

Uplink Module

Hardware Reference



AT-A35/SX
AT-A35/LX
AT-A39/T/
AT-A40/SC
AT-A40/MT
AT-A41/SC
AT-A41/MT
AT-A42/GBIC

Uplink Module Hardware Reference
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Contents

| | |
|--|----|
| Devices Covered By This Document | 4 |
| Hardware Overview | 4 |
| Compatible Switch Units | 4 |
| Operating Environment And Regulatory Standards | 5 |
| Front Panels and Interfaces | 5 |
| LEDs And What They Mean | 7 |
| Uplink Module LEDs | 7 |
| Port, Connector, and Cable Combinations | 9 |
| Gigabit Interface Converters (GBICs) | 10 |
| Troubleshooting | 11 |
| Some Common Problems and How to Solve Them | 11 |
| For More Information | 13 |
| Document Sets | 13 |
| Contacting Us | 13 |

Devices Covered By This Document

This Hardware Reference includes information on the following devices:

- AT-A35/SX
- AT-A35/LX
- AT-A39/T
- AT-A40/SC
- AT-A40/MT
- AT-A41/SC
- AT-A41/MT
- AT-A42/GBIC

The latest Hardware Reference can be found at
www.alliedtelesis.co.uk/site/products/.

Hardware Overview

Uplink modules allow extra ports and port types to be added to the switch. They also increase switching capacity by allowing switches to be linked.

Compatible Switch Units



Warning Attempting to install an expansion module into a switch which is not compatible may damage the switch and the expansion module. Compatible expansion modules are listed in your switch's Hardware Reference. If you are unsure of a module's compatibility, contact an authorised Allied Telesis distributor or reseller.

The following uplink modules are compatible with all Rapier switches, Rapier *i* switches, AT-8700XL switches and AT800 modular switching routers:

- AT-A35/SX
- AT-A35/LX
- AT-A39/T
- AT-A42/GBIC

The following uplink modules are compatible with Rapier G6 and G6F switches, all Rapier *i* switches and all AT-8700XL switches:

- AT-A40/SC
- AT-A40/MT
- AT-A41/SC
- AT-A41/MT

Operating Environment And Regulatory Standards

Environmental Conditions

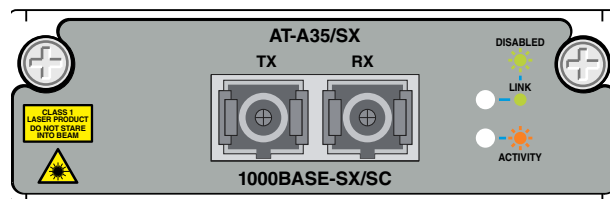
- Operating temperature range: 0 °C to 40 °C (32 °F to 104 °F)
- Storage temperature range: -25 °C to 70 °C (-13 °F to 158 °F)
- Relative humidity range: 5 to 95% non-condensing

Regulatory Standards

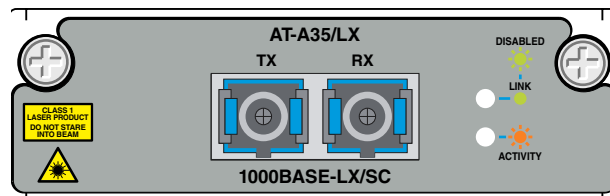
- Emission: EN55022 class A, FCC class A, VCCI class A, AS/NZS CISPR22
- Immunity: EN55024
- Safety: UL60950-1, CAN/CSA-C22.2 No. 60950-1-03, EN60950-1, AS/NZS60950.1

Front Panels and Interfaces

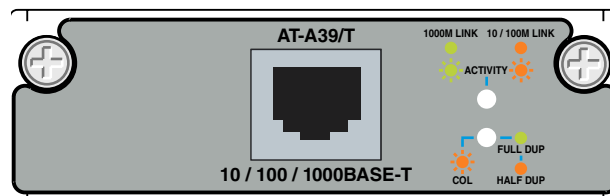
AT-A35/SX AT-A35-SX 1-port 100BASE-SX (SC connector) uplink module.



AT-A35/LX AT-A35/LX 1-port 1000BASE-LX (SC connector) uplink module.

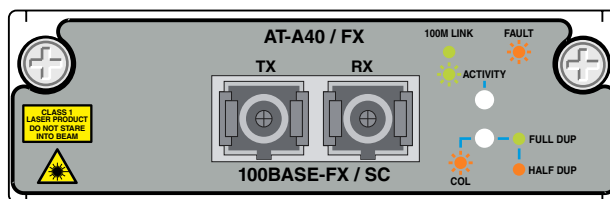


AT-A39/T/ AT-A39 1-port 10/100/1000BASE-T (RJ-45 connector) uplink module.

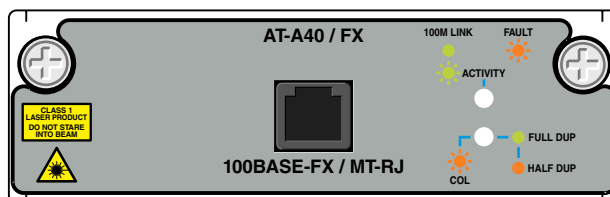


- Early versions of the AT-A39/T operate at 1000 Mbps only
- 10/100/1000 Mbps operation is available only if the AT-A39/T Uplink Module is installed in a Rapier G6, Rapier G6F, Rapier *i* or AT-8700XL model, otherwise operation is fixed at 1000 Mbps

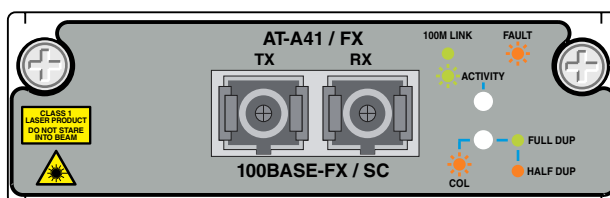
AT-A40/SC AT-A40/SC 1-port 100BASE-FX Multimode Fibre (SC connector) uplink module.



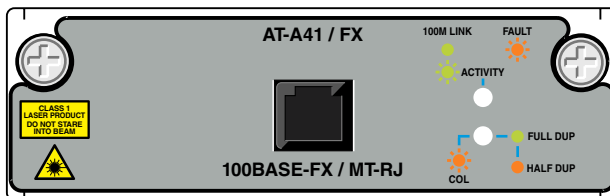
AT-AR40/MT AT-A40/MT 1-port 100BASE-FX Multimode Fibre (MT-RJ connector) uplink module.



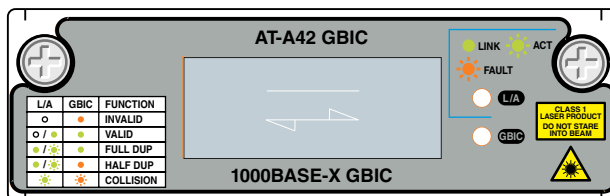
AT-A41/SC AT-A41/SC 1-port 100BASE-FX Singlemode Fibre (SC connector) uplink module.



AT-A41/MT AT-A41/MT 1-port 100BASE-FX Singlemode Fibre (MT-RJ connector) uplink module.



AT-A42/GBIC AT-A42/GBIC 1-port 1000BASE-X GBIC uplink module.



LEDs And What They Mean

The following tables outline how uplink modules and the switches report faults and operational activities.

LED Legend

- LED is On and Green
- ⦿ LED is Flashing Green
- LED is On and Amber
- ⦿ LED is Flashing Amber
- LED is Off.

Uplink Module LEDs

These LEDs are on the face-plates of respective uplink module models.

Table 1: AT-A35/SX and AT-A35/LX LEDs

| LED | State | Function |
|----------|----------------|---|
| Link | Green | The port is receiving light |
| | Off | No link is present |
| Activity | Flashing Amber | Frames are being transmitted or received through the port |
| | Off | No activity is occurring |

Table 2: AT-A39/T LEDs

| LED | State | Function |
|-----------------------|-----------------------------|--------------------------------------|
| Full Dup/Half Dup/Col | Green | The port is operating at full-duplex |
| | Amber | The port is operating at half-duplex |
| | Flashing amber | Collisions are occurring |
| | Off | No link is present |
| Activity | Green | A 1000 Mbps link is open |
| | Flashing green | 1000 Mbps activity is occurring |
| | Amber ¹ | A 10/100 Mbps link is open |
| | Flashing Amber ¹ | 10/100 Mbps activity is occurring |
| | Off | No link is present |

1. Early versions of the AT-A39/T operate at 1000 Mbps only. 10/100/1000 Mbps operation is available only if the AT-A39/T Uplink Module is installed in a Rapier G6, Rapier G6F, Rapier i or AT-8700XL model, otherwise operation is fixed at 1000 Mbps.

Table 3: AT-A40/SC, AT-A40/MT, AT-A41/SC and AT-A41/MT LEDs¹

| LED | State | Function |
|-----------------------|--|---|
| Activity/Link/Fault | Green | A link is open and the port is enabled |
| | Flashing green | 100 Mbps activity is occurring |
| | Flashing amber (and lower LED is Off) | The link has failed at the remote end |
| | Off | No link is present |
| Full Dup/Half Dup/Col | Green | The port is operating at full-duplex |
| | Amber | The port is operating at half-duplex |
| | Flashing amber | Collisions are occurring |
| | Off | No link is present |
| Both LEDs | Alternate flashing of upper and lower LED, amber | The switch does not support this model of uplink module |

1. AT-A40 and AT-A41 Uplink Modules can only be installed in Rapier G6, G6F, Rapier i and AT-8700XL switches.

Table 4: AT-A42/GBIC LEDs

| LED | State | Function |
|----------------------|--|--|
| L/A Link/Activity | Green | A 1000 Mbps link is open |
| | Flashing green | 1000 Mbps activity is occurring |
| | Flashing amber (and GBIC LED is Off) | A TX fault has occurred |
| | Off | No link is present |
| GBIC | Green | The switch has recognised the GBIC, the GBIC is a valid model |
| | Green (and L/A LED is flashing GREEN) | The port is operating at full-duplex |
| | Amber (and L/A LED is OFF) | The switch has not recognised the GBIC, the GBIC is not a valid model |
| | Amber (and L/A LED is flashing GREEN) | The port is operating at half-duplex |
| | Flashing amber (and L/A LED is flashing GREEN) | Collisions are occurring |
| | Off | No GBIC is installed, or a TX fault has occurred |
| Both LEDs | Slow alternate flashing of L/A and GBIC LED, amber | The switch has not recognised the GBIC, or the GBIC is not a valid model |

Port, Connector, and Cable Combinations

This section lists the recommended cable types and maximum cable lengths for each uplink module model.

Table 5: Port, Connector, and cable Combinations

| Model | Port Type | Connector Type | Cable Type ¹ | Maximum Cable Length |
|-------------|--|------------------|---|--|
| AT-A35/SX | 1000BASE-SX | SC | 50/125 micron multimode fibre | 550m (1,804ft) ² |
| | | | 62.5/125 micron multimode fibre | 275m (902ft) ³ |
| AT-A35/LX | 1000BASE-LX | SC | 9/125 micron singlemode fibre | 3km (1.8mi) Increasing to 10km (6mi) if linking two 1000BASE-LX models |
| | | | 50/125 or 62.5/125 micron multimode fibre | 550m (1804ft) ² |
| AT-A39/T | 10100/1000BASE-T ⁴ | RJ-45 | CAT5 | 100 to 150m |
| | | | CAT5E | (328 to 492ft) 200m (656ft) |
| AT-A40/SC | 100BASE-FX (Multimode fibre, 1300nM) | SC | 50/125 or 62.5/125 micron multimode fibre | 2km |
| AT-A40/MT | 100BASE-FX (Multimode fibre, 1300nM) | MT-RJ | 50/125 or 62.5/125 micron multimode fibre | 2km |
| AT-A41/SC | 100BASE-FX (Singlemode fibre, 1300nM) | SC | 9/125 micron singlemode fibre | 15km |
| AT-A41/MT | 100BASE-FX (Singlemode fibre, 1300nM) | MT-RJ | 9/125 micron singlemode fibre | 15km |
| AT-A42/GBIC | 1000BASE-X | Varies with GBIC | Refer to GBIC's user documentation | Refer to GBIC's user documentation |

1. Refer to the IEEE 802.3 Standards for further cable information.

2. Assumes a fibre optic cable rating of 500 Mhz/Km. (Maximum cable length is 500m at a cable rating of 400 Mhz/Km.)

3. Assumes a fibre optic cable rating of 200 Mhz/Km. (Maximum cable length is 220m at a cable rating of 160 Mhz/Km.)

4. Early versions of the AT-A39/T operate at 1000 Mbps only. 10/100/1000 Mbps operation is available only if the AT-A39/T Uplink Module is installed in a Rapier G6, Rapier G6F, Rapier i or AT-8700XL model, otherwise operation is fixed at 1000 Mbps.

Gigabit Interface Converters (GBICs)

The AT-A42/GBIC uplink module provides one GBIC slot. GBICs are removable gigabit port converters, and allow users to add and remove port types to meet changing network requirements. GBICs can be purchased when an AT-A42 uplink module is purchased, or can be ordered separately.

The following GBICs have been approved for use with AT-A42 uplink modules:

- Allied Telesis AT-G9T Copper
- Allied Telesis AT-8T Copper
- Allied Telesis AT-G8SX 550m SX
- Allied Telesis AT-G8LX10 10km LX
- Finisar FCM8521-3 Copper
- JDS 12LYAA1
- JDS 12SYAA1
- Agilent HFBR5601 1000BASE-SX
- Agilent HFBR5611 1000BASE-LX

Please note that the RX and TX terminal locations on SC fibre GBIC ports are the reverse of RX and TX terminal locations on fixed SC fibre ports. When looking at an SC fibre GBIC from the front, the RX terminal is on the left and the TX terminal is on the right.

GBIC 1000BASE-T Auto-Negotiation

1000BASE-T GBICs support only 1000 Mbps full duplex connections. Although 1000BASE-T GBICs will participate in auto-negotiation processes, they will only advertise 1000 Mbps. Half duplex, 10BASE-T, and 100BASE-TX modes are not supported.

While 1000BASE-T GBICs will auto-negotiate at the copper Ethernet level, the ports will behave as if in fixed 1000 Mbps full duplex mode. This is because the SERDES connection used by GBIC ports makes the auto-negotiation invisible to the switch, and so prevents a successful link negotiation.

When a 1000BASE-T GBIC is inserted into a GBIC slot, the port's auto-negotiation capability is disabled. This means that the port speed may not be set to "auto-negotiate". If the port had been configured to auto-negotiate (by default or by command) prior to the GBIC's insertion, then this configuration is overridden for as long as the GBIC remains in place.

Troubleshooting

This section provides information on how to detect and resolve the most common problems that can cause uplink modules to malfunction.

Other sources of troubleshooting information are:

- www.alliedtelesis.com.
- The Software Reference for your switch unit.

Performing the following tasks will eliminate the most common faults.

1. Check that the uplink module is correctly installed. See the Installation and Safety Guide for your switch for a step by step guide to installing uplink modules.
2. Make sure the power cord is securely connected to the switch unit and power outlet.
3. Check that the power supply voltage to the switch unit is stable.
4. Check that the correct data cables are being used and that their connections are secure.
5. Make sure that other network devices are working properly.
6. Use the **show install** command to check that the latest software version is loaded. See your switch unit's *Software Reference* for more information about obtaining the latest software version.
7. If the switch unit is malfunctioning, reboot it by pressing the recessed Reset button or entering the command **restart reboot**. Alternatively, power OFF and ON the switch unit by disconnecting and reconnecting the main power supply (including, if connected, the RPS power).

If the uplink module continues to malfunction, see "Some Common Problems and How to Solve Them".

Some Common Problems and How to Solve Them

Link/Activity LED on Any Port is Off

This can indicate:

- A loose data cable.
- The device at the other end of the connection is not working properly or is turned off.
- The data cable is not wired correctly.
- The network administrator has manually disabled the port through the software.
- The port's selected transmission mode does not match that of the attached device.

Perform the following steps in sequence:

1. Make sure the data cable connections are secure.
2. Make sure the device at the other end of the connection is switched on and working properly.

3. Check that the data cable is wired correctly.
4. If you can, log in and check the port status. See your switch unit's Hardware Reference for more information about logging in.
5. If the port is Enabled, make sure the transmission speed matches that of the connected device (auto-negotiating, full or half-duplex). If the port is Disabled, someone has used the software to manually disable it. You should find out why the port was disabled before enabling it.

The Switch Unit's Power LED is OFF

This can indicate:

- A loose power cord.
- A power supply failure.

Perform the following steps in sequence:

1. Check that the power cord connection is secure.
2. Ensure that the supply voltage is within the 110 VAC to 240 VAC operational range.
3. If you can, log in and run diagnostics. See your switch unit's Hardware Reference for more information about logging in and running diagnostics.

Fault LED is On

This can indicate:

- There is a problem with the switch unit or RPS PSU.
- The switch unit or its management software is malfunctioning.
- A software download has been unsuccessful.
- A low power supply voltage.
- Switch-unit overheating due to a fan failure or extreme ambient temperature.

Perform the following steps in sequence:

1. Check [“LEDs And What They Mean” on page 7](#) for descriptions of the flashing sequences and what they mean.
2. Reset the switch unit by pressing the recessed Reset button on the front panel.
3. If you were attempting to download software or manage the switch unit via the RS-232 terminal Port, check that connections between the Terminal Port and local terminal or PC are secure.

If you cannot access the switch unit's software because of a faulty RS-232 Terminal Port connection, you can still manage the switch unit via Telnet or SNMP until the problem is fixed.

4. Unplug the switch unit and then plug it in again. If present, you will also have to disconnect and reconnect the RPS unit.
5. If you can, log in and run diagnostics. See your switch unit's Hardware Reference for more information about logging in and running diagnostics.
6. Download the latest software release. See your switch unit's Software Reference for more information on how to obtain the latest software release.

For More Information

This Reference has been developed to familiarise you with the hardware features of uplink modules. The Reference provides information that will assist you with the process of installing and maintaining uplink modules.

Document Sets

There are several sources of further information.

- The *Uplink Module Installation and Safety Guide*, which outlines the procedure for installing an uplink module.
- The *Hardware Reference* for your switch or switching router, which provides detailed information on the switch unit and its hardware features.
- The *Software Reference* for your switch or switching router, which provides detailed information on configuring the switch unit and its software.
- The *Installation and Safety Guide* for your switch or switching router, which provides installation instructions.
- The *Network Service Module Installation and Safety Guide*, which outlines the procedure for installing an NSM; and the *Network Service Module Hardware Reference*, which provides detailed information on NSMs.
- The *Port Interface Card Installation and Safety Guide*, which outlines the procedure for installing PICs; and the *Port Interface Card Hardware Reference*, which provides detailed information on PICs.

All of these documents can be found on the Documentation and Tools CD-ROM bundled with each Switch or Switching Router, or at www.alliedtelesis.co.uk/site/products/.

Contacting Us

With locations covering all of the established markets in North America, Latin America and Europe, Allied Telesis provides localized sales and technical support worldwide. To find our representative nearest you, visit Allied Telesis on the web at: www.alliedtelesis.com.

