall with the locations of the four holes in the brackets. See Figure 47 as an example.

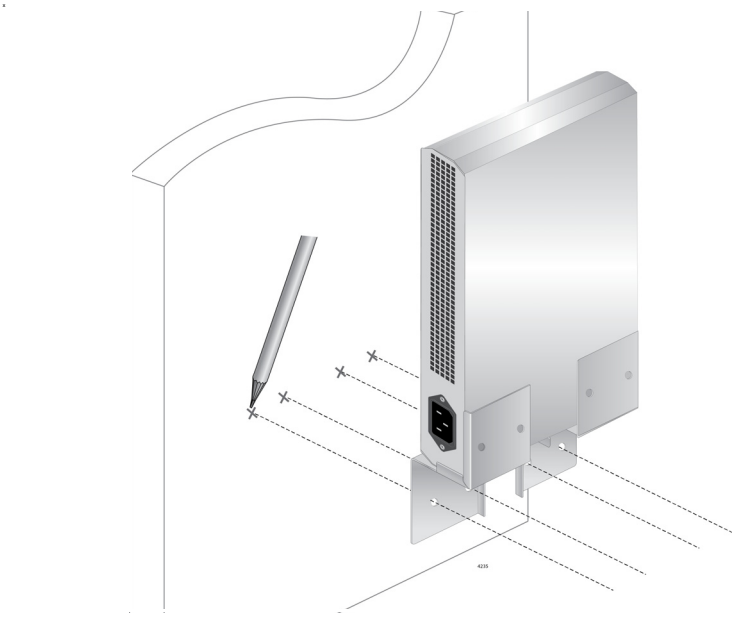


Figure 47. Marking the Screw Hole Locations

4. Pre-drill the marked locations on the wall at the locations marked in Step 3.

5. Install the four plastic anchors into the wall in the holes drilled in Step 4.

6. Position brackets on the wall and drive screws through the holes to attach the brackets on the wall. See Figure 48.

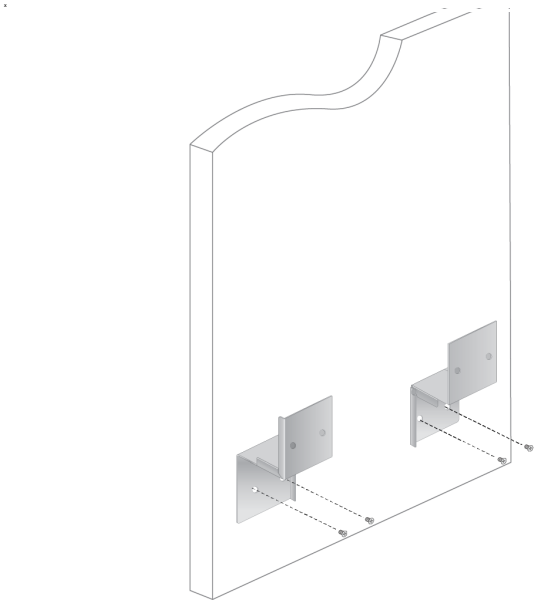


Figure 48. Driving the Screws through the Holes

7. Make sure that the two brackets are installed securely.
8. Slide the switch into the brackets on the wall as shown in Figure 49.

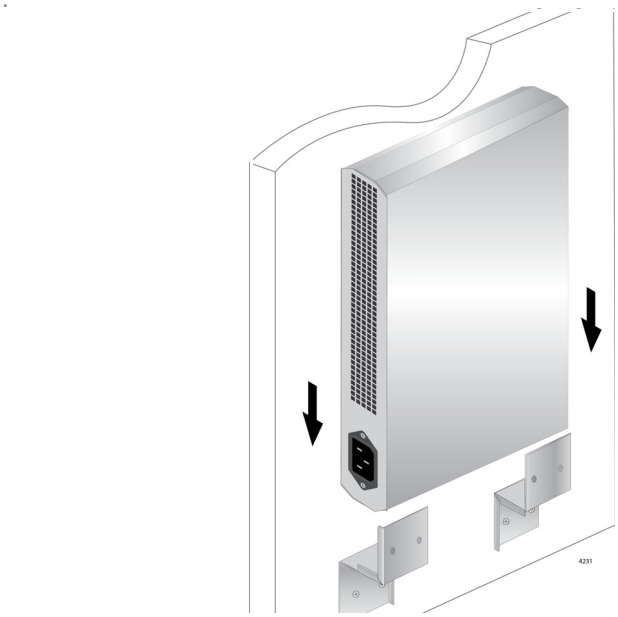


Figure 49. Placing the Switch into the Brackets

9. Place the other two brackets on the top of the switch and mark the screw hole locations with a pencil as shown in Figure 50.

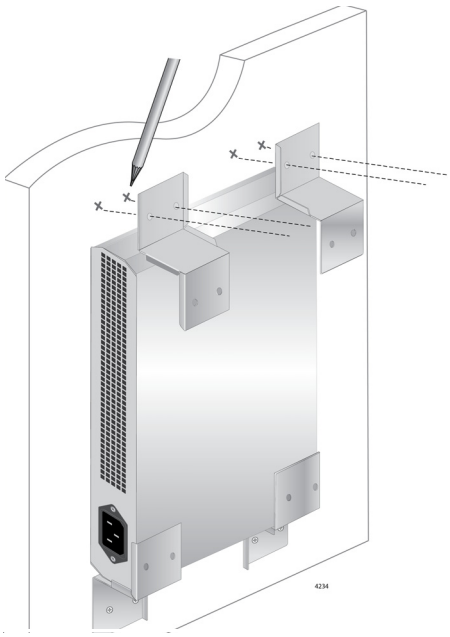


Figure 50. Marking the Screw Hole Locations

10. Remove the two brackets and switch and set aside.

11. Pre-drill the marked locations on the wall at the locations marked in Step 9.

12. Install the four plastic anchors into the wall in the holes drilled in Step 11.

13. Slide the switch into the bottom brackets and place the other two brackets on the top of the switch

14. Install the screws through the bracket holes to attach them to the wall. See Figure 51 on page 93.

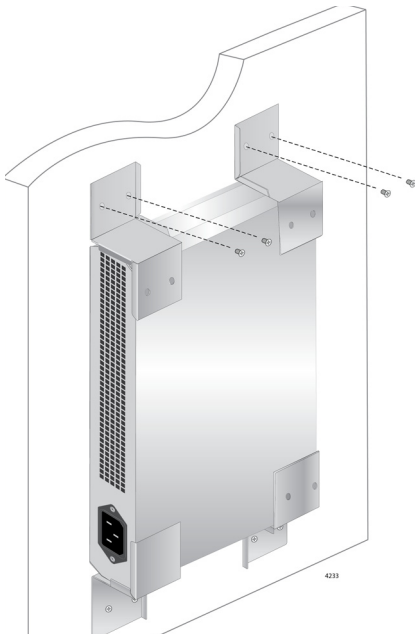


Figure 51. Driving the Screws through the Holes

15. Make sure that the switch is installed securely to the wall. Proceed to “Cabling the Switch” on page 54 and then to “Powering On the Switch” on page 55

Appendix C

Loop Prevention Feature

The following sections are contained in this appendix:

Note
You can configure the Loop Prevention feature by following the steps out lined in the “Switch Configuration” chapter under the section “Loop Prevention” on page 66.

The GS920 Series switches are equipped with a Loop Prevention feature. It detects loops and blocks ports in order to reduce negative effects on the local network while keeping connectivity of devices. Loops in Ethernet networks can cause broadcast storms that consume network bandwidth and reduce network performance.

When Loop Prevention is enabled, the switch sends Loop Prevention frames periodically. A loop is detected in the LAN when the switch receives the Loop Prevention frame sent from itself. When this occurs, the Loop Detection selects one of the LAN switches and its port to be blocked. Once the port is blocked, the following actions take place on the affected switch:

- – The Loop LED starts blinking.
- – The LED of the blocked port starts blinking.

When the loop is resolved or the link to the blocked port goes down, the port is relieved from the blocking state and both the switch Loop LED and port Loop LED stop blinking.

Guidelines for Loop Prevention

Here are guidelines for enabling Loop Prevention:

- Loop Prevention does not function properly when Flow Control is enabled. You Flow Control must disabled when Loop Prevention is enabled.
- When a loop is detected and a port is blocked, the switch does not flood packets even when Flooding is enabled.
- A port receives Loop Prevention frames even when the port is blocked.
- The AT-GS920/8 switch with Loop Prevention-enabled ignores a Loop Prevention frame if its hop count exceeds 32.
- The AT-GS920/16 and AT-GS920/24 switch with Loop Prevention-enabled ignores a Loop Prevention frame if its hop count exceeds 10
- Allied Telesis recommends designing the network with 10 or less cascade levels when building a Loop Prevention-enabled network.

Root Switch

The following topics are contained in this section:

- ❒ “Root Switch Overview”
- ❒ “Switch Priority”
- ❒ “Root Switch”
- ❒ “Non-root Switch”
- ❒ “Examples of Selecting a Root Switch” on page 98

Root Switch Overview

In a LAN topology with multiple GS920 Series switches, one of the switches is elected to be the root switch for the Loop Prevention feature. Initially, all of the GS920 Series switches are root switches. They broadcast Loop Prevention frames to each other and then compare their relative switch priorities. The switch with the highest switch priority is selected to be the root switch. If multiple switches have the same highest switch priority, the switch with the smallest MAC address becomes the root switch.

Switch Priority

Table 20 shows the switch priorities specified for each GS920 Series model.

Table 20. Switch Priority

Model	Switch Priority
AT-GS920/8	Higher
AT-GS920/16 AT-GS920/24	Lower

Note
The AT-GS920/8 switch has higher priority than the AT-GS920/16 and AT-GS920/24 switches.

Root Switch

Once a switch is assigned as the root switch, it is responsible for sending out Loop Prevention frames. A loop condition exists if the root switch receives a Loop Prevention frame that it generates itself. Once a loop is detected, the root switch determines which switch/port to block within the LAN to prevent the loop.

Non-root Switch

If a switch is not selected as the Loop Prevention root switch, then it is a non-root switch. A non-root switch updates the hop count in the Loop Prevention frames before forwarding them. It also maintains a timer for each of the switch’s ports.

When receiving a Loop Prevention frame at a port, the switch sets the port timer to 16 seconds. The timer decreases every second. When another Loop Prevention frame is received at the port, the switch refreshes the port timer again to 16 seconds. If all of the switch's port timers reach zero, then the switch interprets the situation as a topology change where the root switch no longer is present. The non-root switch changes itself back to a root switch and begins to broadcast Loop Prevention frames which starts a new selection process for a new root switch.

Examples of Selecting a Root Switch

Root Switch Based on Highest Priority

In the example shown in Figure 52, Switch A is elected as the root switch because this switch has the highest priority.

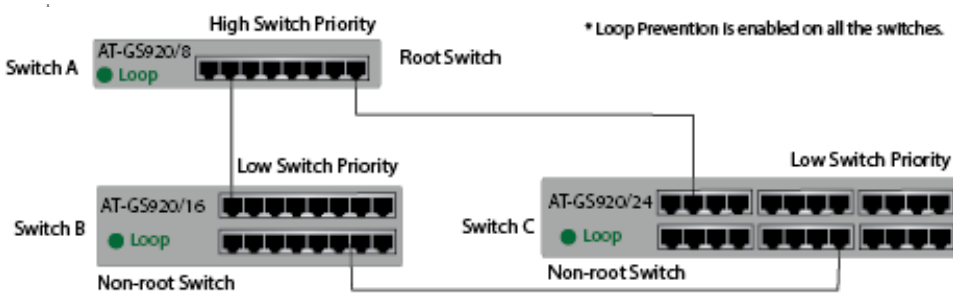


Figure 52. Case 1: Selecting a Root Switch

Root Switch Based on Highest Priority/Lowest MAC Address Value

In the example shown in Figure 53, Switch A has a higher priority than Switch C. Switch A and Switch B have the same switch priority. Since Switch A's MAC address is smaller than Switch B's, Switch A is elected as the root switch.

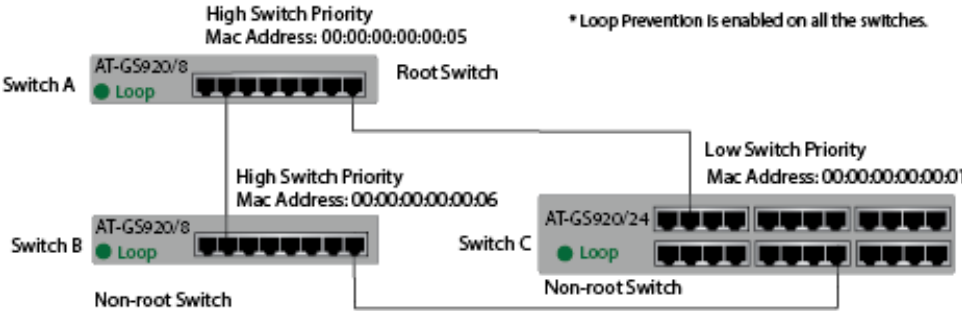


Figure 53. Case 2: Selecting a Root Switch

Detecting and Blocking a Loop

The following topics are contained in this section:

Loop Detection

Loop Prevention detects a loop in a LAN with using Loop Prevention frames.These frames are sent from the root switch to all the non-root switches. If the root switch receives a Loop Prevention frame that it generated, then a loop is detected. The Loop Prevention feature then decides which port in the LAN is to be blocked. The blocked port stops receiving and forwarding all data traffic except for the Loop Prevention frames.

Blocked Port Selection Criteria

After a loop is detected in the LAN, Loop Prevention selects a specific port for blocking by applying the following rules in order of precedence:

1. The port with the largest hop count from the root switch
2. Among the ports with the same hop count, the port that is connected to the switch with the lowest switch priority
3. Among the ports with the same hop count and switch priority, the port on the switch with the largest MAC address
4. Among the ports with the same hop count and on the same switch:
   - For the AT-GS920/8 switch, a port with the smaller port number
   - For the AT-GS920/16 and AT-GS920/24 switches, a port with the larger port number

Port Blocked Within a LAN

When a loop is detected in the example shown in Figure 54, Port 8 on the Switch C is blocked to relieve the loop. This port has the largest hop count from the root switch.

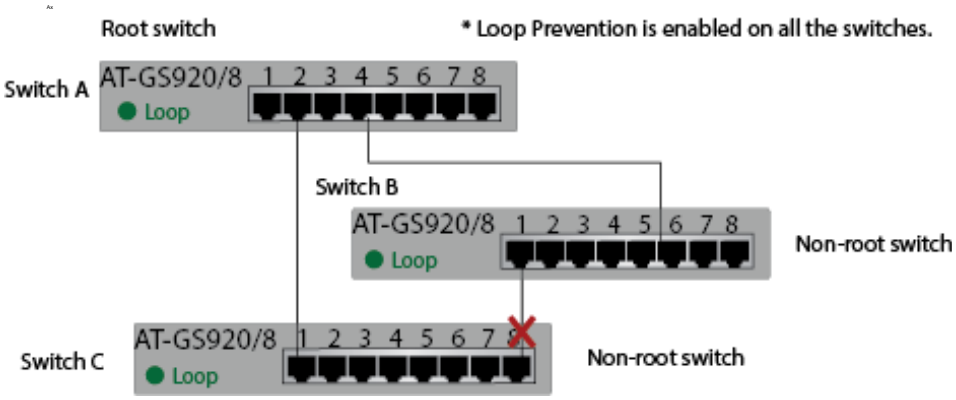


Figure 54. Case 1: Selecting a Port to be Blocked

When a loop is detected in the example shown in Figure 55, Port 1 on the Switch D is blocked to relieve the loop. Port 1 and Port 9 on Switch D have the same hop count, but Port 1 is blocked because the switch priority of Switch C where Port 1 is linked is lower than the switch priority of Switch B where Port 9 is linked.

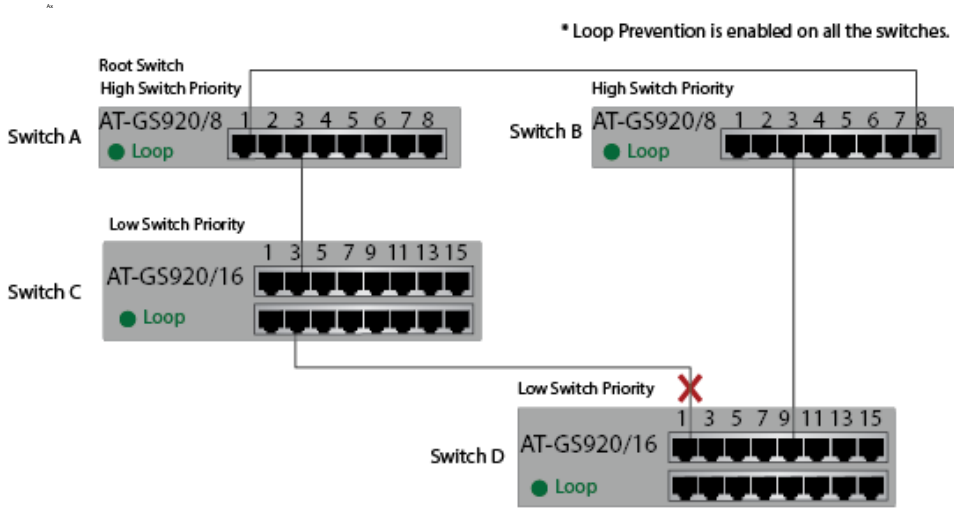


Figure 55. Case 2: Selecting a Port to be Blocked

When a loop is detected in the example shown in Figure 56 on page 101, Port 2 on the Switch C is blocked to relieve the loop. Port 2 on Switch C and Port 6 on Switch B have the same hop count and both ports are connected to an AT-GS920/8 switch, which means the same switch priority. However, the MAC address of Switch C is larger than the MAC address of Switch B. Therefore, Port 2 on Switch C is chosen to be blocked.

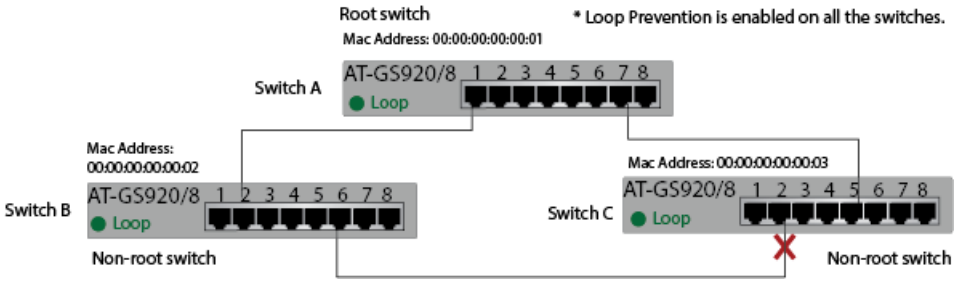


Figure 56. Case 3: Selecting a Port to be Blocked

Port Blocked on One Switch

When a loop occurs within one GS920 Series switch, all the ports have the same hop count, same switch priority, and same MAC address. Loop Prevention selects a port to block based on the port numbers.

When a loop occurs within one AT-GS920/8 switch, Loop Prevention blocks the port with the smaller port number. See Figure 57 as an example.

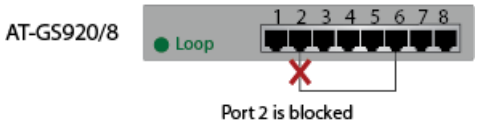


Figure 57. Blocked Port on One AT-GS920/8 Switch

When a loop occurs within one AT-GS920/16 or AT-GS920/24 switch, Loop Prevention blocks the port with the larger port number. See Figure 58 as examples.

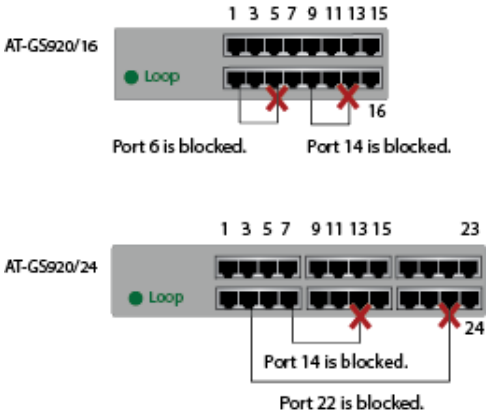


Figure 58. Blocked Port on One AT-GS920/16 or AT-GS920/24 Switch

Blocking a Port Affected by an External Loop

In the example shown in Figure 59, Switch A is the only switch that has Loop Prevention enabled in the LAN and the other switches in the LAN have Loop Prevention disabled.

Since Switch A is the only switch with Loop Prevention enabled, it is by definition the root switch. Port 1 of Switch A is blocked as a result.

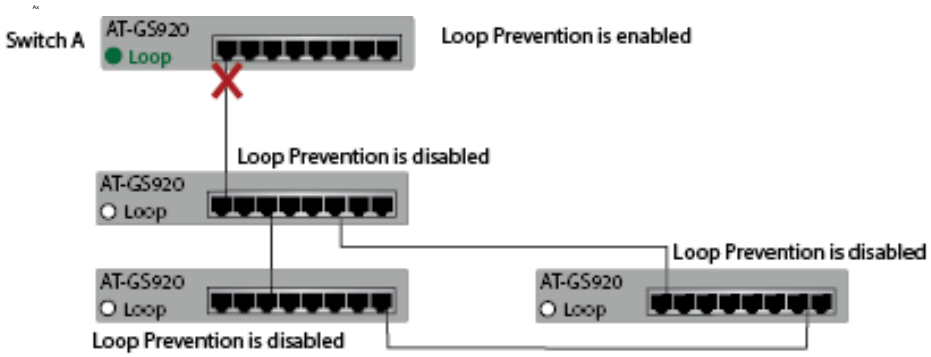


Figure 59. Blocking a Port Affected by an External Loop

Hop Count Limitation

Loop Prevention on the GS920 Series switch has a hop count limitation. Each GS920 Series switch has its maximum hop count as shown in Table 21. The Loop Prevention-enabled switch ignores the Loop Prevention frame when the hop count in the frame exceeds the maximum hop count of the switch.

Table 21. Maximum Hop Count

Model	Maximum Hop Count
AT-GS920/8	32
AT-GS920/16 AT-GS920/24	10

If one AT-GS920/16 or AT-GS920/24 switch exist in a topology, Loop Prevention ignores a Loop Prevention frame when its hop count is over 10.

Allied Telesis recommends designing the network with 10 or less cascade levels when building a Loop Prevention-enabled network.