

1 OmniAccess 512

Introduction

The OmniAccess™ 512 (OA-512) family is a group of stackable switches that offers multiservice access to an enterprise (WAN) backbone. Designed to connect branch offices to the main office Frame Relay network, this switch combines LAN switching, WAN routing, and Service Level Management in a single platform.

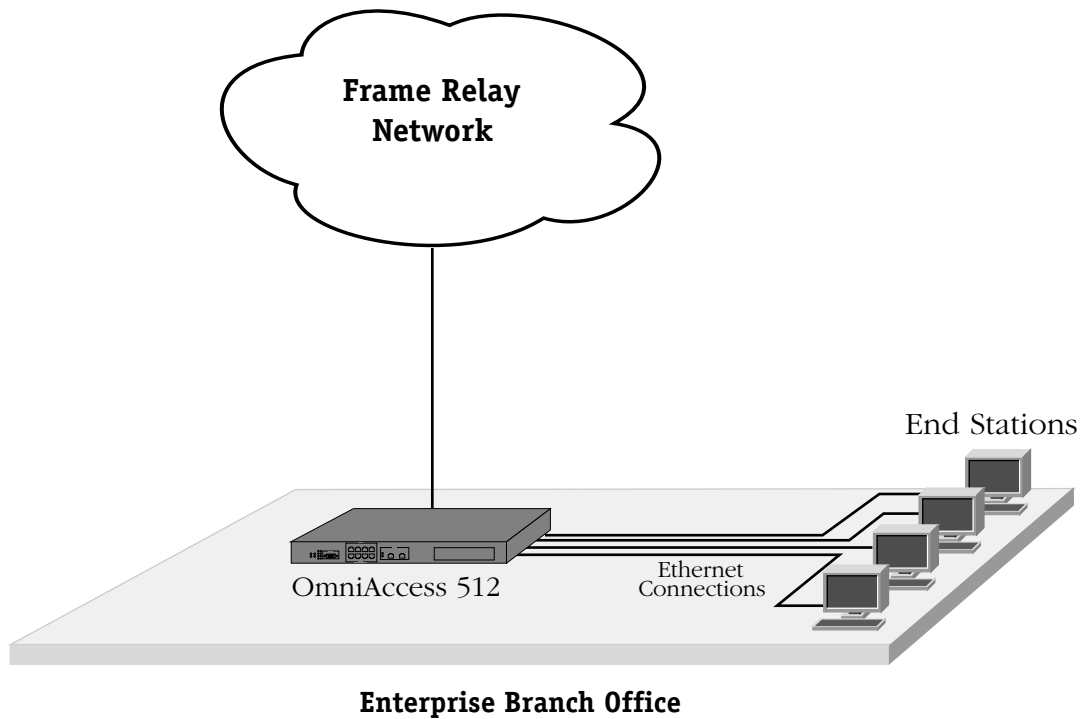
The OA-512 supports up to two wide-area uplinks. User-installable USP, T1/E1, and ISDN submodules provide flexibility. Support of frame relay, leased lines, and ISDN offers a broad range of solutions for connecting an enterprise branch office.

◆ Note ◆

For information on the OmniAccess 408 switch, which offers multiservice access to an ATM backbone, please refer to the separate *OmniAccess 408 User Manual*.

Application Example

The OmniAccess is intended to be used as an enterprise managed device at the edge of a customer frame relay network. The following diagram illustrates this idea:



In this example, the branch office LAN is Ethernet based. The end stations hook into the OmniAccess 512, which then feeds data into the Enterprise WAN through uplink connections. Uplink connections could be T1/E1, universal serial port, or ISDN.

OmniAccess 512 Hardware Options

The OA-512 product number refers to a high-performance 10/100 Ethernet chassis. The OA-512 chassis provides empty expansion ports for user-installable WAN uplinks and an empty expansion slot for upcoming uplinks, including Voice over IP (VoIP). Detailed information on the OA-512 chassis and available uplink submodules is provided below.

◆ Important Note ◆

OmniAccess switches do not support the Alcatel Backup Power System (BPS) or Hardware Routing Engine (HRE).

OA-512 Chassis

The OA-512 chassis provides:

- one console management port
- twelve 10/100 Ethernet ports
- two empty expansion ports for field-installable WAN uplinks
- one empty expansion slot reserved for future use with upcoming uplink submodules, including VoIP. Contact your Alcatel distributor for information on VoIP uplink availability.

Front Panel Information

For additional front panel layout information, refer to the illustration on page 1-5.

Console Port Information

The console management port can be connected to a management station (e.g., a laptop or desktop computer) in order to manage the switch via the User Interface (UI) or Command Line Interface (CLI). For detailed console port information, refer to *The Console Management Port* on page 1-11.

LED Information

The front panel also includes four management LEDs and twelve Ethernet port LEDs. The management LEDs are used to monitor the hardware and software status for the switch. The Ethernet port LEDs indicate the link integrity status for each of the twelve 10/100 ports. For detailed information on OA-512 LEDs, refer to pages 1-9 through 1-10.

◆ Note ◆

For WAN uplink LED information, refer to the WAN uplink descriptions beginning on page 1-14.

OmniAccess 512 Uplink Submodules

To allow you to customize your OA-512 chassis, Alcatel offers the following uplink submodules.

WAN Uplink Submodules

OA-512 WAN uplinks can be field-installed at either the **S3/1** or **S3/2** port positions (refer to page 1-8 for slot and port layout information):

- OA-512-FT1/FE1 (1) user-installable T1/E1 WAN uplink with integral CSU
- OA-512-BRI-U (1) user-installable BRI-U WAN uplink
- OA-512-BRI-S/T (1) user-installable BRI-S/T WAN uplink
- OA-512-USP (1) user-installable Universal Serial WAN uplink

◆ BRI Uplink Submodules ◆

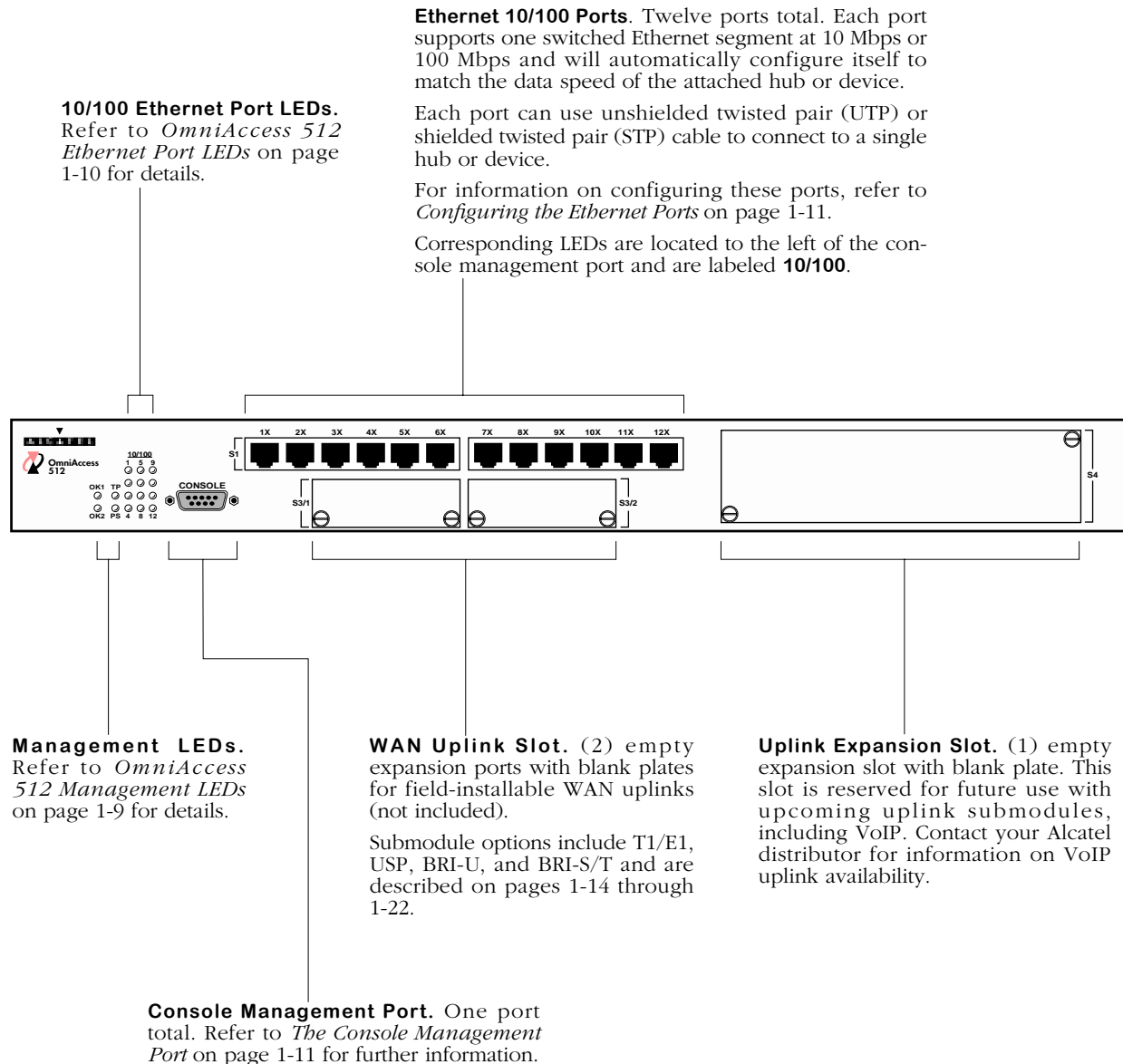
A maximum of one (1) BRI uplink can be installed in each OA-512 chassis. This restriction applies to BRI-U and BRI-S/T uplinks.

A BRI uplink can be installed at either the **S3/1** or **S3/2** port positions.

Expansion Slot for Upcoming Uplink Submodules

The OA-512 chassis provides one empty expansion slot reserved for future use with upcoming uplink submodules, including VoIP. Contact your Alcatel distributor for information on VoIP uplink availability.

OA-512 Front Panel Information



OA-512 Front Panel

0A-512 Hardware Specifications

General Chassis Information	
Chassis Configuration	twelve 10/100 Ethernet ports two empty expansion ports for WAN uplinks (not included) one empty slot available for upcoming uplinks (not included) one console port for software management
Power Connector	one AC power connector on rear panel (Backup Power System <i>is not</i> supported)
Physical Dimensions	17 1/4" w, 1 3/4" h, 12" d
Weight	11 lbs.
Voltage Range	90-265 VAC, 47 to 63 Hz auto-ranging and auto-sensing
Current Draw	1.0 Amps at 110 VAC
Watts	60
Current Provided	up to 15 Amps
Operating Temperatures	0 to 50 degrees Celsius 32 to 122 degrees Fahrenheit
Operating Humidity	10% to 95% (non-condensing)
Emissions Certification	FCC, CE, VCCI, AUSTEL, BCIQ (Class A with UTP cables; Class B with STP cables)
Safety Certification	UL, CSA, TUV and CB
System Resources/Memory	
Addresses Supported (CAM)	2,048 MAC addresses
Flash	8 MB
SDRAM	32 MB
SSRAM	1 MB
Ethernet Ports	
Cable Supported	Unshielded twisted-pair (UTP)—100 ohms (Category 5 required when running at 100 Mbps) Shielded twisted-pair (STP)—100 ohms
Data Rate	10 Mbps or 100 Mbps (auto-sensing)
Connector Type	RJ-45, MDI
Connections Supported	Hub or device; half-duplex or full-duplex

Hardware Specifications continued on next page...

0A-512 Hardware Specifications, continued

Console Port	
Data Rates	1.2, 9.6, 19.2, and 38.4 Kbps
Connector Type	DB-9
Connections Supported	DCE; Direct connection to workstation (DTE)

0A-512 Software Specifications

Standards Supported	
IEEE Standards	IEEE 802.3u, 802.1d Spanning Tree, 802.3x Flow Control, 802.1Q VLAN
Frame Relay Standards	FRF.1 (UNI), FRF.3, LMI Rev 1, ANSI T1.617 Annex D, ITU Q.933 Annex A, RFC 1490 (Multi-protocol over FR), RFC 1293 (InvArp)
PPP Standards	PPP (RFC 1661), Multilink PPP (RFC 1990), CHAP (RFC 1989), PAP (RFC 1334), IP Routing (RFC 1332), IPX Routing (RFC 1552)
Routing Support	RIP, RIPv2, OSPF, BGP-4, DVMRP, DHCP Relay
VLAN Support	Port, MAC, Network Protocol, IP address, Multicast, Custom, Authenticated VLAN policies

OmniAccess 512 Slot Designations

The front panel of an OA-512 switch is divided into several areas labeled **CONSOLE**, **S2**, **S3**, **S4**, etc. Conceptually, think of these areas as a division of the switch into several modules, or *slots*. The UI and CLI, which are used to manage the switch, rely on these slot designations for many configuration and management commands.

◆ LED Information◆

For detailed LED information, refer to *OmniAccess 512 Management LEDs* on page 1-9 and *OmniAccess 512 Ethernet Port LEDs* on page 1-10.

The twelve (12) 10/100 LEDs are labeled **10/100** and indicate the status of the 10/100 Ethernet ports located at slot **S2**.

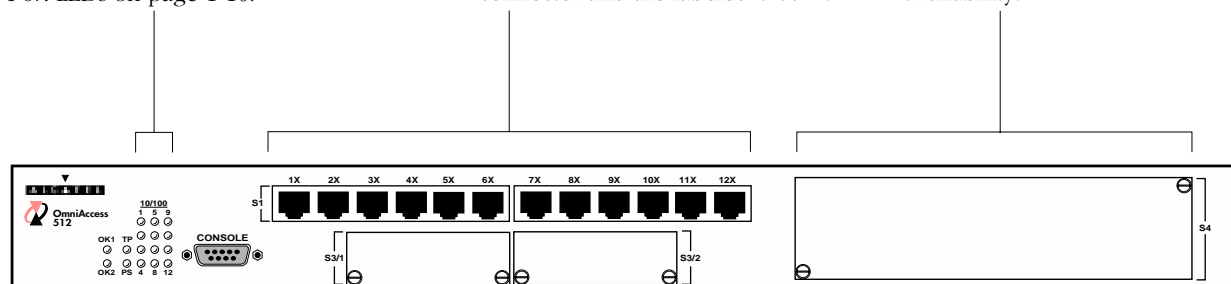
For more information on Ethernet LEDs, refer to *OmniAccess 512 Ethernet Port LEDs* on page 1-10.

The area labeled **S2** occupies Slot 2 of the OA-512. This area provides twelve (12) 10/100 Ethernet ports.

Corresponding LEDs are located to the left of the switch's console port connector and are labeled **10/100**.

The area labeled **S4** occupies Slot 4. This area is reserved for future use with upcoming uplink submodules, including VoIP.

Contact your Alcatel distributor for information on VoIP uplink availability.



The area labeled **CONSOLE** represents Slot 1 and contains the equivalent of a management module.

The UI refers to the management module as the **MPM**.

You can connect directly to the MPM and configure the switch via the console port.

The area labeled **S3/1** occupies Slot 3/Port 1. This area provides a port position for a slide-in WAN uplink submodule.

Submodule options include T1/E1, USP, BRI-U, and BRI-S/T and are described on pages 1-14 through 1-22.

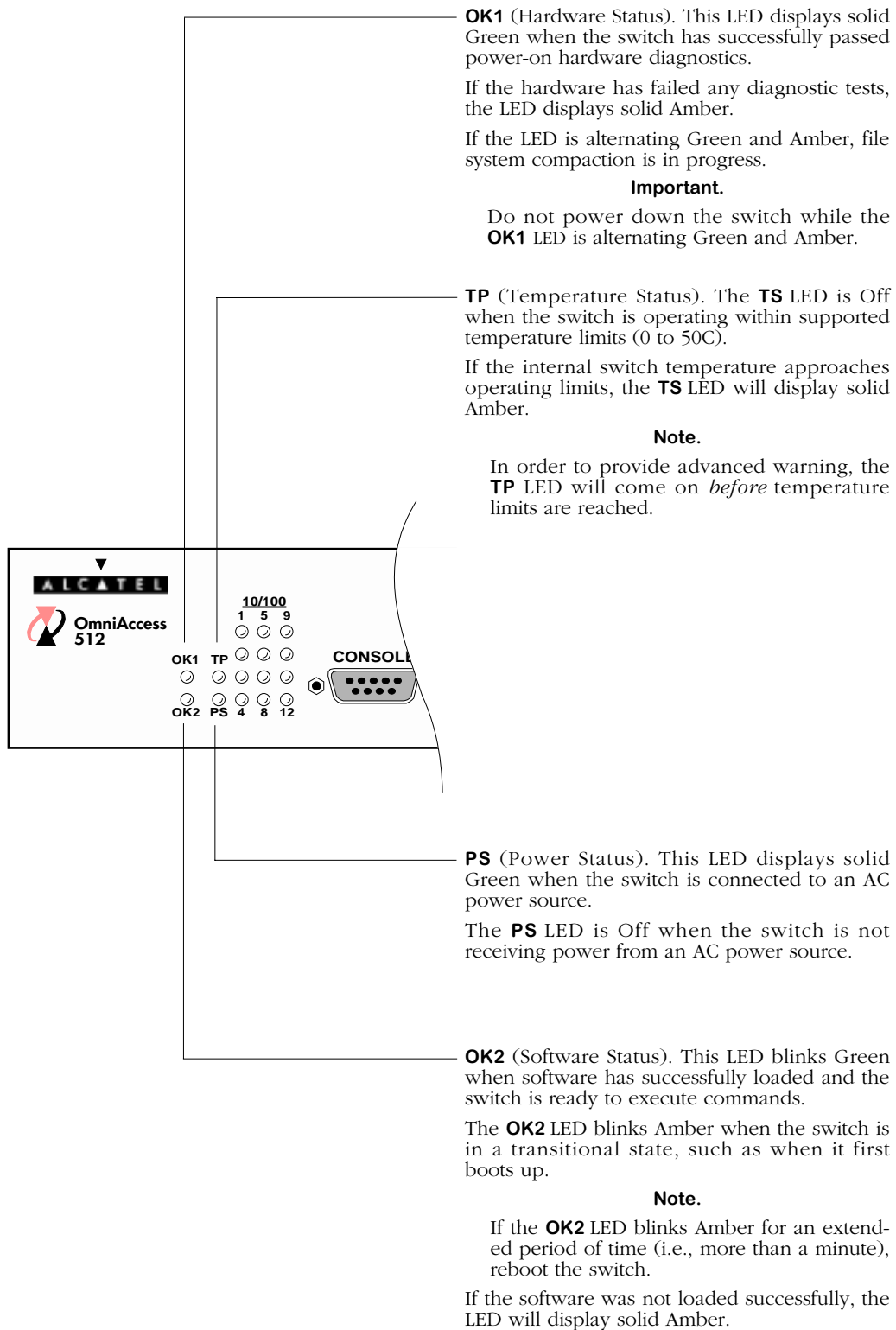
The area labeled **S3/2** occupies Slot 3/Port 2. This area provides a port position for a slide-in WAN uplink submodule.

Submodule options include T1/E1, USP, BRI-U, and BRI-S/T and are described on pages 1-14 through 1-22.

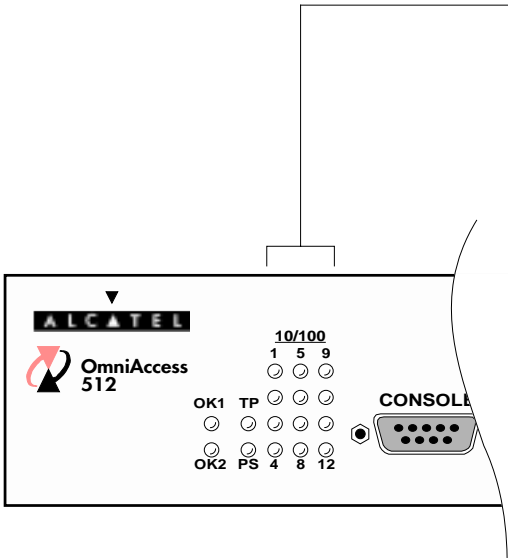
Important Note.

A maximum of one (1) BRI uplink can be installed in each OA-512 chassis. This restriction applies to BRI-U and BRI-S/T ports. A BRI uplink can be installed in either port position **S3/1** or **S3/2**.

OmniAccess 512 Management LEDs



OmniAccess 512 Ethernet Port LEDs



10/100 (Ethernet Port Status). Each LED is associated with a corresponding 10/100 Ethernet port located at Slot 2 (**S2**). In this figure, the LED labeled **1** (located at top left of the **10/100** LED bank) reports the status of Ethernet port **1X** at slot **S2**. The LED located immediately below LED **1** is LED **2** and reports the status of Ethernet port **2X**, etc. Refer to page 1-8 for slot and port locations.

An LED displays solid Green when a good cable connection exists on the corresponding port.

The LED then flashes Green when traffic is detected on the port.

If the LED is off, a cable is not connected to the corresponding port or the connected cable does not have link integrity.

Configuring the Ethernet Ports

Each of the twelve (12) Ethernet ports on the OA-512 supports a fully-switched 10 Mbps or 100 Mbps connection in full- or half-duplex mode. By default, each port is configured to operate in auto-sensing, half-duplex mode. However, each port may be manually configured via the **10/100cfg** command. (The **10/100cfg** command allows you to disable or enable auto-sensing and/or set the link mode to half- or full-duplex.)

An additional software command, **10/100vc**, allows you to view the current line speed and link mode of each port connection. For more information on the **10/100cfg** and **10/100vc** commands, refer to Chapter 12, “Managing Ethernet Ports.”

The Console Management Port

You can access the switch management software via the console port on the OA-512's front panel. The console management port is a 9-pin female DCE connector per IBM AT serial port specifications. You can connect directly from this port to a PC or terminal with a standard straight-through cable available in most computer equipment stores.

◆ Note ◆

If you are connected to a modem, use a null-modem cable.

If the connecting device does not conform to IBM AT serial port specifications, you may need to use a special cable or adapter. See Appendix B, “OmniAccess Pinouts and Custom Cables,” for information on the pin signals used for this port.

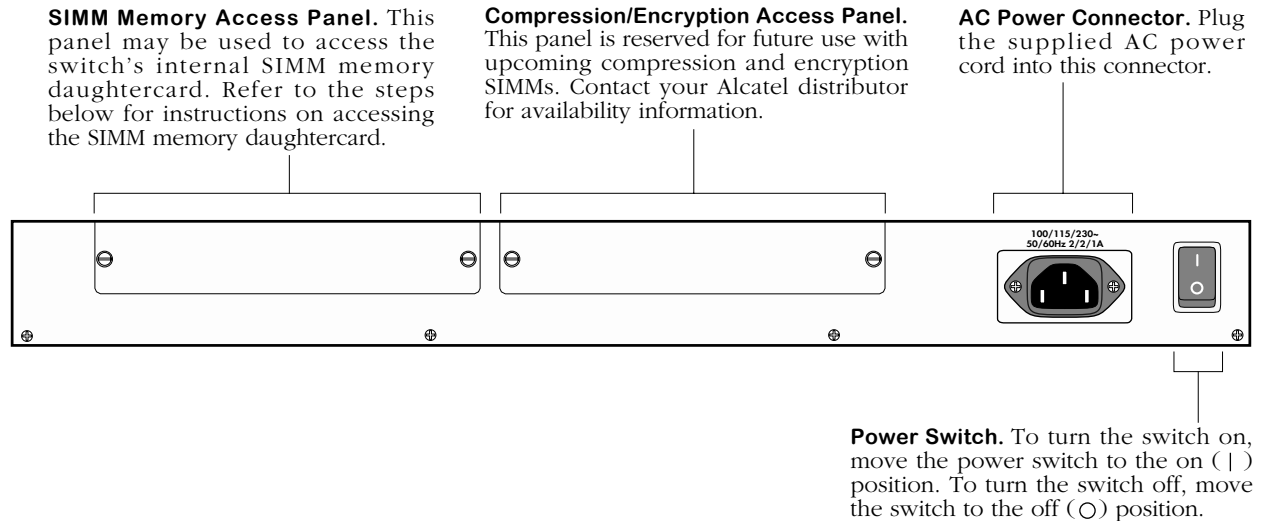
Connecting or Disconnecting a Serial Cable During Operation

You can connect or disconnect a serial cable at the console port at any time without disrupting the switch.

Serial Data Rates

The console management port supports serial data rates of 1200, 9600, 19,200, and 38,400. By default, the rate is set to 9600 bps. You can change this setting via the **ser** command (described in Chapter 6, “Configuring Switch-Wide Parameters”).

Rear Panel



◆ Important Note ◆

OmniAccess switches do not support the Alcatel Backup Power System (BPS).

Accessing the SIMM Memory Daughtercard

◆ Anti-Static Notice ◆

Before handling any components, eliminate any static electricity by wearing a ground strap, or by grounding yourself properly. Static discharge can damage the daughtercard and other components on your switch.

1. When it will not have an adverse effect on the network, power off the switch.
2. Locate the SIMM memory access panel on the OA-512 using the illustration above.

◆ Compression/Encryption Availability ◆

The compression/encryption access panel is reserved for future use with upcoming OmniAccess compression and encryption SIMM daughtercards. Do not attempt to install a daughtercard at this access panel location. Contact your OmniAccess distributor for compression and encryption availability.

3. Use a flat-head screwdriver to loosen the SIMM memory access panel connector screws.
4. Pull the access panel up and away from the OA-512 chassis.
5. Install the SIMM memory daughtercard according to the separate instruction sheet included with your SIMM memory installation kit.
6. Once the SIMM memory daughtercard has been installed, replace the access panel.
7. Tighten the connector screws by hand or with a flat-blade screwdriver. Be sure that the screws are completely screwed down, but do not overtighten.

Power Cords

The power cord is the main disconnect device. It should be plugged into an easily accessible outlet. In the event that your power cord is lost or damaged, refer to the specifications below.

Specifications

The power cord to be used with 115-Volt configuration is a minimum type SJT (SVT)18/3, rated at 250 Volts ac, 10 Amps with a maximum length of 15 feet. One end terminates in an IEC 320 attachment plug and the other end terminates in a NEMA 5-15P plug.

The power cord to be used with 230-Volt configuration is minimum type SJT (SVT) 18/3, rated 250 Volts ac, 10 Amps with a maximum length of 15 feet. One end terminates in an IEC 320 attachment plug and the other end terminates as required by the country where it will be installed.

European cords *must* be Harmonized (HAR) type.

OA-512 Uplink Submodules

Uplink submodules allow you to customize your OA-512 switch chassis. Alcatel offers the following uplink submodules which can be field-installed in either the **S3/1** or **S3/2** port positions (refer to page 1-8 for slot and port layout information):

- OA-512-FT1/FE1 (1) user-installable T1/E1 WAN uplink with integral CSU
- OA-512-BRI-U (1) user-installable BRI-U WAN uplink
- OA-512-BRI-S/T (1) user-installable BRI-S/T WAN uplink
- OA-512-USP (1) user-installable Universal Serial WAN uplink

◆ Reminder ◆

A maximum of one (1) BRI uplink can be installed in the OA-512 chassis. This restriction applies to BRI-U and BRI-S/T ports. A BRI uplink can be installed in either port position **S3/1** or **S3/2**.

OA-512-FT1/FE1 WAN Submodule

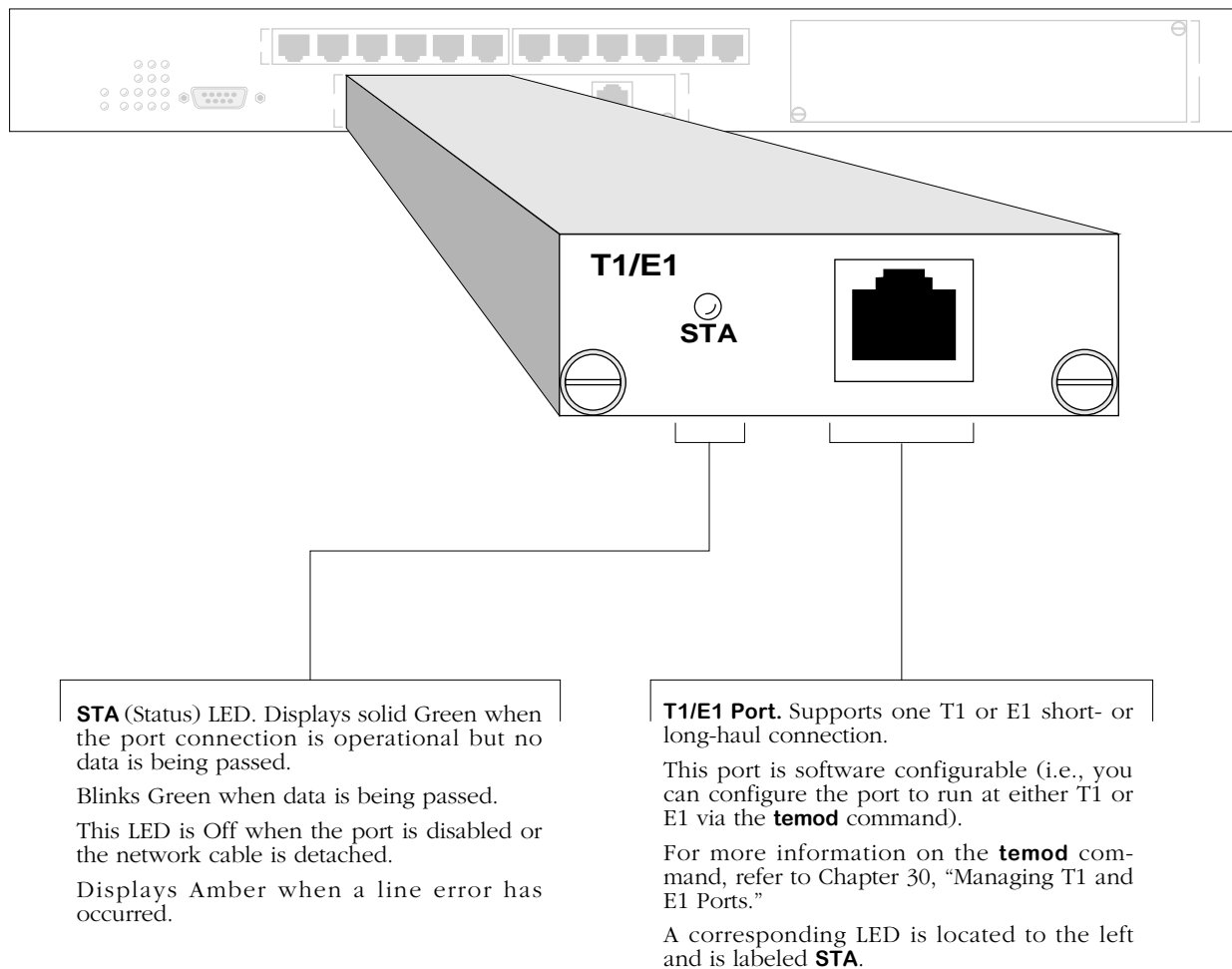
The OA-512-FT1/FE1 is an uplink submodule that supports one T1 or E1 connection to a public or private digital data network. This uplink may be installed in either the **S3/1** or **S3/2** port positions.

◆ Jumper Information ◆

You can configure this uplink's E1 connection to support 75 ohm coaxial cable by changing the jumper settings on the daughtercard. For instructions, refer to *Changing the OA-512-FT1/FE1 Jumper Positions (75 ohm E1 Coaxial Interface)* on page 1-16.

Front Panel

The front panel of the OA-512-FT1/FE1 contains one copper RJ-45 connector, one corresponding port LED, and two connecting screws for attaching the submodule to the OA-512 chassis. Refer to the illustration below for more details.



OA-512-FT1/FE1 Technical Specifications

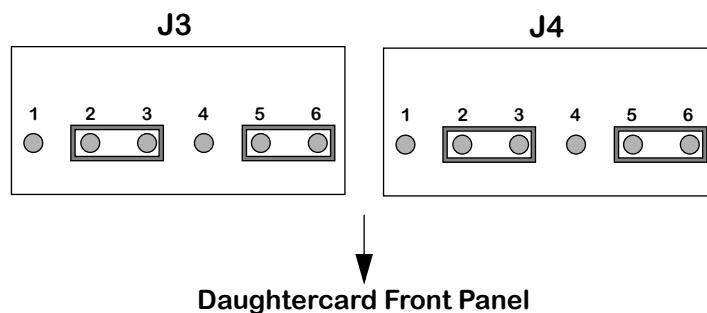
Hardware Information	
Ports	one T1/E1 WAN uplink port
Cable Supported	24 gauge twisted pair
Cable Distance	Short-reach: up to 200 meters maximum Long-reach: up to 1829 meters maximum
Data Rate	T1: 1.544 Mbps E1: 2.048 Mbps
Connector Type	RJ-45
Connections Supported	DTE or DCE
Software Information	
Standards Supported	RFCs 1406, 1213, 1659
Frame Formats	T1: Superframe, Extended Superframe, Unframed E1: E1, E1-CRC, E1-MF, E1-CRC-MF, Unframed
Line Coding	T1: B8ZS or AMI E1: HDB3 or AMI
Facility Datalink Protocol	ANSI T1.403 and AT&T 54016

Changing the OA-512-FT1/FE1 Jumper Positions (75 ohm E1 Coaxial Interface)

If you wish to support a 75 ohm coaxial E1 interface, you must change the positions of the **J3** and **J4** jumpers to pins 2/3 and 5/6 as shown in the illustration below. (The default jumper settings—for T1 100 ohm and E1 120 ohm—are pins 1/2 and 4/5.)

The applicable OA-512-FT1/FE1 jumper blocks are located on the underside of the daughtercard and are labeled **J3** and **J4**. To determine pin numbers from left to right, orient the daughtercard front panel as shown.

To remove a jumper, pull it straight up and away from the jumper block. To replace, slide the jumper over both of the specified pins and carefully press down until it meets the daughtercard's jumper block.



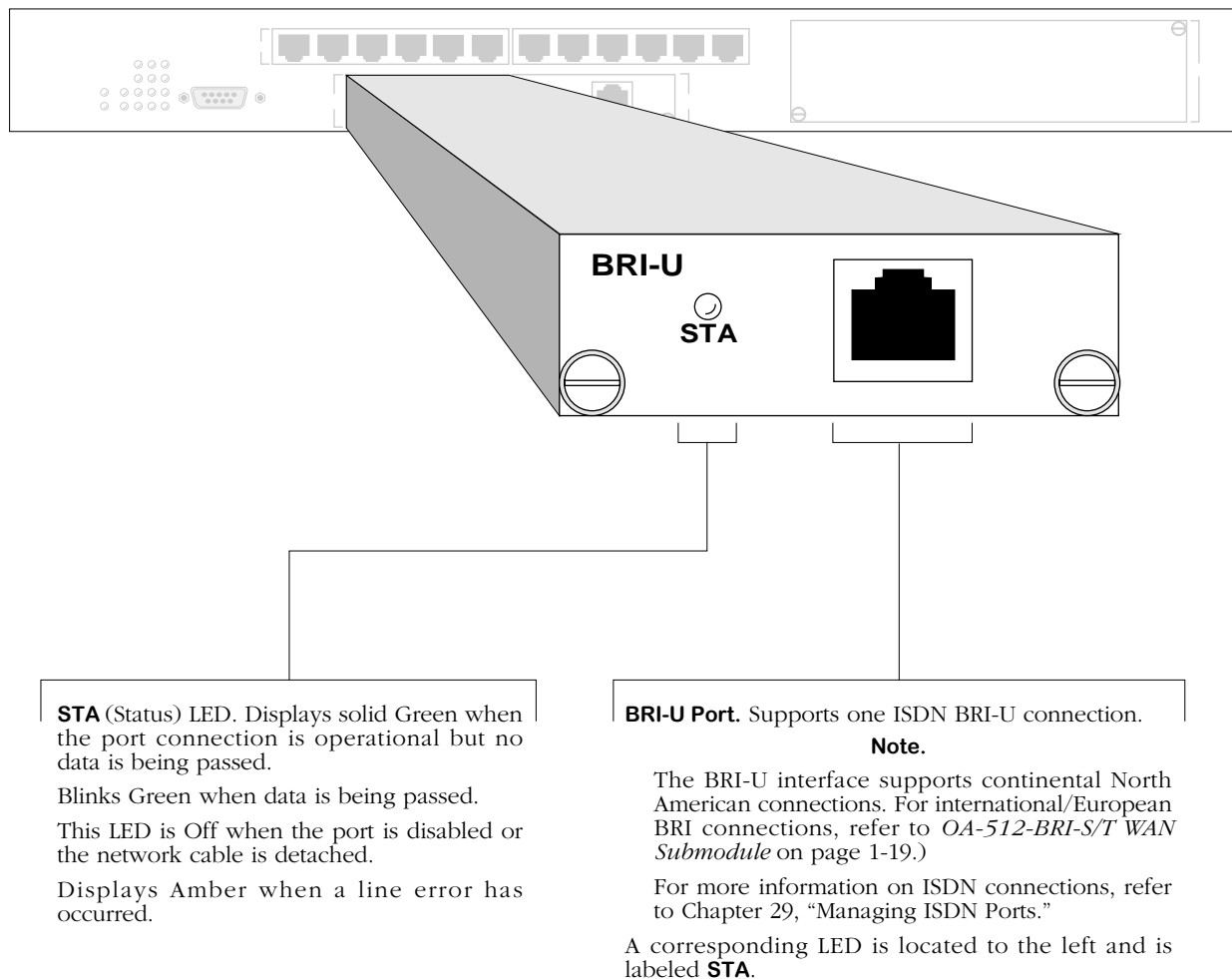
Jumper Positions for 75 ohm E1 Coaxial Interface

OA-512-BRI-U WAN Submodule

The OA-512-BRI-U is an uplink submodule that supports one BRI-U connection to a public or private ISDN network. This uplink may be installed in either the **S3/1** or **S3/2** port positions. Note, however, that only one BRI uplink submodule may be installed in each OA-512 switch.

Front Panel

The front panel of the OA-512-BRI-U contains one copper RJ-45 connector, one corresponding port LED, and two connecting screws for attaching the submodule to the OA-512 chassis. Refer to the illustration below for more details.



OA-512-BRI-U WAN Submodule

0A-512-BRI-U Technical Specifications

Hardware Information	
Ports	one BRI-U (North American) WAN uplink port
Cable Supported	24 gauge twisted pair
Data Rate	two "B" channels at 56/64 Kbps one "D" channels at 16 Kbps
Connector Type	RJ-45
Connections Supported	ISDN Basic Rate "U" Interface
Software Information	
Standards Supported	Q.921, Q.931, I.430, T1.601

OA-512-BRI-S/T WAN Submodule

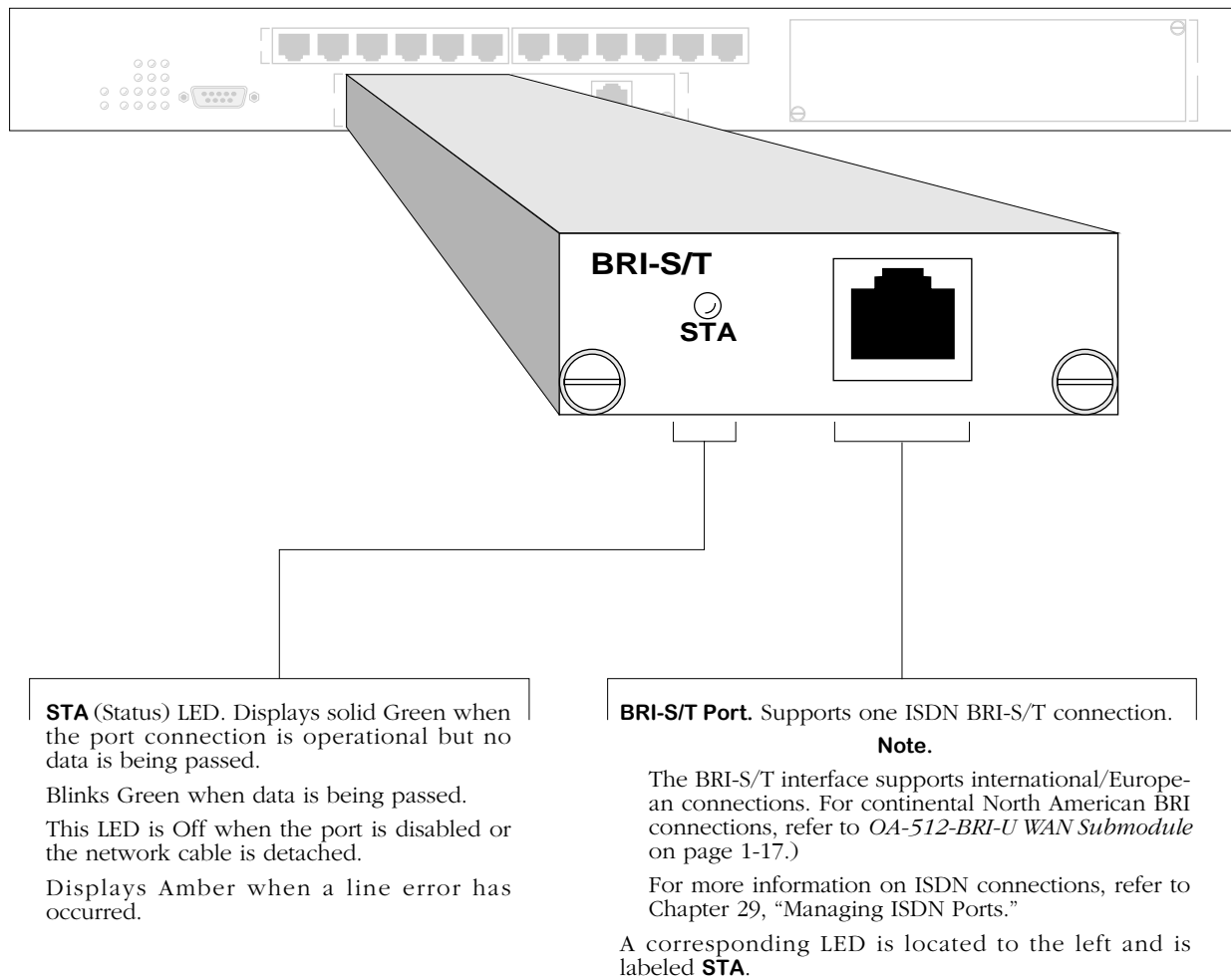
The OA-512-BRI-S/T is an uplink submodule that supports one BRI-S/T connection to a public or private ISDN network. This uplink may be installed in either the **S3/1** or **S3/2** port positions. Note, however, that only one BRI uplink submodule may be installed in each OA-512 switch.

◆ Jumper Information ◆

You can specify *no bus termination installed* for this uplink's S/T interface by changing the jumper settings on the daughtercard. For instructions, refer to *Changing the OA-512-BRI-S/T Jumper Positions (No Bus Termination)* on page 1-20.

Front Panel

The front panel of the OA-512-BRI-S/T contains one copper RJ-45 connector, one corresponding port LED, and two connecting screws for attaching the submodule to the OA-512 chassis. Refer to the illustration below for more details.



OA-512-BRI-S/T WAN Submodule

OA-512-BRI-S/T Technical Specifications

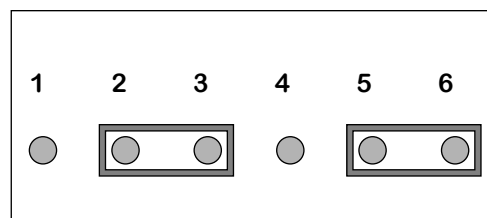
Hardware Information	
Ports	one BRI-S/T (European) WAN uplink port
Data Rate	two “B” channels at 56/64 Kbps one “D” channels at 16 Kbps
Connector Type	RJ-45
Connections Supported	ISDN Basic Rate “S/T” Interface
Software Information	
Standards Supported	Q.921, Q.931, I.430, T1.601

Changing the OA-512-BRI-S/T Jumper Positions (No Bus Termination)

For passive bus arrangements (i.e., no bus termination) and performance testing, you must change the positions of the **J3** jumpers to pins 2/3 and 5/6 as shown in the illustration below. (The default jumper settings—for active bus arrangements—are pins 1/2 and 4/5.)

The applicable OA-512-BRI-S/T jumper block is located on the underside of the daughtercard and is labeled **J3**. To determine pin numbers from left to right, orient the daughtercard front panel as shown.

To remove a jumper, pull it straight up and away from the jumper block. To replace, slide the jumper over both of the specified pins and carefully press down until it meets the daughtercard’s jumper block.



J3



Daughtercard Front Panel

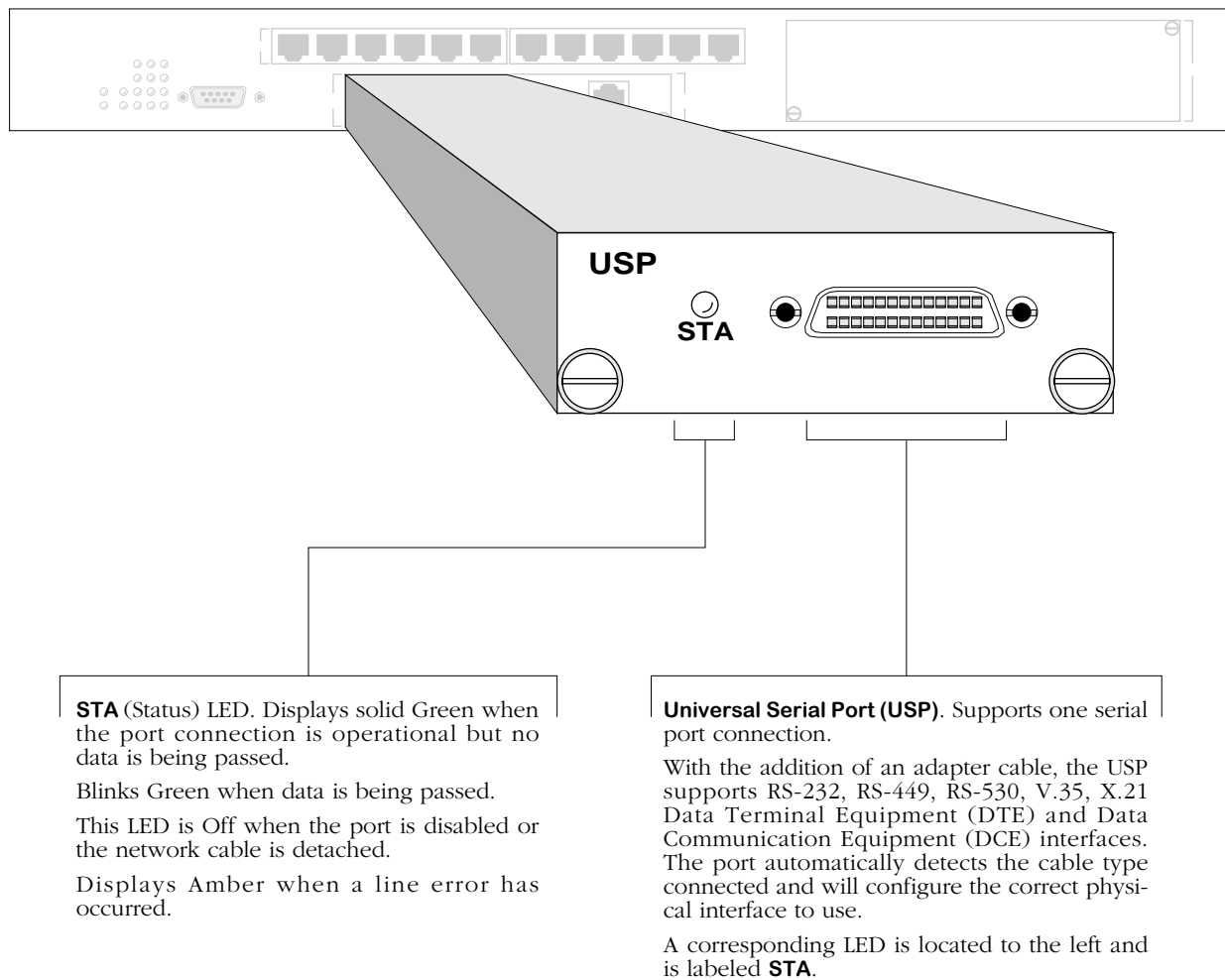
Jumper Positions for Passive Bus Arrangement

OA-512-USP WAN Submodule

The OA-512-USP is an uplink submodule that supports one serial port connection to legacy synchronous serial port devices. This uplink may be installed in either the **S3/1** or **S3/2** port positions.

Front Panel

The front panel of the OA-512-USP contains one serial port connector, one corresponding port LED, and two connecting screws for attaching the submodule to the OA-512 chassis. Refer to the illustration below for more details.



OA-512-USP WAN Submodule

0A-512-USP Technical Specifications

Hardware Information	
Ports	one Universal Serial Port (USP) WAN uplink
Cable Supported	DTE or DCE in the following types: RS-232, V.35, X.21, RS-530, RS-449
Data Rates	56, 64, 128, 256, 384, 512, 768, 1024, 1536, 1544, 2048 Kbps
Connector Type	USP (high-density, 26-pin shielded)
Connections Supported	DTE or DCE
Software Information	
Standards Supported	RFCs 1406, 1213, 1659