SuperStack® 3 Switch 3812, Switch 3824, and Switch 3848
Getting Started Guide

3C17401
3C17400
3CR17402-91

http://www.3com.com/

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CONTENTS

About This Guide

This guide provides all the information you need to install and use 3Com® SuperStack® 3 Switch 3812 (3C17401), Switch 3824 (3C17400), or Switch 3848 (3CR17402-91) in its default state.

The guide is intended for use by network administrators who are responsible for installing and setting up network equipment; consequently, it assumes a basic working knowledge of LANs (Local Area Networks).

Please refer to the CD-ROM that accompanies your Switch for the following:

- *Management Interface Reference Guide — an online guide which gives you detailed information on how to use the web interface and command line interface to manage the Switch.*
- *Other documentation relating to the 3Com SuperStack 3 Switch 3812, Switch 3824, or Switch 3848.*
- *3Com Network Supervisor — a powerful network management tool for small to medium enterprise networks.*
- *A number of other useful applications.*

If the information in the release notes that are shipped with your product differ from the information in this guide, follow the instructions in the release notes.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) or HTML on the 3Com World Wide Web site:

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Conventions

Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons

Icon	Notice Type	Description
	Information note	Information that describes important features or instructions.
	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device.
	Warning	Information that alerts you to potential personal injury.

Table 2 Text Conventions

Convention	Description
`Screen displays`	This typeface represents information as it appears on the screen.
`Syntax`	The word "syntax" means that you must evaluate the syntax provided and then supply the appropriate values for the placeholders that appear in angle brackets. Example: To change your password, use the following syntax: `system password <password>` In this example, you must supply a password for <password>.
`Commands`	The word "command" means that you must enter the command exactly as shown and then press Return or Enter. Commands appear in bold. Example: To display port information, enter the following command: **`bridge port detail`**
The words "enter" and "type"	When you see the word "enter" in this guide, you must type something, and then press Return or Enter. Do not press Return or Enter when an instruction simply says "type."
Keyboard key names	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press Ctrl+Alt+Del
Words in *italics*	Italics are used to: ■ Emphasize a point. ■ Denote a new term at the place where it is defined in the text. ■ Identify menu names, menu commands, and software button names. Examples: From the *Help* menu, select *Contents*. Click *OK*.

Related Documentation

In addition to this guide, each Switch documentation set includes the following:

- *Management Quick Reference Guide*

  This guide contains:

  - a list of software features supported by each Switch.
  - a summary of the web interface and command line interface commands for the Switch.

- *Release Notes*

  These notes provide information about the current software release, including new features, modifications, and known problems.

- *Switch Implementation Guide*

  This guide contains information on the features supported by your Switch and how they can be used to optimize your network. It is supplied in PDF format on the CD-ROM that accompanies the Switch.

- *Management Interface Reference Guide*

  This guide provides detailed information about the web interface and command line interface that enable you to manage the Switch. It is supplied in HTML format on the CD-ROM that accompanies the Switch.

There are other publications you may find useful:

- Documentation accompanying the SFP Transceivers.
- Documentation accompanying 3Com Network Supervisor. This is supplied on the CD-ROM that accompanies the Switch.

Accessing Online Documentation

The CD-ROM supplied with your Switch contains the following online documentation:

- Switch Implementation Guide (PDF format).
- Switch Management Interface Reference Guide (HTML format).
- Other documentation relating to the Switch 3812, Switch 3824, or Switch 3848 (PDF format).

To access the online documentation from the CD-ROM:

1. Insert the CD-ROM into the relevant CD-ROM drive. If your PC has auto-run enabled, a splash screen will be displayed automatically.
2. Select the Documentation section from the contents page.

If the online documentation is to be accessed from a local drive or server, you will need to access the CD-ROM contents via the root directory and copy the files from the CD-ROM to a suitable directory.

- The HTML Reference Guide is stored in the `Docs/referenceguide` on the CD-ROM. The documentation is accessed using the index.htm file.
- The PDF Implementation Guide is stored in the `Docs/implementation` directory of the CD-ROM.

3Com recommends that you copy the `Docs/referenceguide` *directory as a whole to maintain the structure of the files.*

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Example:

Part Number DUA1740-0AAA03
SuperStack 3 Switch 3812, Switch 3824, and Switch 3848 Getting Started Guide
Page 10

1 Introducing the SuperStack 3 Switch 3812, Switch 3824, and Switch 3848

This chapter contains introductory information about the Switch 3812, Switch 3824, and Switch 3848 and how they can be used in your network. It covers summary information about the hardware and the following topics:

About the Switch

The Switch 3812, Switch 3824 and Switch 3848 units are 10/100/1000 Mbps Ethernet Switches which consist of either:

- 12 10BASE-T/100BASE-TX/1000BASE-T RJ-45 ports (Switch 3812) or
- 24 10BASE-T/100BASE-TX/1000BASE-T RJ-45 ports (Switch 3824) or
- 48 10BASE-T/100BASE-TX/1000BASE-T RJ-45 ports (Switch 3848)

and:

- Four SFP ports

The highest four numbered RJ-45 ports are combination ports. When an SFP module is inserted it has priority over the 10/100/1000 port of the same number (9–12 on the Switch 3812, 21–24 on the Switch 3824, and 45-48 on the Switch 3848).

For information about using the software features of the Switch, refer to the "Switch Management Interface Reference Guide" on the CD-ROM that accompanies the Switch.

Summary of Hardware Features

Table 3 summarizes the hardware features that are supported by the Switch 3812, Switch 3824, and Switch 3848.

Table 3 Hardware features

Feature	Switch 3812, Switch 3824, and Switch 3848
MAC Addresses	Up to 16,000 supported
Forwarding Modes	Store and Forward
Auto-negotiation	Supported on all ports
Auto MDI/MDIX	Supported on all 10/100/1000 ports
Duplex Modes	Half and full duplex on all 10/100/1000 ports when running at 10 Mbps or 100 Mbps.
SFP Gigabit Ethernet Ports	Supports fiber Gigabit Ethernet short-wave (SX), long-wave (LX) and long-haul (LH70) transceivers in any combination
Flow Control	Supported on all ports
Traffic Prioritization	Supported (IEEE Std 802.1D, 1998 Edition)
	Eight traffic queues per port
Fast Ethernet and Gigabit Ethernet Ports	Auto-negotiating 10BASE-T/100BASE-TX/1000BASE-T and SFP ports

Feature	Switch 3812, Switch 3824, and Switch 3848
RPS Support	Connects to SuperStack 3 Advanced Redundant Power System (ARPS). (Switch 3848 only)
Mounting	19-inch rack or stand-alone mounting

Switch — Front View Detail

Figure 1 Switch 3812 — front view

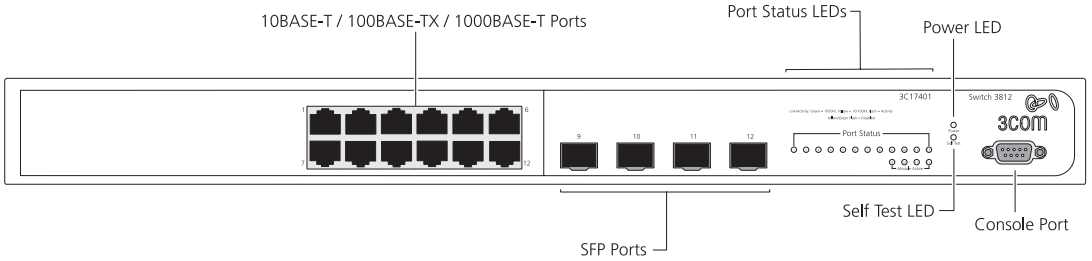


Figure 2 Switch 3824 — front view

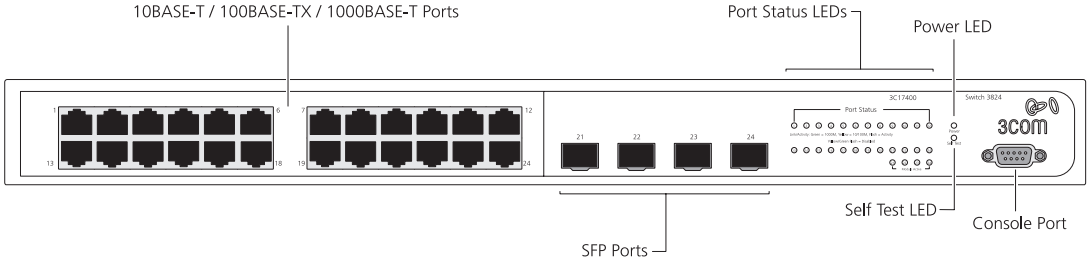
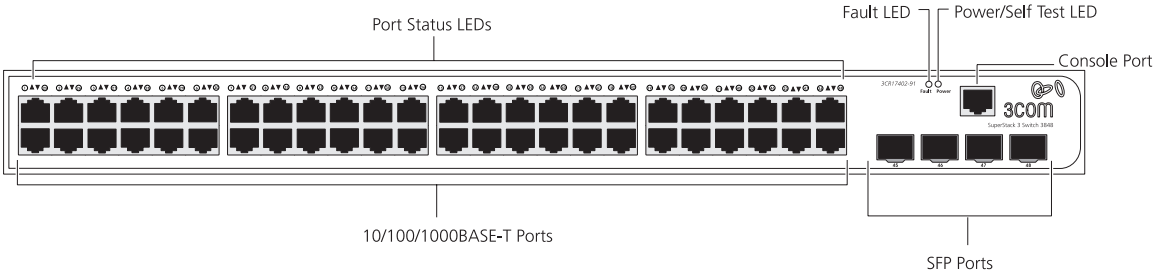


Figure 3 Switch 3848 — front view



WARNING: *RJ-45 Ports. These are shielded RJ-45 data sockets. They cannot be used as standard traditional telephone sockets, or to connect the unit to a traditional PBX or public telephone network. Only connect RJ-45 data connectors, network telephony systems, or network telephones to these sockets.*

Either shielded or unshielded data cables with shielded or unshielded jacks can be connected to these data sockets.

10BASE-T/ 100BASE-TX/ 1000BASE-T Ports

The 10BASE-T/100BASE-TX/1000BASE-T ports have RJ-45 connectors and are configured as Auto MDIX (cross-over).

The default state for these ports is auto-negotiation enabled, where the speed, duplex and flow control modes of a link are automatically detected to provide the highest available bandwidth with the link partner.

Alternatively, auto-negotiation can be disabled. These ports can be manually configured to 10 Mbps half duplex, 100 Mbps half duplex, 10 Mbps full duplex or 100 Mbps full duplex. It is not possible to manually configure a 1000 Mbps link as auto-negotiation is mandatory in the 1000 Mbps standard. If auto-negotiation is disabled, Auto MDIX cannot function and the ports are fixed as MDIX (cross-over) mode.

If auto-negotiation is disabled on a 1000 Mbps port, the speed will drop to the highest available speed. By default this is 100 Mbps.

Dual Personality SFP Ports

The four Dual Personality SFP (Small Form Factor Pluggable) ports support fiber Gigabit Ethernet short-wave (SX), long-wave (LX) and long-haul (LH70) transceivers in any combination. This offers you the flexibility of

using SFP transceivers to provide connectivity between the Switch and remote 1000 Mbps workgroups or to create a high capacity aggregated link backbone connection.

The SFP ports are capable of auto-negotiating flow control. As the speed and duplex modes are fixed by the media type, only the flow control is negotiated with the link partner. Alternatively, auto-negotiation can be disabled and the flow control setting can be manually configured.

Console Port

The console port allows you to connect a terminal and perform remote or local out-of-band management. The Switch 3812 and Switch 3824 have a DB-9 serial connector and need a serial cable to connect to your PC. The Switch 3848 has an RJ-45 serial port and is supplied with an RJ-45 to DB-9 cable.

The standard null modem cable is set to autobaud (up to a maximum of 19,200 baud), 8 data bits, no parity and 1 stop bit.

LEDs

Table 4 lists LEDs visible on the front of the Switch, and how to read their status according to color. For information on using the LEDs for problem solving, see "Checking for Correct Operation of LEDs" on page 23.

Table 4 LED behavior

LED	Color	Indicates
Port Status/Packet LEDs		
	Green	A high speed (1000 Mbps) link is present, and the port is enabled.
	Green flashing	A high speed (1000 Mbps) link is present and active.
	Yellow	A low speed (10/100 Mbps) link is present, and the port is enabled.
	Yellow flashing	A low speed (10/100 Mbps) link is present and active.
	Green for one second, Amber for one second, then OFF until operational.	POST in operation, all LEDs perform a one second lamp test.
	Alternate yellow then green flashing (fast)	A port has failed a loop back test during POST.
	Alternate yellow then green flashing	A link is present but the port has been disabled.

LED	Color	Indicates
	Off	No link is present.
Power LED (Switch 3812 and Switch 3824)		
	Green	The Switch is powered-up and operating normally.
	Red	The Switch has a fault with the Power Supply Unit.
	Off	The Switch is not receiving power or there is a fault with the Power Supply Unit.
Self Test LED (Switch 3812 and Switch 3824)		
	Green flashing	There is a test in progress.
	Green	All tests have been passed and the Switch is ready for use.
	Red	A fault has occurred.
	Red flashing	An internal fan has failed.
	Off	The unit is booting-up.
Power/Self Test LED (Switch 3848 only)		
	Green	The Switch is powered-up and operating normally.
	Green flashing	The Switch is either downloading software or is initializing (which includes running a Power On Self Test).
	Yellow	The Switch is faulty.
	Off	The Switch is not receiving power or there is a fault with the Power Supply unit.
Fault LED (Switch 3848 only)		
	Red	The Switch and/or the PSU are above critical temperature but below critical shut down temperature. Fans are operating normally.
	Off	The Switch and PSU are below critical temperature. One or more fans have failed.

Switch — Rear View Detail

Figure 4 Switch 3812 and Switch 3824 — rear view

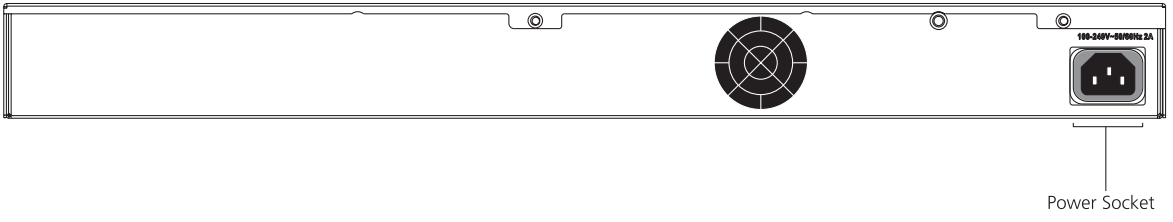
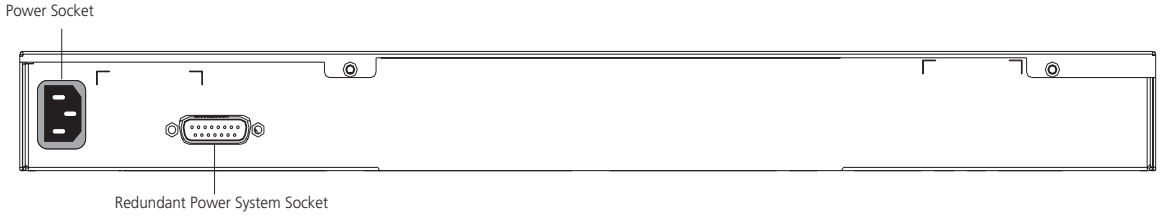


Figure 5 Switch 3848 — rear view



Power Socket Each Power Supply automatically adjusts its power setting to any power voltage in the range 100-240 VAC.

Redundant Power System Socket (Switch 3848 only) To protect against internal power supply failure, you can use this socket to connect the Switch to a SuperStack 3 Advanced Redundant Power System. See "Connecting a Redundant Power Supply (Switch 3848 only)" on page 23.

Default Settings

Table 5 shows the default settings for the Switch 3812, Switch 3824 and Switch 3848. If you initialize one of the Switch units, it is returned to these defaults.

Table 5 Default Settings

Feature	Switch 3812, Switch 3824, or Switch 3848
Port Status	Enabled
Port Speed	Auto-negotiated
Duplex Mode	Auto-negotiated
Flow Control	Disabled
Broadcast Storm Control	Enabled
	Threshold: 3000 broadcast frames per second
Virtual LANs (VLANs)	All ports belong to the untagged Default VLAN (VLAN 1)
Multicast Filtering	IGMP filtering enabled
Rapid Spanning Tree Protocol	Enabled
Link Aggregation Control Protocol (LACP)	Disabled per port
Spanning Tree Protocol	Enabled
Smart Auto-sensing	Enabled

If you initialize a Switch unit by selecting *System* > *Control* > *Initialize* in the Web interface or by entering **`system control initialize`** in the Command Line Interface, the following settings are retained to allow you to connect to and manage the Switch:

- IP Address
- Subnet Mask
- Default Gateway

2 INSTALLING THE SWITCH

This chapter contains the information you need to install and set up the Switch 3812, Switch 3824, or Switch 3848. It covers the following topics:

WARNING: Safety Information. *Before installing or removing any components from the Switch or carrying out any maintenance procedures, you must read the safety information provided in Appendix A of this guide.*

AVERTISSEMENT: Consignes de sécurité. *Avant d'installer ou d'enlever tout composant de Switch ou d'entamer une procédure de maintenance, lisez les informations relatives à la sécurité qui se trouvent dans l'Appendice A de ce guide.*

VORSICHT: Sicherheitsinformationen. *Bevor Sie Komponenten aus dem Schalter entfernen oder den Schalter hinzufügen oder Instandhaltungsarbeiten verrichten, lesen Sie die Sicherheitsanweisungen, die in Anhang A in diesem Handbuch aufgeführt sind.*

Package Contents

- Switch unit
- CD-ROM
- This Guide
- Management Quick Reference Guide
- Release Notes
- Warranty Flyer
- Power Cord
- 2 x securing brackets
- 4 x screws (Switch 3812 and Switch 3824)
- 8 x screws (Switch 3848)
- 4 x rubber feet
- RJ45 to DB9 converter cable (Switch 3848 only)

Choosing a Suitable Site

The Switch is suited for use in an internal wiring closet, a network room, or telecommunications room, where it can be mounted in a standard 19-inch equipment rack, or free-standing.

CAUTION: *Ensure that the ventilation holes are not obstructed.*

The Switch 3848 is fitted with high speed fans that have a high audible output while running at full speed. The Switch is designed to reduce the fan speed shortly after power on (if thermal conditions allow) which will also reduce the fan noise generated.

When deciding where to position the Switch, ensure that:

- Cabling is located away from:
  - sources of electrical noise such as radios, transmitters and broadband amplifiers.
  - power lines and fluorescent lighting fixtures.
- The Switch is accessible and cables can be connected easily.
- Water or moisture cannot enter the case of the Switch.
- Air flow is not restricted around the Switch or through the vents in the side of the Switch. 3Com recommends that you provide a minimum of 25 mm (1 in.) clearance.
- Air temperature around the Switch does not exceed 40 °C (104 °F).

If the Switch is installed in a 19-inch rack or closed assembly its local air temperature may be greater than room ambient temperature.

- The air is as free from dust as possible.
- The Switch is situated away from sources of conductive (electrical) dust, for example laser printers.
- The unit is installed in a clean, air conditioned environment.
- The AC supply used by the Switch is separate to that used by units that generate high levels of AC noise, for example air conditioning units.
- No more than four Switch units are placed on top of one another, if the units are free-standing.

Rack-mounting

The Switch is 1U high and will fit in most standard 19-inch racks.

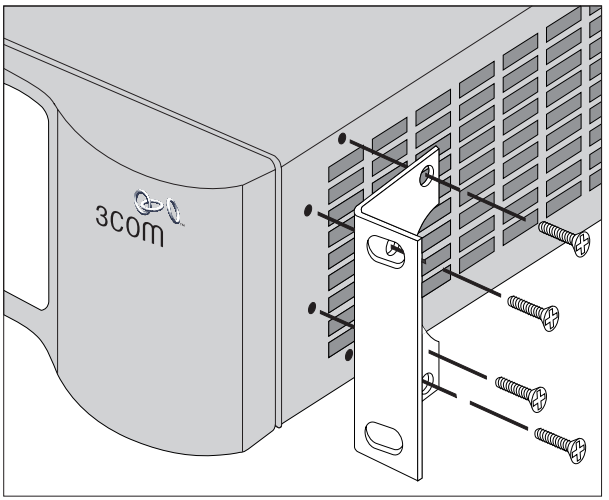
CAUTION: *Disconnect all cables from the Switch before continuing. Remove all self adhesive pads from the underside of the Switch if they have been fitted.*

CAUTION: *If you use a shelf or support ensure that it will not obstruct the air flow through the side panels of the Switch.*

To rack-mount your Switch:

1. Place the Switch the right way up on a hard flat surface, with the front facing towards you.
2. Locate a securing bracket over the mounting holes on one side of the Switch, as shown in Figure 6.
3. Insert the screws and tighten with a suitable screwdriver.

Figure 6 Fitting a bracket for rack-mounting



You must use the screws supplied with the securing brackets. Damage caused to the unit by using incorrect screws invalidates your warranty.

4 Repeat steps 2 and 3 for the other side of the Switch.

5 Insert the Switch into the 19-inch rack and secure with suitable screws (not provided). Ensure that ventilation holes are not obstructed.

6 Connect network cabling.

Placing Units On Top of Each Other

If the Switch units are free-standing, up to four units can be placed one on top of the other. If you are mixing a variety of Switch and Hub units, the smaller units must be positioned at the top.

If you are placing Switch units one on top of the other, you must use the self-adhesive rubber pads supplied. Apply the pads to the underside of each Switch, sticking one in the marked area at each corner. Place the Switch units on top of each other.

The Power-up Sequence

The following sections describe how to get your Switch powered-up and ready for operation.

Powering-up the Switch

Use the following sequence of steps to power-up the Switch.

1. Plug the power cord into the power socket at the rear of the Switch.
2. Plug the other end of the power cord into your power outlet.

   The Switch powers-up and runs through its Power On Self Test (POST), which takes approximately 1 minute.

Checking for Correct Operation of LEDs

During the Power On Self Test, all ports on the Switch are disabled and the LEDs light in a rapid sequence.

When the POST has completed, check the Unit Status to make sure that your Switch is operating correctly. Table 6 shows possible colors for the LED.

Table 6 Unit Status Colors

Color	State
Green	The Switch is powered-up and operating normally.
Yellow	The Switch has failed its Power On Self Test (POST).
Off	The Switch is not receiving power.

If there is evidence of a problem, see "Solving Problems Indicated by LEDs" on page 46 for a list of suggested solutions.

CAUTION: *The Switch has no ON/OFF switch; the only method of connecting or disconnecting mains power is by connecting or disconnecting the power cord.*

Connecting a Redundant Power Supply (Switch 3848 only)

You can connect a SuperStack 3 Advance Redundant Power System to the Switch 3848. This unit, which is also known as RPS, is designed to maintain the power to your Switch if a power supply failure occurs.

For normal redundancy, the unit requires a Type 3 Power Module (part number 3C16075)

For full redundancy, the unit requires two Type 3 Power Modules combined using a Type 3 Y-Cable (part number 3C16077).

WARNING: *If you are connecting the Switch to a Type 3 Power Module, read the Safety Information section in the Type 3 Power Module User Guide.*

CAUTION: *The Switch can only use a SuperStack Advance Redundant Power System output.*

Choosing the Correct Cables

All of the ports on the Switch are Auto-MDIX, that is they have a cross-over capability. These ports can automatically detect whether to operate in MDI or MDIX mode. Therefore you can make a connection to one of the ports with a straight-through (MDI) or a cross-over cable (MDIX).

The Auto-MDIX feature only operates when auto-negotiation is enabled.

If auto-negotiation is disabled, all the Switch ports are configured as MDIX (cross-over). If you want to make a connection to another MDIX port, you need a *cross-over* cable. Many ports on workstations and servers are configured as MDI (straight-through). If you want to make a connection to an MDI port, you need to use a standard *straight-through* cable. See Table 7.

3Com recommends that you use at least Category 5 twisted pair cable — the maximum segment length for this type of cable is 100 m (328 ft.).

Table 7 Cables required to connect the Switch to other devices if auto-negotiation is disabled

	Cross-over Cable	Straight-through Cable
Switch to Switch (MDIX to MDIX)	✓	×
Switch to Hub (MDIX to MDIX)	✓	×
Switch to PC (NIC) (MDIX to MDI)	×	✓

CAUTION: *If you want to install the Switch using a Category 5E or Category 6 cable, 3Com recommends that you briefly connect the cable to a grounded port before connecting network equipment. If you do not, the cable's Electrostatic Discharge (ESD) may damage the Switch's port.*

You can create a grounded port by connecting all wires at one end of a UTP cable to an earth ground point, and the other end to a female RJ-45 connector located, for example, on a Switch rack or patch panel. The RJ-45 connector is now a grounded port.

SFP Operation

The following sections describes how to insert an SFP transceiver into an SFP port.

SFP transceivers are hot-insertable and hot-swappable. You can remove them from and insert them into any SFP port without having to power down the Switch.

Approved SFP Transceivers

The following list of approved SFP transceivers is correct at the time of publication.

- 3CSFP91 SFP (SX)
- 3CSFP92 SFP (LX)
- 3CSFP97 SFP (LH70)

To access the latest list of approved SFP transceivers for the Switch on the 3Com Corporation World Wide Web site, enter this URL into your internet browser:

`http://www.3com.com`

Inserting an SFP Transceiver

To be recognized as valid, the SFP transceiver must have the following characteristics:

- 1000BASE-SX, 1000BASE-LX or 1000BASE-LH70:
  - 1000BASE-SX SFP transceiver

    Use this transceiver to connect the Switch directly to a multimode fiber-optic cable.
  - 1000BASE-LX SFP transceiver

Use this transceiver to connect the Switch directly to a single-mode fiber-optic cable or to multimode fiber using a conditioned launch cable.

- 1000BASE-LH70 SFP transceiver

  Use this transceiver to connect the Switch directly to a single-mode fiber-optic cable.

If the SFP transceiver is faulty, it will not operate within the Switch. See "Solving Hardware Problems" *on* page 47.

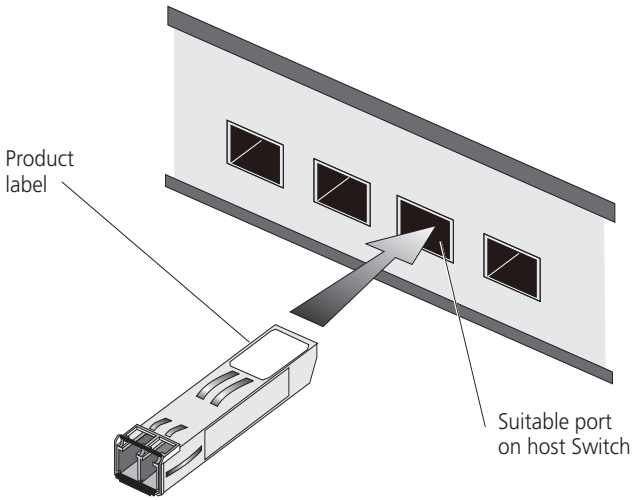
3Com recommends that you only use SFPs supplied by 3Com. If the SFP transceiver is invalid it will not be recognized by the Switch.

Use the following sequence of steps to activate the SFP ports:

1. The SFP transceiver is keyed and there is only one way in which it can be installed correctly. It is not necessary to power-down your Switch.
2. Hold the transceiver so that the connector is toward you and the product label is visible. Ensure the wire release lever is closed (in the upright position).
3. Gently slide the transceiver into the SFP port until it clicks. If the transceiver does not click into place, remove it, turn it over and re-insert.
4. Remove the plastic protective cover if fitted.

CAUTION: *The dual personality ports on the Switch enable you to activate an RJ-45 port or an SFP port or a mixture of both. Taking the Switch 3848 as an example, you can activate the RJ-45 ports 45 and 46 and the SFP ports 47 and 48 at the same time. If you try to activate the same dual personality RJ-45 port and SFP port (for example, RJ-45 port 45 and SFP port 45 at the same time), the SFP port will take priority.*

Figure 7 Inserting an SFP Transceiver



5 Use and appropriate cable to connect the transceiver to a suitable device.

6 Check the LEDs on the front of the Switch to ensure that it is operating correctly. Refer to "LEDs" on page 15 for more information.

Removing an SFP Transceiver

If you wish to remove the transceiver (it is not necessary to power-down your Switch):

1 Disconnect the cable from the transceiver.

2 Move the wire release lever downwards until it is pointing toward you.

3 Pull the wire release lever toward you to release the catch mechanism; the transceiver will then easily slide out.

3 Setting Up for Management

Your Switch can operate in its default state, that is, you can install it and it will work straight away (plug-and-play). However, to make full use of the features offered by the Switch, and to change and monitor the way it works, you have to access the management software that resides on the Switch. This is known as managing the Switch.

Managing the Switch can help you to improve the efficiency of the Switch and therefore the overall performance of your network.

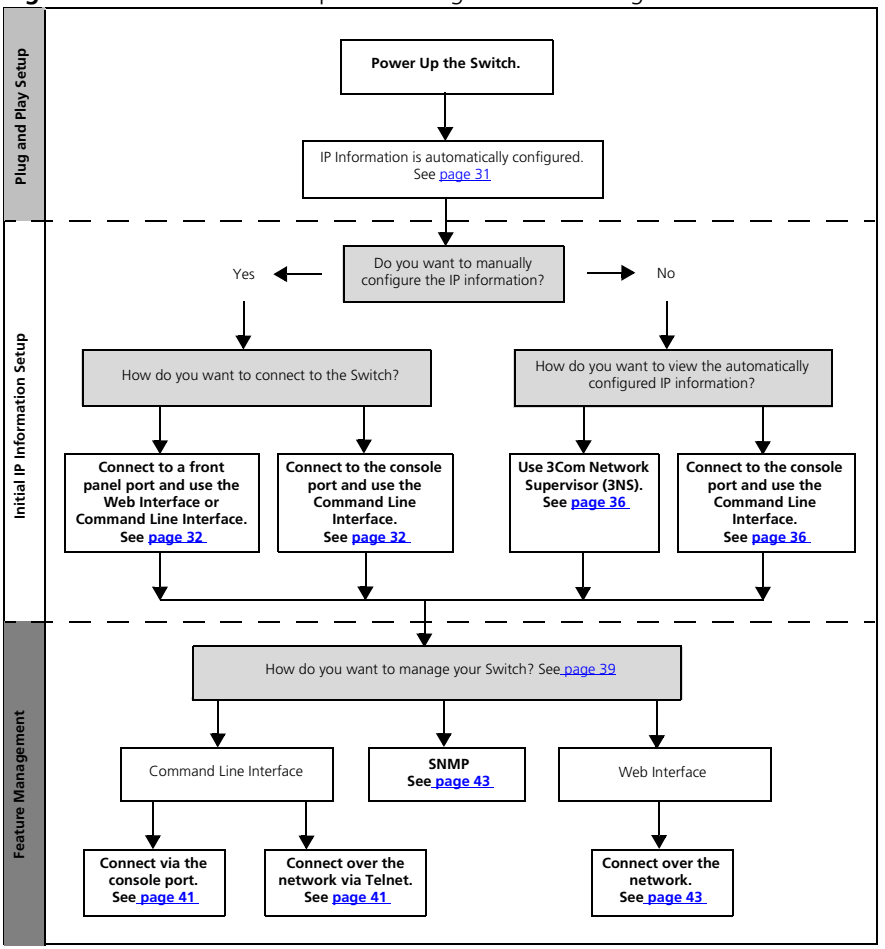
This chapter explains the initial set up of the Switch and the different methods of accessing the management software to manage a Switch. It covers the following topics:

Setting Up Overview

This section gives an overview of what you need to do to get your Switch set up and ready for management when it is in its default state. The whole setup process is summarized in Figure 8. Detailed procedural steps are contained in the sections that follow. In brief, you need to:

- Configure IP information manually for your Switch or view the automatically configured IP information
- Prepare for your chosen method of management

Figure 8 Initial Switch Setup and Management Flow diagram



CAUTION: *To protect your Switch from unauthorized access, you must change all three default passwords as soon as possible, even if you do not intend to actively manage your Switch. For more information on default users and changing default passwords, see* "Default Users and Passwords" *on* page 44.

IP Configuration

You can use one of the following methods to allocate IP information to your Switch (essential if you wish to manage your Switch across the network).

Manual IP Configuration

You can choose to configure the IP information yourself. The Switch remembers the information that you enter until you change it again or set the configuration method to Automatic.

You should use the Manual IP configuration method if:

- you do not have a DHCP server on your network, or
- you want to remove the risk of the IP address ever changing, or
- your DHCP server does not allow you to allocate static IP addresses. (Static IP addresses are necessary to ensure that the Switch is always allocated the same IP information.)

For most installations, 3Com recommends that you configure the Switch IP information manually. This makes management simpler and more reliable as it is not dependent on a DHCP server, and eliminates the risk of the IP address changing.

If you wish to manually enter IP information for your Switch, work through the "Manually Configuring IP Information" section on page 32.

Automatic IP Configuration

By default the Switch tries to configure itself with IP information without requesting user intervention. It tries to obtain an IP address from a DHCP server on the network.

It may take up to 5 minutes for your Switch to obtain an IP address after it has been powered up.

When using automatic IP configuration it is important that the IP address of the Switch is static, otherwise you will not know what the IP address is and it will be difficult to manage. Most DHCP servers allow static IP

addresses to be configured so that you know what IP address will be allocated to the Switch. Refer to the documentation that accompanies your DHCP server.

For a detailed description of how automatic IP configuration operates, please refer to the Implementation Guide on the CD-ROM that accompanies your Switch or on the 3Com Web site.

You should use the automatic IP configuration method if:

- your network uses DHCP to allocate IP information, or
- flexibility is needed. If the Switch is re-deployed onto a different subnet, it will automatically reconfigure itself with an appropriate IP address, instead of you having to manually reconfigure the Switch.

If you use the automatic IP configuration method, you need to discover the automatically allocated IP information before you can begin management. Work through the "Viewing Automatically Configured IP Information" section on page 36.

Preparing for Management

Once your Switch's initial set up is complete you can set up your chosen management method as described in "Methods of Managing a Switch" on page 39.

For detailed information about the specific web interface operations and command line interface commands and problem solving, refer to the "Management Interface Reference Guide" on the CD-ROM that is supplied with the Switch or on the 3Com Web site.

Manually Configuring IP Information

You can manually configure the Switch IP information in the following way:

- Connecting to the console port — connect a workstation using a console cable to the console port of the Switch. You can then manually enter IP information using the command line interface (CLI).

Connecting to the Console Port

To set up your Switch manually you can alternatively make a connection to the console port (this example describes a local connection to the console port, rather than a remote one via a modem). You can do this whilst the Switch is offline, that is, before you connect the Switch to a network, or whilst the Switch is online, that is, connected to a network.

Pre-requisites

- A workstation with terminal emulation software installed, such as Microsoft Hyperterminal. This software allows you to communicate with the Switch via the console port directly, or through a modem.
- Documentation supplied with the terminal emulation software.
- A suitable cable:
  - An RJ-45 to DB9 converter cable (Switch 3848 only).
  - A standard null modem cable — if you are connecting directly to the console port, or
  - A standard modem cable — if you are connecting to the console port using a modem.

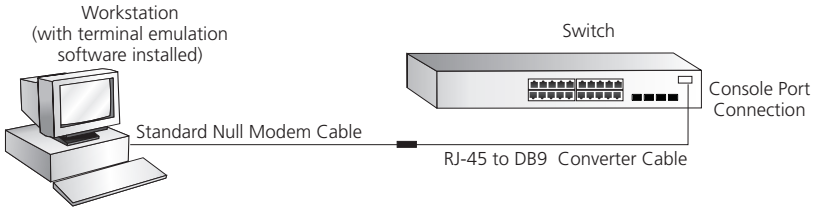
You can find pin-out diagrams for the cables in Appendix B *on* page 59.

- You need to have the following so that you can manually set up the Switch with IP information:
  - IP address
  - subnet mask
  - default gateway

Connecting the Workstation to the Switch

1 Connect the workstation to the console port using a standard null modem cable (Switch 3812 and Switch 3824) or an RJ-45 to DB9 converter cable and a standard null modem cable (Switch 3848) as shown in Figure 9 (Switch 3848 shown).

Figure 9 Connecting a workstation to the Switch via the console port



To connect the cable:

a Switch 3812 and Switch 3824: Insert one end of the null modem cable into the console port of the Switch.
Switch 3848: Insert the RJ-45 end of the RJ-45 to DB9 converter cable into the console port of the Switch.

b Switch 3848 only: Connect the null modem cable to the DB9 end of the converter cable.

c All Switches: Connect the other end of the null modem cable to one of the serial ports (also known as a COM port) on your workstation.

2 Open your terminal emulation software and configure the COM port settings to which you have connected the cable. The settings should be set to match the default settings for the Switch, which are:

- 19,200 baud
- 8 data bits
- no parity
- 1 stop bit
- no hardware flow control

Refer to the documentation that accompanies the terminal emulation software for more information.

Setting Up the Switch with IP Information

You are now ready to manually set up the Switch with IP information using the command line interface.

1 The command line interface login sequence begins as soon as the Switch detects a connection to its console port.

If the login prompt does not begin immediately, press Return a few times until it starts.

2 At the login and password prompts, enter **`admin`** as your user name and press Return at the password prompt. If you have logged on correctly, the top-level menu of the command line interface is displayed as shown in the example in Figure 10.

Figure 10 Example top-level command line interface menu

```
Menu options: --------------3Com Switch 3848    -----------------------
 bridge             - Administer bridge-wide parameters
 feature            - Administer system features
 gettingStarted     - Basic device configuration
 logout             - Logout of the Command Line Interface
 physicalInterface  - Administer physical interfaces
 protocol           - Administer protocols
 security           - Administer security
 system             - Administer system-level functions
 trafficManagement  - Administer traffic management

Type  ? for help
---------------------------------------- (1) -------------------------
Select menu option:
```

3 At the Select menu option prompt you can either:

- enter the **`protocol ip basicConfig`** command. At the `Enter configuration method` prompt enter **`manual`**. The screen prompts you to enter IP information.

or

- enter the **`gettingStarted`** command. At the `Enter configuration method` prompt enter **`manual`**. The screen prompts you to enter IP information.

4 Enter the IP address, subnet mask, and gateway IP address for the Switch. The screen displays a summary of the information entered.

If using the `gettingStarted` command you will then be prompted to enter system information, change passwords, and then given the option to carry out advanced configuration.

The initial set up of your Switch is now complete and the Switch is ready for you to set up your chosen management method. See "Methods of Managing a Switch" on page 39.

If you do not intend to use the command line interface via the console port to manage the Switch, you can logout, disconnect the serial cable and close the terminal emulator software.

Viewing Automatically Configured IP Information

If you allow the Switch to automatically configure its own IP information you need to discover and view the IP information before you can begin to manage the Switch. You can discover the IP information in two ways:

- Using 3Com Network Supervisor — this application will auto-discover the Switch and display the automatically allocated IP information assigned to the Switch.
- Connecting to the Console Port — connect a workstation using a console cable to the console port of the Switch. You can then view the IP information automatically assigned to the Switch using the command line interface (CLI).

Using 3Com Network Supervisor

You can use the 3Com Network Supervisor application provided on the CD-ROM that accompanies your Switch to discover the automatically allocated IP information.

1. Connect your Switch to the network.
2. Power-up the Switch and wait for two minutes.
3. Launch 3Com Network Supervisor and run the Auto-discovery wizard.

   3Com Network Supervisor will auto-discover the new Switch and display the IP information that has been automatically allocated to the Switch.

Most DHCP servers allow static IP addresses to be configured so that you know what IP address the Switch will be given. Refer to the documentation that accompanies your DHCP server.

If your network does not have a DHCP server, the workstation running 3Com Network Supervisor must be on the same subnet as the Switch, because Auto-IP addresses are non-routable.

Connecting to the Console Port

Alternatively, you can view the automatically configured IP information via the command line interface (CLI) through a connection to the console port. (This example describes a local connection to the console port, rather than a remote one via a modem.)

Pre-requisites

- A workstation with terminal emulation software installed, such as Microsoft Hyperterminal. This software allows you to communicate with the Switch via the console port directly, or through a modem.
- Documentation supplied with the terminal emulation software.

- A suitable cable:
  - A standard null modem cable — if you are connecting directly to the console port, or
  - A standard modem cable — if you are connecting to the console port using a modem.
  - An RJ-45 to DB9 converter cable. (Switch 3848 only)

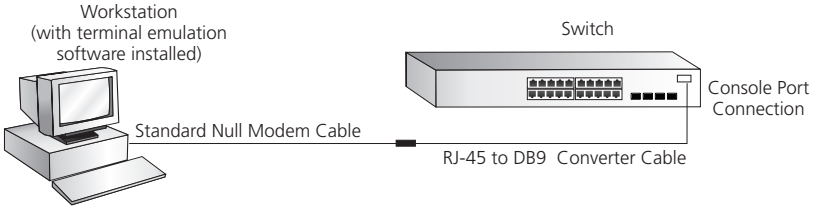
You can find pin-out diagrams for the above cables in Appendix B *on* page 59.

- A Category 5 twisted pair Ethernet cable with RJ-45 connectors to connect your Switch to the network.

Connecting the Workstation to the Switch

1 Connect the workstation to the console port using an RJ-45 to DB9 converter cable and a standard null modem cable as shown in Figure 11.

Figure 11 Connecting a workstation to the Switch via the console port



To connect the cable:

a Insert the RJ-45 end of the RJ-45 to DB9 converter cable into the console port.

b Connect the null modem cable to the DB9 end of the converter cable.

c Connect the other end of the null modem cable to one of the serial ports (also known as a COM port) on your workstation.

2 Open your terminal emulation software and configure the COM port settings to which you have connected the cable. The settings should be set to match the default settings for the Switch, which are:

- 19,200 baud
- 8 data bits
- no parity
- 1 stop bit

- no hardware flow control

Refer to the documentation that accompanies the terminal emulation software for more information.

Viewing IP Information via the Console Port

You are now ready to view the automatically allocated IP information using the command line interface.

1 Connect your Switch to the network using an Ethernet cable. As soon as a network connection is made the Switch begins the automatic IP configuration process.

The automatic IP configuration process usually completes within one minute.

2 The command line interface login sequence begins as soon as the Switch detects a connection to its console port.

If the login prompt does not begin immediately, press Return a few times until it starts.

3 At the login and password prompts, enter **admin** as your user name and press Return at the password prompt. If you have logged on correctly, the top-level menu of the command line interface is displayed as shown in the example in Figure 12.

Figure 12 Example top-level command line interface menu

```
Menu options: --------------3Com Switch 3848    ----------------------
 bridge             - Administer bridge-wide parameters
 feature            - Administer system features
 gettingStarted     - Basic device configuration
 logout             - Logout of the Command Line Interface
 physicalInterface  - Administer physical interfaces
 protocol           - Administer protocols
 security           - Administer security
 system             - Administer system-level functions
 trafficManagement  - Administer traffic management

Type  ? for help
---------------------------------------- (1) -------------------------
Select menu option:
```

4 At the Select menu option prompt enter the **protocol ip interface summary** command. A summary of the automatically allocated IP information is displayed. Make a note of the IP Address.

The initial set up of your Switch is now complete and the Switch is ready for you to set up your chosen management method. See "Methods of Managing a Switch" on page 39.

If you do not intend to use the command line interface via the console port to manage the Switch, you can disconnect the serial cable and close the terminal emulator software.

Methods of Managing a Switch

Once you have completed the initial set up of your Switch, you can decide how you wish to manage the Switch. You can use one of the following methods:

- Command line interface management
- Web interface management
- SNMP management

Command Line Interface Management

Each Switch has a command line interface (CLI) that allows you to manage the Switch from a workstation, either locally via a console port connection (see Figure 13), or remotely over the network (see Figure 14).

Figure 13 CLI management via the console port

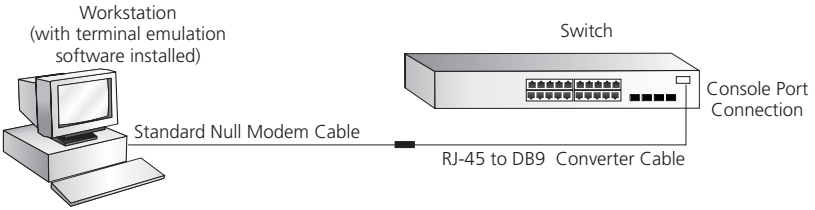
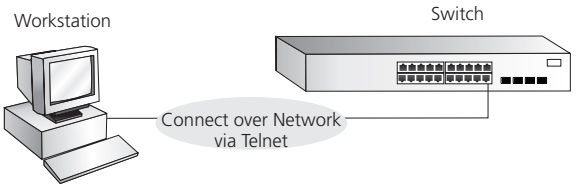


Figure 14 CLI management over the network

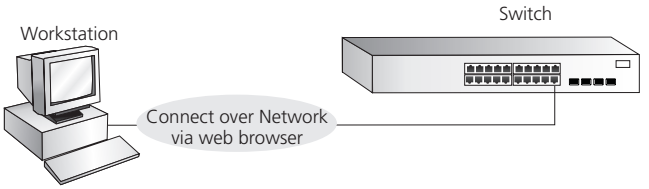


Refer to "Setting Up Command Line Interface Management" on page 40.

Web Interface Management

Each Switch has an internal set of web pages that allow you to manage the Switch using a Web browser remotely over an IP network (see Figure 15).

Figure 15 Web interface management over the network

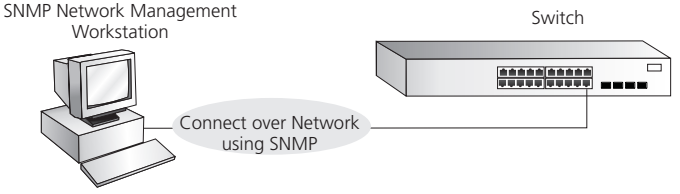


Refer to "Setting Up Web Interface Management" on page 42.

SNMP Management

You can manage a Switch using any network management workstation running the Simple Network Management Protocol (SNMP) as shown in Figure 16. For example, you can use the 3Com Network Supervisor software that is provided on the CD-ROM that accompanies your Switch.

Figure 16 SNMP management over the network



Refer to "Setting Up SNMP Management" on page 43.

Setting Up Command Line Interface Management

This section describes how you can set up command line interface management using a local console port connection or over the network.

CLI Management via the Console Port

To manage a Switch using the command line interface via the local console port connection:

1. Ensure you have connected your workstation to the console port correctly as described in "Connecting to the Console Port" on page 32.
2. Your Switch is now ready to continue being managed and/or configured through the CLI via its console port.

CLI Management over the Network

To manage a Switch using the command line interface over a network using Telnet:

1. Ensure you have already set up the Switch with IP information as described in "Setting Up Overview" on page 30.
2. Check that you have the IP protocol correctly installed on your management workstation. You can check this by trying to browse the World Wide Web. If you can browse, the IP protocol is installed.
3. Check you can communicate with the Switch by entering a **`ping`** command at the DOS prompt in the following format:

   `c:\ ping xxx.xxx.xxx.xxx`
   (where xxx.xxx.xxx.xxx is the IP address of the Switch)

   If you get an error message, check that your IP information has been entered correctly and the Switch is powered up.
4. To open a Telnet session via the DOS prompt, enter the IP address of the Switch that you wish to manage in the following format:

   `>telnet xxx.xxx.xxx.xxx`
   (where xxx.xxx.xxx.xxx is the IP address of the Switch)

If opening a Telnet session via third party software you will need to enter the IP address in the format suitable for that software.

5. At the login and password prompts, enter **`admin`** as your user name and press Return at the password prompt (or the password of your choice if you have already modified the default passwords).

If the login prompt does not display immediately, press Return a few times until it starts.

6. If you have logged on correctly, the top-level menu of the command line interface for the Switch you wish to manage is displayed as shown in Figure 10 on page 35.

Setting Up Web Interface Management

This section describes how you can set up web interface management over the network.

Pre-requisites

- Ensure you have already set up the Switch with IP information as described in "Setting Up Overview" on page 30.
- Ensure that the Switch is connected to the network using a Category 5 twisted pair Ethernet cable with RJ-45 connectors.
- A suitable Web browser.

Choosing a Browser

To display the web interface correctly, use one of the following Web browser and platform combinations:

Table 8 Supported Web Browsers and Platforms

	Windows 95	Windows 98	Windows NT 4	Windows 2000	Windows XP	Solaris 2.6
Netscape 4.76	✓	✓	✓	✓	✓	✓
Netscape 6.2	✗	✓	✓	✓	✓	✗
Internet Explorer 5.0, 5.5 and 6.0	✓	✓	✓	✓	✓	✗

For the browser to operate the web interface correctly, JavaScript and Cascading Style Sheets must be enabled on your browser. These features are enabled on a browser by default. You will only need to enable them if you have changed your browser settings.

To enable style sheets in Netscape Navigator 4.76 on Solaris 2.6, open Netscape Navigator and select *Edit* > *Preferences* > *Fonts*. Select the *Use document-specified fonts, including Dynamic Fonts* radio button. You should also set the font sizes as follows:

- Variable Width Font - Size 10.0
- Fixed Width Font - Size 12.0

This ensures that the text spacing is correct. Finally in the *Advanced* category ensure that *Enable JavaScript* and *Enable style sheets* are checked.

Web Management Over the Network

To manage a Switch using the web interface over an IP network:

1. Check that you have the IP protocol correctly installed on your management workstation. You can check this by trying to browse the World Wide Web. If you can browse, the IP protocol is installed.
2. Check you can communicate with the Switch by entering a **`ping`** command at the DOS prompt in the following format:

   `c:\ ping xxx.xxx.xxx.xxx`
   (where xxx.xxx.xxx.xxx is the IP address of the Switch)

   If you get an error message, check that your IP information has been entered correctly and the Switch is powered up.
3. Open your web browser and enter the IP address of the Switch that you wish to manage in the URL locator, for example, in the following format:

   `http://xxx.xxx.xxx.xxx`
4. At the login and password prompts, enter **`admin`** as your user name and press Return at the password prompt (or the password of your choice if you have already modified the default passwords).
5. Click on the *Device View* button to display the web management options.

Setting Up SNMP Management

Any network management application running the Simple Network Management Protocol (SNMP) can manage a Switch if:

- The correct Management Information Bases (MIBs) are installed on the management workstation.
- The management workstation is connected to the Switch using a port on the management VLAN (VLAN 1 by default). By default, all ports on the Switch are in VLAN 1.

You can use the 3Com Network Supervisor application that is provided on the CD-ROM that accompanies your Switch to provide SNMP management for your Switch. If you use 3Com Network Supervisor it automatically loads the correct MIBs and necessary files onto your workstation.

Pre-requisites

- Documentation supplied with the SNMP network management application software.

To manage your Switch using an SNMP network management application, you need to specify SNMP community strings for the users defined on the Switch. You can do this using the command line interface **`system management snmp community`** *command — refer to the command line interface section of the "Management Interface Reference Guide" for more information.*

Default Users and Passwords

If you intend to manage the Switch using the web interface or the command line interface, or to change the default passwords, you need to log in with a valid user name and password. The Switch has three default user names, and each user name has a different password and level of access. These default users are listed in Table 9.

CAUTION: *To protect your Switch from unauthorized access, you must change all three default passwords as soon as possible, even if you do not intend to actively manage your Switch*

Table 9 Default Users

User Name	Default Password	Access Level
monitor	monitor	monitor — the user can view all manageable parameters, except special/security features, but cannot change any manageable parameters.
manager	manager	manager — the user can access and change the operational parameters but not special/security features
admin	(no password)	security — the user can access and change all manageable parameters

Use the admin default user name (no password) to login and carry out initial Switch setup.

Changing Default Passwords

You can change the default passwords using either:

- The **`gettingStarted`** command on the CLI, or
- The **`security device user modify`** command on the CLI, or
- The *Security* > *Device* > *User* > *Modify* operation on the web interface.

For more information about default users and passwords, refer to the "Management Interface Reference Guide" on the Switch CD-ROM.

4 PROBLEM SOLVING

This chapter helps you to diagnose and solve problems you may have with the operation of your Switch. There is also an explanation of IP addressing.

The topics covered are:

If you experience a problem that is not listed here, it may be included in the support section of the Switch Management Interface Reference Guide on the CD-ROM that accompanies your Switch.

For Technical Support information, see Appendix D.

Solving Problems Indicated by LEDs

If the LEDs on the Switch indicate a problem, refer to the list of suggested solutions below.

The Power or Power/Self Test LED does not light

Check that the power cable is firmly connected to the Switch and to the supply outlet. If the connection is secure and there is still no power, you may have a faulty power cord or an internal fault. Check the power cord by:

- Testing it in another device
- Connecting a working power cord to the 'problem' device

Then contact your supplier for advice.

On powering up, the Power/Self Test LED lights yellow for about ten seconds after which it starts flashing green (Switch 3848 only).

On powering-up, the Self Test LED lights red (Switch 3812 and Switch 3824) or Power/Self Test LED remains yellow (Switch 3848)

This indicates one of the following:

- A port has failed and has been automatically disabled. You can verify this by checking that the Port Status LED is flashing Green/Yellow (fast). This could be due to a loop back failure. If a port fails the Switch passes its Power On Self Test and continues to operate normally.
- An internal fan has malfunctioned. If a fan has stopped spinning, power off the unit and check the air vents for obstructions. If this situation occurs, the fault LED will light red (Switch 3848 only).
- The internal PSU has failed and power is being supplied by an external Redundant Power Supply (RPS). Although the Switch has a fault it will continue to operate normally.

On Powering up, the Power/Self Test LED lights yellow for about ten seconds after which it starts flashing green. This is normal and does not indicate any of the above conditions. (Switch 3848 only)

A Port Status LED is flashing green/yellow

The port has failed and has been automatically disabled. The Switch passes its Power On Self Test and continues to operate normally, even if one or more ports are disabled.

A link is connected and yet the Port Status LED for the port does not light

Check that:

- The Switch and the device at the other end of the link (or cable) are connected securely.
- The devices at both ends of the link are powered-up
- The quality of cable is satisfactory
- Auto-negotiation settings are the same at both ends.

  Auto-negotiation problems will occur with 10BASE-T, 100BASE-TX or 1000BASE-T where auto-negotiation is disabled and incorrect cables are being used (cross-over or straight).

Solving Hardware Problems

In the rare event of your Switch unit experiencing a hardware failure, refer to the list of suggested solutions below.

A fan failure warning message is received

Your Switch has a fan monitoring system that will generate fan failure warning messages. Fan failure could potentially reduce the lifetime of the Switch. The monitoring system polls the fan status at periodic intervals while the unit is powered up.

Should one or more fans fail within the Switch, a warning message will be generated in the following ways:

- **RMON Trap** — if configured, an RMON trap is generated and sent to the management workstation.
- **Command Line Interface** — an indication of a general hardware failure is provided through the Top level menu displayed when logging on to the CLI. For more detailed information about the failure select the **`system summary`** command.
- **Web Interface** — an indication of fan failure is provided through the Device Summary table for the specific unit. In addition all Summary tables turn red to indicate the fan failure. The device mimic will also display red flashing fan icons.

For further information about RMON, refer to "Chapter 7: Status Monitoring and Statistics" in the Switch Implementation Guide supplied in PDF format on the CD-ROM that accompanies the Switch.

If a fan failure warning message is generated:

1 Power off the unit.

2 Check that the air vents are not obstructed.

3 Power cycle the unit. To do this, remove and reconnect the AC mains supply.

4 If a fan fail trap is still received, return the unit.

An SNMP thermal shutdown trap and email is received

1 Power off the unit.

2 Check that the air vents are not obstructed.

3 Check that the ambient temperatures and environmental conditions meet those specified in Appendix C.

4 Power cycle the unit. If a further thermal shutdown trap is received, return the unit.

Unit fails or SNMP thermal shutdown trap is received

1 Power cycle the unit. To do this, remove and reconnect the AC mains supply.

2 Check the command line interface (**`system summary`** command) to determine whether a thermal shutdown has occurred.

3 If no, return the unit:

If yes, check that:

- The air vents are not obstructed.
- The ambient temperatures and environmental conditions meet those specified in Appendix C.

4 Power cycle the unit. If a further thermal shutdown occurs, and all environmental conditions are satisfactory, return the unit to 3Com.

Error message indicating that the SFP transceiver is invalid

The Switch has identified that the SFP does not meet the minimum requirements for the Switch and has disabled the port. To correct this problem, completely remove the SFP and replace it with a 3Com approved SFP. See "“Approved SFP Transceivers” on page 26.

Error message indicating that the SFP transceiver is faulty

To correct this problem, completely remove the SFP and then reinsert it. Alternatively, insert another identical SFP. If the problem persists, contact 3Com Technical Support.

Solving Communication Problems

If you experience communication problems with the Switch, ensure that:

- The Switch IP address has been configured.
- If the Switch is separated from your management application by a router, ensure that the default gateway IP address within the Switch is the same as the IP address of the router.
- The Switch's IP address has been entered correctly in your network management application (for example 3Com Network Supervisor).

The following is an brief overview of IP addressing, and how to obtain a registered IP address.

IP Addressing

To be managed correctly, each device on your network (for example a Switch or Hub) must have a unique IP address. IP addresses have the format *n.n.n.n* where *n* is a decimal number between 0 and 255. An example IP address is 192.168.100.8.

The IP address is split into two parts:

- The first part ('192.168.100' in the example) identifies the network on which the device resides
- The second part ('.8' in the example) identifies the device within the network

The natural subnet mask for this example is 255.255.255.0.

If your network has a connection to the external IP network, that is, you access the Internet, you must apply for a registered IP address.

How do you obtain a registered IP Address?

The IP registration system ensures that every IP address used is unique; if you do not have a registered IP address, you may be using an identical address to someone else and your network will not operate correctly.

InterNIC Registration Services is the organization responsible for supplying registered IP addresses. The following contact information is correct at time of publication:

World Wide Web site: **`http://www.internic.net`**

If your IP network is internal to your organization only, that is, you do not access the Internet, you may use any arbitrary IP address as long as it is not being used by another device on your network. 3Com suggests you use addresses in the range 192.168.0.0 to 192.168.255.255 with a subnet mask of 255.255.255.0.

These suggested IP addresses are part of a group of IP addresses that have been set aside specially for use 'in house' only.

Solving Software Upgrade Problems

You can upgrade the management software of the Switch by using the *System* > *Control* > *Software Upgrade* operation in the Web Interface, or the **`system control softwareUpgrade`** command in the command line interface.

For details on these options, refer to the Management Interface Reference Guide supplied in HTML format on the CD-ROM that accompanies your Switch.

If you have problems with your software upgrade, refer to the Problem Solving section in the Management Interface Reference Guide.

A SAFETY INFORMATION

You must read the following safety information before carrying out any installation or removal of components, or any maintenance procedures on the Switch 3812, Switch 3824, or Switch 3848.

WARNING: *Warnings contain directions that you must follow for your personal safety. Follow all directions carefully.*
You must read the following safety information carefully before you install or remove the unit.

AVERTISSEMENT: *Les avertissements présentent des consignes que vous devez respecter pour garantir votre sécurité personnelle. Vous devez respecter attentivement toutes les consignes.*
Nous vous demandons de lire attentivement les consignes suivantes de sécurité avant d'installer ou de retirer l'appareil.

VORSICHT: *Vorsicht enthalten Anweisungen, die Sie zu Ihrer eigenen Sicherheit befolgen müssen. Alle Anweisungen sind sorgfältig zu befolgen.*
Sie müssen die folgenden Sicherheitsinformationen' sorgfältig durchlesen, bevor Sie das Gerät installieren oder ausbauen.

Alle Verfahren die in dieser Anleitung beschrieben werden gelten für alle Modelle, sofern nicht anders angegeben. Wo eine Vorgehensweise für die Schalter 3812, Schalter 3824, und Schalter 3848 gilt wird nur der Begriff Schalter verwendet.

Diese Anleitung ist für Netzwerkadministratoren vorgesehen, die für die Installation und das Einstellen von Netzwerkkomponenten verantwortlich sind; Erfahrung im Umgang mit LANs (Local Area Networks) wird vorausgesetzt.

Important Safety Information

WARNING: *Installation and removal of the unit must be carried out by qualified personnel only.*

WARNING: *If installing a Switch in a stack with SuperStack® 3 units that are narrower, the deeper units must be installed below the narrower units.*

WARNING: *The unit must be earthed (grounded).*

WARNING: *Connect the unit to an earthed power supply to ensure compliance with safety standards.*

WARNING: *Power Cord Set:*
This must be approved for the country where it is used:

U.S.A. and Canada	■ The cord set must be UL-approved and CSA certified. ■ The minimum specification for the flexible cord is: No. 18 AWG Type SV or SJ 3-conductor ■ The cord set must have a rated current capacity of at least 10A. ■ The attachment plug must be an earth-grounding type with a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A, 250V) configuration.
United Kingdom only	■ The supply plug must comply with BS1363 (3-pin 13 amp) and be fitted with a 5A fuse which complies with BS1362. ■ The mains cord must be <HAR> or <BASEC> marked and be of type H03VVF3GO.75 (minimum).
Europe only:	■ The supply plug must comply with CEE 7/7 (“SCHUKO”). ■ The mains cord must be <HAR> or <BASEC> marked and be of type H03VVF3GO.75 (minimum).
Denmark	■ The supply plug must comply with section 107-2-D1, standard DK2-1a or DK2-5a.
Switzerland	■ The supply plug must comply with SEV/ASE 1011.

WARNING: *The appliance coupler (the connector to the unit and not the wall plug) must have a configuration for mating with an EN60320/IEC320 appliance inlet.*

WARNING: *The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.*

WARNING: *This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 60950. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.*

WARNING: *France and Peru only:*
This unit cannot be powered from IT† supplies. If your supplies are of IT type, this unit must be powered by 230V (2P+T) via an isolation transformer ratio 1:1, with the secondary connection point labelled Neutral, connected directly to earth (ground).
†Impédance à la terre.

WARNING: *U.K. only:*
If connecting a modem to the console port of the Switch, only use a modem which is suitable for connection to the telecommunications system.

WARNING: *RJ-45 Ports. These are shielded RJ-45 data sockets. They cannot be used as standard traditional telephone sockets, or to connect the unit to a traditional PBX or public telephone network. Only connect RJ-45 data connectors, network telephony systems, or network telephones to these sockets.*

Either shielded or unshielded data cables with shielded or unshielded jacks can be connected to these data sockets.

WARNING: *Fiber Optic ports - Optical Safety*

Never look at the transmit laser while it is powered-up. Never look directly at the fiber ports and fiber cable ends when they are powered-up.

***WARNING*:** *Use of controls or adjustments of performance or procedures other than those specified herein may result in hazardous laser emissions.*

L'information de Sécurité Importante

AVERTISSEMENT: *L'installation et la dépose de ce groupe doivent être confiés à un personnel qualifié.*

AVERTISSEMENT: *Si vous superposez un switch plus etroit que ceux qui sont sur une pile, if fallait entasser ce switch au dessous des autres.*

AVERTISSEMENT: *Vous devez mettre l'appareil à la terre (à la masse) ce groupe.*

AVERTISSEMENT: *Brancher l'unité à une source de courant mise à la terre pour assurer la conformité aux normes de sécurité.*

AVERTISSEMENT: *Cordon électrique:*
Il doit être agréé ans le pays d'utilisation:

Etats-Unis et Canada	■ Le cordon doit avoir reçu l'homologation des UL et un certificat de la CSA
	■ Le cordon souple doit respecter, à titre minimum, les spécifications suivantes :
	■ calibre 18 AWG
	■ type SV ou SJ
	■ à 3 conducteurs
	■ Le cordon doit être en mesure d'acheminer un courant nominal d'au moins 10 A
	■ La prise femelle de branchement doit être du type à mise à la terre (mise à la masse) et respecter la configuration NEMA 5-15P (15 A, 125 V) ou NEMA 6-15P (15 A, 250 V)
Danemark	■ La prise mâle d'alimentation doit respecter la section 107-2 D1 de la norme DK2 1a ou DK2 5a
Europe	■ La prise secteur doit être conforme aux normes CEE 7/7 ("SCHKO")
	■ LE cordon secteur doit porter la mention <HAR> ou <BASEC> et doit être de type HO3VVF3GO.75 (minimum).
Suisse	■ La prise mâle d'alimentation doit respecter la norme SEV/ASE 1011

AVERTISSEMENT: *Le coupleur d'appareil (le connecteur du groupe et non pas la prise murale) doit respecter une configuration qui permet un branchement sur une entrée d'appareil EN60320/CEI 320.*

AVERTISSEMENT: *La prise secteur doit se trouver à proximité de l'appareil et son accès doit être facile. Vous ne pouvez mettre l'appareil hors circuit qu'en débranchant son cordon électrique au niveau de cette prise.*

AVERTISSEMENT: *L'appareil fonctionne à une tension extrêmement basse de sécurité qui est conforme à la norme CEI 60950. Ces conditions ne sont maintenues que si l'équipement auquel il est raccordé fonctionne dans les mêmes conditions.*

AVERTISSEMENT: *France et Pérou uniquement:*
Ce groupe ne peut pas être alimenté par un dispositif à impédance à la terre. Si vos alimentations sont du type impédance à la terre, ce groupe doit être alimenté par une tension de 230 V (2 P+T) par le biais d'un transformateur d'isolement à rapport 1:1, avec un point secondaire de connexion portant l'appellation Neutre et avec raccordement direct à la terre (masse).

AVERTISSEMENT: *Points d'accès RJ-45. Ceux-ci sont protégés par des prises de données. Ils ne peuvent pas être utilisés comme prises de téléphone conventionnelles standard, ni pour la connection de l'unité à un réseau téléphonique central privé ou public. Raccorder seulement connecteurs de données RJ-45, systèmes de réseaux de téléphonie ou téléphones de réseaux à ces prises.*

Il est possible de raccorder des câbles protégés ou non protégés avec des jacks protégés ou non protégés à ces prises de données.

AVERTISSEMENT: *Ports pour fibres optiques – sécurité sur le plan optique*

Ne regardez jamais le laser tant qu'il est sous tension. Ne regardez jamais directement le port à fibres optiques et les embouts de câbles à fibres optiques tant qu'ils sont sous tension.

AVERTISSEMENT: *L'utilisation de contrôles, de réglages de performances ou de procédures autres que ceux qui sont spécifiés au sein*

du présent document risquent d'entraîner l'exposition à des rayonnements laser dangereux.

Wichtige Sicherheitsinformationen

VORSICHT: *Die Installation und der Ausbau des Geräts darf nur durch Fachpersonal erfolgen.*

VORSICHT: *Wenn Sie einen Schalter zusammen mit kleineren Einheiten in einem Stack aufstellen, muss die tiefste Einheit unterhalb der kleineren Einheiten aufgestellt werden.*

VORSICHT: *Das Gerät muß geerdet sein.*

VORSICHT: *Das Gerät muß an eine geerdete Steckdose angeschlossen werden, die europäische Sicherheitsnormen erfüllt.*

VORSICHT: *Der Anschlußkabelsatz muß mit den Bestimmungen des Landes übereinstimmen, in dem er verwendet werden soll.*

VORSICHT: *Der Gerätestecker (der Anschluß an das Gerät, nicht der Wandsteckdosenstecker) muß eine passende Konfiguration für einen Geräteeingang gemäß EN60320/IEC320 haben.*

VORSICHT: *Die Netzsteckdose muß in der Nähe des Geräts und leicht zugänglich sein. Die Stromversorgung des Geräts kann nur durch Herausziehen des Gerätenetzkabels aus der Netzsteckdose unterbrochen werden.*

VORSICHT*: *Europe

- *Das Netzkabel muß vom Typ HO3VVF3GO.75 (Mindestanforderung) sein und die Aufschrift <HAR> oder <BASEC> tragen.*
- *Der Netzstecker muß die Norm CEE 7/7 erfüllen ("SCHUKO").*

VORSICHT: *Der Betrieb dieses Geräts erfolgt unter den SELV-Bedingungen (Sicherheitskleinstspannung) gemäß IEC 60950. Diese Bedingungen sind nur gegeben, wenn auch die an das Gerät angeschlossenen Geräte unter SELV-Bedingungen betrieben werden.*

VORSICHT: *RJ-45-Porte. Diese Porte sind geschützte Datensteckdosen. Sie dürfen weder wie normale traditionelle Telefonsteckdosen noch für die Verbindung der Einheit mit einem traditionellem privatem oder öffentlichem Telefonnetzwerk gebraucht werden. Nur RJ-45-Datenanscluße, Telefonnetzsysteme or Netztelefone an diese Steckdosen anschließen.*

Entweder geschützte oder ungeschützte Buchsen dürfen an diese Datensteckdosen angeschlossen werden.

VORSICHT: *Faseroptikanschlüsse – Optische Sicherheit*

Niemals ein Übertragungslaser betrachten, während dieses eingeschaltet ist. Niemals direkt auf die Faseransnchlüsse und auf die Faserkabelenden schauen, während diese eingeschaltet sind.

VORSICHT: *Die Verwendung von Steuerelementen oder die Anpassung von Leistungen und Verfahren in anderer als der hierin genannten Weise kann zu gefährlichen Laseremissionen führen.*

Power Cord Set — Japan

電源コードを接続する場合は、アース接続がされていることを確認してから行なってください。
アース線をはずす場合は、電源コードが接続されていないことを確認してから行なってください。

B PIN-OUTS

Null Modem Cable

Figure 17 9-pin to RS-232 25-pin (Switch 3812 and Switch 3824)

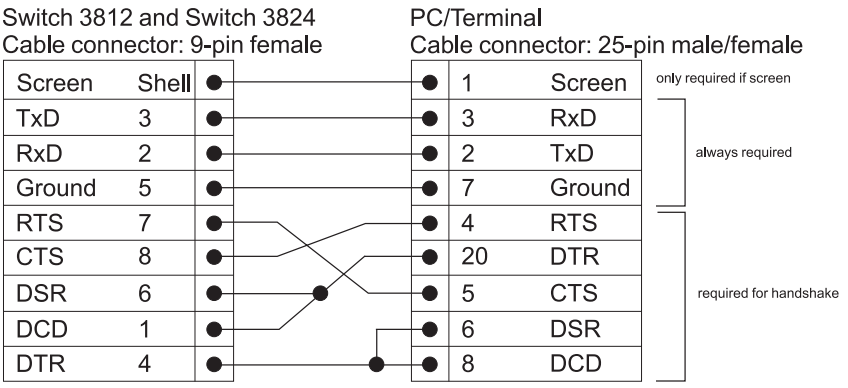
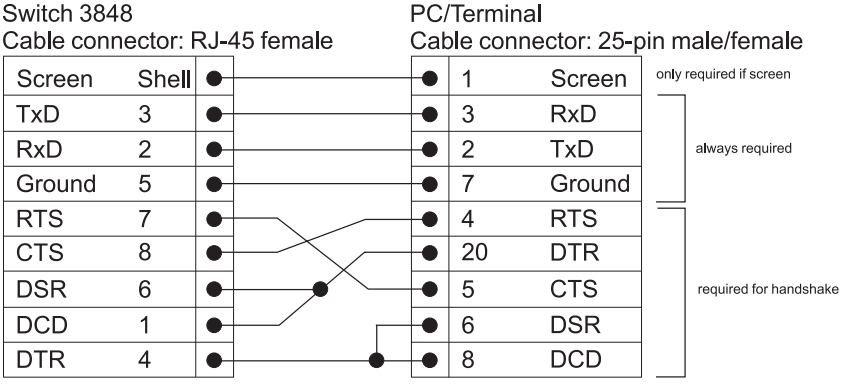


Figure 18 RJ-45 to RS-232 25-pin (Switch 3848)



PC-AT Serial Cable

Figure 19 9-pin to 9-pin (Switch 3812 and Switch 3824)

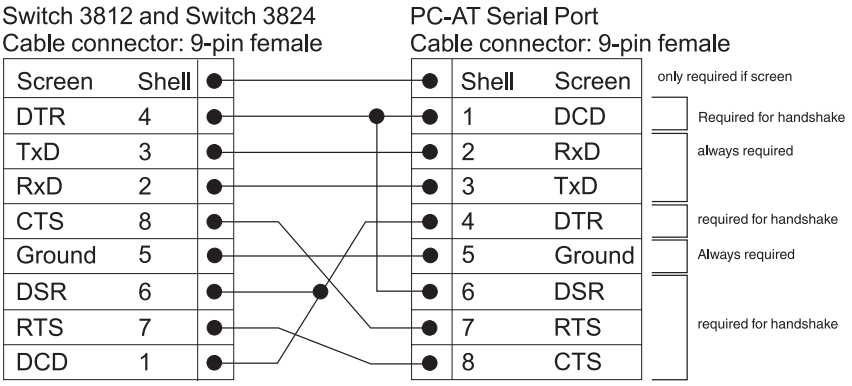
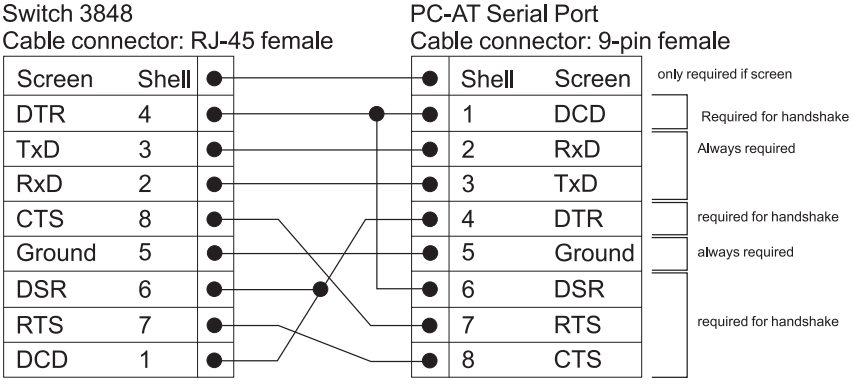


Figure 20 RJ-45 to 9-pin (Switch 3848)



Modem Cable

Figure 21 9-pin to RS-232 25-pin (Switch 3812 and Switch 3824)

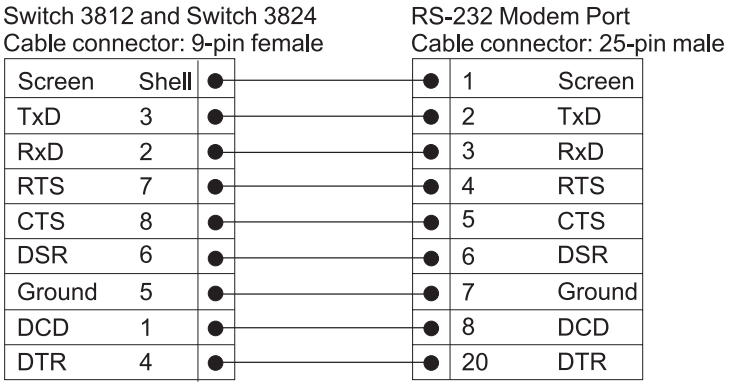
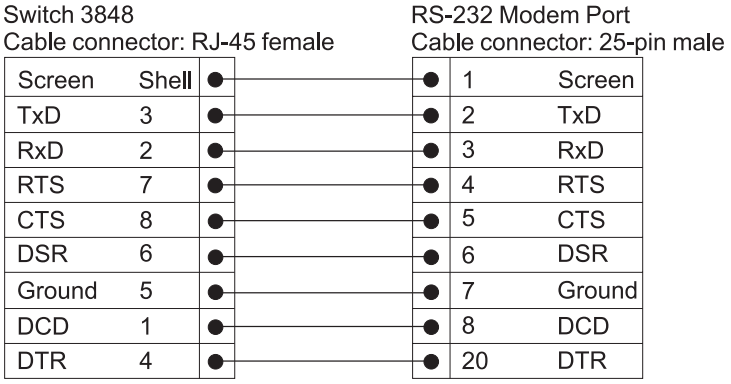


Figure 22 RJ-45 to RS-232 25-pin (Switch 3848)



RJ-45 Pin Assignments

Pin assignments are identical for 10/100 and 1000 RJ-45 connectors.

Table 10 Pin assignments

Pin Number	10/100	1000
Ports configured as MDI		
1	Transmit Data +	Bidirectional Data A+
2	Transmit Data -	Bidirectional Data A-
3	Receive Data +	Bidirectional Data B+
4	Not assigned	Bidirectional Data C+

Pin Number	10/100	1000
5	Not assigned	Bidirectional Data C-
6	Receive Data –	Bidirectional Data B-
7	Not assigned	Bidirectional Data D+
8	Not assigned	Bidirectional Data D-

Table 11 Pin assignments

Pin Number	10/100	1000
Ports configured as MDIX		
1	Receive Data +	Bidirectional Data B+
2	Receive Data -	Bidirectional Data B-
3	Transmit Data +	Bidirectional Data A+
4	Not assigned	Bidirectional Data D+
5	Not assigned	Bidirectional Data D-
6	Transmit Data -	Bidirectional Data A-
7	Not assigned	Bidirectional Data C+
8	Not assigned	Bidirectional Data C-

C TECHNICAL SPECIFICATIONS

Switch 3812, Switch 3824, and Switch 3848

Physical Dimensions	
Switch 3812 and Switch 3824	Height: 43.6 mm (1.72 in) x Width: 440 mm (17.3 in.) x Depth: 325 mm (12.8 in.). Weight: 3.7 kg (8.2 lb) (Switch 3812), 4.0 kg (8.8 lb) (Switch 3824).
Switch 3848	Height: 43.6 mm (1.72 in) x Width: 440 mm (17.3 in.) x Depth: 415 mm (16.3 in.). Weight: 5.0 kg (11.0 lbs).
Environmental Requirements	
Operating Temperature	0 ° to 40 °C (32 ° to 104 °F)
Storage Temperature	–10 ° to +70 °C (14 ° to 158 °F)
Operating Humidity	10–95% relative humidity, non-condensing
Standards	EN60068 to 3Com schedule (package testing: paras 2.1, 2.2, 2.30 and 2.32. Operational testing: paras 2.1, 2.2, 2.30 and 2.13.
Safety	
Agency Certifications	UL 60950, EN60950, CSA 22.2 No. 60950, IEC 60950, IEC825-1, EN60825-1
EMC	
Emissions	CISPRR 22 Class A, EN55022 Class A, FCC Part 15 Subpart B Class A, ICES-003 Class A, VCCI Class A, EN61000-3-2, EN61000-3-3
Immunity	EN 55024
Power Consumption	
Switch 3812	53 W maximum
Switch 3824	82 W maximum
Switch 3848	150 W maximum
Heat Dissipation	
Switch 3812	181 BTU/hour maximum
Switch 3824	280 BTU/hour maximum
Switch 3848	511 BTU/hour maximum
Power Supply	
AC Line Frequency	50/60 Hz

Input Voltage Options	100–240 VAC
Current Rating	0.44 A maximum (Switch 3812) 0.69 A maximum (Switch 3824) 1.25 A maximum (Switch 3848)

D OBTAINING SUPPORT FOR YOUR PRODUCT

Register Your Product to Gain Service Benefits

To take advantage of warranty and other service benefits, you must first register your product at **http://eSupport.3com.com/**. 3Com eSupport services are based on accounts that you create or have authorization to access. First time users must apply for a user name and password that provides access to a number of eSupport features including Product Registration, Repair Services, and Service Request.

Purchase Value-Added Services

To enhance response times or extend warranty benefits, contact 3Com or your authorized 3Com reseller. Value-added services can include 24x7 telephone technical support, software upgrades, onsite assistance or advance hardware replacement. Experienced engineers are available to manage your installation with minimal disruption to your network. Expert assessment and implementation services are offered to fill resource gaps and ensure the success of your networking projects. More information on 3Com Extended Warranty and Professional Services is available at **http://www.3com.com/**

Contact your authorized 3Com reseller or 3Com for additional product and support information.

Troubleshoot Online

You will find support tools posted on the 3Com web site at **http://www.3com.com/**

- **3Com Knowledgebase** helps you troubleshoot 3Com products. This query-based interactive tool is located at **http://knowledgebase.3com.com** and contains thousands of technical solutions written by 3Com support engineers.

- **Connection Assistant** helps you install, configure and troubleshoot 3Com desktop and server NICs, wireless cards and Bluetooth devices. This diagnostic software is located at:
  http://www.3com.com/prodforms/software/connection_assistant/ca_thankyou.html

Access Software Downloads

Software Updates are the bug fix / maintenance releases for the version of software initially purchased with the product. In order to access these Software Updates you must first register your product on the 3Com web site at **http://eSupport.3com.com/**.

First time users will need to apply for a user name and password. A link to software downloads can be found at **http://eSupport.3com.com/**, or under the Product Support heading at **http://www.3com.com/**

Software Upgrades are the software releases that follow the software version included with your original product. In order to access upgrades and related documentation you must first purchase a service contract from 3Com or your reseller.

Contact Us

3Com offers telephone, e-mail and internet access to technical support and repair services. To access these services for your region, use the appropriate telephone number, URL or e-mail address from the list below. You will find a current directory of support telephone numbers posted on the 3Com web site at **http://csoweb4.3com.com/contactus/**

Telephone Technical Support and Repair

To obtain telephone support as part of your warranty and other service benefits, you must first register your product at
http://eSupport.3com.com/

When you contact 3Com for assistance, please have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision level
- Diagnostic error messages
- Details about recent configuration changes, if applicable

To send a product directly to 3Com for repair, you must first obtain a return authorization number (RMA). Products sent to 3Com, without authorization numbers clearly marked on the outside of the package, will be returned to the sender unopened, at the sender's expense. If your product is registered and under warranty, you can obtain an RMA number online at **http://eSupport.3com.com/**. First time users will need to apply for a user name and password.

Telephone numbers are correct at the time of publication. Find a current directory of support telephone numbers posted on the 3Com web site at **http://csoweb4.3com.com/contactus/**

Country	Telephone Number	Country	Telephone Number
Asia, Pacific Rim Telephone Technical Support and Repair			
Australia	1 800 678 515	Philippines	1235 61 266 2602 or
Hong Kong	800 933 486		1800 1 888 9469
India	+61 2 9424 5179 or	P.R. of China	800 810 3033
	000800 650 1111	Singapore	800 6161 463
Indonesia	001 803 61009	S. Korea	080 333 3308
Japan	00531 616 439 or	Taiwan	00801 611 261
	03 3507 5984	Thailand	001 800 611 2000
Malaysia	1800 801 777		
New Zealand	0800 446 398		
Pakistan	+61 2 9937 5083		
You can also obtain support in this region using the following e-mail: **apr_technical_support@3com.com**			
Or request a repair authorization number (RMA) by fax using this number:			+ 65 543 6348
Europe, Middle East, and Africa Telephone Technical Support and Repair			
From anywhere in these regions, call:	+44 (0)1442 435529		
From the following countries, you may use the numbers shown:			
Austria	01 7956 7124	Luxembourg	342 0808128
Belgium	070 700 770	Netherlands	0900 777 7737
Denmark	7010 7289	Norway	815 33 047
Finland	01080 2783	Poland	00800 441 1357
France	0825 809 622	Portugal	707 200 123
Germany	01805 404 747	South Africa	0800 995 014
Hungary	06800 12813	Spain	9 021 60455
Ireland	1407 3387	Sweden	07711 14453
Israel	1800 945 3794	Switzerland	08488 50112
Italy	199 161346	U.K.	0870 241 3901

You can also obtain support in this region using the following URL:
http://emea.3com.com/support/email.html

Country	Telephone Number	Country	Telephone Number
Latin America Telephone Technical Support and Repair			
Antigua	1 800 988 2112	Guatemala	AT&T +800 998 2112
Argentina	0 810 444 3COM	Haiti	57 1 657 0888
Aruba	1 800 998 2112	Honduras	AT&T +800 998 2112
Bahamas	1 800 998 2112	Jamaica	1 800 998 2112
Barbados	1 800 998 2112	Martinique	571 657 0888
Belize	52 5 201 0010	Mexico	01 800 849CARE
Bermuda	1 800 998 2112	Nicaragua	AT&T +800 998 2112
Bonaire	1 800 998 2112	Panama	AT&T +800 998 2112
Brazil	0800 13 3COM	Paraguay	54 11 4894 1888
Cayman	1 800 998 2112	Peru	AT&T +800 998 2112
Chile	AT&T +800 998 2112	Puerto Rico	1 800 998 2112
Colombia	AT&T +800 998 2112	Salvador	AT&T +800 998 2112
Costa Rica	AT&T +800 998 2112	Trinidad and Tobago	1 800 998 2112
Curacao	1 800 998 2112	Uruguay	AT&T +800 998 2112
Ecuador	AT&T +800 998 2112	Venezuela	AT&T +800 998 2112
Dominican Republic	AT&T +800 998 2112	Virgin Islands	57 1 657 0888

You can also obtain support in this region using the following:

Spanish speakers, enter the URL:
http://lat.3com.com/lat/support/form.html

Portuguese speakers, enter the URL:
http://lat.3com.com/br/support/form.html

English speakers in Latin America should send e-mail to:
lat_support_anc@3com.com

US and Canada Telephone Technical Support and Repair	
	1 800 876 3266

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REGULATORY NOTICES

FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference to radio communications, in which case the user will be required to correct the interference at their own expense.

INFORMATION TO THE USER

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the equipment with respect to the receiver.
- Move the equipment away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

How to Identify and Resolve Radio-TV Interference Problems

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

In order to meet FCC emissions limits, this equipment must be used only with cables which comply with IEEE 802.3.

CSA STATEMENT

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CE STATEMENTS (EUROPE)

This product complies with the European Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC as amended by European Directive 93/68/EEC.

Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

You must only insert a 3Com approved SFP transceiver into the Switch. These are listed in the "Approved SFP Transceivers" section of the Getting Started Guide.

VCCI STATEMENT

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。