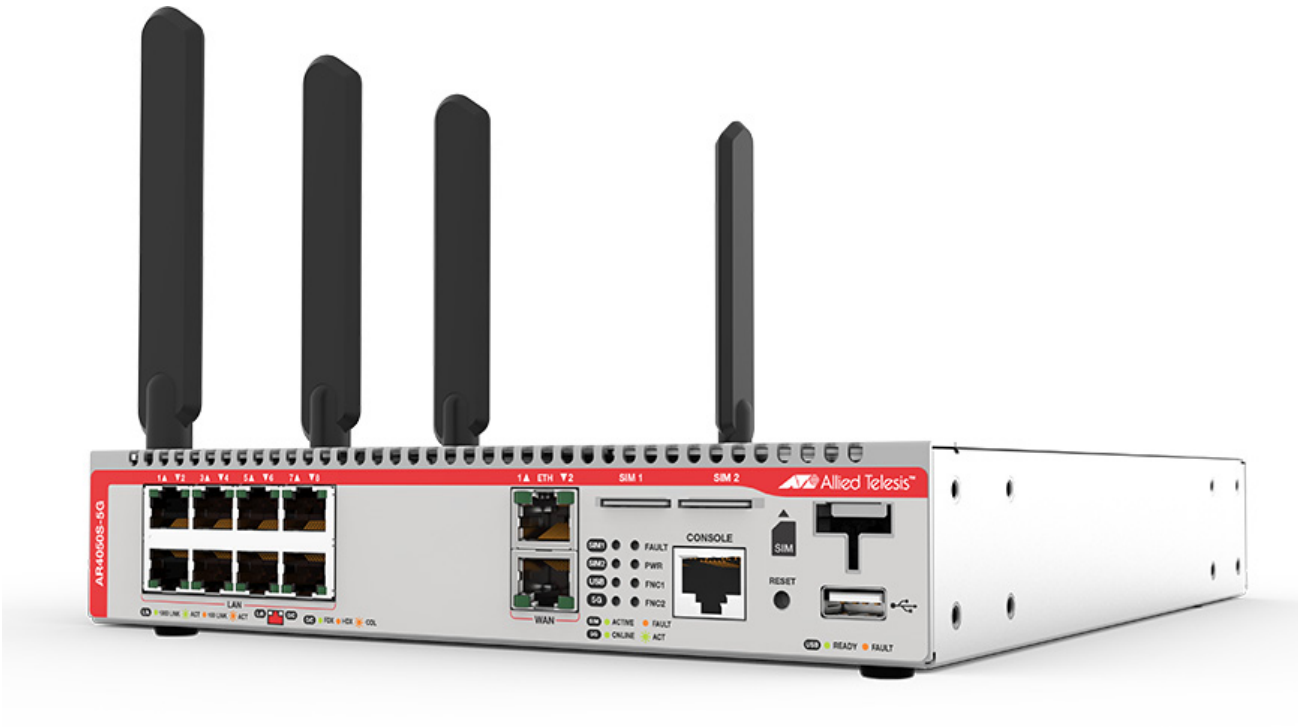
Allied Telesis™

❒ AT-AR4050S-5G



Installation Guide

C613-04091-00 REV B

Safety

Electrical Safety and Emissions Standards

This product meets the following standards.

U.S. Federal Communications Commission
FCC Radiation Exposure Statement This device complies with FCC radiation exposure limits set forth for an uncontrolled environment and it also complies with Part 15 of the FCC RF Rules. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and consider removing the no-collocation statement. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1. this device may not cause harmful interference, and 2. this device must accept any interference received, including interference that may cause undesired operation. For more detailed information about Radio frequency bands and maximum radio frequencies

Industry Canada
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 device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada’s licence-exempt RSS(s). Operation is subject to the following two conditions: 1. This device may not cause harmful interference. 2. This device must accept any interference, including interference that may cause undesired operation of the device. L’émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d’Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L’exploitation est autorisée aux deux conditions suivantes : 1. L’appareil ne doit pas produire de brouillage; 2. L’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement. The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance. Le dispositif rencontre l'exemption des limites courantes d'évaluation dans la section 2.5 de RSS 102 et la conformité à l'exposition de RSS-102 rf, utilisateurs peut obtenir l'information canadienne sur l'exposition et la conformité de rf. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

European Union (EU)/United Kingdom (UK) Radio Equipment Compliance
Hereby, Allied Telesis Labs Ltd, declares that the radio equipment type AT-AR4050S-5G is in compliance with Directive 2014/53/EU, as well as UK Radio Equipment Regulations SI 2017 No. 1206. The full texts of the system declarations of conformity are available at: www.alliedtelesis.com/ for EU and UK.

Singapore Radio Equipment Compliance
This device is accredited with IMDA compliance. This allows for importation and sales within Singapore. This compliance is registered under Telecommunication Dealer's (Class) License DA109146. Singapore IMDA TS CMT **Complies with IDMA Standards DA109146**

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

Warning: A 20cm distance is required between all antennas and the user.

EMC: EN55032, EN55035, EN301489-1/-52, FCC Part 15B, ICES-003, AS/NZS CISPR 32.

Electrical Safety: IEC 60950-1, CAN/CSA-C22.2 No.62368-1-1, EN60950-1, UL 60950-1.

Environmental Compliance: 2011/65/EU and 2015/863 RoHS Directive.

Radio Certifications: EN301 908-1/-2, EN301 908-1/-13, 3GPP 38521-3, EN301 908-1/-25, EN 62311/EN 50385, FCC Part22/24/27/90, RSS-130/132/133/139/140/192/197/199, AS/NZS S042.1, AS/CA S042.4.

Translated Safety Statements

Important: Safety statements that have the ⌐ symbol are translated into multiple languages in the *Translated Safety Statements* document at www.alliedtelesis.com/documents/translated-safety-statements.

Preface

This guide contains the installation instructions for the AT-AR4050S-5G router. This preface contains the following sections:

Document Conventions

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/services-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 product questions in our knowledge database, to check support tickets, to learn about RMAs, and to 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 a Return Merchandise Authorization (RMA) request via our interactive support center.
- Documentation — View the most recent installation and user guides, software release notes, white papers, and data sheets for your products.
- Software Downloads — Download the latest software releases for your managed products.

For sales or corporate information, go to www.alliedtelesis.com/how-to-buy and select your region.

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Chapter 1
Overview

This chapter contains the following sections:

Features

The AT-AR4050S-5G is a Broadband VPN access router providing eight fixed 10/100/1000BASE-T copper LAN ports and two Ethernet WAN interfaces providing 10/100/1000BASE-T copper connectivity. The AT-AR4050S-5G supports 3G, 4G and 5G mobile access with dual-SIM cards. The AT-AR4050S-5G is housed in a 1-RU chassis and targeted for use in a desk top, table or wall mounted environment using the monopole antennas provided.

Here are the features of the AT-AR4050S-5G router.

10/100/1000 Mbps Twisted Pair Ports

Here are the basic features of the 10/100/1000 Mbps twisted pair ports:

- 8 LAN ports per router
- 10Base-T (IEEE 802.3i), 100Base-TX (IEEE 802.3u), and 1000Base-T (IEEE 802.3ab) compliant
- IEEE 802.3u Auto-Negotiation compliant
- Auto-MDI/MDIX
- 100 meters (328 feet) maximum operating distance
- RJ-45 connectors

WAN Ports

Here are the basic features of the WAN ports:

- Supports two ETH ports

WWAN Card

Internally mounted WWAN card with 4 external antennas (3 are located on the left side, and one at the rear). The dual SIM card slots are on the front panel.

USB Port

One USB 2.0 connector (type A) is available on the front panel for either removable file storage or external LTE/3G USB modem. The maximum load supported is 700mA @ 5V.

Dual SIM Card Slots

Here are the basic features of the Dual SIM card slots.Two SIM Card slots are available on the front panel that support a storage capacity up to 256KB. These slots accept micro-SIM (15mm x 12mm) only.

Note
We do not recommend using mini-SIM (25mm x 15mm) or Nano-SIM (12.3mm x 8.8mm). The required SIM adapter for these SIMs can cause problems if the SIM card detaches.

Both SIM card slots feature a ‘Push - Push’ insert and eject mechanism. If two SIM cards are inserted, priority is given to SIM 1 with SIM 2 acting as the backup.

Reset Button

Here are the basic features of the reset button:

- Returns to factory default settings
- Reboots the router

LEDs

Here are the LEDs:

- Power LED
- Fault LED
- USB LED
- SIM1
- SIM2
- 5G
- Eth 1 and Eth 2 link activity
- Eth 1 and Eth 2 duplex activity
- LAN Duplex/collision and link/activity
- Function 1 LED
- Function 2 LED

Kensington Lock Hole

Here are the basic features of the Kensington lock hole:

- Used for attaching a lock-and-cable apparatus
- One hole located on the center of the back panel

Installation Options

Here are the installation options for the router:

- Desk or tabletop (horizontal with monopole antennas)
- Desk stand (vertical with monopole antennas)
- Wall mounted (vertical with monopole antennas)

Management Software and Interfaces

Here are the management software and interfaces:

- AlliedWare Plus™ Operating System
- Command line interface
- Web browser interface

Management Methods

Here are the methods for managing the router:

- Local management through the Console port
- Remote Telnet and Secure Shell management
- Remote web browser management
- SNMPv1, v2c, and v3

Package Contents

- ❒ 1 main unit
- ❒ 1 AC power cable
- ❒ HS/TS substance chart, C-RoHS (English)
- ❒ HS/TS substance chart, C-RoHs (Chinese)
- ❒ 1 addendum product document sheet
- ❒ 1 AMF document sheet
- ❒ 1 AC power cord retainer
- ❒ 1 USB retainer
- ❒ 1 double-side adhesive tape
- ❒ 2 cable ties
- ❒ 4 stick-on rubber feet kit
- ❒ 1 RS-232 console cable
- ❒ 4 monopole antennas

Front and Back Panels

The front panel of the AT-AR4050S-5G router is shown in Figure 1.

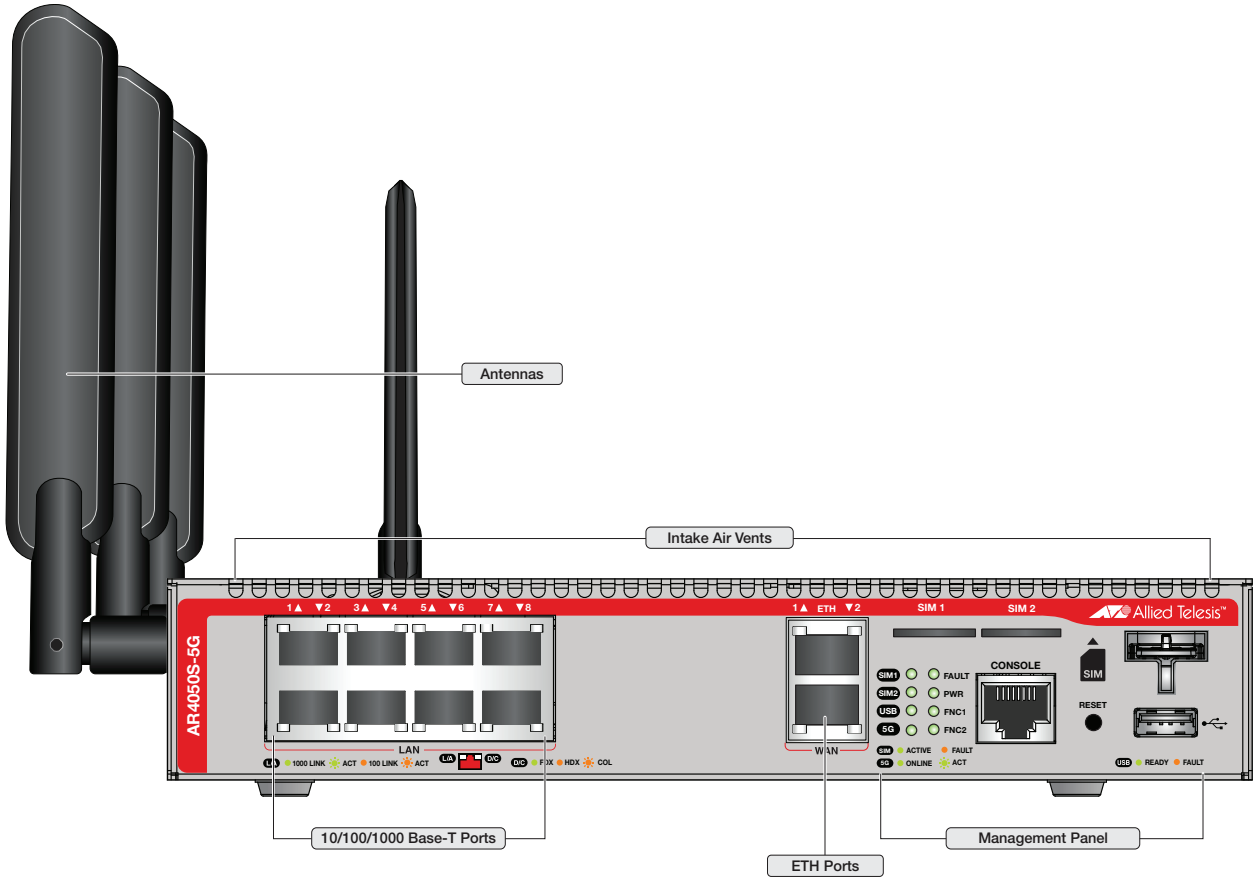


Figure 1. Front panel of the AT-AR4050S-5G router

The back panel of the AT-AR4050S-5G router is shown in Figure 2.

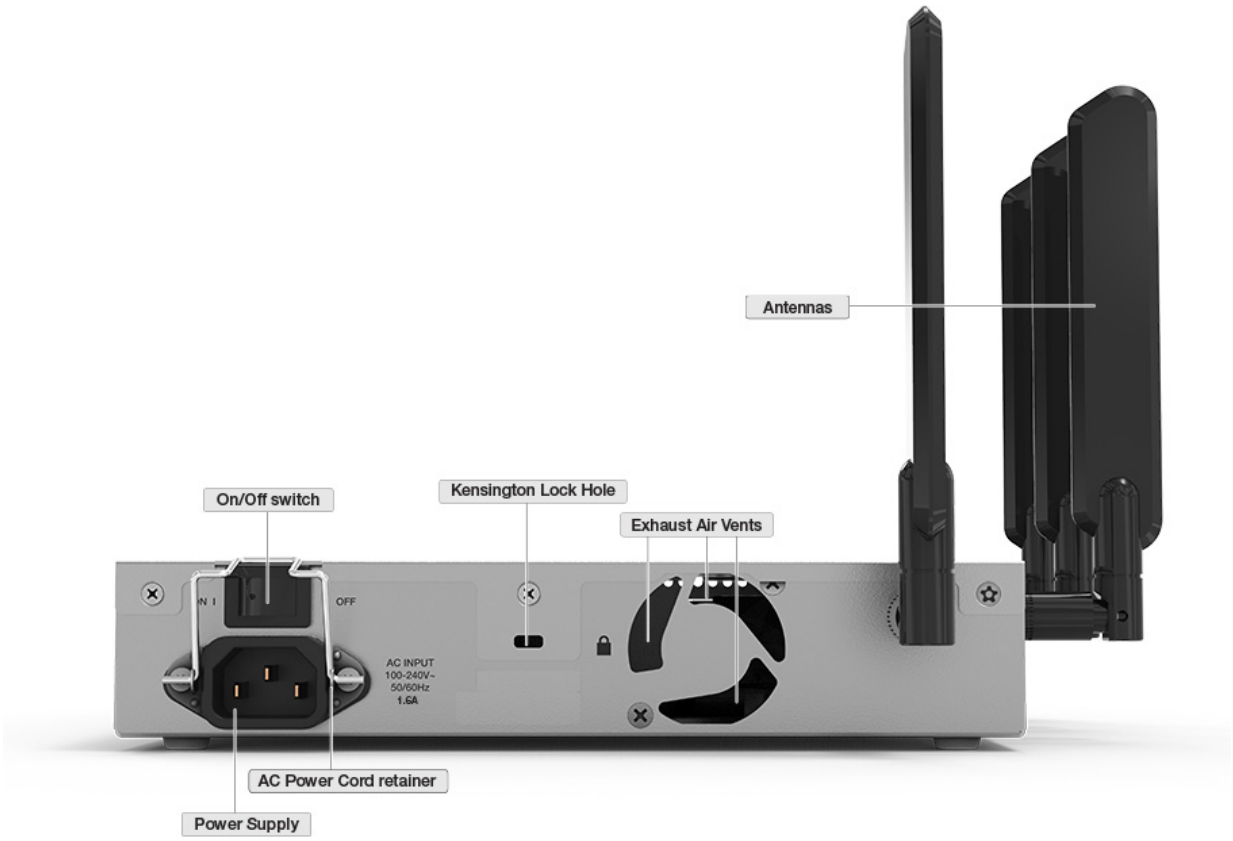


Figure 2. Back panel of the AT-AR4050S-5G router

Management Panel

Figure 3 identifies the components in the management panel on the AT-AR4050S-5G router.

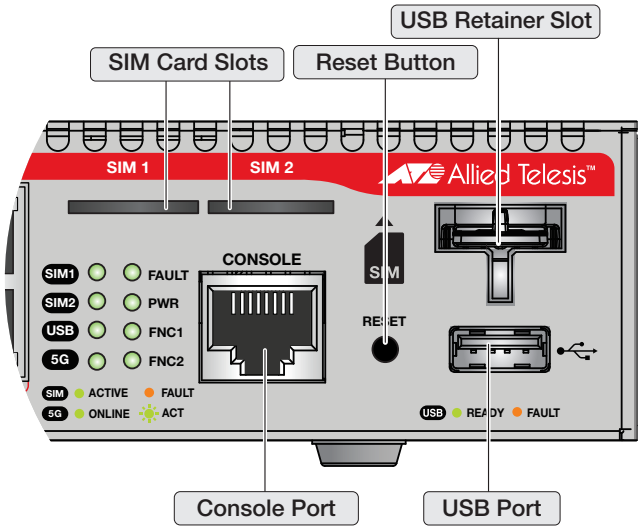


Figure 3. Management panel of the AT-AR4050S-5G router

Management Software

The router is shipped with the management software pre-installed. The software provides a Command Line Interface (CLI) and a Graphical User Interface (GUI) for in-band, over-the-network management.

In the unlikely event that the management software becomes corrupted or damaged on the router, you can download the software from the Allied Telesis corporate web site and reinstall it on the router. For instructions on how to install new management software, see the product documentation.

Twisted Pair Ports

The AT-AR4050S 5G router features 8 twisted pair LAN ports and 2 twisted pair ETH ports for WAN connection. All ports are 10Base-T, 100Base-TX, and 1000Base-T compliant. You can set the port speeds and duplex modes either automatically with IEEE 802.3u Auto-Negotiation or manually with the management software.

The twisted pair ports feature 8-pin RJ-45 connectors. For the port pinouts, see “RJ-45 Twisted Pair Port Pinouts” on page 70.

The ports have a maximum operating distance of 100 m (328 feet). For 10 Mbps operation, the ports require Category 3 or better 100 ohm shielded or unshielded twisted pair cabling. For 100 or 1000 Mbps operation, the ports require Category 5 or Enhanced Category 5 (5E) 100 ohm shielded or unshielded twisted pair cabling.

Note
A router port connected to an end node that is not using Auto-Negotiation should not use Auto-Negotiation to set the speed and duplex mode, because a duplex mode mismatch may occur. In this case, disable Auto-Negotiation and set the port’s speed and duplex mode manually.

WAN Ports

ETH Ports

The router has two ETH ports that support 10/100/1000 Mbps twisted pair ports.

The ETH ports are located between the management panel and the bypass ports. The upper port is ETH 1 and the lower port is ETH 2.

You can use one of the ETH ports to connect the router to the WAN.

LEDs

Here are the descriptions of the LEDs.

LEDs for the Twisted Pair LAN Ports

Each twisted pair port on the AT-AR4050S-5G router has two LEDs that display link, activity, duplex and collision information. The LEDs are shown in Figure 4.

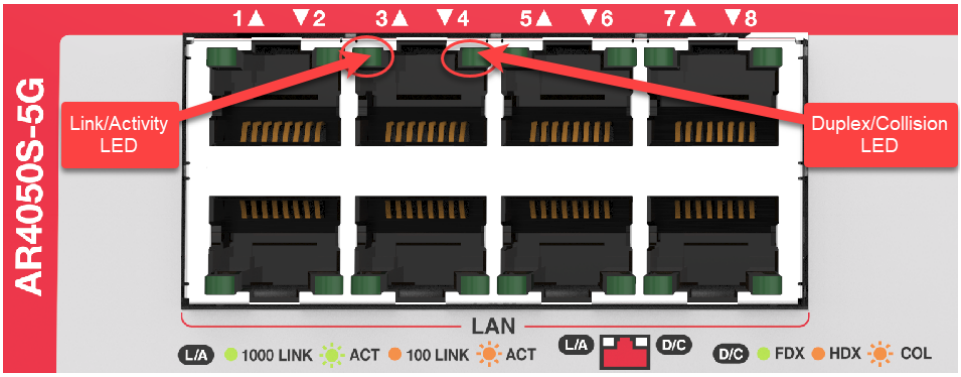


Figure 4. LEDs for the 10/100/1000Base-T Ports

The twisted pair LAN port LEDs are described in Table 1.

Table 1. LEDs for the Twisted Pair LAN Ports

LED	State	Description
Link/ Activity LED	Solid Green	A port has established a 1000 Mbps link to a network device.
	Blinking Green	A port is transmitting or receiving data at 1000 Mbps.
	Solid Yellow	A port has established a 10 or 100 Mbps link to a network device.
	Blinking Yellow	A port is transmitting or receiving data at 10 or 100 Mbps.
	Off	A port has not established a link with another network device.
Duplex/ Collision Mode LED	Solid Green	A port is operating in full duplex mode.
	Solid Yellow	A port is operating in half-duplex mode at 10 or 100 Mbps. (Half-duplex mode does not apply to 1000 Mbps operation.)
	Blinking Yellow	Collisions are occurring on a port operating at 10 or 100 Mbps.

Table 1. LEDs for the Twisted Pair LAN Ports

LED	State	Description
	Off	A port has not established a link with another network device.

LEDs for the ETH 1 and ETH 2 Ports

Each twisted pair port on the router has two LEDs that display link, activity, duplex and collision information. The LEDs are shown in Figure 5.

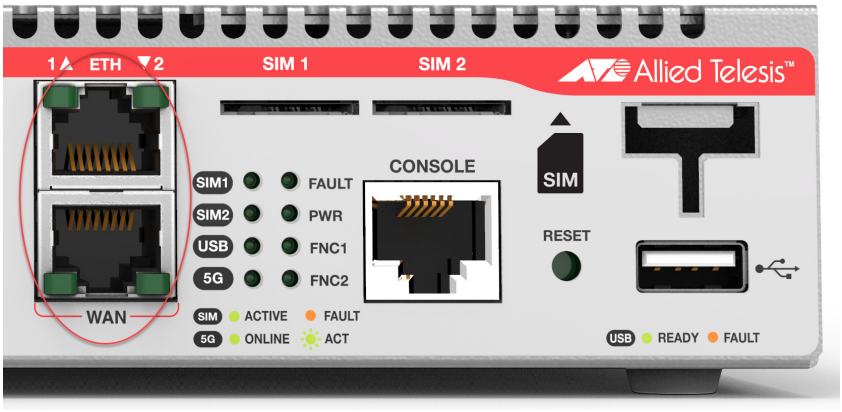


Figure 5. ETH Port LEDs

The ETH 1 and ETH 2 LEDs are described in Table 2.

Table 2. LEDs for ETH 1 and ETH 2 Ports

LED	State	Description
Link/ Activity LED	Solid Green	A port has established a 1000 Mbps link to a network device.
	Blinking Green	A port is transmitting or receiving data at 1000 Mbps.
	Solid Yellow	A port has established a 10 Mbps or 100 Mbps link to a network device.
	Blinking Yellow	A port is transmitting or receiving data at 10 or 100 Mbps.
	Off	A port has not established a link with another network device.
Duplex Mode LED	Solid Green	A port is operating in full duplex mode.
	Solid Yellow	A port is operating in half-duplex mode at 10 or 100 Mbps. (Half-duplex mode does not apply to 1000 Mbps operation.)
	Blinking Yellow	Collisions are occurring on a port operating at 10 or 100 Mbps.
	Off	A port has not established a link with another network device.

SIM LEDs

The SIM card LEDs report the status of the SIM cards. The LEDs are shown in Figure 6.

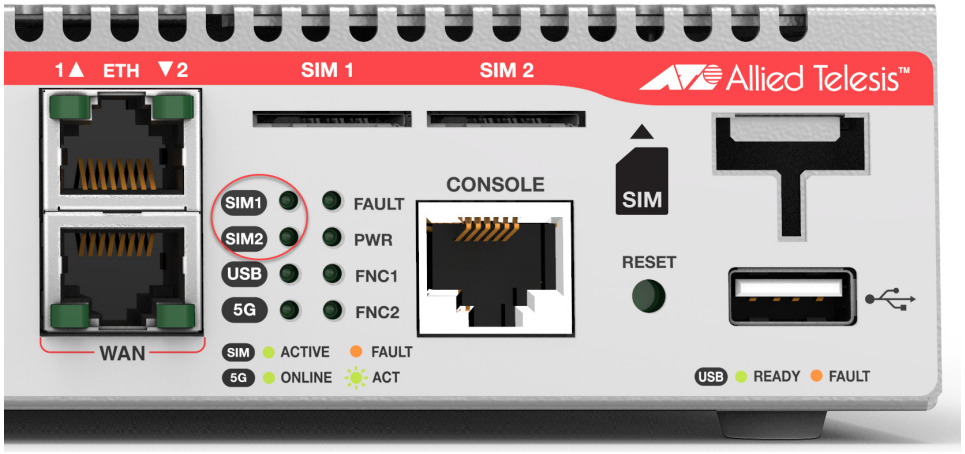


Figure 6. SIM Card LEDs

The SIM LEDs are described in Table 3.

Table 3. SIM Card LEDs

LED	State	Description
SIM1	Off	No SIM card inserted.
	Green On	Mobile network is active.
	Yellow On	Mobile network is not available.
SIM2	Off	No SIM card inserted.
	Green On	Mobile network is active.
	Yellow On	Mobile network is not available.

USB LED

The USB LED reports the status of the USB device. The USB memory mode and USB modem mode share the same USB LED. The LED is shown in Figure 7.

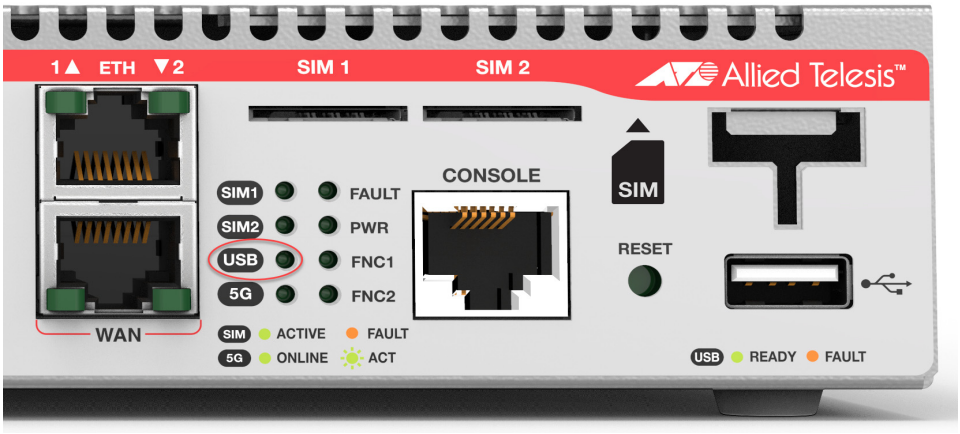


Figure 7. USB LED

The USB LED is described in Table 4.

Table 4. USB LED

LED	State	Description
Memory Mode and Modem Mode	Off	No USB device is attached.
	Steady Yellow	USB device is experiencing failure.
Memory Mode	Steady Green	USB storage device is mounted correctly.
Modem Mode	Steady Green	USB modem device is recognized.

5G LED

The 5G LED reports the 5G connectivity status of the router.

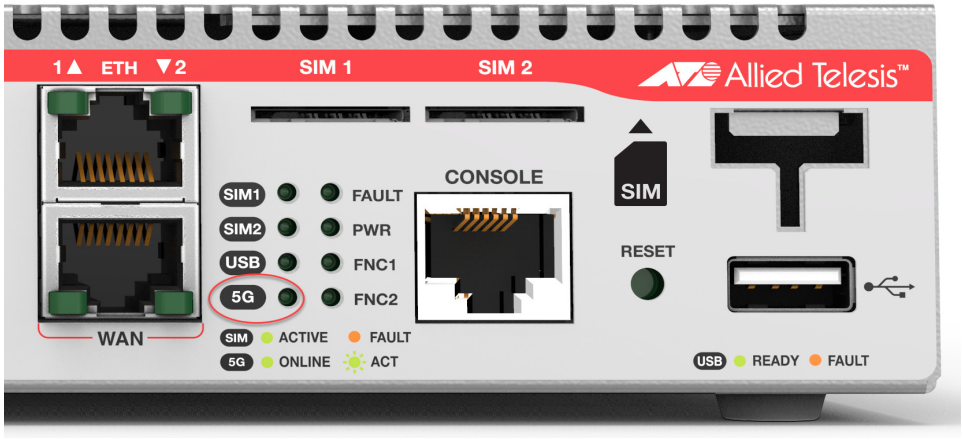


Figure 8. 5G LED

The 5G LED is described in Table 5.

Table 5. 5G LED

LED	State	Description
5G	Off	5G is off line and is not in service.
	Steady Green	5G is on line and is in service.
	Green Blinking 400ms On 100ms Off	This pattern shows 5G data activity.
	Green Blinking 5s On 200ms Off	This pattern shows 5G roaming.
	Green Blinking 1s On 1s Off	This pattern shows 5G low power mode.
	Green Blinking 200ms On 5s Off	This pattern shows 5G has no service.

Fault LED

The Fault LED reports the status of the router. The LED is shown in Figure 9.

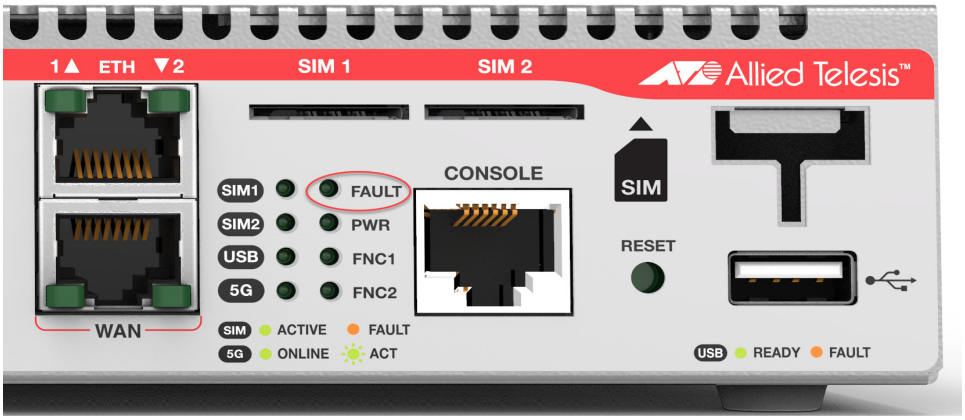


Figure 9. Fault LED

The fault LED is described in Table 6.

Table 6. Fault LED

LED	State	Description
Fault	Off	The router is operating normally.
	1 Red Flash	Indicates a fan fault.
	2 Red Flashes	Indicate a power (voltage) fault.
	6 Red Flashes	Indicates a temperature fault.

Power LED

The Power LED reports the status of AC power. The LED is shown in Figure 10. .

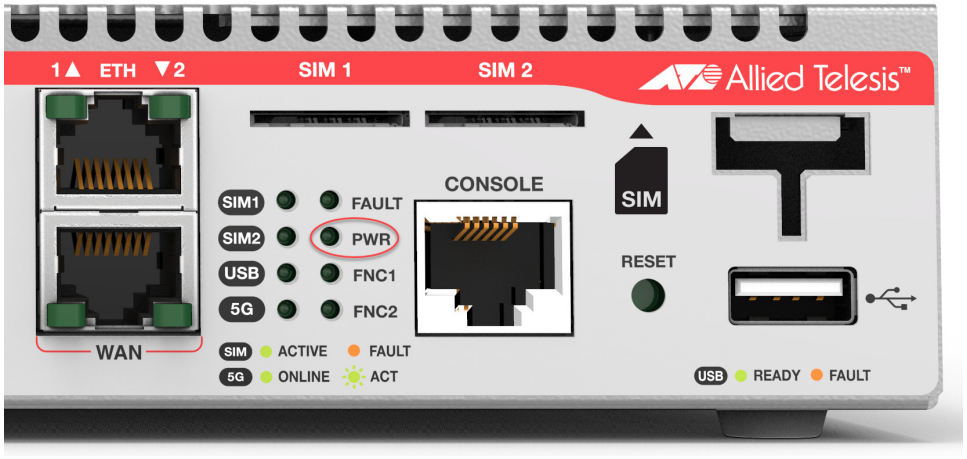


Figure 10. Power LED

The power LED is described in Table 7.

Table 7. Power LED

LED	State	Description
Power	Off	The router is not receiving AC power.
	Steady Green	The router is receiving AC input power and is operating normally.

Function 1 LED

The Function 1 LED is shown in Figure 11. The Function 1 LED is user configurable and controlled by trigger actions.

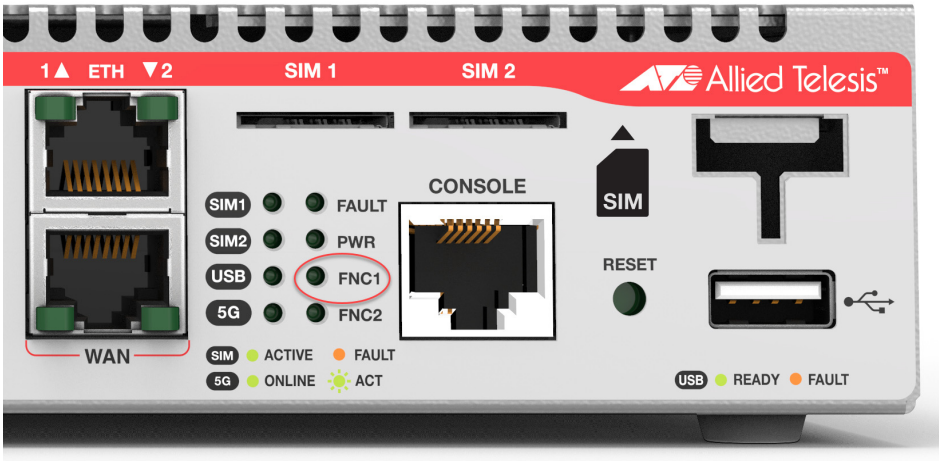


Figure 11. Function 1 LED

Function 2 LED

The Function 2 LED is shown in Figure 12. The Function 2 LED is user configurable and controlled by trigger actions.

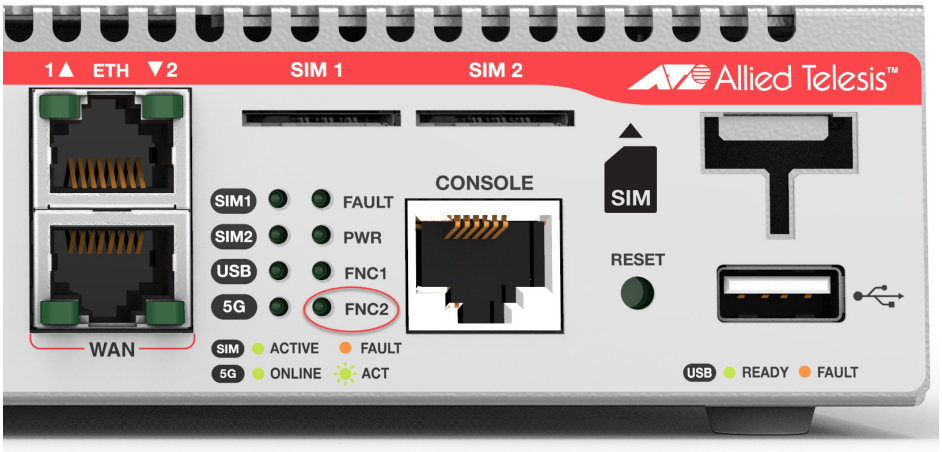


Figure 12. Function 2 LED

USB Port

The management panel has a USB port which is shown in Figure 13. You may also use the port for the following maintenance purposes:

- Storing configuration files on flash drives and restore the files to the router whose settings have been lost or corrupted.
- Using with the Autoboot feature.
- Updating the management firmware on the router.
- Storing configuration files on a USB device and copy the files to the router whose settings have been lost or corrupted.
- Updating the management firmware on the router.

The USB port is USB2.0 type-A compatible.

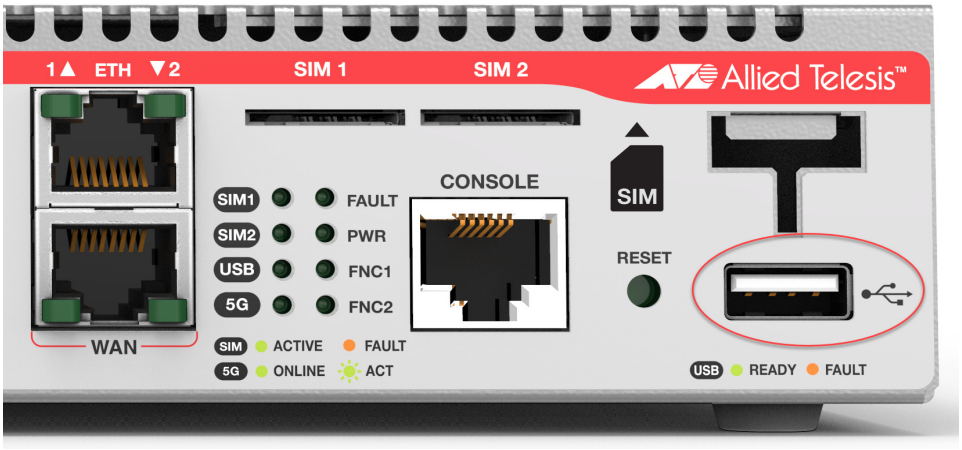


Figure 13. USB port

USB Retainer Slot

The management panel has a USB retainer slot which is shown in Figure 14. You can use the USB retainer kit and the USB retainer slot to prevent the USB device from falling out the USB port.

Note
Cable ties are designed to be used only once. Before you tighten them make sure they are positioned where you want them.

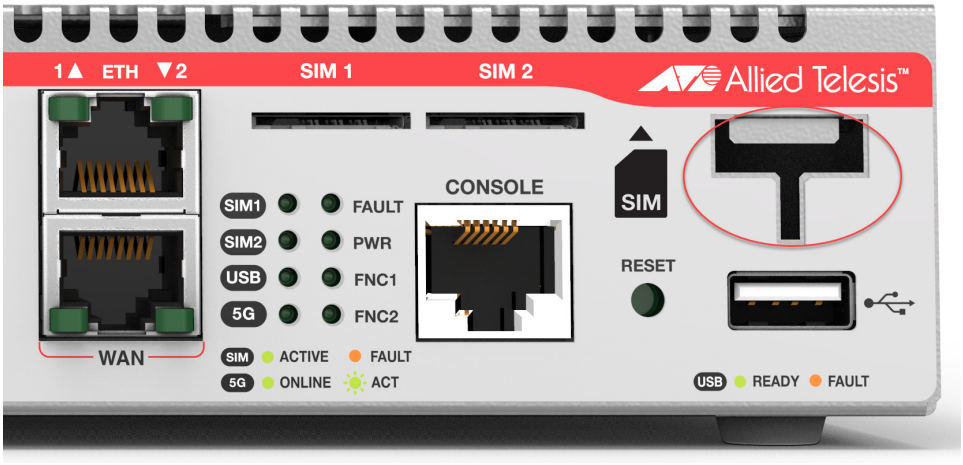


Figure 14. USB retainer slot

The following steps describe how to use the USB retainer kit and the USB retainer slot.

1. To fit the shape of the USB device, cut the USB retainer to an appropriate size and stick the double-side adhesive tape onto the back of the USB retainer as shown in Figure 15.

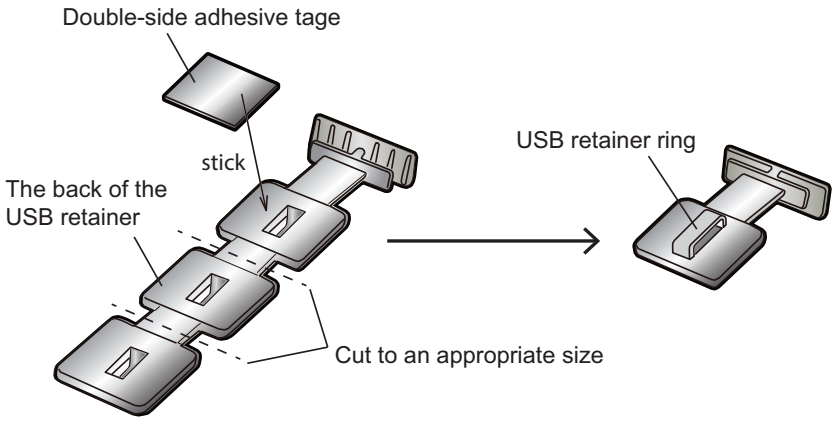
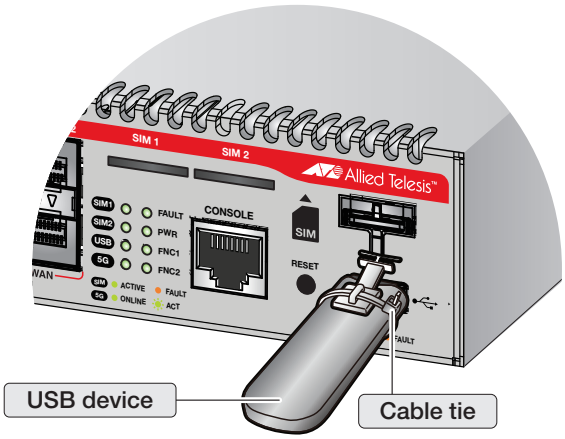


Figure 15. USB retainer

2. Mount the USB device into the USB port and then attach the H-shaped tip of the USB retainer to the USB retainer slot as shown in Figure 16.



Attach the H-shaped tip to the USB retainer slot

Figure 16. Attaching the USB retainer

3. Stick the double-side adhesive tape onto the back of the USB retainer. Wrap the cable tie around the USB device and pass the flat side through the USB retainer ring. Move the arm into position and the buckle of the cable tie under the device and tighten the tie.

Dual SIM card slots

Two SIM card slots are available on the front panel. These slots accept micro-SIM sized cards (15mm x 12mm) only, provided by your mobile service provider.

Note
We do not recommend using mini-SIM (25mm x 15mm) or Nano-SIM (12.3mm x 8.8mm). The required SIM adapter for these SIM cards can cause problems if the SIM card detaches.

Both SIM card slots feature a Push-Push latch and eject system.

Primary and secondary SIM slots are user configurable. If two SIM cards are inserted, priority will be given to SIM 1 with SIM 2 acting as the backup.

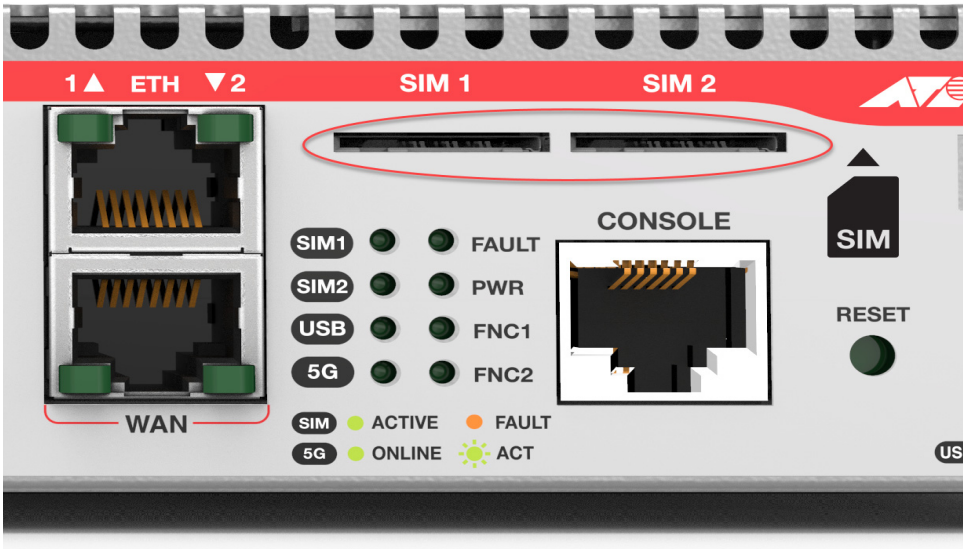


Figure 17. Dual SIM card slots

Console Port

The Console port is used to establish a management session with the router to configure its features and parameter settings. The Console port is shown in Figure 18. This type of management uses serial RS-232 and is commonly referred to as local or out-of-band management because it is not conducted over your network. To perform local management, you must be at the location of the router and must use the management cable included with the router.

To establish a local management session with the router, connect a terminal or a personal computer with a terminal emulation program to the Console port, which has an RJ-45 style (8P8C) connector, using the provided management cable. The cable has RJ-45 style (8P8C) and DB-9 (D-sub 9-pin female) connectors.

The Console port is set to the following specifications.

- Default baud rate: 9600 bps.
- Supported baud rate: 9600 bps, 14400 bps, 19200 bps, 28800 bps, 38400 bps, 57600 bps, 115200 bps.
- Data bits: 8.
- Parity: None.
- Stop bits: 1.
- Flow control: None.

Note
These settings are for a DEC VT100 or ANSI terminal, or an equivalent terminal emulation program.

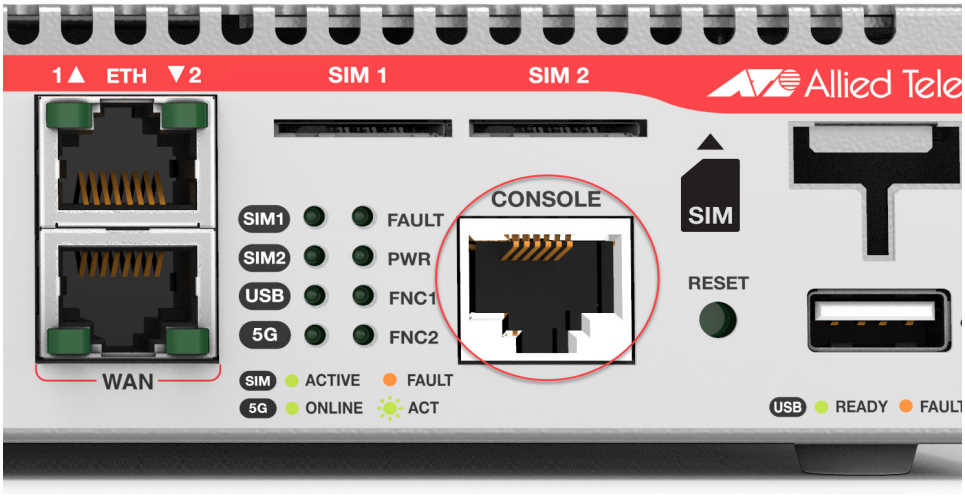


Figure 18. Console port

Reset Button

The reset button is located between the Console port and the USB port. You may use the reset button to restore the router to its factory default settings or reboot the router.

- To return to the factory default settings, press and hold the reset button for at least 5 seconds, and then release the button.
- To return to the normal configuration and reboot the router, press and hold the reset button for at least 1 second but less than 5 seconds, and then release the button.

Note
You won't lose files that contain user information by rebooting the router.

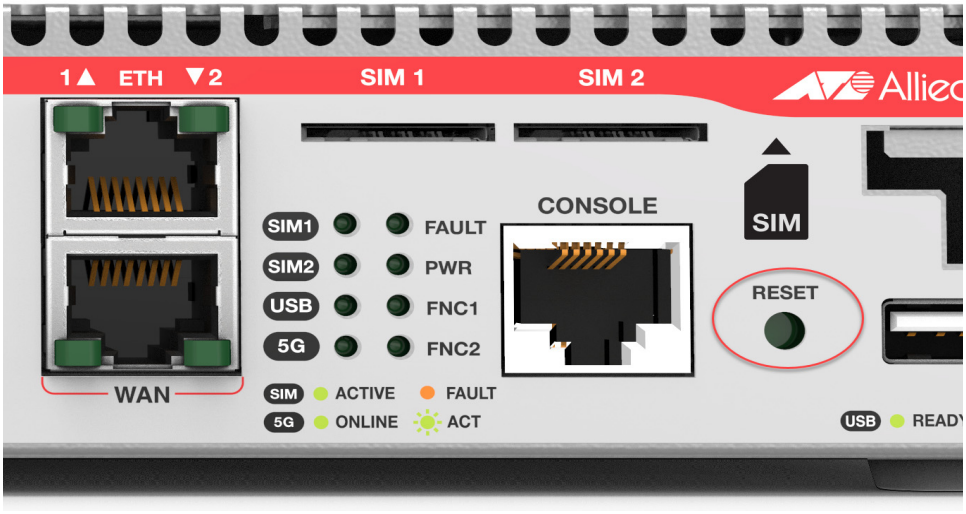


Figure 19. Reset button

Power Supply

Each router has an internal power supply with a single AC power supply socket on the back panel. A power cable is supplied with the router. You can use the On/Off switch on the back panel of the router to power the router on or off.

Refer to “Power Specifications” on page 67 for the input voltage range.

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

Antennas and Antenna Connectors

Four connectors are available around the outside of the unit to connect the antennas. These connectors are type SMA Jack (F) ST. See Figure 20.

Warning: A 20cm distance is required between all antennas and the user.

Monopole antennas

The antenna connectors support the four monopole antennas that are supplied with the router. All four antennas must be connected to the antenna connectors. The monopole antennas are suitable for table, desk top or desk stand mount installation environments where signal strength is strong.

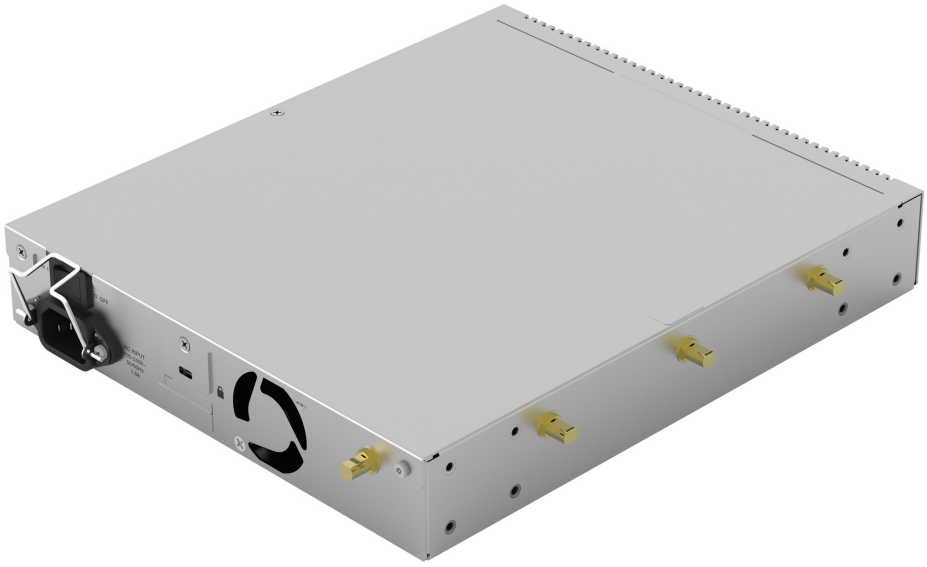


Figure 20. Antenna connectors

Chapter 2
Beginning the Installation

The chapter contains the following sections:

Reviewing Safety Precautions

Review the following safety precautions before beginning the installation procedure.

Note
Safety statements that have the ⁄ symbol are translated into multiple languages in the *Translated Safety Statements* document at www.alliedtelesis.com.

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 LAN cables. ⁄ E1

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

Warning
The 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

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

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

Warning
Operating Temperatures. The router is designed for a maximum ambient temperature of 40° degrees C.

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

Warning
Only trained and qualified personnel are allowed to install or replace this equipment. E14

Caution
Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern. E21

Caution
Risk of explosion if battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Warning
Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading. E25

Note
Use dedicated power circuits or power conditioners to supply reliable electrical power to the device. E27

Note
If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra). E35

Caution
Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. E36

Warning
Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuits (e.g., use of power strips). E37

Caution
The unit does not contain serviceable components. Please return damaged units for servicing. E42

Choosing a Site for the Router

Observe these requirements when planning the installation of the router:

- If you plan to install the router in an equipment rack, check to be sure that the rack is safely secured so that it 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.If you plan to install the router on a table top, or desk, check to be sure that the table is level and stable. In this case we recommend using the monopole antennas provided.
- If you plan to install the router using a wall mount, check that the position has adequate signal strength. In this case we recommend using the monopole antennas provided.
- The power outlet should be located near the router and be easily accessible.
- The site should allow for easy access to the ports on the front of the router, so that you can easily connect and disconnect cables, and view the port LEDs.
- The site should allow for adequate air flow around the unit and through the cooling vents on the front and rear panels. The ventilation direction in units that have a cooling fan is from front to back, with the fan on the back panel drawing the air out of the unit.
- Do not install the router in a wiring or utility box because it will overheat and fail from inadequate airflow.
- The site should not expose the router to moisture or water.
- The site should be a dust-free environment.
- The site should include dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.
- **When positioning the router ensure that the antennas are upright and not placed near any large metal objects. Do not wall mount on a metal surface.**

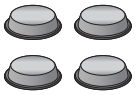
  Following these instructions provides unobstructed access for clear signal strength.
- **Warning:** A 20cm distance is required between all antennas and the user.

Warning
Routers should not be stacked on top of one another on a table or desk top because that could present a personal safety hazard if you need to move or replace routers.

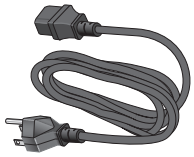
Unpacking the Router

Figure 21 lists the items that come with the AT-AR4050S-5G router. If any item is missing or damaged, contact your Allied Telesis sales representative for assistance. You should retain the original packaging material in the event you need to return the unit to Allied Telesis.

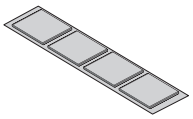
One 2 m (6.6 ft) local management cable with RJ-45 (8P8C) and DB-9 (D-sub 9-pin female) connectors.



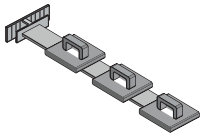
Four rubber feet



One regional AC power cord



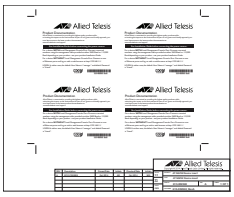
One double-side adhesive tape



One USB retainer

Two cable ties

One AC power cord retainer



Four addendum document sheets

Four monopole antennas

Figure 21. Components of the AT-AR4050S-5G router

Chapter 3

Installing the Router and Powering on the Router

The procedures in this chapter are:

Installing the Power Cord Retaining Clip

Perform the following procedures to install the power cord retaining clip on the power supply module.

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

1. Locate the power cord retaining clip, shown in Figure 22.

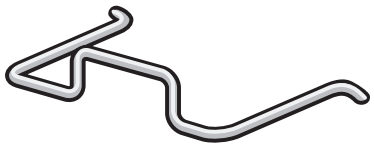


Figure 22. Power cord retaining clip

2. Install the clip on the AC power connector on the power supply module. With the ‘u’ of the clip facing down, press the sides of the clip torward the center and insert the short ends into the holes in the retaining bracket, as shown in Figure 23.

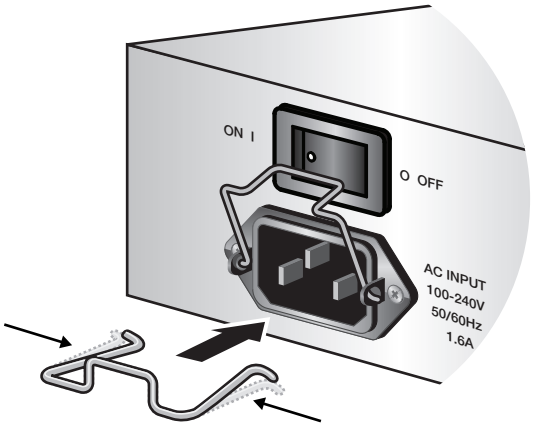


Figure 23. Inserting the retaining clip into the retaining bracket

Fitting Rubber Feet

Fit the rubber feet for a router that you want to install on a table or desk top. Fit these as follows:

1. Remove all equipment from the package and store the packaging material in a safe place.

2. Turn the router over and place it on a table.

3. Remove the adhesive rubber feet from the packaging and press them firmly onto the base of the router, as shown in Figure 24.

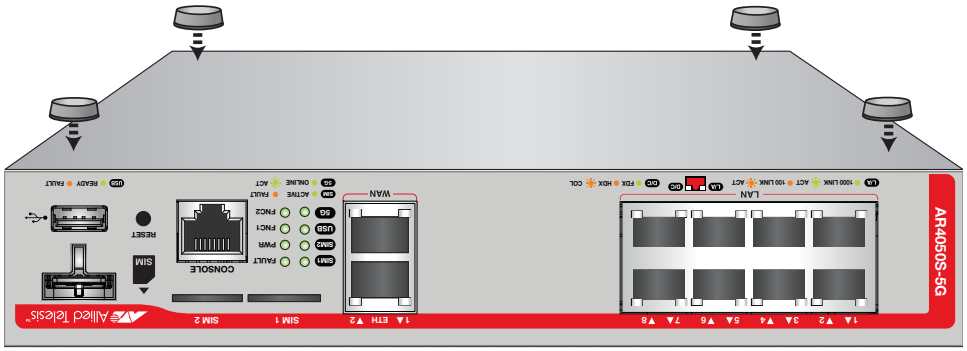


Figure 24. Attaching the rubber feet

4. Turn the router over again and place it on a flat, secure surface (such as a desk or table) leaving ample space around the unit for ventilation.

Removing Rubber Feet

Rubber feet are not required for desk stand, wall mount or equipment rack installations. If they have already been fixed remove them as follows:

- Turn the router over and place it on a table.
- If rubber feet are attached to the base of the router, remove them by prising off with a flat-head screwdriver, as shown in Figure 25.

Note
The rubber feet are applied using an adhesive backed polyurethane product. Using a screwdriver to pry the rubber feet off the metalwork may destroy the adhesive in the removal process.

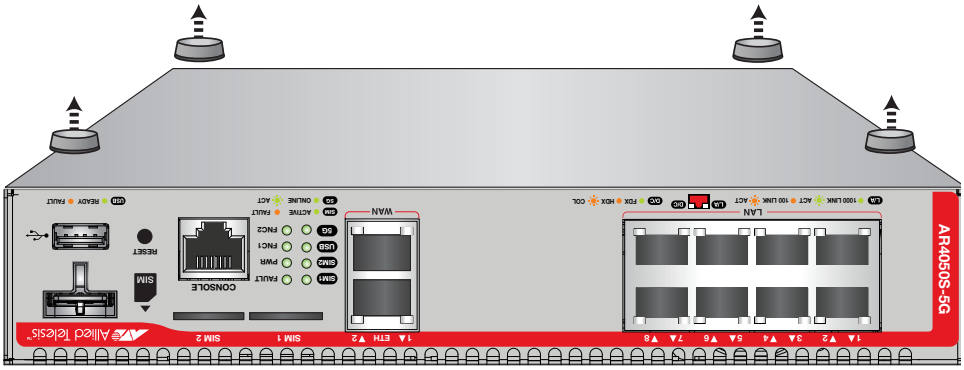


Figure 25. Removing the rubber feet

Installing the Router on a Table or Desk Top

You may install the router on a table or desk top.

Installation guidelines can be found in “Choosing a Site for the Router” on page 38.

Here is the procedure for installing the router on a table or desk top:

- The table should be level and stable.
- Fit the rubber feet to the bottom of the router. See Figure 24.
- The power outlet should be located near the router and be easily accessible.
- The site should allow for easy access to the ports on the front of the router, so that you can easily connect and disconnect cables, and view the port LEDs.
- The site should allow for adequate air flow around the units and through the cooling vents on the front and rear panels. The ventilation direction is from front to back, with the fan on the back panel drawing the air out of the unit.
- The site should not expose the router to moisture or water.
- The site should be a dust-free environment.
- The site should include dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.
- Connect all 4 monopole antennas by screwing them into the antenna connectors. There are three antenna connectors located on the left side of the unit and one at the rear.
- Check that all four antennas face upward for clear unobstructed signals when located on the table or desk top.

Warning
Do not stack routers on top of one another on a table or desk top because that could present a personal safety hazard if you need to move or replace routers.

Go to Chapter 4, “Cabling the Networking Ports” on page 55 to connect the network cables to the ports on the router.

Installing the Router using a Desk Stand

This procedure requires the following items:

- A desk stand mount kit (not provided).
- Cross-head screwdriver (not provided).
- Make sure that the vertical stand surface is flat and unobstructed from metal objects that interfere with the antenna's signal strength.

Note
Desk stand mount kits AT-STND-J03 can be purchased separately from your Allied Telesis dealer.

Installation guidelines can be found in "Choosing a Site for the Router" on page 38.

To install the router on a desk or flat surface using the desk stand mount kit, perform the following procedure:

1. If the rubber feet are attached to the bottom of the router, remove them by prising off with a flat-head screwdriver. See Figure 25.
2. Orient the two brackets against the right side of the router, and secure them to the unit with the four screws provided in the desk stand mount kit. See Figure 26.
3. The router is now vertically mounted with the display panel facing to the left. See Figure 26.
4. Connect all four monopole antennas by screwing them into the antenna connectors. There are 3 antenna connectors located on the top side of the router and 1 at the rear. See Figure 26.
5. Check that all four antennas face upward for clear unobstructed signals when located on the desk. See Figure 26.

Figure 26. Desk stand mounted router

6. Go to Chapter 2, “Choosing a Site for the Router” on page 38 to connect the network cables to the ports on the router.

Installing the Router on a Wall

This procedure requires the following items:

- A wall mount kit (not provided).
- Cross-head screwdriver (not provided).
- If you are fixing the router to a solid masonry or hollow wall, you need equipment to drill a six mm hole. The wall mount kit is supplied with screws and rawplugs to fasten the brackets to a masonry or plasterboard wall. If you are fixing the router to a wooden wall, the screws are self-tapping.

Note
Wall mount kits AT-BRKT-J24 can be purchased separately from your Allied Telesis dealer.

Installation guidelines can be found in “Choosing a Site for the Router” on page 38.

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

1. If the rubber feet are attached to the bottom of the router, remove them by prising off with a flat-head screwdriver. See Figure 25.
2. Orient the 4 brackets against the sides of the router, and secure them to the unit with the 16 bracket screws provided in the wall mount kit. See Figure 27.

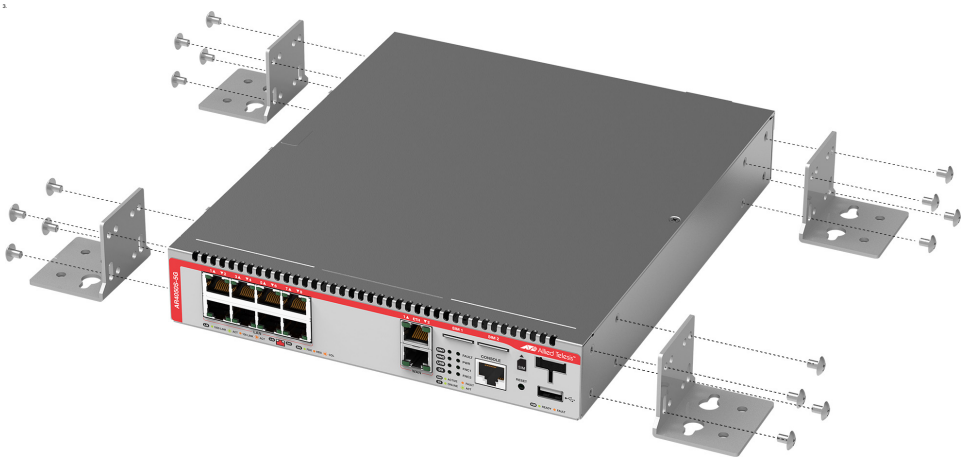


Figure 27. Attaching the wall mount brackets to the sides of the router

3. Have another person hold the router at the wall location where the router is to be installed, while you use a pencil or pen to mark the wall with the locations of the holes in the brackets.

4. The router should be oriented such that the front faceplate is facing to the left or right and not facing upwards or downwards. See Figure 29.

5. Screw all the monopole antennas to their antenna connectors so you can check that they can face upward for clear unobstructed signals when fixed to the wall, See Figure 28. You can then unscrew them while fixing the router to the wall, See Figure 29.

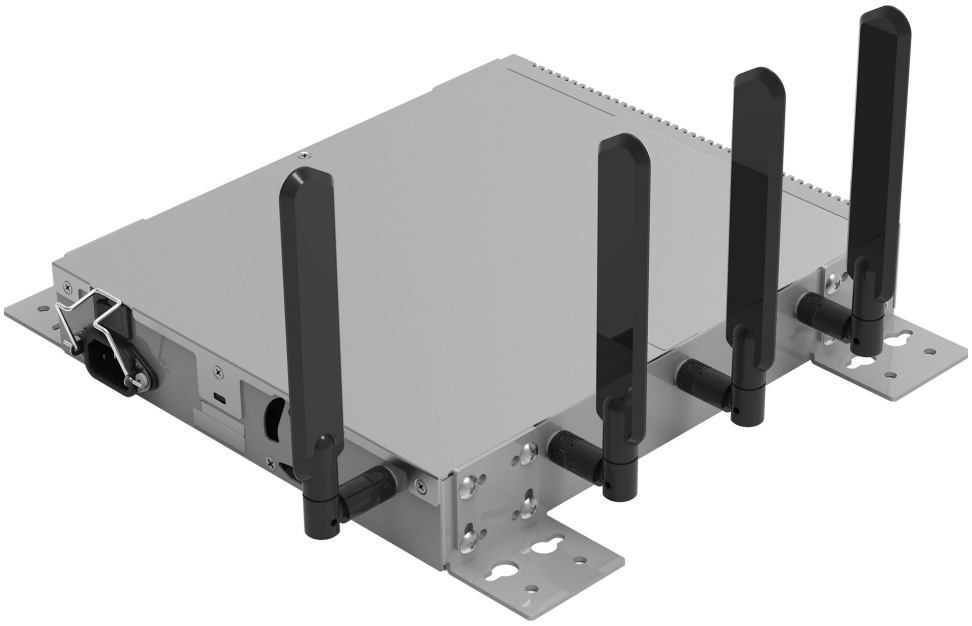


Figure 28. Brackets attached to the router

6. While another person holds the router at the wall location, secure it to the wall using the 16 wall mounting screws. See Figure 29.

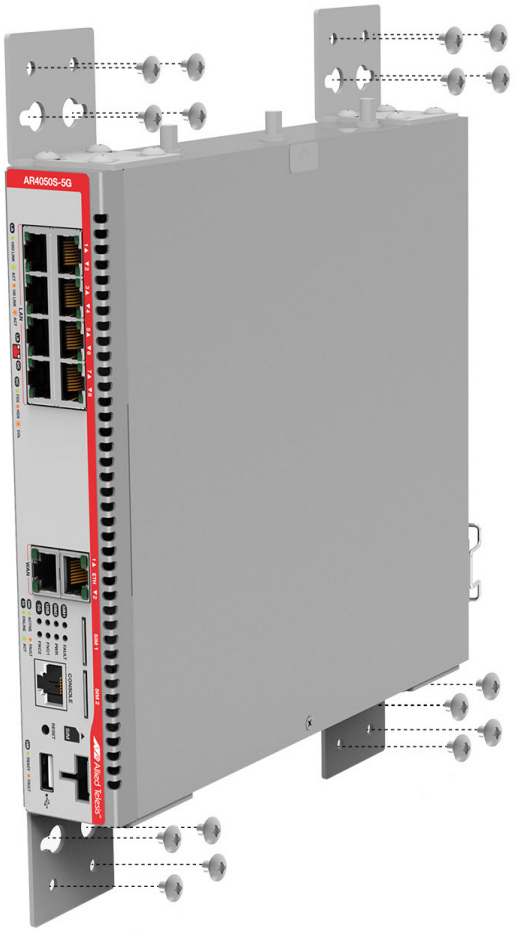


Figure 29. Securing the router to the wall

7. Screw the four monopole antenna back into the four antenna connectors once you have secured the router to the wall. Make sure that they face upwards and are unobstructed for clear signal strength.

8. Go to Chapter 4, “Cabling the Networking Ports” on page 55 to connect the network cables to the ports on the router.

Connecting AC Power to a Power Supply Module

The router has a single fan which pulls air into the chassis through the intake air vents to cool the chassis components. The air is discharged through the exhaust air vents on the top of the chassis front panel. See Figure 1 on page 11 For the location of the intake air vents. See Figure 2 on page 12 for the location of the exhaust air vents.

Warning
Keep the intake vents clear of any obstructions to insure proper cooling of the router components.

To power on the router, perform the following procedure:

1. Position the power cord retaining clip in the up position, as shown in Figure 30.

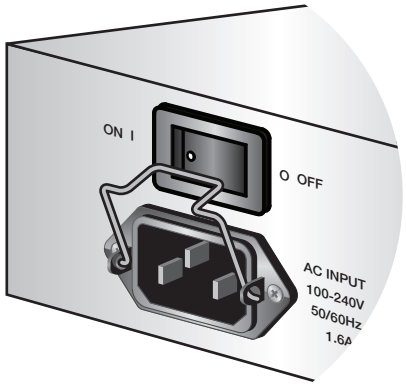


Figure 30. Power cord retaining clip in the up position

2. Plug the power cord into the AC power connector on the rear panel of the unit. Lower the power cord retaining clip to secure the power cord to the unit.

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

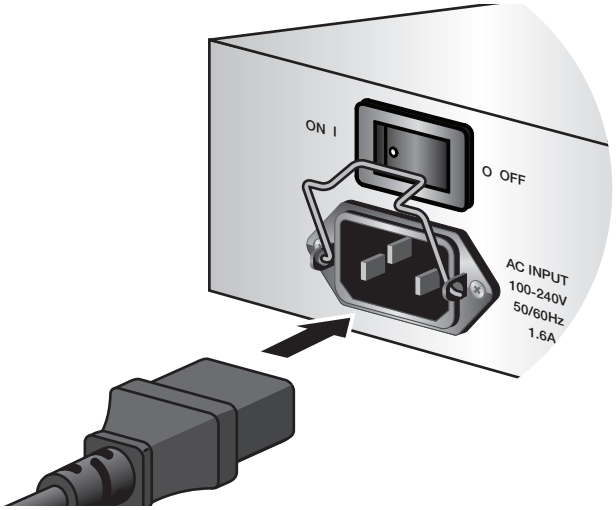


Figure 31. Connecting the AC power cord

3. Connect the other end of the power cord to an appropriate AC power outlet and switch the On/Off switch to On. For power specifications for the router, refer to “Power Specifications” on page 67.

4. Verify that the POWER LED is green.

Starting a Local Management Session

This procedure requires a terminal or a terminal emulator program and the management cable that comes with the router. To start a local management session on the router, perform the following procedure:

1. Connect the RJ-45 connector on the management cable to the Console port on the front panel of the router, as shown in Figure 32.

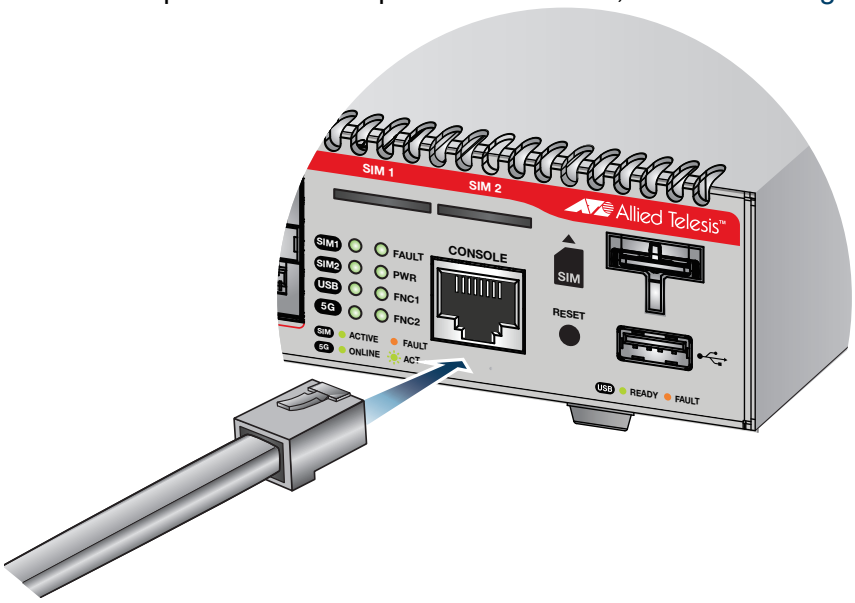


Figure 32. Connecting the Management Cable to the Console Port

2. Connect the other end of the cable to an RS-232 port on a terminal or PC with a terminal emulator program.

3. Configure the terminal or terminal emulator program as follows:

   - Baud rate: 9600 bps (9600 bps, 14400 bps, 19200 bps, 28800 bps, 38400 bps, 57600 bps, 115200 bps. The default is 9600 bps.)
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: None

   Note
   The port settings are for a DEC VT100 or ANSI terminal, or an equivalent terminal emulator program.

Monitoring the Initialization Processes

It takes about thirty seconds for the router to initialize its management software programs and features, and load the default configuration.

You may also monitor the bootup sequence by connecting a terminal or computer that has a terminal emulator program to the console port on the router. You will see Figure 33.

```
Verifying release... [  OK  ]
Booting...


          _______________   ____
        /\ \             / /______\
      /   \ \_      __/ /| ______ |
    /       \ |     |  /  | ______ |
  /          \ \   / /     \ ____ /
/_______/\____\ \/ /_____________/

Allied Telesis Inc.
AlliedWare Plus (TM) v5.5.1
Current release filename:AR4050S-5G-5.5-1-0.1.rel
Original release filename: AR4050S-5G-5.5.0-0.1.rel
Built: Tue Jan 10 07:05:13 UTC 2021
[  OK  ] Started Dispatch Password requests to Console Directory Watch.
[  OK  ] Started Forward Password requests to Wall Directory Watch.
[  OK  ] Reached target Network is Online.
[  OK  ] Reached target Network (Pre).
[  OK  ] Reached target Paths.
[  OK  ] Reached target Slices.
[  OK  ] Reached target Swap.
[  OK  ] Listening on Syslog Socket.
[  OK  ] Listening on initctl Compatibility Named Pipe.
[  OK  ] Listening on Journal Socket (/dev/log).
[  OK  ] Listening on Journal Socket.
[  OK  ] Listening on Journal Socket.
[  OK  ] Listening on udev Control Socket.
[  OK  ] Listening on udev Kernel Socket.
[  OK  ] Reached target Sockets.
```

Figure 33. Router initialization messages

```
Mounting Huge Pages File System...
Mounting Kernel Debug File System...
Starting Synchronise Hardware Clock to System Clock...
Starting Load Kernel Modules...
Starting Journal Service...
Mounting FUSE Control File System...
Starting Remount Root and Kernel File Systems...
Starting udev Coldplug all Devices...
Starting udev Kernel Device Manager...
[  OK  ] Mounted Huge Pages File System.
[  OK  ] Mounted Kernel Debug File System.
[  OK  ] Started Synchronise Hardware Clock to System Clock.
[  OK  ] Mounted FUSE Control System.
[  OK  ] Started Remount Root and Kernel File Systems.
[  OK  ] Started Apply Kernel Variables.
[  OK  ] Started Journal Service.
[  OK  ] Started udev Kernel Device Manager.
[  OK  ] Reached target Local File Systems (Pre).
Mounting/mnt...
Mounting/net...
Mounting/tmp...
Starting Flush Journal to Presistent Storage...
[  OK  ] Mounted/mnt.
[  OK  ] Mounted/net.
[  OK  ] Mounted/tmp.
[  OK  ] Started Flush Journal to Persistent Storage.
[  OK  ] Started udev Coldplug all Devices.
Starting Mount AWPlus specific local FS...
[  OK  ] Started Load Kernel Modules.
[  OK  ] Started Mount AWPlus specific local FS.
...
Initializing HA processes:
atmf_agentd, atmfd, auth, cwmd, ddnsd, execd, hostd
hsl, imi, lacp, lldpd, mstp, nsm, ospf6d
ospfd, pdmd, pim6d, pimd, ripd, ripngd, rmon
statmond, vrrpd
...
Loading default configuration
done!
```

Figure 33. Router initialization messages (Continued)

Chapter 4
Cabling the Networking Ports

This chapter contains the following procedures:

Cabling the Twisted Pair Ports

Here are the guidelines to cabling the 10/100/1000Base-T twisted pair ports.

- The connectors on the cables should fit snugly into the ports, and the tabs should lock the connectors into place.
- The default setting for the wiring configurations of the ports is auto-MDI/MDI-X. The default setting is appropriate for router ports that are connected to 10/100Base-TX network devices that also support auto-MDI/MDI-X.
- The default auto-MDI/MDI-X setting is not appropriate for router ports that are connected to 10/100Base-TX network devices that do not support auto-MDI/MDI-X and have a fixed wiring configuration. For router ports connected to those types of network devices, you should disable auto-MDI/MDI-X and set the wiring configurations manually.
- The appropriate MDI/MDI-X setting for a router port connected to a 10/100Base-TX network device with a fixed wiring configuration depends on the setting of the network device and whether the router and network device are connected with straight-through or crossover cable. If you are using straight-through twisted pair cable, the wiring configurations of a port on the router and a port on a network device must be opposite each other, such that one port uses MDI and the other MDI-X.

  For example, if a network device has a fixed wiring configuration of MDI, you must disable auto-MDI/MDI-X on the corresponding router port and manually set it to MDI-X. If you are using crossover twisted pair cable, the wiring configurations of a port on the router and a port on a network device must be the same.
- The default speed setting for the ports is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Auto-Negotiation.
- The default speed setting of Auto-Negotiation is not appropriate for ports connected to 10/100Base-TX network devices that do not support Auto-Negotiation and have fixed speeds. For those router ports, you should disable Auto-Negotiation and set the port's speed manually to match the speeds of the network devices.
- The 10/100/1000Base-T ports must be set to Auto-Negotiation, the default setting, to operate at 1000Mbps.
- The default duplex mode setting for the ports is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Auto-Negotiation for duplex modes.

- The default duplex mode setting of Auto-Negotiation is not appropriate for ports connected to network devices that do not support Auto-Negotiation and have a fixed duplex mode. You should disable Auto-Negotiation on those ports and set their duplex modes manually to avoid the possibility of duplex mode mismatches.

  A router port using Auto-Negotiation defaults to half-duplex if it detects that the end node is not using Auto-Negotiation, which can result in a mismatch if the end node is operating at a fixed duplex mode of full-duplex.

Chapter 5
Troubleshooting

This chapter contains suggestions on how to troubleshoot the router if a problem occurs.

> **Note**
> For further assistance, please contact Allied Telesis Technical Support at www.alliedtelesis.com/services-support.

Problem 1: The POWER LED on the front of the router is off.

Solutions: The unit is not receiving power. Try the following:

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

Problem 2: A twisted pair port on the router is connected to a network device but the port's Link/Activity/Speed LED is off.

Solutions: The port is unable to establish a link to a network device. Try the following:

- Verify that the network device connected to the twisted pair port is powered on and is operating properly.
- Verify that the twisted pair cable is securely connected to the port on the media converter channel and to the port on the remote network device.Verify that the twisted pair cable is securely connected to the port on the media converter channel and to the port on the remote network device.
- Verify that the port is connected to the correct twisted pair cable. This is to eliminate the possibility that the port is connected to the wrong network device, such as a powered off device.

- ❒ Try connecting another network device to the twisted pair port with a different cable. If the twisted pair port is able to establish a link, then the problem is with the cable or the other network device.
- ❒ Verify 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 and Category 5 and Category 5E for 100 and 1000 Mbps operation.

Note
A 1000BASE connection may require five to ten seconds to establish a link.

Problem 3: Network performance between a twisted pair port on the router and a network device is slow.

Solution: There might be a duplex mode mismatch between the port and the network device. This occurs when a twisted pair port using Auto-Negotiation is connected to a device with a fixed duplex mode of full duplex. If this is the cause of the problem, adjust the duplex mode of the port on the network device or on the router so that both ports are using the same duplex mode.

Problem 4: A port's Link/Activity/Speed LED is blinking.

Solution: The link between the port and the network device is intermittent. Try the following:

- ❒ Connect another network device with a different cable to the port. If the Link LED remains steady on, then the problem is with the original cable or the network device.

Problem 5: 5G antenna connection issues.

Solutions: Ensure that you are using the correct antenna for the installation environment. Check the following:

- ❒ Use all four monopole antennas for table top or desk stand environments.
- ❒ Check that all four antenna cables are connected from the antenna unit to the router antenna connectors.
- ❒ Check that there are no metal obstructions that can interfere with the wireless signal strength.

Problem 6: 5G SIM card issues.

Solution: Follow the SIM card detection test procedure listed below:

The following procedure is used to test SIM cards in both SIM 1 and SIM 2 card slots.

Step 1: Boot your router with no configuration and no SIM cards inserted

Step 2: Check that both SIM 1 and SIM 2 LEDs are off

Step 3: Configure your router

```
awplus# configure terminal
awplus(config)# sim enable sim1
awplus(config)# sim enable sim2
awplus(config)# apn carrier1
awplus(apn-config)# name carrier_name.co.nz
awplus(apn-config)# exit
awplus(config)# interface wwan0
awplus(config-if)# apn sim1 carrier1
awplus(config-if)# apn sim2 carrier1
awplus(config-if)# exit
awplus(config)#
```

Step 4: Display interface 'wwan0' information

Use the **show interface** command. Observe that the 'wwan0' interface administrative state is up:

```
awplus#show int wwan0
Interface wwan0
  Link is DOWN, administrative state is UP
  Hardware is WWAN
  index 14 metric 0 mtu 1428
  <BROADCAST,NOARP,MULTICAST>
  VRF Binding: Not bound
  SNMP link-status traps: Disabled
  Router Advertisement is disabled
  Router Advertisement default routes are accepted
  Router Advertisement prefix info is accepted
    input packets 0, bytes 0, dropped 0, multicast packets 0
    output packets 0, bytes 0, multicast packets 0, broadcast packets 0
    input average rate : 30 seconds 0 bps, 5 minutes 0 bps
    output average rate: 30 seconds 0 bps, 5 minutes 0 bps
  Time since last state change: 0 days 00:04:13
```

Step 5: Display SIM status

Use the **show 5g sim** command. Observe that both SIM 1 and SIM 2 slots are empty:

```
awplus#show 5g sim
  SIM Status:

Slot 1 is                              : Empty
Slot 1 administrative state            : Up
Slot 1 present, up and configured      : No
Slot 1 is                              : Invalid
Slot 1  APN                            : carrier1
Slot 1  APN name                       : carrier_name.co.nz
Slot 1  User name                      : Not Set
Slot 1  Password                       : Not Set
Slot 1  Authentication type            : Not Set
Slot 1  Packet data protocol type      : ipv4-or-ipv6

Slot 2 is                              : Empty
Slot 2 administrative state            : Up
Slot 2 present, up and configured      : No
Slot 2 is                              : Invalid

Slot 2  APN                            : carrier1
Slot 2  APN name                       : carrier_name.co.nz
Slot 2  User name                      : Not Set
Slot 2  Password                       : Not Set
Slot 2  Authentication type            : Not Set
Slot 2  Packet data protocol type      : ipv4-or-ipv6

SIM Failover Interval                  : 300 seconds
Network is running                     : False
```

Step 6: Add a SIM card to both SIM 1 and SIM 2 card slots

Wait for 10 seconds and then enter the command **show 5g sim** to check that both SIM slots report that the cards are present. SIM 1 is detected first:

```
awplus#show 5g sim
SIM Status:

Slot 1 is                           : Present
Slot 1 administrative state         : Up
Slot 1 present, up and configured   : Yes
Slot 1 is                           : Active

Slot 1  APN                         : carrier1
Slot 1  APN name                    : carrier_name.co.nz
Slot 1  User name                   : Not Set
Slot 1  Password                    : Not Set
Slot 1  Authentication type         : Not Set
Slot 1  Packet data protocol type   : ipv4-or-ipv6

Slot 2 is                           : Present
Slot 2 administrative state         : Up
Slot 2 present, up and configured   : Yes
Slot 2 is                           : Backup

Slot 2  APN                         : carrier1
Slot 2  APN name                    : carrier_name.co.nz
Slot 2  User name                   : Not Set
Slot 2  Password                    : Not Set
Slot 2  Authentication type         : Not Set
Slot 2  Packet data protocol type   : ipv4-or-ipv6

SIM Failover Interval               : 300 seconds
Network is running                  : True
```

Step 7: Check that SIM 1 LED is green and SIM 2 LED is amber

Step 8: Display the ICCID number

Use the **show 5g sim detail** command to display details about the active SIM such as the Integrated Circuit Card ID (ICCID). This 19-20 digit number is typically printed on the back of the SIM card. The ICCID is a globally unique serial number that identifies the SIM card.

```
awplus#show 5g sim detail
Current SIM Details:

Slot 1 is                           : Present
Slot 1 administrative state         : Up
Slot 1 present, up and configured   : Yes
Slot 1 is                           : Active

Slot 1  APN                         : carrier1
Slot 1  APN name                    : carrier_name.co.nz
Slot 1  User name                   : Not Set
Slot 1  Password                    : Not Set
Slot 1  Authentication type         : Not Set
Slot 1  Packet data protocol type   : ipv4-or-ipv6

Slot 1 ICCID                        : 8964011910081632115
```

Step 9: Disable SIM 1

Use the command **no sim enable** to disable SIM 1. SIM 2 automatically becomes the active SIM.

```
awplus(config)# no sim enable sim1
awplus(config)# end
```

Step 10: Display the SIM status

Use the command **show 5g sim**. Observe that the administrative state for slot 1 is down and is invalid, while slot 2 is up and is the backup:

```
awplus#show 5g sim
SIM Status:

Slot 1 is                           : Present
Slot 1 administrative state         : Down
Slot 1 present, up and configured   : Yes
Slot 1 is                           : Invalid

Slot 1  APN                         : carrier1
Slot 1  APN name                    : carrier_name.co.nz
Slot 1  User name                   : Not Set
Slot 1  Password                    : Not Set
Slot 1  Authentication type         : Not Set
Slot 1  Packet data protocol type   : ipv4-or-ipv6

Slot 2 is                           : Present
Slot 2 administrative state         : Up
Slot 2 present, up and configured   : Yes
Slot 2 is                           : Backup

Slot 2  APN                         : carrier1
Slot 2  APN name                    : carrier_name.co.nz
Slot 2  User name                   : Not Set
Slot 2  Password                    : Not Set
Slot 2  Authentication type         : Not Set
Slot 2  Packet data protocol type   : ipv4-or-ipv6

SIM Failover Interval               : 300 seconds
Network is running                  : True
```

Step 11: Check the ICCID number

Use the command **show 5g sim detail**. Observe that the ICCID number has now changed to the SIM card in slot 2:

```
awplus#show 5g sim detail
Current SIM Details:

Slot 2 is                           : Present
Slot 2 administrative state         : Up
Slot 2 present, up and configured   : Yes
Slot 2 is                           : Active

Slot 2  APN                         : carrier1
Slot 2  APN name                    : carrier_name.co.nz
Slot 2  User name                   : Not Set
Slot 2  Password                    : Not Set
Slot 2  Authentication type         : Not Set
Slot 2  Packet data protocol type   : ipv4-or-ipv6

Slot 2 ICCID                        : 8964011910081632116
```

Step 12: Check that the SIM 1 LED is amber and that the SIM 2 LED is green

Step 13: If one of the SIM card tests fail, then check the following:

Only Micro SIMS are supported (15mm x 12mm). We do not recommend using Mini or Nano SIM cards because the SIM adapter that they require can cause problems if the SIM card detaches. Make sure that you insert the SIM card correctly:

- The card must be the right size for the slot.
- Check that the SIM card is the right way up. The gold contacts must be facing downwards.
- Make sure the SIM card is inserted the right way around. The corner cut-out should be inserted first.
- The gold contact area of the SIM card must be clean and undamaged.
- Make sure there are no foreign objects in the SIM card slot.

Appendix A
Technical Specifications

Physical Specifications

Dimensions (W x D x H)

Table 8. Product Dimensions

AT-AR4050S-5G	220 mm x 260 mm x 42.5mm (8.6 in. x 10.2 in. x 1.6 in.)

Weight

Table 9. Product Weight

AT-AR4050S-5G	1.9 kg

Environmental Specifications

Table 10. Environmental Specifications

Operating Temperature (operation with a fan)	0° C to 40° C (32° F to 104° F)
Storage Temperature	-20° C to 50° C (-4° F to 122° F)
Operating Humidity	5% to 80% noncondensing
Storage Humidity	5% to 95% noncondensing
Maximum Operating Altitude	2,000 m (6,561 ft)
Product Noise Level	42 dB at 30°C
Maximum Nonoperating Altitude	3,000 m (9,843 ft)

Power Specifications

Maximum Power Consumption

Table 11. Maximum Power Consumption

AT-AR4050S-5G	60 watts

Input Voltages

Table 12. Input Voltages

AT-AR4050S-5G	90-264 VAC, 1.6 A maximum, 47/ 63 Hz per input

Certifications

Table 13. Product Certifications

EMI (Electro Magnetic Interference)	**FCC part15** Subpart B/ NA version of standard **ICES-003** Canadian version of standard (Class A) **EN55032 (CISPR32)** European (international version of standard for radiated emissions) (Class A) **AS/NZS CISPR 32** Australian/NZ version **VCCI** (Japan Class A)

Table 13. Product Certifications

EMS (Electro Magnetic Susceptibility)	**EN55035 (CISPR35)** European (international version of standard) EU RED Directive for immunity. **EN55024** (India) **EN301489-1** - ElectroMagnetic Compatibility (EMC) standard for radio equipment. **EN IEC 61000-3-2** Harmonic Current Emission **EN IEC 61000-3-3** Voltage Fluctuations and Flicker
Electrical Safety	**IEC 62368-1** (international version of standard) **EN 62368-1** (European version of standard) **UL 62368-1** (NA version of standard) **CAN/CSA C22.2 No. 62368-1** (Canadian version of standard) **AS/NZS 62368** (Australian/NZ version of standard)
RoHS	2011/65/EU + 2015/863 RoHS Directive
Declaration of non-use of the 9 prohibited substances regulated in JGPSSI/JIG level A without the 6 substances prohibited in RoHS Directive. (As a factory)	JGPSSI/JIG level A
China RoHS	GB 18455-2001
China RoHS	SJ/T11364—2006

Table 13. Product Certifications

Law compliance for JP	1. Law for promotion of sorted collection and recycling of containers and packaging 2. Law for promotion of effective utilization of resources
CE Marking	2006/95/EC Low Voltage Directive 2004/108/EC EMC Directive
Singapore IMDA TS CMT	Telecommunication Dealer’s (Class) License DA109146.

RJ-45 Twisted Pair Port Pinouts

Figure 34 illustrates the pin layout of the RJ-45 connectors and ports.

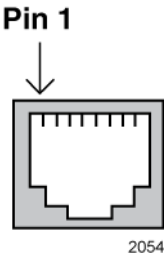


Figure 34. RJ-45 Socket Pin Layout (Front View)

Table 14 lists the pin signals for 10 and 100 Mbps.

Table 14. Pin Signals for 10 and 100 Mbps

Pin	MDI Signal	MDI-X Signal
1	TX+	RX+
2	TX-	RX-
3	RX+	TX+
4	Not used	Not used
5	Not used	Not used
6	RX-	TX-
7	Not used	Not used
8	Not used	Not used

Table 15 lists the pin signals when a port operating at 1000 Mbps.

Table 15. Pin Signals for 1000 Mbps

Pinout	Pair
1	Pair 1 +
2	Pair 1 -
3	Pair 2 +

Table 15. Pin Signals for 1000 Mbps (Continued)

4	Pair 3 +
5	Pair 3 -
6	Pair 2 -
7	Pair 4 +
8	Pair 4 -

RJ-45 Style Serial Console Port Pinouts

Table 16 lists the pin signals of the RJ-45 style serial Console port.

Table 16. RJ-45 Style Serial Console Port Pin Signals

Pin	Signal
1	RTS (Input)
2	DTR (Looped to pin 7)
3	Transmit Data
4	Ground
5	Ground
6	Receive Data
7	DSR (Looped to pin 2)
8	CTS (output)