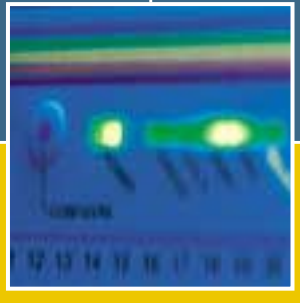
UPLINK MODULE

HARDWARE REFERENCE



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Uplink Module Hardware Reference
Document Number C613-03026-00 REV F.

Contents

Models Covered By This Reference

This Hardware Reference includes information on the following models:

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

The latest Hardware Reference can be found at www.alliedtelesyn.co.nz/support/support.html.

Why You Should Read This Reference

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.

This Reference does not cover software configuration or physical installation procedures. For information on software, refer to the Software Reference for your switch unit. For information on installing an Uplink Module, refer to the Uplink Module Quick Install Guide. These documents can be found on the CD-ROM bundled with your switch unit, or at www.alliedtelesyn.co.nz/support/support.html.

Where To Find More Information

There are several sources of further information.

Information on Uplink Modules:

- The *Uplink Module Quick Install Guide*, which outlines the procedure for installing an Uplink Module; and the Hardware Reference for your switch unit, which provides detailed information on the unit's hardware features.

Information on Switches and Switching Routers:

- 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 *User Guide* for your switch or switching router, which provides an introduction to the switch unit's Graphical User Interface and its Layer 2 switching features.

Information on other expansion options for the AR800 and Rapier Series:

- The *Network Service Module Quick Install 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 Quick Install 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.alliedtelesyn.co.nz/support/support.html.

Compatible Switch Units

This section lists all uplink module models, and indicates which switches each model can be installed in.

- AT-A35/SX: All Rapier Switches, Rapier *i* switches, and AR800 Modular Switching Routers
- AT-A35/LX: All Rapier Switches, Rapier *i* switches, and AR800 Modular Switching Routers
- AT-A39/T: All Rapier Switches, Rapier *i* switches, and AR800 Modular Switching Routers
- AT-A40/SC: Rapier G6 and G6F switches and all Rapier *i* switches
- AT-A40/MT: Rapier G6 and G6F switches and all Rapier *i* switches
- AT-A41/SC: Rapier G6 and G6F switches and all Rapier *i* switches
- AT-A41/MT: Rapier G6 and G6F switches and all Rapier *i* switches

Hardware Description

This section provides information on the hardware features of all Uplink Module models.

Uplink Module Overview

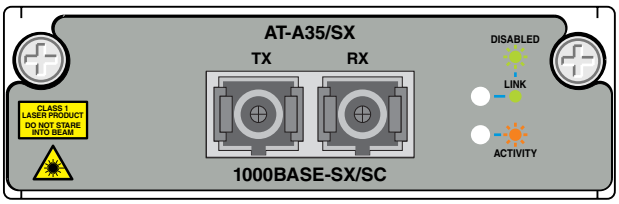
Uplink Modules allow extra ports and port types to be added to the switch. Uplink Modules also increase switching capacity by allowing switches to be linked.

AT-82xx Expansion Modules are not compatible with AR800 Series Modular Switching Routers or Rapier Switches. Attempting to install an AT-82xx Expansion Module into an AR800 Series Modular Switching Router or Rapier Switch may damage the Switch Unit and Expansion Module. If you are unsure of a Module's compatibility, before installing it, contact an authorised Allied Telesyn distributor or reseller.

Uplink Modules currently available are:

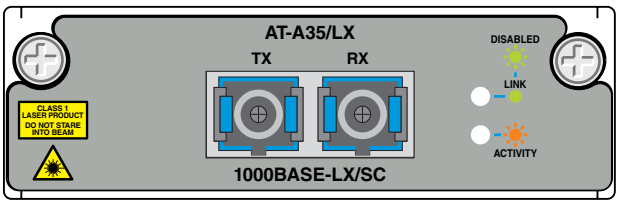
AT-A35/SX 1-port 1000BASE-SX (SC connector)

Figure 1: AT-A35-SX (SC) Uplink module.



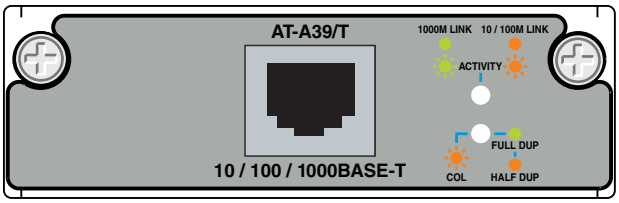
AT-A35/LX 1-port 1000BASE-LX (SC connector)

Figure 2: AT-A35-LX (SC) Uplink module.



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

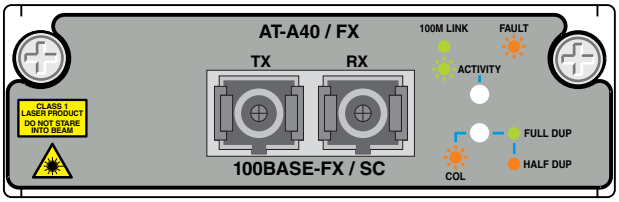
Figure 3: AT-A39-T (RJ-45) Uplink module.



- 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 or Rapier *i* model, otherwise operation is fixed at 1000 Mbps

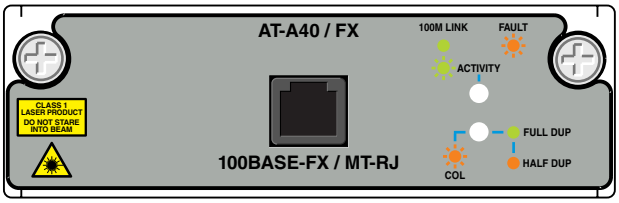
AT-A40/SC 1-port 100BASE-FX Multimode Fibre (SC connector)

Figure 4: AT-A40-FX (SC) Uplink module.



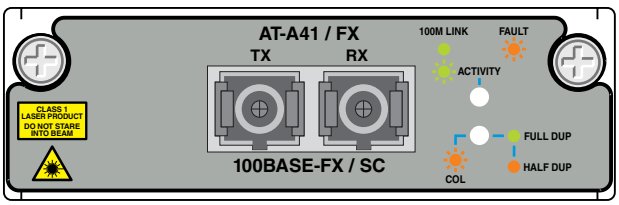
AT-A40/MT 1-port 100BASE-FX Multimode Fibre (MT-RJ connector)

Figure 5: AT-A40-FX (MT-RJ) Uplink module



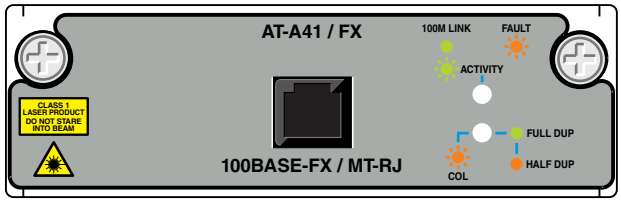
AT-A41/SC 1-port 100BASE-FX Singlemode Fibre (SC connector)

Figure 6: AT-A41-FX (SC) Uplink module.



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

Figure 7: AT-A41-FX (MT-RJ) Uplink module.



More Uplink Modules are planned, check with your Authorised Allied Telesyn distributor or reseller, or visit www.alliedtelesyn.co.nz, to see if any new Uplink Module models have been released.

Hardware Features Common To All Models

Environmental Conditions

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

Regulatory Standards

AT-A35/SX, AT-A35/LX and AT-A39

- EMC: CISPR22 class A, FCC class A, and VCCI class I
- Immunity testing to EN50082 levels 2 (ESD), 3 (susceptibility), 4 (fast transients), 5 (power surge), and 6 (RF immunity)
- Safety: UL1950, CSA22.2, EN60950

AT-A40/SC, AT-A40/MT, AT-A41/SC and AT-A41/MT

- EMC EN55022 class A, FCC class A, VCCI class I
- Immunity EN55024
- Safety UL, cUL and CE

LEDs

- For a complete list of LEDs and their functions, see “LEDs and what they mean”on page 9

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.alliedtelesyn.co.nz.
- 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 Quick Install 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 release is loaded. See your switch unit's *Software Reference* for more information about obtaining the latest software release.
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 and follow" on page 12.

LEDs and what they mean

The following tables outline how Uplink Modules, AR800 Series Switching Routers, Rapier Switches, and Rapier *i* Switches report faults and operational activities.

Uplink Module LEDs

These LEDs are on the face-plates of respective Uplink Module models.

Table 8: Uplink Module LEDs (AT-A35/SX and AT-A35/LX).

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 9: Uplink Module LEDs (AT-A39/T).

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 or Rapier *i* model, otherwise operation is fixed at 1000 Mbps.

Table: 10 AT-A40/SC, AT-A40/MT, AT-A41/SC and AT-A41/MT LEDs[1].

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 be installed in Rapier G6 and G6F switches and all Rapier *i* switches.

Switch-Unit LEDs

The following tables may be helpful when diagnosing possible operational faults. These LEDs are on the front or rear panels of AR800 Series Modular Switching Routers, Rapier Switches, and Rapier *i* Switches.

Table 11: System LEDs common to all AR800, Rapier, and Rapier *i* models.

LED	State	Function
Power	Green	The switch unit is receiving power and the voltage is within the acceptable range
Fault	Red	The switch unit or its management software is malfunctioning
	1 flash	A switch-unit fan has failed. (The LEDs will not indicate an RPS fan failure.)
	3 flashes	If an RPS is connected, the switch-unit's PSU (Power Supply Unit) has failed
	4 flashes	If RPS monitoring is enabled (using the SET SYS RPSMON=ON command), the RPS PSU has failed
	5 flashes	If RPS monitoring is enabled, an RPS is not connected
	Off	Normal operation
RPS[1] (Redundant Power Supply)	Green	An RPS is connected to the switch unit
In use[2] (Rear panel)	Green	An NSM is installed, is receiving power, and is operational
	Off	No NSM is installed, or the NSM is not installed correctly (the switch unit has not recognised the NSM)
Swap[2] (Rear panel)	Green	The NSM and PICs can be hot swapped
	Off	The Hot Swap button must be pressed before the NSM or PICs can be hot swapped, or the software release does not support hot swapping[3]

1. DC Switch and Switching Router models do not have RPS connectors and their RPS LEDs will not function.
2. Not included on the Rapier 48, G6, G6F/SX, G6F/LX, or G6F/MT.
2. Hot swapping is supported by software release 2.3.1 or later.

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 110/240VAC 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 Table 11 on page 11 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.

Port, Connector, and Cable Combinations

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

Table 12: 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

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 of160 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 or Rapier *i* model, otherwise operation is fixed at 1000 Mbps.

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