Sportster ISDN 128K Terminal Adapter Installation Guide

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ABOUT THIS GUIDE

Introduction

This manual provides step-by-step instructions for installing and setting up the Sportster ISDN 128K terminal adapter hardware and software to complete a call across the ISDN network.

This guide is intended for beginning and advanced users of ISDN products.

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

Finding Specific Information in This Guide

This table shows the location of specific information in this guide.

If you are looking for	Turn to
An introduction to the Sportster ISDN 128K TA	Chapter 1
Information about setting up ISDN Service	Chapter 2
A checklist to guide you through the installation process	Chapter 3
Instructions on how to install the Sportster hardware	Chapter 4
Instructions on how to install and configure the Sportster software	Chapter 5
Technical Support Information	Appendix A
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Conventions

Table 1 Notice Icons

Icon	Notice Type	Description
	Information note	Important features or instructions
	Caution	Information to alert you to potential damage to a program, system, or device
	Warning	Information to alert you to potential personal injury

Additional Information

When using the unit, observe the following safety information:

- Retain this install guide for later use and pass it on to subsequent owners/managers of the unit.
- Protect the unit from sudden, transient increases and decreases in electrical power by fitting an in-line surge suppressor or uninterruptible power supply.
- Products manufactured by 3Com are safe and without risk provided they are installed, used, and maintained in good working order and in accordance with their instructions and recommendations.
- Should any of the following conditions occur, isolate the electricity supply and refer to your 3Com reseller.
  - If the unit begins to make an odd noise, smell or smoke.
  - If the unit shows signs of a distinct change in performance.
- Never install telephone wires during a lightning storm, or install telephone connection sockets in wet locations (unless the socket is specifically designed for wet locations).

- Do not touch uninstalled telephone wires or terminals unless the telephone line has been disconnected at the network interface. Always exercise caution when installing or modifying telephone lines.
- Do not use a telephone that is connected to the unit to report a gas leak in the vicinity of the leak.
- Do not use a telephone that is connected to the unit (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not spill food or liquids on the unit. If the unit gets wet, isolate the electrical supply and contact your 3Com reseller.
- Do not push any objects into the openings of the unit. Doing so can cause fire or electric shock by shorting out internal components.
- Ensure nothing rests on the unit's system cables and that the cables are not located where they can be stepped on and cause damage to the unit.
- Keep the unit away from radiators and heat sources. Allow 25mm (1 inch) around the unit or stack to provide adequate air circulation.
- Install the unit in a clean area that is free from dust or extreme temperatures.
- The unit has been designed to be a free standing unit or stacked with other units. Do not place anything else on top of the unit's case.
- Allow a clearance gap of at least a 150 mm from the rear panel of the unit, to allow for cable access.

Year 2000 Compliance

For information on Year 2000 compliance and 3Com products, visit the 3Com Year 2000 web page:

http:// www.3com.com/products/usr_yr2000_stmnt.html

ISDN Resources on the Internet

- Bellcore ISDN Home Page, on the World Wide Web: http://www.bellcore.com/ISDN/ISDN.html
- The frequently asked questions (FAQ) list from the Internet newsgroup **comp.dcom.isdn**, available from ftp://rtfm.mit.edu/pub/usenet/
- Dan Kegel's ISDN Page, on the World-Wide Web at http://alumni.caltech.edu/~dank/isdn/

1 OVERVIEW

Introduction

This chapter is separated into the following sections:

- What does the Sportster ISDN 128K TA Do?
- What is ISDN?

What Does the Sportster ISDN 128K TA Do?

You can use the Sportster ISDN 128K terminal adapter (TA) to connect your personal computer (PC) to a remote computer network. The remote network can be the Internet or, if you are a telecommuter, it can be your office network.

Access to the Internet

If you are connecting to the Internet you will be able to use all of the features offered by your Internet access program. These features vary from program to program. They may include browsing, uploading and downloading files, using electronic mail, and accessing World Wide Web sites and chat rooms.

Telecommuting

If you are telecommuting, you will use the office network just as you would if you were at work. For example, if you normally log into the office network for file retrieval and storage, you will use the same procedure from your home PC to open and save files. If you use electronic mail over a local area network (LAN) at work, you will be able use the same electronic mail program at your home.

Peer-to-Peer Network Programs

You can also use the adapter to connect to a single remote PC that contains another Sportster.

This allows you to use peer-to-peer network programs for file sharing between two PCs.

Peripheral Devices

Additionally, you can attach a telephone, fax or modem to the Sportster and use these devices at the same time that you're transferring data. To hear incoming calls on your telephone handset and receive modem/fax calls, you require an optional External Ring Generator.

What is ISDN?

The Sportster uses a special digital telephone line to connect your computer with the remote network or PC. These lines are called ISDN, or Integrated Services Digital Network. ISDN is a service provided by your phone company that lets you send digital information (the kind you store in a computer) directly over the phone lines. You can send more information and send it faster over an ISDN line than you can over analog telephone lines.

The following diagram shows how your adapter can connect to the Internet or to an office network. The telephone company supplies the ISDN lines and the ISDN network. You set up your PC software to call the ISDN phone number assigned to the remote device or network you wish to access.

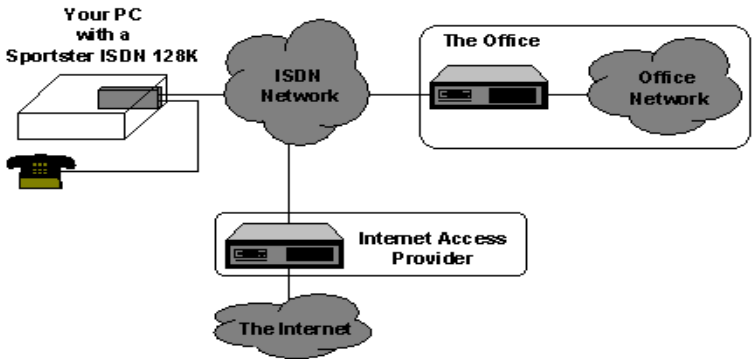


Figure 1-1 Using the Sportster ISDN 128K Adapter

Digital technology makes it possible to combine transmissions from a variety of devices into one network. These devices include computers, telephones, and fax machines.

Because ISDN was designed for transmitting *digital* information, it has many advantages over the analog telephone network. The benefits to you include more accurate and reliable digital transmission, increased transmission speeds (up to 64,000 bits per second (64 Kbps) per channel), and quicker call setups and teardowns.

The ISDN Basic Rate Interface

Physical Appearance

The Sportster communicates over a telephone line called an ISDN Basic Rate Interface (BRI) line. You must order a BRI line from your local telephone company before you can use your Sportster. Chapter 2 explains how to order ISDN service and which services to request.

BRI uses the same wires that are in place for your analog telephone lines. The difference between ISDN lines and regular telephone lines lies in the equipment that you attach on each end of a line and in the type of electronic signaling that these lines carry; there is no physical difference between analog and ISDN telephone wires.

The BRI line uses an RJ-45 or RJ-11 wall jack. RJ-45 connectors have 8 pins and RJ-11s have 4 or 6 pins. You can plug an ordinary RJ-11 connector, the kind used with your regular analog telephone, into an RJ-45 jack, and the Sportster adapter will work correctly. However, an RJ-45 connector will not fit in an RJ-11 jack.

At their end of the BRI, the telephone company adds an electronic device called a *line card*, which adapts your line for ISDN signaling.

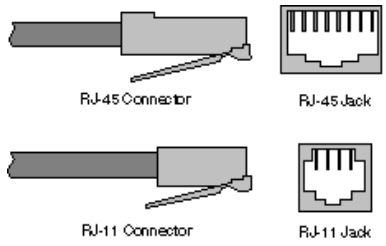


Figure 1-2 RJ-45 and RJ-11 Connectors and Jacks

B channels and D channels

Although Basic Rate Interface signals are transmitted over an ordinary pair of wires, BRI typically contains three channels:

- One 16 Kbps D channel for setting up calls
- Two 64- Kbps B channels for carrying data and/or voice calls

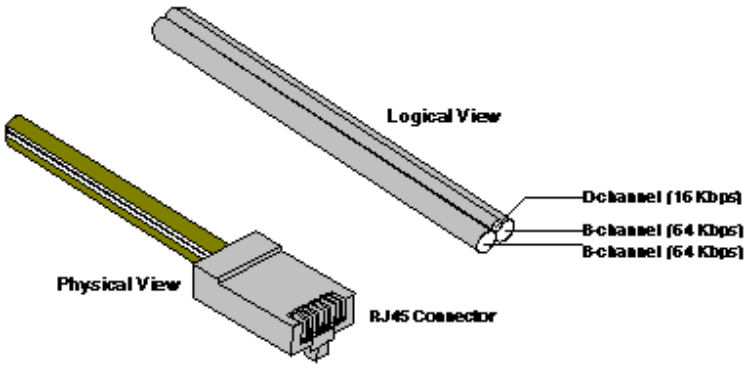


Figure 1-3 ISDN BRI—Three Logical Channels over One Pair of Wires

Required Components

Signals from the BRI line must be translated into signals that your computer can understand. A couple of devices must be in place to perform the translation. Figure 1-4

depicts them as you would see them on your desktop; and Table 1–1 describes them verbally.

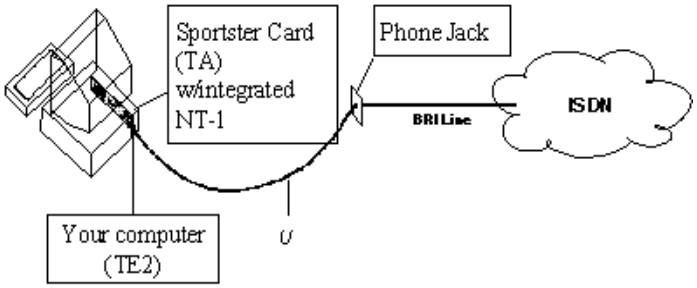


Figure 1-4 Typical Installation of a U Interface Sportster 128K

Table 1-1 ISDN BRI Components in Figure 1-4

Component	Definition
TE2	Terminal Equipment 2. A device, such as your computer, that does not have built-in ISDN capability. A TE2 requires a Terminal Adapter (TA), such as the Sportster, to communicate over the ISDN.
TA	Terminal Adapter. A device that translates between non-ISDN signaling, such as the EIA-232 signaling that occurs at your computer's serial port, and the S/T interface signaling that the NT-1 understands.
NT-1	Network Termination [Unit] -1. An NT-1 translates between the short-distance signaling used at the S/T interface and the longer-distance signaling used at the U interface. An NT-1 also converts from the two wires used for the phone line to the six or eight wires needed for the S/T bus.

2 ORDERING ISDN SERVICE

Introduction

Although efforts are being made to simplify ISDN ordering, it can still be a complex process. This chapter should give you and your local telephone company all the information you need to set up your ISDN lines correctly.

Setting Up ISDN Service

Ordering ISDN

Here's an overview of the ordering process:

1. Call your local telephone company to request an ISDN line. Explain the Sportster's requirements as described in this chapter.
2. Your local telephone company will give you information about your line and its settings.
3. Program the line's settings into your Sportster.

Requesting Service from the Telephone Company

Call the ISDN unit of your local telephone company. Provide them with the information presented in the next section, *What to Tell Your Telephone Company.* Then ask them for the information outlined in the section *What to Ask Your Telephone Company.*

What to Tell Your Telephone Company

1. Request Bellcore Capability Package K or M or EZ-ISDN1.
   a. Capability Package K and EZ-ISDN1 include voice/data calls on one B channel and data calls on the other B channel. They also feature Caller ID, Additional Call Offering (ACO), and Flexible Calling. However, the Sportster will not support the Flexible Calling Option.If you choose one of these packages, the phone number

supporting voice/data calls should be entered as the second phone number when you configure the Sportster (Chapter 5).

Additional Call Offering is useful if both your B channels are busy and you wish to be notified of an incoming call. Normally, the caller will get a busy signal if both B channels are in use.

b Capability Package M includes voice/data calls on both B channels and Caller ID. Choose this package if you do not want the ACO option available with Capability Package K.

2 If your telephone company doesn't recognize Bellcore capability packages, you can also ask for a service package called Intel Blue, which has characteristics nearly identical to Bellcore M. Either package will provide you with 128 Kbps transmission potential, which will enable you to take full advantage of your Sportster's Multi-link PPP (MLPPP) support.

If your phone company recognizes neither of these service packages, you should request the following specific ISDN services and service characteristics:

- ISDN BRI service
- 2 B channels
  - B1/B2: Circuit-switched voice/data (CSV/D) call types
- Enable both B channels to work simultaneously
- No packet mode (X.25) data on the B or D channels
- No EKTS or CACH EKTS services
- Terminal type A
- Dynamic TEI assignments
- Low and high-layer compatibility data transfer ON
- Called and calling party subaddress information ON
- Idle call appearance
- **No** additional call appearances
- Flexible calling features or buttons for voice, such as:
  - ACO
  - Caller ID
- 2B1Q line coding

- RJ-45 (8 pin) or RJ-11 (4 or 6 pin) connector

3 Specify your preferred long-distance provider (i.e., AT&T).

What to Ask Your Telephone Company

Make sure your local telephone company provides you with the following information.

1 Find out at which type of central office switch your ISDN line will terminate, and which protocol will be controlling your calls.

a Any switch running the National ISDN protocol (NI-1)

b AT&T 5ESS switch running AT&T's Custom protocol

c Nortel DMS-100 switch running NT's Custom protocol

If your telephone company's switch detects power losses to the on-board or external NT-1, it may generate an alarm. (Older Nortel DMS-100 Custom switches may function in this way.) When the alarm is generated, the switch may temporarily disconnect your line.

2 How many phone numbers are assigned to your ISDN line? Note that for AT&T 5ESS Custom switches there should be only one number.

❑ **1** ❑ **2**

3 What are the phone numbers? If the line is provisioned for voice and data there may be a separate number for the B channel that carries voice.

Primary data number _____

Voice/secondary number (if used)_____

Service Profile Identifiers (SPIDs) [if used]_____

3 INSTALLATION CHECKLIST

Introduction

The Installation Checklist tells you what things you need to have before you can install, set up, and operate the Sportster 128K TA. The installation instructions in the next chapter assume that the Checklist has been completed, so take the time to fill it out now. It will make the installation and set up process go more smoothly and quickly.

Installation Checklist

ALL USERS: Required Items

- PC - Intel486 or better
- Sportster ISDN 128K U or S/T Interface TA
- ISDN cable for Sportster
- Sportster ISDN 128K Terminal Adapter Installation Guide (this guide)
- Release Notes
- Installation and Setup CD-ROM
- NT-1 (for S/T Interface adapter only)
- Complete information from your telephone company about your ISDN Service (see checklist in Chapter 2)

ALL USERS: Optional Items

- Analog or ISDN (S/T only) Telephone
- Telephony Software, such as a phone manager
- External Ring Generator

INTERNET ACCESS ONLY

USERS: Required Items

- An account with an Internet access provider, who should tell you the following information:

_____ An ISDN phone number

_____ A user name

_____ A user password

Which connection protocol your provider supports:

❑ **PPP** ❑ **MLPPP**

For Windows 95/98 configuration

For WinISDN, you must have an Internet access application software package, such as Explore OnNet or Chameleon, that is compatible with WinISDN.

For Dial-Up Networking, you must have enabled Dial-Up Networking when you set up Windows 95 or 98 and have an Internet browser application such as Netscape Navigator or Microsoft Internet Explorer.

If you are new to Windows Networking, you should review your Windows online help topics before proceeding with Installation. Some helpful topics are:

Installing a network protocol

Changing settings for a network protocol
Changing properties for a Dial-Up connection
Using Dial-Up Networking to connect to another computer or network

Connecting to the Internet using Dial-Up Networking

For Windows NT 4.0 configuration

You must have an Internet access application software package, Netscape Navigator, or Microsoft Explorer, that is compatible with Remote Access Software

4 Hardware Installation

Introduction

Now that your ISDN service has been ordered and installed and you have completed the tasks in the Installation checklist, you are ready to install your Sportster ISDN 128K TA. This chapter guides you through the hardware installation process. It is separated into the following sections:

- Installation Overview
- Hardset Jumpers (Windows NT 4.0 Only)
- Install the Sportster in your PC
- Connect the ISDN Line
- Connect a phone (optional)
- Turn on your PC
- Install your Sportster software

Installation Overview

Installing the Sportster is done in just four or five easy tasks. Here's the overview:

1. Hardset Jumpers (Windows NT 4.0 Only)
2. Install the Sportster in your PC
3. Connect the ISDN line
4. Connect a phone (optional)
5. Turn on your PC
6. Install your Sportster software

Hardset Jumpers (Windows NT 4.0 Only)

If you have Windows NT, before you install the hardware you must hard set the jumper settings on your Sportster to match the I/O base address settings you will configure later.

Figures 4-3 through 4-6 show you how your jumpers are positioned depending on your device (If you have an S/T interface device, consult_Appendix B: S/T Termination Settings). You must match the jumper setting with the corresponding I/O base address.

The address you configure for your Sportster should not conflict with any other device on your PC. To determine which I/O base address setting is "free," follow these steps:

1. From the Windows NT desktop, select **Start/Run**. Type **Winmsd** in the Open field and press the **OK** button.
2. Select the Resource tab and press the **I/O Port** button. Determine which of the I/O base address settings are free. The settings are listed in "pairs" (300/700 is 300, 320/720 is 320, and 340/740 is 340).
3. Hardset the jumpers to the free resource you will configure for your Sportster.

Install the Sportster in Your PC

The Sportster is a U.L.-listed Information Technology Equipment Accessory and is intended for use in a U.L.-listed computer. Refer to your PC user's guide to see that it meets this specification, and for instructions specific to your brand and model on how to install a new adapter. You will need a screwdriver or wrench that fits your computer's screws.

Follow these steps to install the Sportster:

1. Turn off and unplug the PC, then remove the cover. You don't need to disconnect anything but the power. If you don't know how to remove the cover, see your computer user's guide.
2. Remove the screw holding the metal bracket covering an unused 16-bit expansion slot (see Figure 4-1), and then

remove the bracket. You will not need the bracket to install your Sportster. You will need the screw, so set it aside.

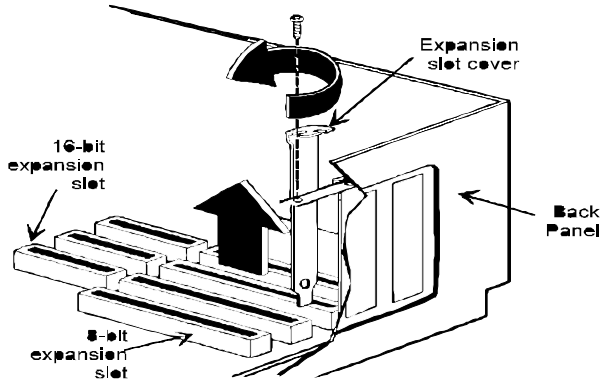


Figure 4-1 Expansion Slot

Don't shock yourself. Unplug the computer and any attached equipment before you install the adapter.

Don't damage the adapter with static electricity. Ground yourself by touching the computer's metal back or side panel.

3 Before removing the adapter from its antistatic bag, ground yourself by touching the metal part of the computer's case. Then remove the adapter by grabbing the non-metallic sides of the adapter.

4 Determine the type of Sportster you are installing. You can easily determine the type of adapter by examining the bracket style located on the end of the board. Figure 4-2 illustrates all possible Sportster types.

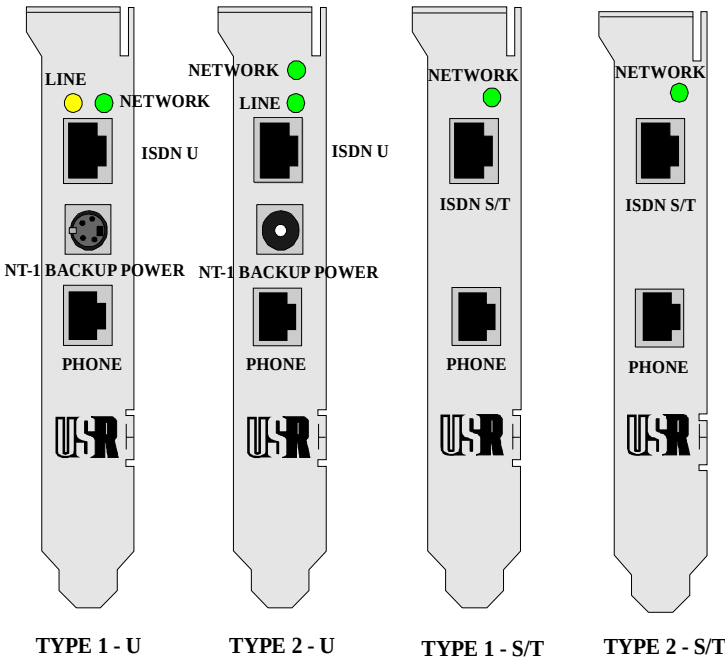


Figure 4-2 Sportster bracket types

5 Verify that the jumpers on your Sportster are terminated correctly (See Figures 4-3 through 4-6 for factory defaults).

If you remove the shunt that covers the jumpers be careful to replace it so that the pins from one jumper are not connected to the pins of an adjacent jumper. The shunt should slip easily onto the pins. Do not force the shunt onto the pins. They can be easily damaged.

6 Insert the Sportster into the expansion slot in the computer. Hold the adapter at the top corners and push down. The adapter should slide easily most of the way. When you feel resistance, make sure the adapter is aligned with the slot, and then push firmly to seat the adapter in the slot.

7 Fasten the Sportster's metal retaining bracket with the screw you removed earlier. Replace the PC cover, but don't plug in the power cord yet.

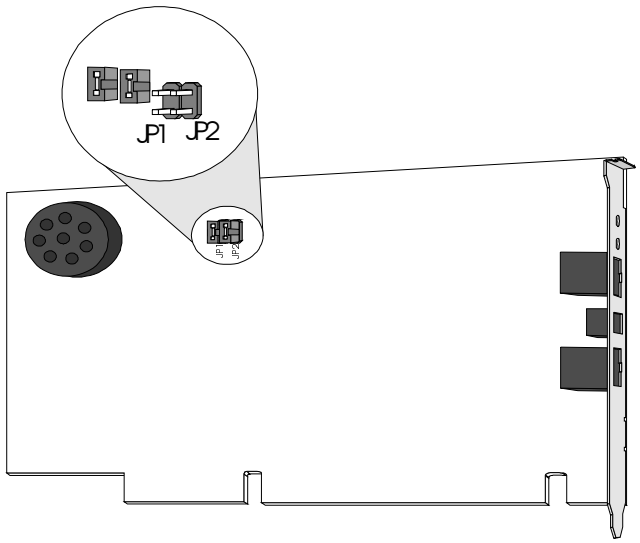


Figure 4-3 Jumper locations for the Type 1 - U Interface

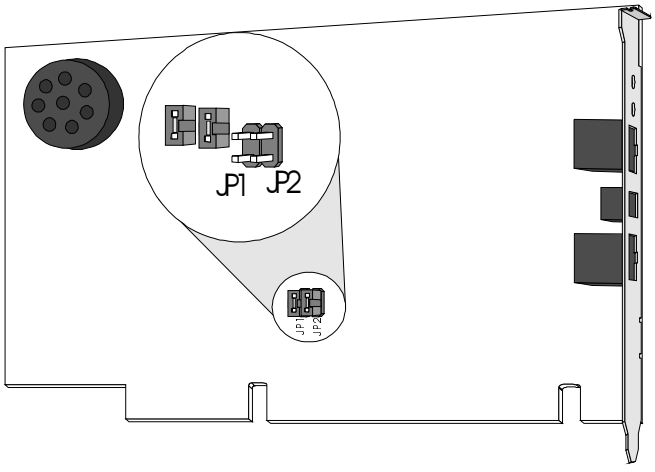


Figure 4-4 Jumper locations for the Type 2 - U Interface

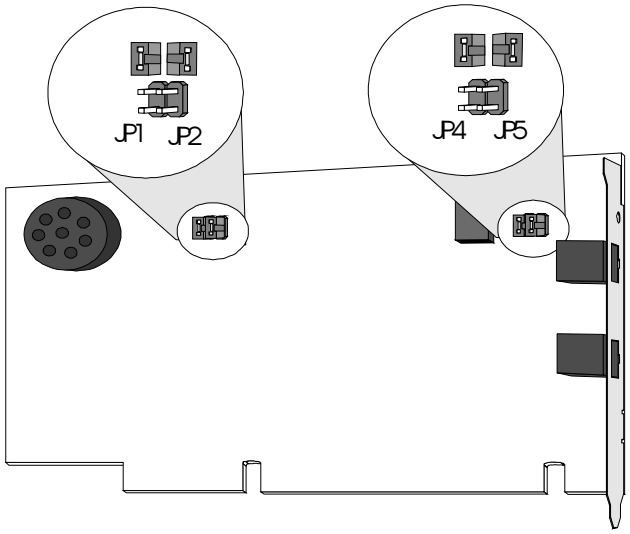


Figure 4-5 Jumper locations for the Type 1 - S/T Interface

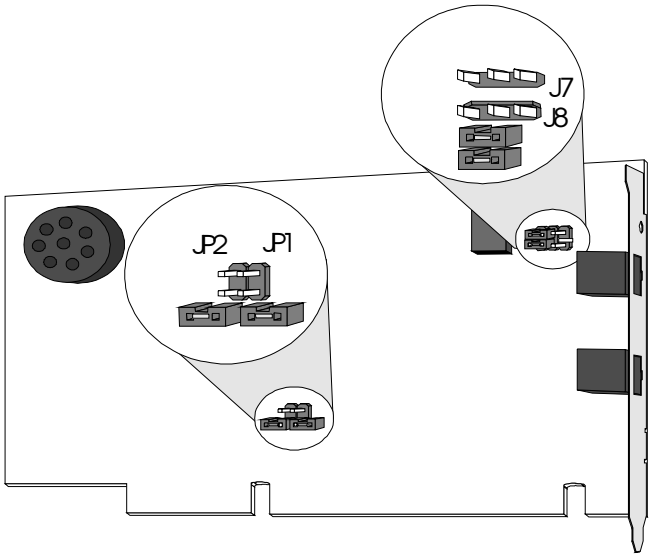


Figure 4-6 Jumper locations for the Type 2 - S/T Interface

Connect the ISDN Line

How you connect the Sportster to the ISDN line depends on whether you have a U interface or S/T interface adapter. If you are unsure which type you have, look at the bracket. If there are two LEDs and a center power supply port, it is a U interface board. If it has one LED and there is no center power supply port, it is an S/T interface board.

If you have a U Interface adapter

1. Plug one end of the cable that came with your Sportster into the top jack on the adapter and plug the other end into the ISDN wall jack.
2. (Optional) Install the NT-1 Backup Kit. The Kit provides power to the NT-1 when your computer is off. You may wish to install this piece of equipment if your telephone company's switch detects the loss of power to the NT-1 and then generates an alarm. Instructions for installing this backup power supply are included with the Kit.

The NT-1 Backup Kit will NOT allow you to receive or place phone calls with the analog device port when your PC is powered OFF.

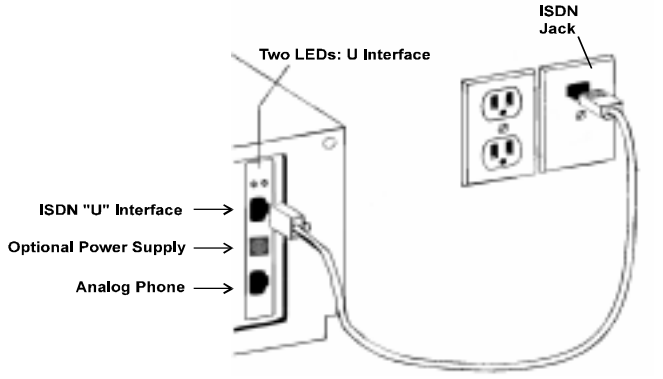


Figure 4-7 U Interface Adapter with onboard NT-1

If you have an S/T Interface adapter

Usually, S/T interface adapters require an external NT-1. If you are connecting to an ISDN line from a PBX system, you may be able to connect the S/T interface directly to the PBX connection. Contact your PBX administrator to find out if you need an NT-1. The NT-1 may consist of two pieces: The NT-1 itself and a separate power supply.

1. If the NT-1 needs to be connected to a power supply, follow the instructions that came with your NT-1.
2. Plug one end of the cable that came with your Sportster into the top jack on the adapter. Plug the other end into an S/T jack on the NT-1 adapter. This jack might be labeled Terminal, TE (for Terminal Equipment), or S/T.
3. Plug one end of the cable that came with the NT-1 into the U interface wall jack and plug the other end into the NT-1 U interface jack, which might be labeled Line. See the NT-1 instruction manual for details.

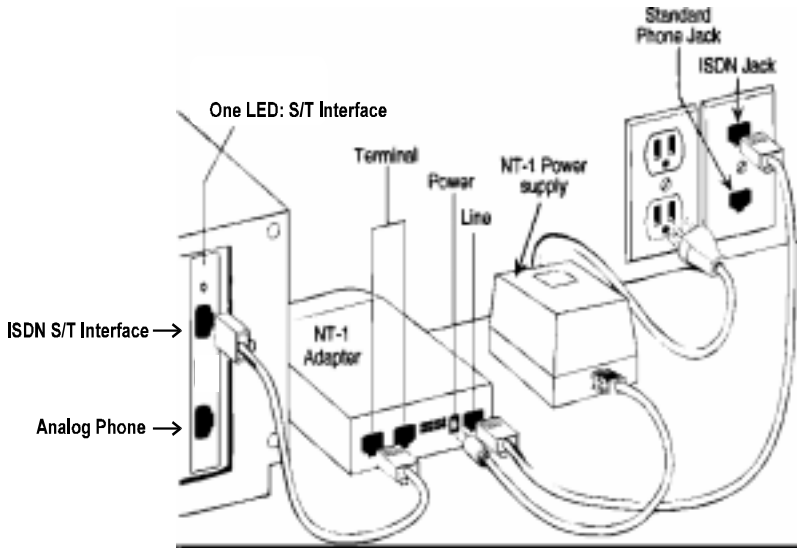


Figure 4-8 S/T Interface Adapter with an external NT-1

Don't shock yourself. Be sure the cover is on the computer and the PC power cord is unplugged from the wall outlet.

4 The S/T termination on the NT-1 should be set to 100 ohms. (See your NT-1 documentation for setting termination.) The Sportster S/T adapter termination was set to 100 ohm at the factory. If you need to change these default settings, refer to Tables B-1 through B-3 in Appendix B: S/T Adapter Termination Settings.

Connect a Phone (Optional)

If your telephone company has provided you with two B channels, one of which is provisioned for both voice and data calls, you may wish to attach a voice telephone to the Sportster. You may use either a *standard analog phone* (a touch-tone phone that uses tones, not pulses) or, with the S/T interface model only, an *ISDN phone*.

If you have an analog phone

If you have a standard analog phone, connect it to the Sportster (S/T or U interface versions) using a standard phone cable with a standard connector. Plug the connector into the bottom jack on the Sportster.

There are two differences between the Sportster's connection and a regular analog phone connection:

1 External Ringing on an analog telephone handset: To enable the External Ringing Option, you require an External Ring Generator. This device is listed in the Optional Products List for the Sportster that was included in the product box. The External Ring Generator will allow your telephone handset to ring when you receive a voice call. It will also allow a modem or fax machine attached to your PC to auto answer data calls. If you do not have the External Ringing Option selected, you can set a Voice Ringing Pattern to allow your Sportster to ring when you receive a voice call.

2 The phone will not operate when the PC is turned off or the Sportster software is not running.

If you have an ISDN phone

If you want to use an ISDN phone, you need a Sportster with an S/T interface. Most external NT-1s provide two S/T terminal RJ-45 jacks. Plug the Sportster into one of these jacks and the ISDN phone into the other jack. The NT-1 should be connected to the ISDN wall jack (U interface) installed by the telephone company.

Unlike the standard analog phone, the ISDN phone *will* work when your PC is turned off and the Sportster software is not running. For more information on connecting and using your ISDN phone, see the documentation that came with the phone.

Turn On Your PC

Reconnect your PC's power cord, and turn on the power.

Install your Sportster software

Now you are ready to install the Sportster software that matches your operating system (Windows 95, 98, or NT 4.0). Proceed to the next chapter for instructions on Sportster software installation.

5 SOFTWARE INSTALLATION

Introduction

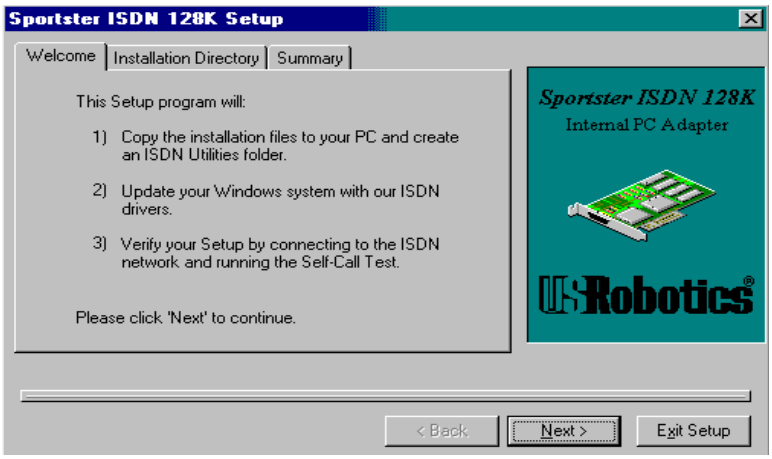
After you have installed your Sportster in your PC, you must load the Sportster software. This chapter provides instructions on this process. It is separated into the following sections:

- Software Installation
- Sportster Configuration
- Sportster Online Help

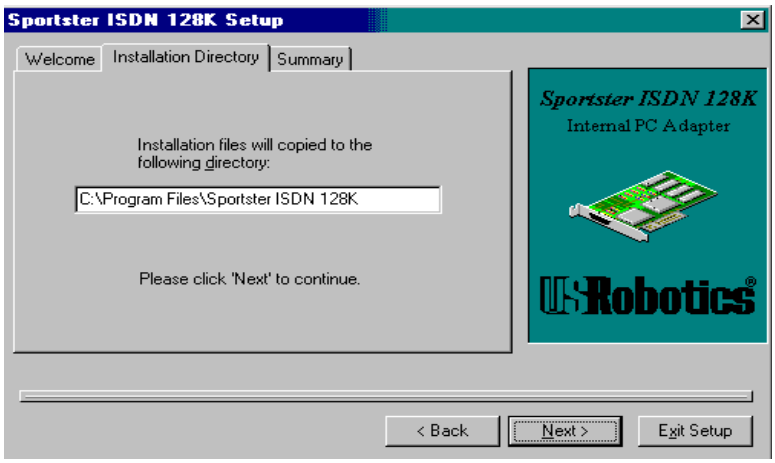
Software Installation

Windows 95

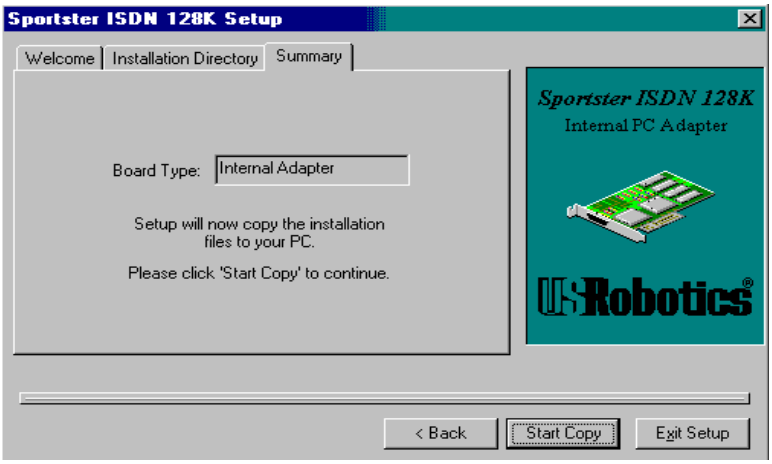
1. Place the Sportster ISDN 128K Installation CD-ROM in your CD-ROM drive. From the Windows desktop, select **Start/Run**. In the Open field, enter **Setup.exe** and point to your CD-ROM drive.
2. You will be introduced to the Installation process with a welcome screen. Press the **Next** button.



3 The Installation directory tab will display the system directory where the software will be installed.



4 Press the **Next** button to proceed. From the Summary screen, press the **Start Copy** button.



5 After the Sportster software has finished installing, you must configure the adapter.

Windows 98

If you are a Windows 95 user upgrading to Windows 98 and have Sportster software installed already, you must re-install the software. If you have an earlier version of the software (5.3 or below), you will NOT be able to install it on Windows 98. Visit the 3Com website (http://www.3com.com) to obtain the latest software.

To uninstall the software, double click ***My Computer/ Control Panel*** *from the Windows desktop. Select* ***Add/Remove Programs*** *and choose the Sportster from the scroll down list. Press the* ***Add/Remove*** *button.*

If you have previously installed the Sportster from the Microsoft Windows 98 CD-ROM, it is highly recommended that you un-install that software and re-install the software from the Sportster ISDN 128K Installation CD-ROM.

To uninstall the software, from the Windows desktop, select ***My Computer/Control Panel****. Double click on the Network icon and select the* ***Configuration*** *tab. Highlight the Sportster and press the* ***Remove*** *button.*

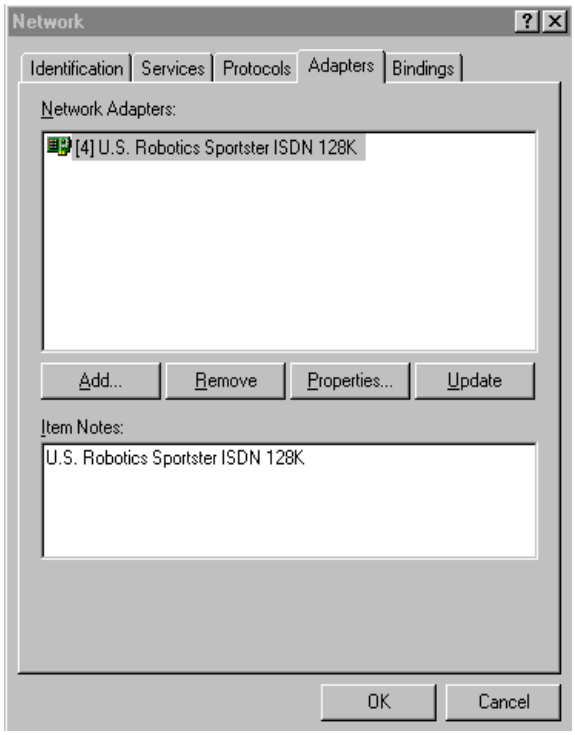
To install the Sportster software, follow these steps:

1. Enter the Sportster Installation CD-ROM in your CD-ROM drive.
2. From the Windows desktop, select **Start/Run**. In the Open field, enter the directory of your CD-ROM drive (i.e., **D:**) and enter **Setup.exe** and point to your CD-ROM drive.
3. In the Welcome screen, press the **Next** button. The Installation directory screen will display **C:\Program Files\Sportster ISDN 128K**, the location where the software will be installed. Press the **Next** button.
4. In the summary window, press the **Start Copy** button.
5. After the Sportster software has finished installing, you must configure the adapter.

Windows NT 4.0

If you have Windows NT, before you install the hardware you must hard set the jumper settings on your Sportster to match the I/O base address settings you will configure later. See Chapter 4: Hardware Installation *for instructions.*

1. From the Windows NT desktop, double click on **My Computer/Control Panel/Network.**
2. Select the **Adapters** tab. Press the **Add** button.



3. From the Select Network Adapter screen, choose **U.S. Robotics Sportster ISDN Adapter** in the scroll down menu. Press the **Have Disk** button.
4. Place the Sportster Installation CD-ROM in your CD-ROM drive. Enter the directory of your drive (i.e., **D:**) and **spwinnt**. Press the **OK** button.

5 After the Sportster software has finished installing, you must configure the adapter.

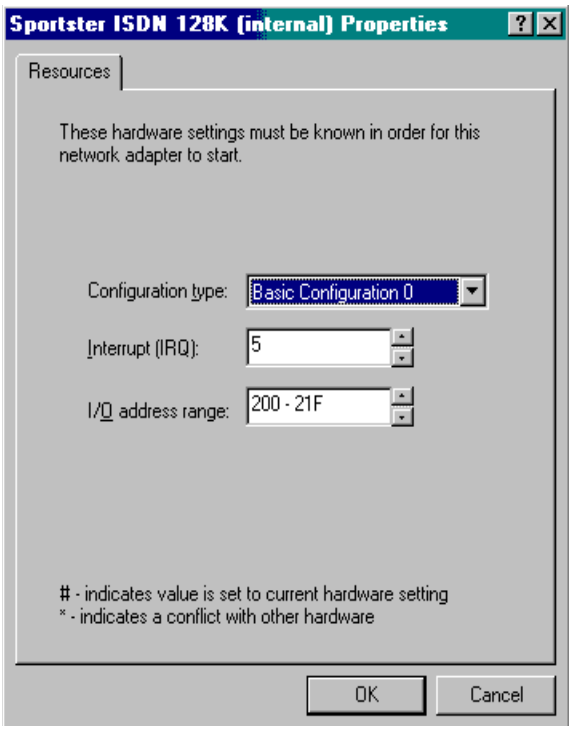
Sportster Configuration

Windows 95/98

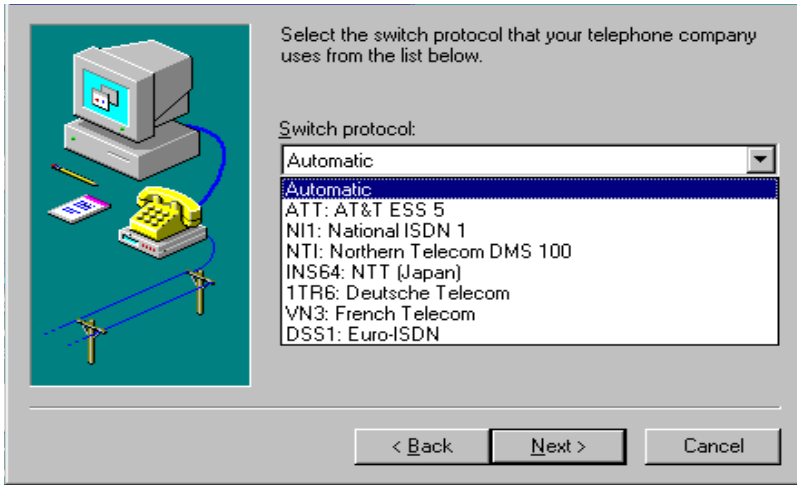
The ISDN settings entered initially through the Microsoft ISDN configuration wizard will be used. If you wish to modify these settings, you must use the Configuration Settings button in your Sportster Manager.

1 Install the Sportster software. You will be prompted to configure the adapter.

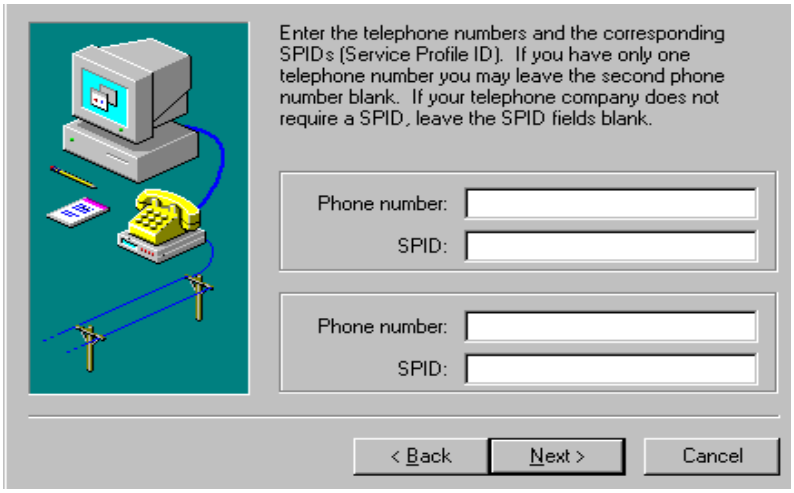
2 In the Resources window, you will see the Interrupt (IRQ) and I/O base address range. Select settings which do not conflict with your system configuration (i.e., used by other devices). Press the **OK** and then the **Next** button.



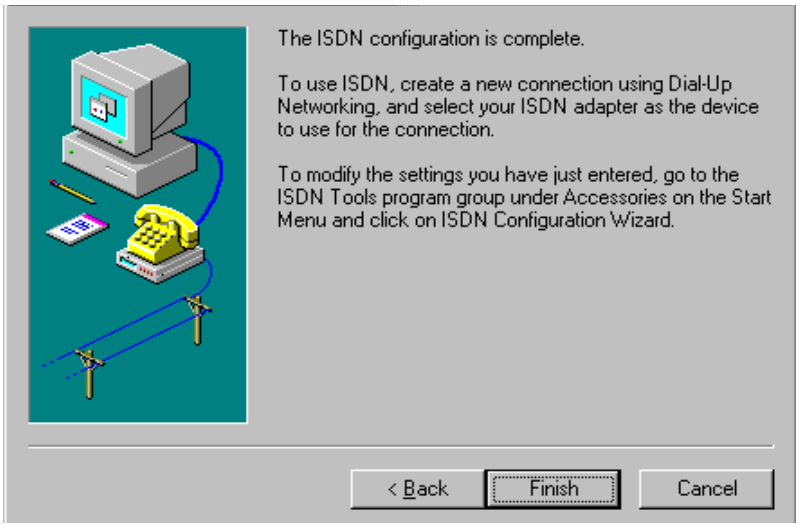
3 Choose **Automatic** to have your Switch type and SPID(s) detected for you and press the **Next** button. Enter the phone number(s) with area code(s). Press the **Next** button.



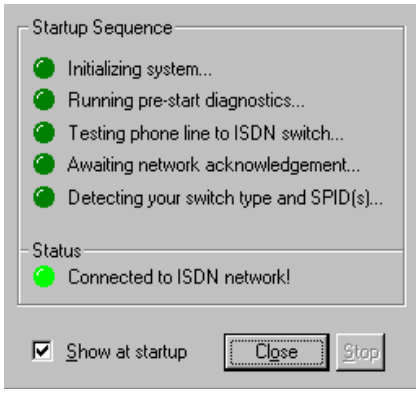
4 If you know your Switch type, select it and press the **Next** button. Enter the phone number(s) and SPID(s), if provided. Press the **Next** button.



5 To complete the ISDN configuration press the **Finish** button. You should press the **Restart Windows** button to complete the configuration.

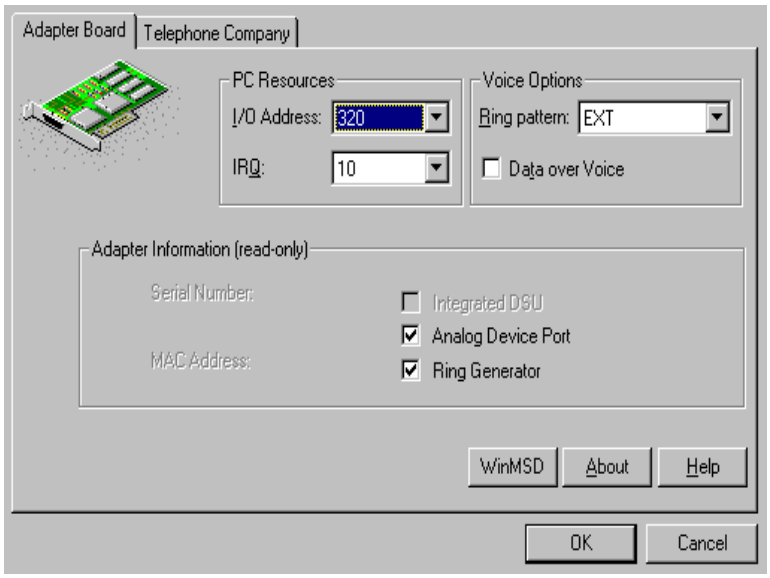


6 Your Sportster will connect when you boot up Windows. You should see the Startup Dialog.

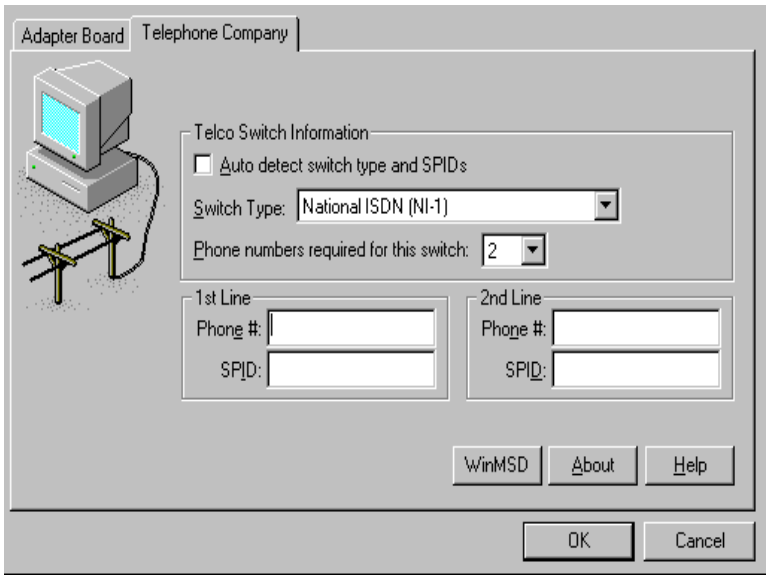


Windows NT 4.0

1. Install the Sportster software. You will be prompted to configure the adapter.
2. In the Adapter Board window are the I/O base address range and the IRQ, which should not conflict with your system configuration. Select the Voice Options (i.e., EXT) and enable or disable Data Over Voice.
3. Under Adapter Information (read only), note the current configuration status of the ISDN adapter.



4. Press the **OK** button and proceed to the Telephone company screen. Under Telco Switch Information, enable or disable Auto detect Switch type and SPID(s). If you choose to disable the function, you must choose a Switch Type from the scroll down menu provided.



5 Enter a phone number and SPID (optional) in the 1st line field. If you have another line, enter the information in the 2nd line field. Press the **OK** button.

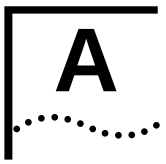
*To search for free resources, press the WinMSD button in the configuration screen. To change the resource settings, double click **My Computer/Network** and select **Adapters**. Highlight the Sportster ISDN 128K and press the **Properties** button.*

6 Consult the Sportster online help for specific information. You will be prompted to configure Remote Access Service (RAS).

Sportster Online Help

For information on advanced configuration, troubleshooting, and Sportster operation, consult the Sportster online help. To access the help, under the tool bar of the Sportster Manager (Windows 95/98) or the Line Monitor (NT 4.0), select Help. To view the help:

1. Place the Sportster installation CD-ROM in your CD-ROM drive. Select **Start/Run**.
2. In the Open field, enter the drive letter of your CD-ROM (i.e., **D:**) and **spwin9x/managenu.hlp** (Windows 95/98) or **spwinnt/managenu.hlp** (Windows NT 4.0).



TECHNICAL SUPPORT

Introduction

3Com provides easy access to technical support information through a variety of services. This appendix describes these services. Information contained in this appendix is correct at time of publication. For the very latest, we recommend that you access 3Com Corporation's World Wide Web site.

This appendix is separated into the following sections:

- Online Technical Services
- Support from your Network Supplier
- Support from 3Com
- Returning Products for Repair

Online Technical Services

Access the latest networking information on 3Com Corporation's World Wide Web site by entering our URL into your Internet browser:

http://www.3com.com/

This service features the latest information about 3Com solutions and technologies, customer service and support, news about the company, *Net Age*® Magazine, technical documentation, and more.

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

Support from 3Com

If you are unable to receive support from your network supplier, technical support contracts are available from 3Com.

Contact your local 3Com sales office to find your authorized service provider using the following number:

(847) 797-6600

Returning Products for Repair

Before you send a product directly to 3Com for repair, you must first obtain a Service Repair Order (SRO) number and shipping address from Technical Support. Products sent to 3Com without SRO numbers will be returned to the sender unopened, at the sender's expense. Make sure you include the following:

- Your Name, Address, Telephone Number, and Company
- Product Serial Number and Part Number (Located on box)
- Brief Description of Problem

B S/T ADAPTER TERMINATION SETTINGS

Introduction

An S/T interface is used in conjunction with an NT-1 when more than one ISDN device is to be connected to the U interface (your ISDN wall jack). A Sportster S/T connects to the ISDN S/T bus. Buses always have two endpoints and, in the case of the S/T bus, one end is typically at the NT-1 and the other is where your last ISDN device connects. The NT-1 connects to the U interface. The S/T bus must be terminated properly. To terminate the S/T bus, you typically add a resistor in two places: at the NT-1 and at the end of the S/T bus. The termination procedures differ depending on the distance between the devised attached to the S/T bus and the NT-1.

This appendix contains information about termination settings of the Sportster S/T interface. It is separated into the following sections:

- Terminating Multiple Devices
- Terminating a Single Device

Terminating Multiple Devices

There are two options for terminating multiple devices. Go to the appropriate section for

your installation:

- Multiple Devices Less Than 100 Feet From the NT-1
- Multiple Devices Less Than 700 Feet From the NT-1

Multiple Devices Less Than 100 Feet From the NT-1

If all of the devices attached to the S/T bus are within 100 feet of the NT-1, set 50 ohms termination at the NT-1 and remove the shunts from the pins to set no termination at each device attached to the S/T bus. Since 100 ohms is the

default setting for the Sportster, you will need to change the setting.

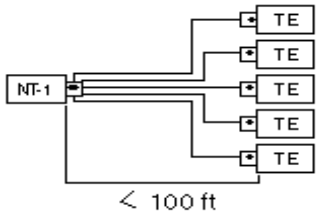


Figure B-1 Resistor Settings: All Devices (TEs) Less Than 100 ft. from the NT-1

Multiple Devices Less Than 700 Feet From the NT-1

If you are placing a cluster of devices less than 700 feet from the NT-1, set 100 ohms termination at the NT-1 and 100 ohms termination just before the branching point. Wiring blocks with built-in 100 ohm termination exist. Remove the shunts from the pins to set no termination on each device attached to the S/T bus.

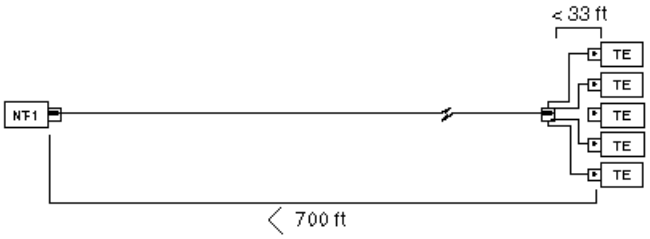


Figure B-2 Resistor Settings: All Devices (TEs) Clustered

Terminating a Single Device

If your S/T adapter is the only device connected to the NT-1, the termination setting options are shown in Table B-1. Table B-1 lists three possible options for setting the termination of your external NT-1 and S/T adapter. Options 1 and 2 are only available on Type 2 S/T adapters. Option 3,

which is the preferred default setting, is available on both Type 1 and Type 2 S/T adapters.

If you remove the shunt that covers the jumpers be careful to replace it so that the pins from one jumper are not connected to the pins of an adjacent jumper. Also the shunt should slip easily onto the pins. Do not force the shunt onto the pins. They can be easily damaged.

Table B-1 Termination Settings for an external NT-1 connecting only an S/T Interface

S/T Type	Options	Device	Termination
Type 2	1	external NT-1	not terminated 50 ohms
Type 2	2	external NT-1	not terminated 50 ohms
Type 1 or 2	3	external NT-1	100 ohms
Preferred default setting			100 ohms

Table B-1 describes the shunt settings to use for the termination of the S/T Type 1 adapter. Pin layouts that accompany this table are shown in Figure B-3. The default setting is 100 ohms. For the S/T Type 1, termination at 50 ohms is not supported.

Table B-2 Jumper Settings for S/T Interface: Type 1

Termination	Jumper Settings			
	JP1	JP2	JP4	JP5
Not terminated	OUT	OUT	OUT	OUT
100 Ohms	IN	IN	IN	IN
50 Ohms	IN	OUT	IN	OUT

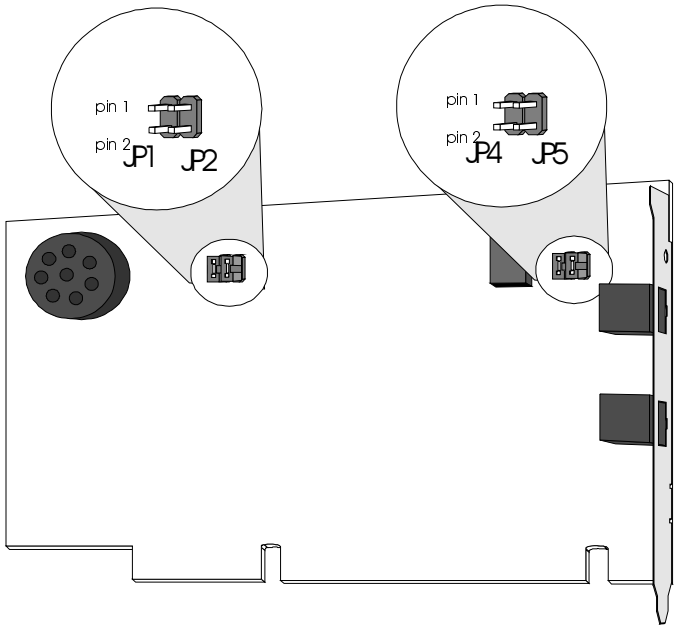


Figure B-3 Pin layouts for Sportster S/T - Type 1

Table B-3 describes the shunt settings to use for the termination of the S/T Type 2 adapter. Pin layouts that accompany this table are shown in Figure B-4. The default setting is 100 ohms. Termination at 50 ohms is fully supported using the settings in Table B-3.

Table B-3 Jumper Settings for S/T Interface: Type 2

Termination	**Jumper Settings**			
	JP2	JP1	JP7	JP8
Not terminated	OUT	OUT	OUT	OUT
100 Ohms	IN	IN	IN	IN
50 Ohms	IN	OUT	IN	OUT

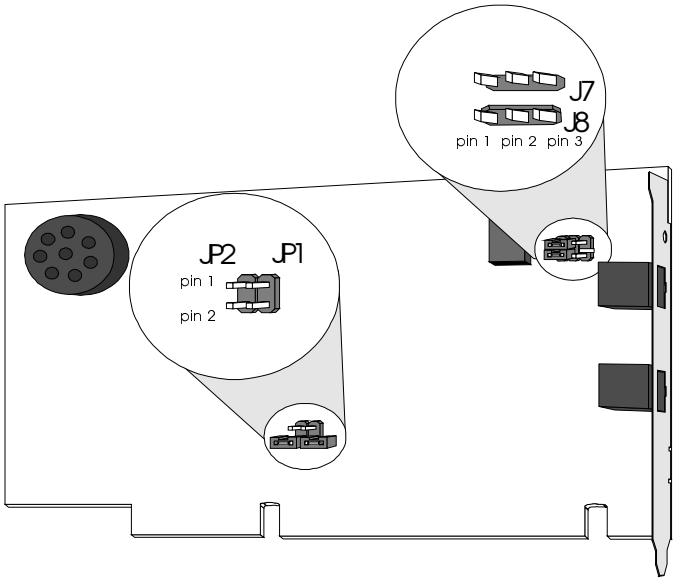
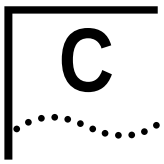


Figure B-4 Pin Layouts Sportster S/T - Type 2



TECHNICAL SPECIFICATIONS

Introduction

This appendix lists the specifications for the Sportster. It is separated into the following sections:

- General Specifications
- ISDN S/T Interface
- ISDN U Interface
- ISDN RJ-45 Connector
- ISDN RJ-11 Connector
- Analog Phone Interface
- PC Interface
- I/O Base Address Settings

General Specifications

Characteristic	Specification
Power	+5Vdc 1.6 watts nominal, 1.9 watts maximum
+12Vdc 0.8 watts maximum	-12Vdc 0.8 watts maximum
Temperature	Storage: -40C to +70C
Operating: 0C to +55C	Humidity
Non-operating: RH of 92% @ +55C	Operating: RH of 85% @ +55C
MTBF*	320,000 hours @ 20C

*Mean time between failures

ISDN S/T Interface

Characteristic	Specification
Switch Compatibility	Compatible with AT&T 5E4.2, 5E5 through 5E9 software generics
	Compatible with Nortel DMS-100's Functional software generics BCS 29 through BCS 36
	Complies with National ISDN (NI1) SR-NWT-001953
S/T Interface	Complies with ANSI T1.605 - 1991 Basic Rate Interface specifications
	Complies with Bellcore's National ISDN specifications SR-NWT-001953
S/T Termination	User-selectable: None (bridges), 100 ohms ± 5% or 50 ohms ± 5%. Factory default = 100 ohms

ISDN U Interface

Characteristic	Specification
Switch Compatibility	Compatible with AT&T 5E4.2, 5E5 through 5E9 software generics
	Compatible with Nortel DMS-100's Functional software generics BCS 29 through BCS 36
	Complies with National ISDN (NI1) SR-NWT-001953
U Interface	Complies with ANSI T1.601 - ISDN Basic Access Interface for use on metallic loops for application on the network side of the NT (Layer 1 Specification - 1992)
	Complies with Bellcore's National ISDN specifications SR-NWT-001953

ISDN RJ-45 Connector

The Sportster has one RJ-45 jack for the ISDN network interface.The ISDN RJ-45 connector that you plug in to the RJ-45 jack is either a U interface (two-wire) or a S/T interface (four-wire), depending on which version of the adapter you have purchased. The following table lists the pin (pole) numbers and their corresponding signal name(s)

for the 8-position/8-pin modular RJ-45 connector only on the U interface.

Pin Number	Signal
4	Ring
5	Tip

The following table lists the pin (pole) numbers and their corresponding signal name(s) for the 8-position/8-pin modular RJ-45 connector only on the S/T interface.

Pin Number	Signal
3	Transmit +
4	Receive +
5	Receive -
6	Transmit -

ISDN RJ-11 Connector

The following table lists the PIN (pole) numbers and their corresponding signal name(s) for the Adapters single 6 position / 4-pin modular RJ-11 connector used for external analog device connection (i.e., modem, phone, fax). Positions 1 - 6 are not loaded (no pin) and positions 2 and 5 are loaded but unused.

Pin Number	Signal
3	Ring
4	Tip

Analog Phone Interface

Characteristic	Specification
AC impedance	600 ohms, + or - 20%
DC source resistance	600 ohms. + or - 5%
Loop current	35mA maximum
Loop voltage	25Vdc maximum

PC Interface

Characteristic	Specification
Bus Interface to Computer	One is a 16-bit interface (slot)
I/O Accesses	8-bit and 16-bit operation
I/O base address requirements	Software selectable in Windows 95 and 98. One of 16 I/O base addresses, each being 16 consecutive bytes in length, between 0x200 and 0x3E0 inclusive. Jumper settings must be match software settings in Windows NT 4.0.
Interrupt requirements	Software selectable. Can be any available IRQ: **5, 9, 10, 11, 12, or 15**.
DMA requirements	none
Shared memory requirements	none

I/O Base Address Settings

Jumper Settings		I/O Base address
JP1	JP2	
IN	IN	300
IN	OUT	320
OUT	IN	340
OUT	OUT	Default setting, software selectable. Not available for Windows NT 4.0.

3Com Corporation LIMITED WARRANTY

HARDWARE

3Com warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from 3Com or its Authorized Reseller:

Sportster ISDN 128K Terminal Adapter	1 year
Spare parts and spares kits	90 days

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FCC CLASS A VERIFICATION STATEMENT

WARNING: 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, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. 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, in which case, the user will be required to correct the interference at the user's own expense.

Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment.

FCC CLASS B STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1 This device may not cause harmful interference, and

2 This device must accept any interference received, including interference that may cause undesired operation.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003.These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from the one which the receiver is

connected to.

- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

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

NOTE: In order to maintain compliance with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Refer to the manual for specifications on cabling types.

FCC Declaration of Conformity

We declare under our sole responsibility that the

Model:	**Description:**
80-000904-02	Sportster ISDN 128K Terminal Adapter

to which this declaration relates, is in conformity with the following standards or other normative documents:

- ANSI C63.4-1992 Methods of Measurement

Federal Communications Commission 47 CFR Part 15, subpart B
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