SN-DTA™
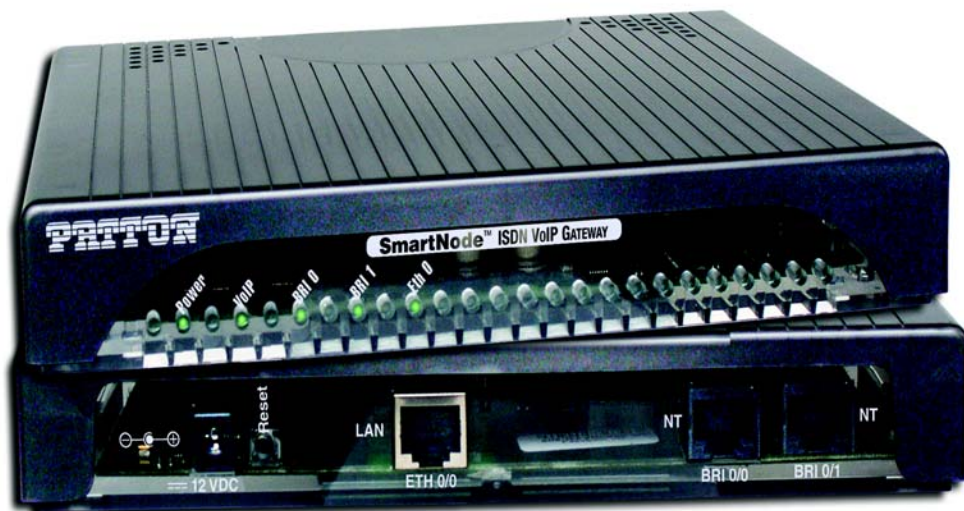# Single/Dual-Port ISDN BRI VoIP Terminal Adapter

User Manual

(CE) Important—This is a Class B device and is intended for use in a light industrial or residential environment. It is not intended nor approved for use in an industrial environment.

This device is approved for connection to the public ISDN telecommunication network, over BRI/S0-ISDN interfaces.

Trademark Statement

The term *SN-DTA* is a trademark of Patton Electronics Company. All other trademarks presented in this document are the property of their respective owners.

Important Information

To use virtual private network (VPN) and/or AES/DES/3DES encryption capabilities with the SN-DTA, you may need to purchase additional licenses, hardware, software, network connection, and/or service. Contact sales@patton.com or +1 (301) 975-1000 for assistance.

Warranty Information

The software described in this document is furnished under a license and may be used or copied only in accordance with the terms of such license. For information about the license, see Appendix F, "End user license agreement" on page 50 or go to **www.patton.com**.

Patton Electronics warrants all SN-DTA components to be free from defects, and will—at our option—repair or replace the product should it fail within one year from the first date of the shipment.

This warranty is limited to defects in workmanship or materials, and does not cover customer damage, abuse or unauthorized modification. If the product fails to perform as warranted, your sole recourse shall be repair or replacement as described above. Under no condition shall Patton Electronics be liable for any damages incurred by the use of this product. These damages include, but are not limited to, the following: lost profits, lost savings and incidental or consequential damages arising from the use of or inability to use this product. Patton Electronics specifically disclaims all other warranties, expressed or implied, and the installation or use of this product shall be deemed an acceptance of these terms by the user.

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About this guide

This guide describes the SN-DTA hardware, installation and basic configuration. For detailed software configuration information refer to the *SmartWare Software Configuration Guide* and the available Configuration Notes.

Audience

This guide is intended for the following users:

- Operators
- Installers
- Maintenance technicians

Structure

This guide contains the following chapters and appendices:

For best results, read the contents of this guide *before* you install the SN-DTA.

Precautions

Notes, cautions, and warnings, which have the following meanings, are used throughout this guide to help you become aware of potential problems. *Warnings* are intended to prevent safety hazards that could result in personal injury. *Cautions* are intended to prevent situations that could result in property damage or impaired functioning.

Note   A note presents additional information or interesting sidelights.

IMPORTANT

The alert symbol and IMPORTANT heading calls attention to important information.

CAUTION

The alert symbol and CAUTION heading indicate a potential hazard. Strictly follow the instructions to avoid property damage.

CAUTION

The shock hazard symbol and CAUTION heading indicate a potential electric shock hazard. Strictly follow the instructions to avoid property damage caused by electric shock.

WARNING

The alert symbol and WARNING heading indicate a potential safety hazard. Strictly follow the warning instructions to avoid personal injury.

WARNING

The shock hazard symbol and WARNING heading indicate a potential electric shock hazard. Strictly follow the warning instructions to avoid injury caused by electric shock.

Safety when working with electricity

WARNING

- Do not open the device when the power cord is connected. For systems without a power switch and without an external power adapter, line voltages are present within the device when the power cord is connected.
- For devices with an external power adapter, the power adapter shall be a listed *Limited Power Source* The mains outlet that is utilized to power the device shall be within 10 feet (3 meters) of the device, shall be easily accessible, and protected by a circuit breaker in compliance with local regulatory requirements.
- For AC powered devices, ensure that the power cable used meets all applicable standards for the country in which it is to be installed.
- For AC powered devices which have 3 conductor power plugs (L1, L2 & GND or Hot, Neutral & Safety/Protective Ground), the wall outlet (or socket) must have an earth ground.
- For DC powered devices, ensure that the interconnecting cables are rated for proper voltage, current, anticipated temperature, flammability, and mechanical serviceability.
- WAN, LAN & PSTN ports (connections) may have hazardous voltages present regardless of whether the device is powered ON or OFF. PSTN relates to interfaces such as telephone lines, FXS, FXO, DSL, xDSL, T1, E1, ISDN, Voice, etc. These are known as "hazardous network voltages" and to avoid electric shock use caution when working near these ports. When disconnecting cables for these ports, detach the far end connection first.
- Do not work on the device or connect or disconnect cables during periods of lightning activity

WARNING

This device contains no user serviceable parts. This device can only be repaired by qualified service personnel.

In accordance with the requirements of council directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE), ensure that at end-of-life you separate this product from other waste and scrap and deliver to the WEEE collection system in your country for recycling.

CAUTION

Always follow ESD prevention procedures when removing and replacing cards.

Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis frame to safely channel unwanted ESD voltages to ground.

To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

General observations

- Clean the case with a soft slightly moist anti-static cloth
- Place the unit on a flat surface and ensure free air circulation
- Avoid exposing the unit to direct sunlight and other heat sources
- Protect the unit from moisture, vapors, and corrosive liquids

Typographical conventions used in this document

This section describes the typographical conventions and terms used in this guide.

General conventions

The procedures described in this manual use the following text conventions:

Table 1. General conventions

Convention	Meaning
Garamond blue type	Indicates a cross-reference hyperlink that points to a figure, graphic, table, or section heading. Clicking on the hyperlink jumps you to the reference. When you have finished reviewing the reference, click on the **Go to Previous View** button ⬅ in the Adobe® Acrobat® Reader toolbar to return to your starting point.
Futura bold type	Commands and keywords are in **boldface** font.
Futura bold-italic type	Parts of commands, which are related to elements already named by the user, are in ***boldface italic*** font.
Italicized Futura type	Variables for which you supply values are in *italic* font
Futura type	Indicates the names of fields or windows.
Garamond bold type	Indicates the names of command buttons that execute an action.
< >	Angle brackets indicate function and keyboard keys, such as <SHIFT>, <CTRL>, <C>, and so on.
[ ]	Elements in square brackets are optional.
{a	b	c}	Alternative but required keywords are grouped in braces ({ }) and are separated by vertical bars (	)
blue screen	Information you enter is in blue screen font.
screen	Terminal sessions and information the system displays are in screen font.
node	The leading IP address or nodename of a SN-DTA is substituted with ***node*** in ***boldface italic*** font.
SN	The leading **SN** on a command line represents the nodename of the SN-DTA
#	An hash sign at the beginning of a line indicates a comment line.

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Chapter 1   General information

Chapter contents

SN-DTA overview

The SN-DTA ISDN BRI VoIP Terminal Adapter (see figure 1) gives demanding ISDN users a quick and easy way to reap the benefits of state-of-the art Voice-over-IP technology while preserving their investments in ISDN phones and PBX equipment. Supporting two or four concurrent voice or fax calls over an IP network, the SN-DTA is a simple and cost-effective way for home and home-office users to connect their ISDN terminals to the cost-saving world of Voice-over-IP.

The SN-DTA provides one to two ISDN S_0 (S/T) Basic Rate Interface (BRI) ports that deliver high-quality Voice-over-IP (VoIP) to ISDN terminals, connected directly or via a residential S-bus. A 10/100 Base-T Ethernet port provides connection to either 1) an Internet Telephony Service Provider (ITSP) via a broadband access router and xDSL or cable modem, or 2) a remote IP-PBX over a corporate-private network.

Figure 1. SN-DTA

The SN-DTA performs the following major functions:

- Two/four channels of Voice or FAX-over-IP through one/two Euro-ISDN BRI/S_0 port (NT orientation).

- Provides line power to connected ISDN phone or PBX terminals (TE orientation).

- Standards-compliant VoIP in accordance with SIP or H.323 protocols.

- 10/100Base-T Ethernet WAN port for connection to a router, xDSL, cable, or wireless modem.

- Euro-ISDN BRI/S0 port (NTorientation, one to two ports depending on the SN-DTA model type)

- A fallback cut-through relay between the two ISDN BRI ports electrically connects the NT and TE port in case of power failure and enables life-line calls to the public ISDN network (PSTN-supplied ISDN line must be used). *(SN-DTA/2BIS2V/EUI only)*

- High Precision Clock—Delivers DECT PBX interoperability with reliable fax performance. *(SN-DTA/HP versions only)*

SN-DTA model codes

The SmartNode SN-DTA series consists of several models. They differ in the number of BRI ports and voice channels supported. All models come equipped with one 10/100/Base-Tx Ethernet port.

The SN-DTA models are listed in table 2.

Table 2. SmartNode SN-DTA BRI Ports and Voice Channels

Model	BRI NT port	BRI TE port	Voice Channels
SN-DTA/1BIS2V/EUI	1	-	2
SN-DTA/2BIS4V/EUI	2	-	4
SN-DTA/2BIS2V/EUI	1	1	2

SN-DTA/HP model codes

The high precision SN-DTA/HP models have a Stratum III clock. The Stratum III clock provides a clock source of < 5 ppm. For PBXs that used to rely on PSTN for accurate clock source, the SN-DTA/HP can provide a PSTN-equivalent high precision clock. The popular DECT PBX needs such high precision clocks.

Note   For high precision clock models, replace SN-DTA with SN-DTA/HP in the model code.
For example: SN-DTA/2BIS4V**HP**EUI

SN-DTA rear panel

The SN-DTA is an ISDN BRI VoIP Terminal Adapter that supports two VoIP calls via a single ISDN BRI port (see figure 2). The SN-DTA rear panel ports are described in table 3.
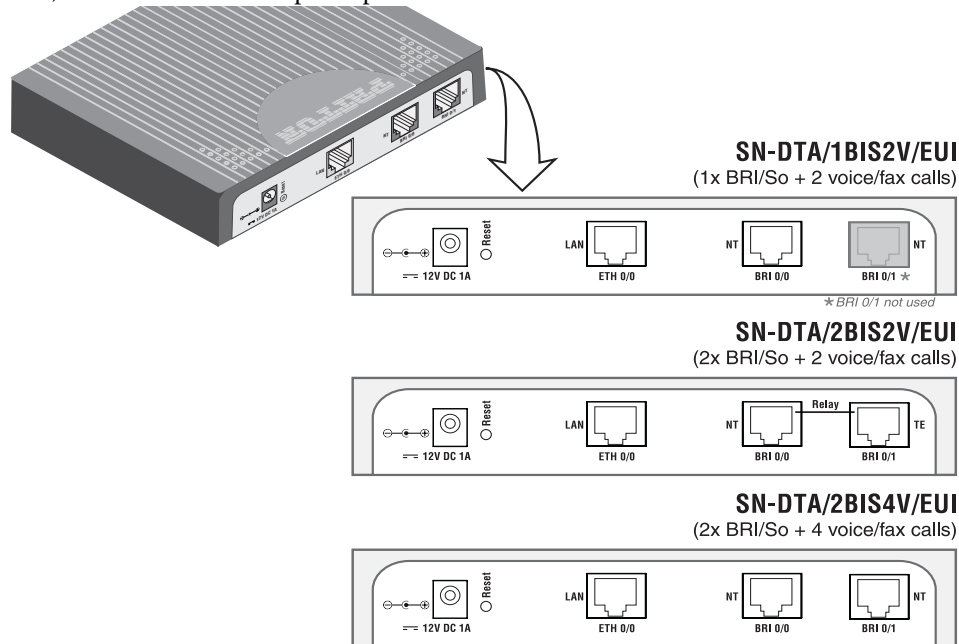
Figure 2. SN-DTA rear panel

Table 3. Rear panel ports

Port	Description
ETH (LAN)	Switched Auto-MDX Fast-Ethernet port, RJ-45 (see figure 2), connect the unit to an Internet Telephony Service Provider (ITSP) [via an xDSL or cable modem] or a remote IP-PBX [via a private corporate network].
BRI NT	ISDN BRI NT (Net) port, RJ-45 S0 (S/T)-interface (see figure 2), connects the unit to an ISDN phone or PBX trunk-port. Point-to-point or point-to-multipoint configurable.
BRI TE (SN-DTA/2BIS2V/EUI only)	ISDN BRI TE (Usr) port, RJ-45 S0 (S/T)-interface (see figure 2), connects the unit to an ISDN NT. Point-to-point or point-to-multipoint confgurable.
12V DC, 1.0A	The SN-DTA has a 12V DC 1A power input (see figure 2).
Reset	The reset button (see figure 2) has three functions: • Restart the unit with the current startup configuration—Press (for less than 1 second) and release the *Reset* button to restart the unit with the current star-tup configuration. • Restart the unit with factory default configuration—Press the *Reset* button for 5 seconds until the *Power* LED (see figure 3 on page 18) starts blinking to restart the unit with factory default configuration. • Restart the unit in bootloader mode (to be used only by trained SN-DTA technicians)—Starting with the unit powered off, press and hold the *Reset* button as you apply power to the unit. Release the *Reset* button when the *Power* LED starts blinking so the unit will enter bootloader mode.

SN-DTA front panel
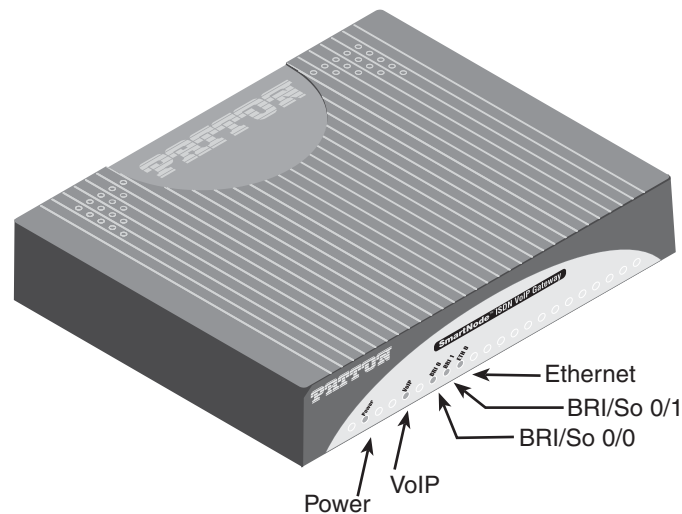
Figure 3. SN-DTA front panel

Figure 3 shows SN-DTA LEDs, the LED definitions are listed in table 4.

Table 4. SN-DTA LED definitions

LED	Description
Note	If an error occurs, all LEDs will flash once per second.
Power	When lit, indicates power is applied and the unit is in normal operation. Off indicates no power applied. Flashes once per second during boot (startup).
VoIP	• On indicates that the SN-DTA is registered to an H.323 gatekeeper/SIP server, or, in the case of direct routing, has at least one active VoIP connection. • Off indicates that the unit is not configured or registered, or has no active direct-routed VoIP connection. • Flashing green indicates that the unit is attempting to register or has failed to register.
BRI	Off indicates no active calls. Blinking when one or two B-channels are connected.
Ethernet	• On when the Ethernet connection has a link indication. • Flashes when data is received or transmitted at the corresponding Ethernet port.

Chapter 2   SN-DTA Applications overview

Chapter contents

Introduction

Patton's SN-DTA BRI VoIP Terminal Adapter provides ISDN users a quick and easy migration path to the cost-saving world of IP telephony. This chapter describes typical applications for which the SN-DTA is uniquely suited.

Whether you are connecting to an Internet Telephony Service Provider (ITSP) or the phone system at your main office, SN-DTA provides the features you need for high-quality, state-of-the-art Voice-over-IP. In either scenario, Patton's robust and mature software provides call-property adaptation with regular-expression mapping between ISDN and SIP/H.323 signaling schemes. In the corporate private network, intelligent and configurable call-routing supports existing numbering plans for ultimate useability.

> **Note**   Detailed configuration information for the applications can be found online from the Patton webserver at **www.patton.com**.

Typical application

The SmartNode SN-DTA with one or two ISDN BRI ports can be used to make and receive calls to and from Internet Telephony services on any ISDN Terminal (Phone or PBX) (see Figure 4). The SN-DTA enables the connection of ISDN terminals or SOHO PBXs to a VoIP network or Internet Telephony Service. It can connect to ISDN PBXs in point-to-point mode and ISDN Terminals in point-multipoint mode (S-Bus) and offers a feature rich configuration interface. An optional BRI TE port (SN-DTA/2BIS2V/EUI only) can be used for fallback to the local PSTN. Using individually configurable routing tables, an outbound call can be directed to the local PSTN or to the VoIP network. Inbound calls from the Internet and the PSTN can ring the same phone.

The SN-DTA supports three types of Internet-access service, including fixed-IP address, DHCP, and PPPoE.
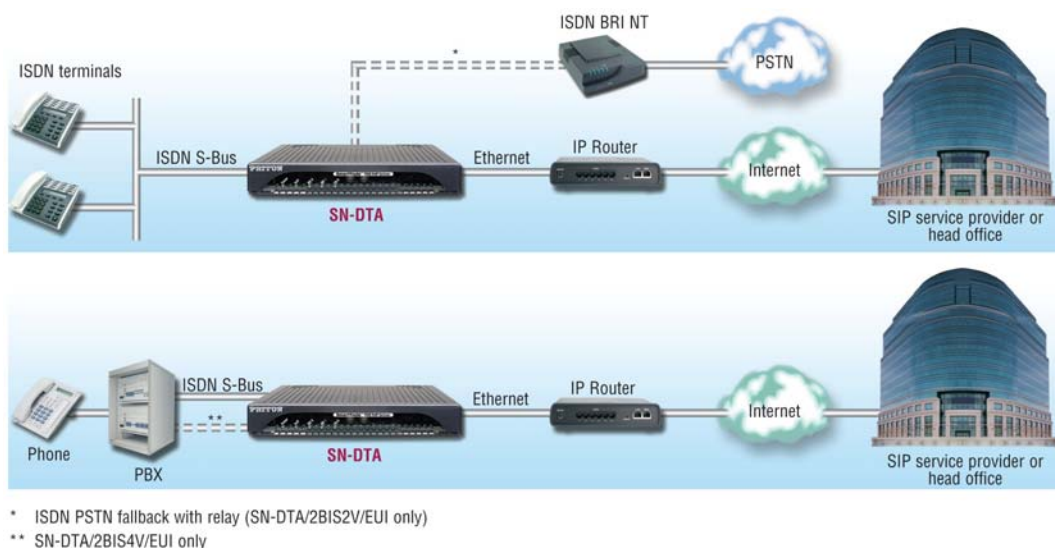
Figure 4. SN-DTA application

Chapter 3   SN-DTA installation

Chapter contents

Planning the installation

⚠ CAUTION

> The mains outlet that is utilized to power the equipment must be within 10 feet (3 meters) of the device and shall be easily accessible.

Before installing the SN-DTA, the following tasks should be completed:

- **Create a network diagram** (see section "Network information" on page 22)
- **Gather IP related information** (see section "Connect the cables in the following order:" on page 24 for more information)
- **Install the hardware and software needed to configure the SmartNode.** (See section "Software tools" on page 23)
- **Verify power source reliability** (see section "Power source" on page 23).

After you have finished preparing for SN-DTA installation, go to section "Installing the SN-DTA" on page 24 to install the device.

Site log

Patton recommends that you maintain a site log to record all actions relevant to the system, if you do not already keep such a log. Site log entries should include information such as listed in table 5.

Table 5. Sample site log entries

Entry	Description
Installation	Make a copy of the installation checklist and insert it into the site log
Upgrades and maintenance	Use the site log to record ongoing maintenance and expansion history
Configuration changes	Record all changes and the reasons for them
Maintenance	Schedules, requirements, and procedures performed
Comments	Notes, and problems
Software	Changes and updates to SmartWare software

Network information

Network connection considerations that you should take into account for planning are provided for several types of network interfaces are described in the following sections.

Network Diagram

Draw a network overview diagram that displays all neighboring IP nodes, connected elements and telephony components.

IP related information

Before you can set up the basic IP connectivity for your SN-DTA you should have the following information:

- IP addresses used for Ethernet LAN and WAN ports

- Subnet mask used for Ethernet LAN and WAN ports

- IP addresses of central H.323 gatekeeper (if used)

- IP addresses and/or URL of SIP servers or Internet telephony services (if used)

- Login and password for PPPoE Access

- Login and password for SIP or H.323 based telephony services

- IP addresses of central TFTP server used for configuration upload and download (optional)

Software tools

You will need a PC (or equivalent) with Windows Telnet or a program such as *Tera Term Pro Web* to configure the software on your SN-DTA.

Power source

If you suspect that your AC power is not reliable, for example if room lights flicker often or there is machinery with large motors nearby, have a qualified professional test the power. Patton recommends that you include an uninterruptible power supply (UPS) in the installation to ensure that VoIP service is not impaired if the power fails.

Location and mounting requirements

The SN-DTA is intended to be placed on a desktop or similar sturdy, flat surface that offers easy access to the cables. Allow sufficient space at the rear of the chassis for cable connections. Additionally, you should consider the need to access the unit for future upgrades and maintenance.

Installing the SN-DTA

SN-DTA hardware installation consists of the following:

- Placing the device at the desired installation location (see section "Placing the SN-DTA")

- Connecting the interface and power cables (see section "Installing cables")

When you finish installing the SN-DTA, go to chapter 4, "SN-DTA initial configuration" on page 26.

Placing the SN-DTA

Place the SN-DTA on a desktop or similar sturdy, flat surface that offers easy access to the cables. The unit should be installed in a dry environment with sufficient space to allow air circulation for cooling.

> **Note** For proper ventilation, leave at least 2 inches (5 cm) to the left, right, front, and rear of the unit.

Installing cables

Do not work on the system or connect or disconnect cables during periods of lightning activity.

WARNING

Connect the cables in the following order:

1. Connect the ISDN terminal to the BRI port (see section "Connecting the SN-DTA to the ISDN terminals" on page 24).

2. Connect the 10/100Base-T Ethernet WAN (see section "Connecting the SN-DTA to the IP network" on page 24)

3. Connect the power supply (see section "Connecting the SN-DTA to the power supply" on page 25)

Connecting the SN-DTA to the ISDN terminals

The SN-DTA comes with one or two ISDN BRI ports located on the rear panel (see figure 2 on page 17). Install the connections as follows:

1. **BRI NT:** Connect the BRI NT port of the SN-DTA to the TE port of the ISDN terminal (phone, PBX or residential S-bus).

2. **BRI TE** *(SN-DTA/2BIS2V/EUI only)*: Connect the BRI TE port of the SN-DTA to the NT port of the ISDN device (ISDN NT or PBX NT port).

For details on the BRI port pinout and ISDN cables, refer to Appendix C, "Cabling" on page 43 and Appendix D, "Port pin-outs" on page 46.

Connecting the SN-DTA to the IP network

The SN-DTA comes with a 10/100 Base-Tx Ethernet port for connection to an IP network. The Ethernet WAN interface is factory-configured as a DHCP client, so you must connect the SN-DTA to an IP network that provides a DHCP server.

The Ethernet port (ETH) includes an automatic MDX (auto-crossover) feature that automatically detects the cable configuration and adjusts accordingly. The feature allow you to use a straight-through Ethernet cable to connect to an Ethernet hub or switch. Typically the hub or switch will connect to a router that provides the the local-residential IP network with broadband Internet access.

Using the included black Ethernet cable, connect the RJ-45 Ethernet WAN port on your SN-DTA (labeled ETH), to an Ethernet hub or switch on the same network as your PC.

For details on the Ethernet port pinout and cables, refer to Appendix C, "Cabling" on page 43 and Appendix D, "Port pin-outs" on page 46.

Connecting the SN-DTA to the power supply

1. Insert the barrel-type connector end of the AC power supply into the *12V DC, 1.0A* port (see figure 2 on page 17).

> **⚠ CAUTION**
>
> The external power supply automatically adjusts to accept an input voltage from 100 to 240 VAC (50/60 Hz).
>
> Verify that the proper voltage is present before plugging the power cord into the receptacle. Failure to do so could result in equipment damage.

2. Verify that the AC power cord included with your SN-DTA is compatible with local standards. If it is not, refer to chapter 5, "Contacting Patton for assistance" on page 33 to find out how to replace it with a compatible power cord.

3. Connect the male end of the AC power supply power cord to an appropriate AC power outlet.

4. Verify that the green *Power* LED is lit (see figure 3 on page 18).

External S-Bus power supply

Do not use an external power supply for ISDN terminals connected to the SN-DTA. The SN-DTA supplies S-Bus line power to ISDN terminals connected to the BRI port, so external power supplies are not required for the ISDN terminals.

Congratulations, you have finished installing the SN-DTA! Now go to chapter 4, "SN-DTA initial configuration" on page 26.

Chapter 4 SN-DTA initial configuration

Chapter contents

Introduction

This chapter leads you through the basic steps to set up a new SN-DTA:

- Start the SN-DTA Discovery Tool (see section "Start the SmartNode Discovery Tool" on page 27)

- Access the Web Browser (GUI) Interface (see section "Access the Web Browser (GUI) Interface" on page 28)

- Configuring your SN-DTA (see section "Configuring your SN-DTA" on page 30)

This section describes how to quickly access the configuration interface of a SN-DTA and give an overview of the different elements you can configure. For detailed information on all configuration parameters refer to the SmartWare software configuration guide.

Start the SmartNode Discovery Tool

The SmartNode discovery tool provides a quick and easy way to access the management interfaces residing within your SN-DTA. The tool identifies any Patton VoIP devices installed on your network and displays the model number, IP address and MAC address of each unit.To use the discovery tool, do the following:

1. Open a web browser and go to www.patton.com/SNDiscovery. A list of SmartNode utilities displays. Identify the **SmartNode Discovery Tool** item in the list. Click the **Download** link and agree to the service terms to save the file to your PC.

2. At your PC, double-click the *SNDiscovery.exe* filename to activate the tool. The SmartNode Discovery Tool window will display the IP Address, MAC Address, Device Type (model number) and Build (software release) of your SN-DTA.
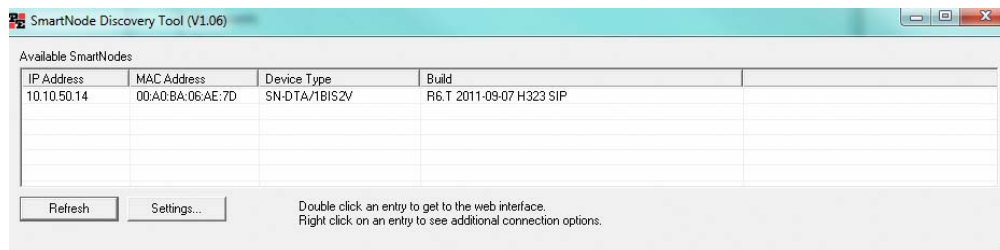
Figure 5. SmartNode Discovery Tool window

If your SN-DTA does not appear:

- Make sure the SN-DTA and your PC are on the same routed subnet

- Make sure any firewall programs on your PC are disabled

Access the Web Browser (GUI) Interface

The SN-DTA provides a web-browser-based graphical user interface (GUI) that makes it easy to configure, monitor and manage your SN-DTA. To access the web-browser interface, do the following:

1. In the SmartNode Discovery Tool window, select the line that displays the IP address of your SN-DTA.
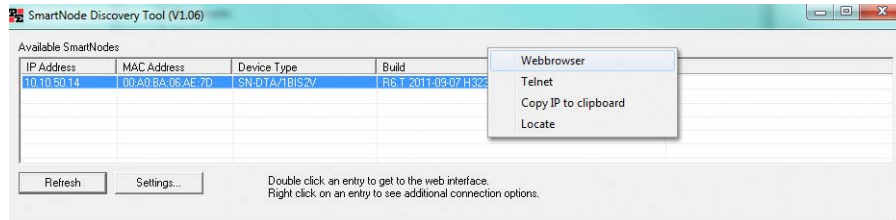
Figure 1. SmartNode Discovery Tool window with webbrowser selected

2. Right-click the selected line, and select *Webbrowser*. The Login window will display.
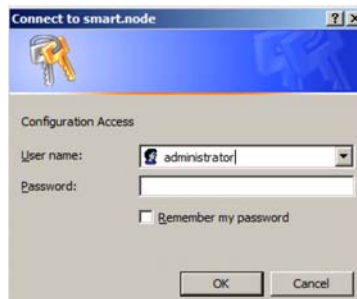
Figure 2. Login window

3. Enter the username *administrator*. Do not enter a password. Instead simply click OK. Your web browser will display the SN-DTA home page (see figure 6).
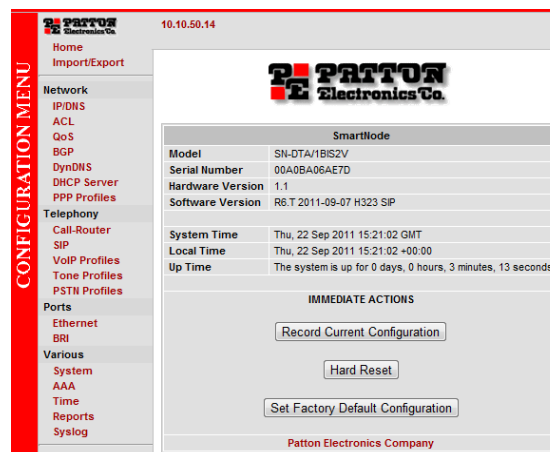
Figure 6. SN-DTA home page

The SN-DTA home page displays three action buttons that allow you to store the current configuration state, reload the device, and restore to factory defaults. The home page also displays certain basic system information. You can always return to the home page by clicking Home in the navigation bar.

Figure 7. Main GUI elements

The GUI consists of the following main elements (see figure 7):

• The "Navigation Bar" on the left edge presents you with a menu listing giving access to the various configuration and status pages of the SN-DTA.

• At the top of the page you see the "Current System Path" which displays the location and element currently presented in the main area.

• The rest of the page displays the configuration and status information for the different features of the SN-DTA.

Configuring your SN-DTA

Once you have logged in you can use the browser-based graphical user interface (GUI) to configure and manage your SN-DTA. The information in this section is intended to introduce the configuration tools and get you started. For more detailed information about configuring your SN-DTA, please refer to the *SmartWare Configuration Guide.*

> ⚠️ **CAUTION** The SN-DTA immediately applies your changes whenever you modify the configuration. However, your new settings ARE NOT PERMANENTLY SAVED in non-volatile memory [RAM]. To survive power failure or manual reload you must store your new settings in non-volatile memory. To save your changes: return to the home page and press the Save Current Configuration button.

You may find the following hints helpful when configuring your SN-DTA:

For each box containing an "Apply" button, fill in the required fields and press "apply" once. The settings are applied immediately after the button is pressed. If there are several boxes with an "Apply" button on one page, fill in the information per box and press the button for each box separately. This saves the new configuration parameters in volatile memory (RAM) only.

The "alert" symbol shows you that somewhere a user input is missing for correct functionality. In the case of the present WAN page, you can ignore them, because the respective title bullet ("PPP over Ethernet") is not selected.

The "info" symbol denotes hints to ease configuration or to avoid pitfalls. Read them whenever you encounter them!

Accessing the Internet

The SN-DTA supports two types of WAN (Internet or corporate-Private) access:

• DHCP (factory default)

• Fixed IP address

To modify the WAN access configuration, go to the SN-DTA Home page:

1. In the configuration menu pane, click *IP/DNS.* In the *Interfaces* section, click on **eth0**. The Configuration screen for the Ethernet port displays (figure 8).
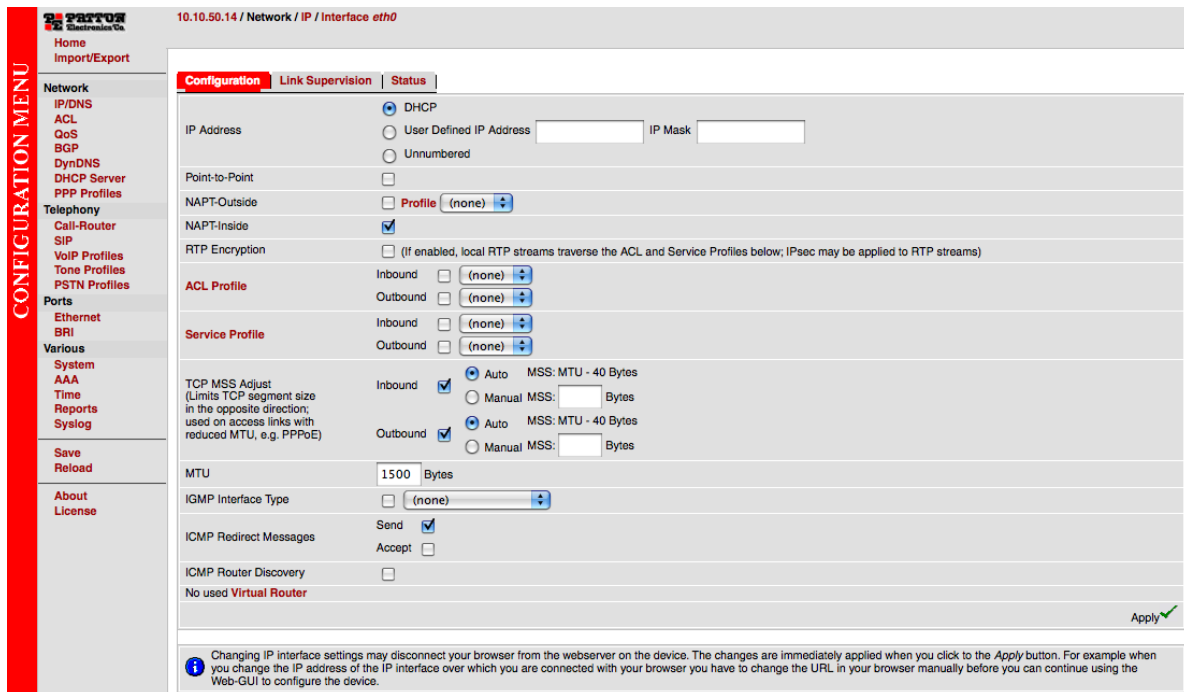
Figure 8. Ethernet Configuration page

The SN-DTA supports two configuration options for the Ethernet connection (see figure 8), as described in the following paragraphs:

- **DHCP (client—factory default).** The SN-DTA's WAN port has a DHCP client enabled that uses an established Internet connection to get the Internet connectivity parameters (IP address, default gateway) automatically from a DHCP server. Use this option when connecting the SN-DTA to a DSL router, a cable modem, or to a company LAN (with a DHCP server). This is the factory default configuration so no configuration is required, only the LAN and WAN Ethernet connections should be made to access the Internet immediately.

- **User Defined Address.** The SN-DTA uses an existing internet connection which does not provide an upstream DHCP server. In this case, you need to set the IP address, subnet mask, default gateway and DNS servers manually.

  - **IP Address**—The IP address of the WAN Ethernet port.

  - **IP Mask**—The mask for the WAN port's IP address.

Click the **Apply** icon to activate the new configuration.

Configuring the default gateway

To configure the default gateway on the SN-DTA:

1. In the configuration menu pane, click *IP/DNS*. Click on the **Routes** tab. The Configuration screen for Static Routes displays (figure 9).

Figure 9. Default Gateway Configuration

2. Enter details for the following fields:

   Destination IP—Enter *0.0.0.0* as the destination IP address for forwarding all traffic.

   Destination Mask—Enter *0.0.0.0* as the destination netmask for forwarding all traffic.

   Gateway—Enter the IP address of the upstream router.

3. Click the **Apply** icon to save your settings.

Chapter 5   Contacting Patton for assistance

Chapter contents

Introduction

This chapter contains the following information:

- "Contact information"—describes how to contact Patton technical support for assistance.

- "Warranty Service and Returned Merchandise Authorizations (RMAs)"—contains information about the RAS warranty and obtaining a return merchandise authorization (RMA).

Contact information

Patton Electronics offers a wide array of free technical services. If you have questions about any of our other products we recommend you begin your search for answers by using our technical knowledge base. Here, we have gathered together many of the more commonly asked questions and compiled them into a searchable database to help you quickly solve your problems.

Patton support headquarters in the USA

- Online support: available at **www.patton.com**

- E-mail support: e-mail sent to **support@patton.com** will be answered within 1 business day

- Telephone support: standard telephone support is available five days a week—from **8:00 am** to **5:00 pm EST** (**1300** to **2200 UTC/GMT**)—by calling **+1 (301) 975-1007**

- Fax: **+1 (253) 663-5693**

Alternate Patton support for Europe, Middle East, and Africa (EMEA)

- Online support: available at **www.patton.com**

- E-mail support: e-mail sent to **support@patton.com** will be answered within 1 business day

- Telephone support: standard telephone support is available five days a week—from **9:00 am** to **5:30 pm CET** (**0800** to **1630 UTC/GMT**)—by calling **+41 (0)31 985 25 55**

- Fax: **+41 (0)31 985 25 26**

Warranty Service and Returned Merchandise Authorizations (RMAs)

Patton Electronics is an ISO-9001 certified manufacturer and our products are carefully tested before shipment. All of our products are backed by a comprehensive warranty program.

> **Note**   If you purchased your equipment from a Patton Electronics reseller, ask your reseller how you should proceed with warranty service. It is often more convenient for you to work with your local reseller to obtain a replacement. Patton services our products no matter how you acquired them.

Warranty coverage

Our products are under warranty to be free from defects, and we will, at our option, repair or replace the product should it fail within one year from the first date of shipment. Our warranty is limited to defects in workmanship or materials, and does not cover customer damage, lightning or power surge damage, abuse, or unauthorized modification.

Out-of-warranty service

Patton services what we sell, no matter how you acquired it, including malfunctioning products that are no longer under warranty. Our products have a flat fee for repairs. Units damaged by lightning or other catastrophes may require replacement.

Returns for credit

Customer satisfaction is important to us, therefore any product may be returned with authorization within 30 days from the shipment date for a full credit of the purchase price. If you have ordered the wrong equipment or you are dissatisfied in any way, please contact us to request an RMA number to accept your return. Patton is not responsible for equipment returned without a Return Authorization.

Return for credit policy

* Less than 30 days: No Charge. Your credit will be issued upon receipt and inspection of the equipment.

* 30 to 60 days: We will add a 20% restocking charge (crediting your account with 80% of the purchase price).

* Over 60 days: Products will be accepted for repairs only.

RMA numbers

RMA numbers are required for all product returns. You can obtain an RMA by doing one of the following:

* Completing a request on the RMA Request page in the *Support* section at **www.patton.com**

* By calling **+1 (301) 975-1007** and speaking to a Technical Support Engineer

* By sending an e-mail to **returns@patton.com**

All returned units must have the RMA number clearly visible on the outside of the shipping container. Please use the original packing material that the device came in or pack the unit securely to avoid damage during shipping.

Shipping instructions

The RMA number should be clearly visible on the address label. Our shipping address is as follows:

> **Patton Electronics Company**
> RMA#: xxxx
> 7622 Rickenbacker Dr.
> Gaithersburg, MD 20879-4773 USA

Patton will ship the equipment back to you in the same manner you ship it to us. Patton will pay the return shipping costs.

Appendix A **Compliance information**

Chapter contents

Compliance

EMC Compliance
- EN55022, Class B
- EN55024
- EN 61000-3-2
- EN 61000-3-3
- EN55024

Safety Compliance
- UL60950-1/CSA C22.2 No. 60950-1
- IEC/EN60950-1 2nd Edition
- AS/NZS60950-1

PSTN Compliance
- ACMA AS/ACIF S003:2008

CE Declaration of Conformity

Patton Electronics, Inc declares that this device is in compliance with the essential requirements and other relevant provisions of:

2004/108/EC on the approximation of the laws of the member states relating to electromagnetic compatibility.

2006/95/EC on the approximation of the laws of the member states relating to electrical equipment designed for use within certain voltage limits.

$C \, E$ **The safety advice in the documentation accompanying this product shall be obeyed. The conformity to the above directives are indicated by the CE sign on the device.**

The safety advice in the documentation accompanying this device shall be obeyed. The conformity to the above directive is indicated by CE mark on the device.

EG-Konformitätserklärung

Produktbezeichnung: SN-DTA

Die bezeichneten Produkte stimmen in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender Richtlinie überein:

2004/108/EG

Richtlinie des europäischen Parlaments und des Rates vom 15. Dezember 2004 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/336/EWG.

2006/95/EG

Richtlinie des europäischen Parlaments und des Rates vom 12. Dezember 2006 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen.

$C\epsilon$ **Die Sicherheitshinweise in der mitgelieferten Produktdokumentation sind zu beachten.**

Die Konformität mit der oben erwähnten Richtlinie wird durch das CE-Zeichen auf dem Gerät bestätigt.

Die unterzeichnete Konformitätserklärung kann heruntergeladen werden von: www.patton.com/certifications/ .

Authorized European Representative

D R M Green,
European Compliance Services Limited.
Oakdene House, Oak Road ,
Watchfield,
Swindon, Wilts SN6 8TD, UK

Appendix B **Specifications**

Chapter contents

DSP

One 2/4 channel DSP

Voice connectivity

Single/dual ISDN BRI So (NT), 4-wire RJ45 port labeled *BRI*

Single ISDN BRI So (TE), 4-wire RJ45 port labeled *BRI (SN-DTA/2BIS2V/EUI model only)*

Point-to-point, point-to-multipoint configurable

BRI port provides ISDN line power to connected terminals

Failover relay between ports BRI 0/0 and BRI 0/1 *(SN-DTA/2BIS2V/EUI model only)*

Data connectivity

10/100Base-TX Ethernet WAN port

Full duplex, autosensing, auto-MDX

Voice processing (signaling dependent)

2/4 full-duplex channels of Voice CODECS:

- G.711 A-Law/ -Law (64 kbps)
- G.726 (ADPCM 40, 32, 24, 16 kbps)
- G.723.1 (6.3 kbps)
- G.729ab (8 kbps)
- Transparent ISDN data

G.168 echo cancellation

DTMF detection and generation

Carrier tone detection and generation

Silence suppression and comfort noise

Configurable dejitter buffer

Configurable tones (dial, ringing, busy)

Configurable transmit packet length

RTP/RTCP (RFC 1889)

Fax and modem support

Automatic fax and modem detection

Codec fallback for modem-bypass

T.38 Fax-Relay (Gr. 3 Fax, 9.6 k, 14.4 k)

G.711 Fax-Bypass

Voice signalling

SIPv2

H.323v4

SIP call transfer, redirect

Overlap or en-bloc dialing

DTMF in-band, out-of-band

Configurable progress tones

Voice routing—session router

Local switching

Interface huntgroups

Call-Distribution groups

Call Routing Criteria:

- Interface
- Calling/called party number
- Time of day, day of week, date
- ISDN bearer capability
- Various other information elements (IEs) of the ISDN setup
- Wildcard and regular expression matching

Number manipulation functions:

- Replace numbers
- Add/remove digits
- Pattern matching and replacement

IP services

DiffServe/ToS set or queue per header bits

802.1p VLAN tagging

IPSEC AH & ESP Modes

Manual Key; IKE optional

AES/DES/3DES Encryption

> **Note**   To use the IPSec VPN capabilities including AES/DES/3DES encryption with the SN-DTA, you may need to purchase additional license keys.

Management

Industry standard CLI with remote Telnet access

HTTP web management and firmware loading

TFTP configuration & firmware loading

SNMP v1 agent (MIB II and private MIB)

Built-in diagnostic tools (trace, debug)

Operating environment

Operating temperature
32–104°F (0–40°C)

Operating humidity
5–80% (non condensing)

System

CPU Motorola MC870 operating at 66 MHz

Memory:

- 32 Mbytes SDRAM
- 4 Mbytes Flash

Dimensions

8.2W x 1.3H x 6.5D in. (20.8W x 3.4H x 16.5D cm)

Weight and power dissipation

See table 6.

Table 6. SmartNode weight and maximum power specifications

SmartNode model	Weight	Maximum power dissipation
SN-DTA	<15.9 oz./450 g	4W

Appendix C **Cabling**

Chapter contents

Introduction

This section provides information on the cables used to connect the SN-DTA and the interface cards to the existing network infrastructure and to third party products.

Ethernet

Ethernet devices (10Base-T/100Base-T) are connected to the SN-DTA over a cable with RJ-45 plugs. All Ethernet ports on the SN-DTA are Auto-MDX and use any straight or crossover cable to connect to hubs, switches, PCs or other devices.

Straight-through cable

RJ-45, male   **RJ-45, male**

1 ———————————————————————— 1
2 ———————————————————————— 2
3 ———————————————————————— 3
6 ———————————————————————— 6

Note: Other pins are not used.
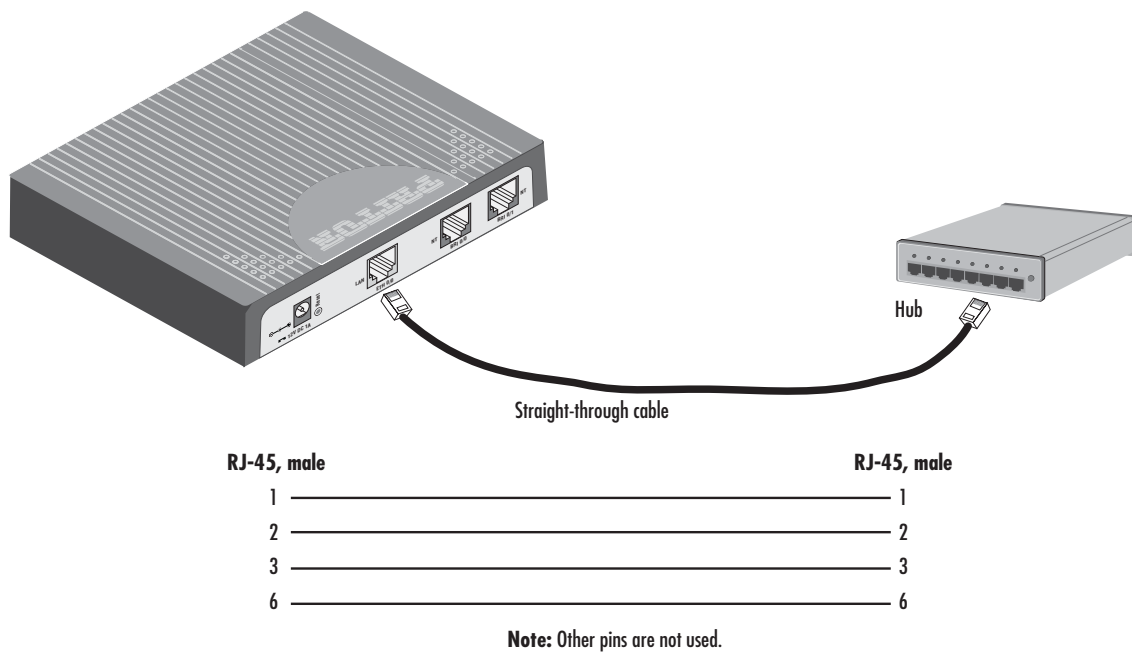
Figure 10. Typical Ethernet straight-through cable diagram

ISDN BRI

The ISDN port connects to ISDN terminals (phones, PBXs) or an ISDN S-BUS using cables terminated with RJ-45 connectors. Use straight-though cables to connect to the TE port of your phone, PBX, or residential S-BUS.

Telephone

RJ-45, male   **RJ-45, male**

3 ——————————————————————— 3
4 ——————————————————————— 4
5 ——————————————————————— 5
6 ——————————————————————— 6

Note: Other pins are not used.
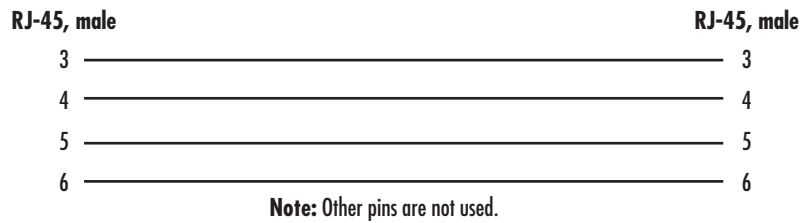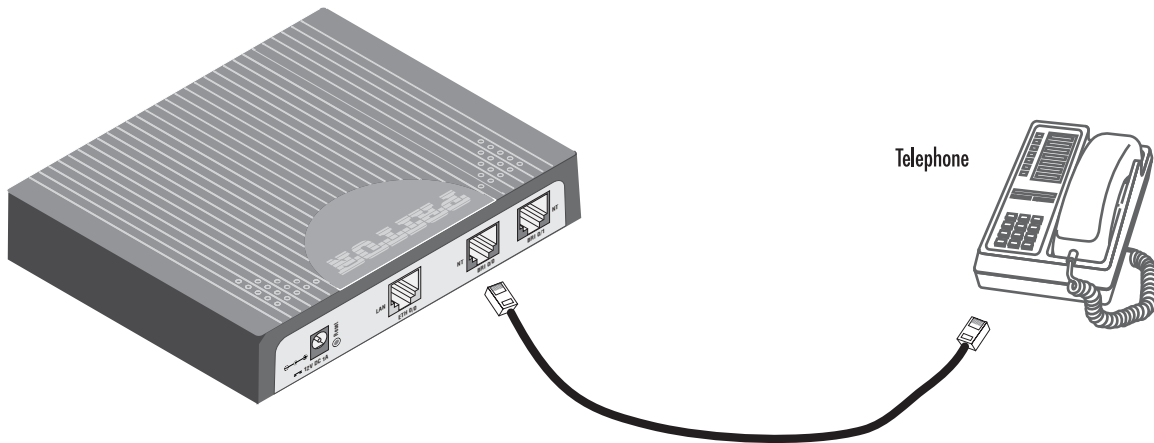
Figure 11. Connecting an ISDN device

Appendix D **Port pin-outs**

Chapter contents

Ethernet

Table 7. RJ-45 socket

Pin	Signal
1	TX+
2	TX-
3	RX+
6	RX-

Note   Pins not listed are not used.

ISDN BRI NT (Net) port

The BRI phone port uses an 8-pin RJ-45 connector (the pinout is shown in table 8).

Table 8. RJ-45 socket

Pin	Signal
3	Rx+
4	Tx+
5	Tx-
6	Rx-

Note   Pins not listed are not used.

ISDN BRI TE (User) port

The BRI *TE* port uses an 8-pin RJ-45 connector (the pinout is shown in table 8).

Table 9. RJ-45 socket

Pin	Signal
3	Tx+
4	Rx+
5	Rx-
6	Tx-

Note   Pins not listed are not used.

Note   All pins between the *NT* and *TE* ports are connected during power failure. Fallback relay operation:

- When the unit is not powered, the fallback relay connects pins 3, 4, 5, and 6 of the net and the user ports (fallback) together. This enables you to place calls to the PSTN even if the unit is powered down.

Appendix E **SN-DTA factory configuration**

Chapter contents

Introduction

The factory configuration settings for the SN-DTA are shown below.

```
#----------------------------------------------------------------#

#                                                                #

# Factory configuration file                                     #

#                                                                #

#----------------------------------------------------------------#



sntp-client

sntp-client server primary 129.132.2.21 port 123 version 4



system



  ic voice 0

    low-bitrate-codec g729



context ip router



  interface eth0

    ipaddress dhcp

    tcp adjust-mss rx mtu

    tcp adjust-mss tx mtu



port ethernet 0 0

  medium auto

  encapsulation ip

  bind interface eth0 router

  no shutdown
```

Appendix F **End user license agreement**

Chapter contents

End User License Agreement

By opening this package, operating the Designated Equipment or downloading the Program(s) electronically, the End User agrees to the following conditions:

1. Definitions

A)   *Effective Date* shall mean the earliest date of purchase or download of a product containing the Patton Electronics Company Program(s) or the Program(s) themselves.

B)   *Program(s)* shall mean all software, software documentation, source code, object code, or executable code.

C)   *End User* shall mean the person or organization which has valid title to the Designated Equipment.

D)   *Designated Equipment* shall mean the hardware on which the Program(s) have been designed and provided to operate by Patton Electronics Company.

2. Title

Title to the Program(s), all copies of the Program(s), all patent rights, copyrights, trade secrets and proprietary information in the Program(s), worldwide, remains with Patton Electronics Company or its licensors.

3. Term

The term of this Agreement is from the Effective Date until title of the Designated Equipment is transferred by End User or unless the license is terminated earlier as defined in section

4. Grant of License

A)   During the term of this Agreement, Patton Electronics Company grants a personal, non-transferable, non-assignable and non-exclusive license to the End User to use the Program(s) only with the Designated Equipment at a site owned or leased by the End User.

B)   The End User may copy licensed Program(s) as necessary for backup purposes only for use with the Designated Equipment that was first purchased or used or its temporary or permanent replacement.

C)   The End User is prohibited from disassembling; decompiling, reverse-engineering or otherwise attempting to discover or disclose the Program(s), source code, methods or concepts embodied in the Program(s) or having the same done by another party.

D)   Should End User transfer title of the Designated Equipment to a third party after entering into this license agreement, End User is obligated to inform the third party in writing that a separate End User License Agreement from Patton Electronics Company is required to operate the Designated Equipment.

5. Warranty

The Program(s) are provided *as is* without warranty of any kind. Patton Electronics Company and its licensors disclaim all warranties, either express or implied, including but not limited to the implied warranties of merchantability, fitness for a particular purpose or non-infringement. In no event shall Patton Electronics Company or its licensors be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use of or inability to use the Program(s), even if Patton Electronics Company has been advised of the possibility of such damages. Because some states do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply to you.

If the Program(s) are acquired by or on behalf of a unit or agency of the United States Government, the Government agrees that such Program(s) are *commercial computer software* or *computer software documentation* and that, absent a written agreement to the contrary, the Government's rights with respect to such Program(s) are limited by the terms of this Agreement, pursuant to Federal Acquisition Regulations 12.212(a) and/or DEARS 227.7202-1(a) and/or sub-paragraphs (a) through (d) of the "Commercial Computer Software - Restricted Rights" clause at 48 C.F.R. 52.227-19 of the Federal Acquisition Regulations as applicable.

6. Termination

A)   The End User may terminate this agreement by returning the Designated Equipment and destroying all copies of the licensed Program(s).

B)   Patton Electronics Company may terminate this Agreement should End User violate any of the provisions of section "4. Grant of License" on page 51.

C)   Upon termination for **A** or **B** above or the end of the Term, End User is required to destroy all copies of the licensed Program(s)

7. Other licenses

The Program may be subject to licenses extended by third parties. Accordingly, Patton Electronics Company licenses the Programs subject to the terms and conditions dictated by third parties. Third party software identified to the Programs includes:

• A routing license is included at no charge.

• MGCP and VPN capabilities will require the purchase of an additional license.

• The LGPL (Lesser General Public License) open source license distributed to you pursuant to the LGPL license terms (**http://www.gnu.org/licenses/lgpl.html).**

• RedBoot (Red Hat Embedded Debug and Bootstrap) embedded system debug/bootstrap environment from Red Hat distributed to you pursuant to the eCos license terms (**http://ecos.sourceware.org/license-overview.html**) and GNU General Public License (GPL) terms (**http://www.gnu.org/copyleft/gpl.html**). Source code is available upon request.