

## Express XR/XRT 128 kbps ISDN Modem

## **Quick Start Guide**

1200153L1 Express XR, Data Only 1200153L2 Express XRT. Two Phone

1200153L2 Express XRT, Two Phone Ports 3360.9VU01 Express XR Power Supply, 9.0 V DC Output

3360.9VU01 Express XR Power Supply, 9.0 V DC Output 336048VUR-2 Express XRT Power Supply, 48 V DC Output

61200.153L1-13E September 1996

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- If your telephone equipment (Express XE/XRT) causes barm to the telephone network, the Telephone Company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice in practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the PCC.
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- 4. This unit contains no user-serviceable parts.

#### FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This capinment has been tested and found to comply with the limits for a class Belgital device, pursuant to Part I for the PCC Rels. These limits are designed to provide reasonable protection against harmful interference in a readensial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not insulted and used in accordance with the instructions, may cause harmful interference to radio or I'v reception, which can be determined by turning the equipment off and on. The user is enounged ut to it correct the interference by one or more of the following concurrence of the control of the

- · 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 that to which the receiver is connected
- · Consult the dealer or an experienced radio/ TV technician for help.

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This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil nuerique respecte les limites de bruits radioelectriques applicables aux appareils numeriques de Class B prescrites dans la norme sur le materiel brouilleur: "Appareils Numeriques," NMB-003 edictee par le ministre des Communications.

#### CANADIAN EQUIPMENT LIMITATIONS

Notice: The Canadian Industry and Science Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord.) The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment mailtanctions, may give the telecommunications company cause to request the user to disconnect the cautiment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

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The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all devices does not exceed 100. WARRANTE ADTRAN warrants that items manufactured by ADTRAN and supplied under Buyer's order shall be free from defects in materials and workmanship and will conform to applicable specifications and drawings. ADTRAN's hishibit perior, whether based upon breach of warranty or contract or negligence in manufacture, shall be limited to replacement or perior at ADTRAN's cleation and and apply only where flayer has given adVATRAN written shorter or an encoderming terms, provided that this warranty shall apply only where flayer has given ADTRAN written shorter of such dictors to neconforming them. In the contraction of the state of the shall be found to the contraction of the shall be found to the shall be found to the shall be found to the shall be added to the shall be shall be found to the shall be shall be found to the shall be sha

\*Note: The following items carry warranty period as shown.

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- Encapsulated U-Repeater and Encapsulated DDS Repeater 2 years.

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#### Telephone Company Contacts for ISDN Service

Ameritech ISDN Repair 1-800-TEAMDATA Bell Atlantic 1-800-204-7332 Bell South 1-800-247-2020

Cincinnati Bell 1-513-566-1611 N YNEX 1-800-N YT-FAST (New York Area) 1-800-650-ISDN (New England Area)

Pac Bell 811-8081\*

Rochester Tel 1-716-777-1811 Southwestern Bell 1-214-841-7799 (Dallas area)

1-800-286-8313 (Houston area) 1-800-344-6357 (Austin area)

1-314-571-2200 (St. Louis area) US West 1-800-223-7508

'all Pac Bell customers may call this number with no need for area code

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## Chapter 1 Introduction

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#### EXPRESS XR/XRT OVERVIEW

The Express XR/ XRT provides high speed network access for Internet and remote office connectivity using ISDN. The unit includes ISDN terminal adapter and network termination (NT1) functionality, eliminating the need for an external NT1 device.

The Express XR™ and the Express XRT™ provide the following features:

- · Data rates up to 230.4 kbps over eight times faster than analog modems
- Simple setup with the Express Configuration Wizard™
- · Automatic SPID and Switch Detection (patent pending) Stac<sup>n</sup> LZS™ compression up to 230.4 kbps
- · Remote configuration
- HyperACCESS® data communications software

· Windows® Plug and Play compatibility

- · Connections for two analog devices
- The Express XRT provides the following additional features: External analog modem support - no additional COM port required (patent pending)
- · Custom calling features and Caller ID support

#### GETTING STARTED

This Ouick Start suide describes how to install, operate, and troubleshoot the Express XR and Express XRT ISDN modems, referred to throughout this guide as Express XR/ XRT.

Express XR/XRT Quick Stort Guide

Before getting started, review the section Minimum Requirements in this chapter to ensure your computer is compatible. In addition, examine the contents of the box to ensure everything has been received undamaged and gather the required setup information provided by your telephone company.

#### MINIMUM REQUIREMENTS

#### What You Provide

In order to operate the Express XR/ XRT the following is required:

- . A computer (386 or higher PC, or Macintosh)
- Windows 3.1 or higher for PC
- 16550 UART high speed serial port (16650 UART required for data speed of 230.4 kbps)
- RS-232 serial cable with a DB-25 connector for the Express XR/ XRT and the other end matching the COM port on the computer (Do not use a null modem cable)
- One Basic Rate ISDN line (Two ISDN phone numbers, sometimes referred to as local directory numbers)

  Single ISDN phone number and point-to-point lines are not recom-



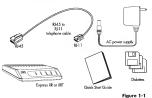
# mended for use with the XRT. Basic Rate ISDN Line

When ordering your ISDN line from the telephone company, request IEZ-ISDN I (Capability Package U) to ensure it is set up properly. EZ-ISDN I is recommended by the industry for most home officer's and business applications. IEZ-ISDN is not available from your service provider order Generic Data M. For more information regarding ordering ISDN Service User Guide part number 6000.015. As or other the telephone company for alternative available on the ADTRAN document of the Company of the ADTRAN document of the Company of the ADTRAN document of the Company of the ADTRAN document of the ADTRAN d

#### What ADTRAN Provides

The ADTRAN Express XR/ XRT is packaged with the following contents (see Figure 1-1):

- · Express XR or Express XRT
- · ADTRAN Express XR/ XRT Quick Start Guide
- ADTRAN Express Configuration Wizard software (2 disks)
   HyperACCESS® communications software (1 disk)
- AC power supply
- RJ-45 to RJ-11 telephone cable



Express XR/XRT Contents

Chapter 1.	Introduction		

## Chapter 2 Installation

#### INSTALLING THE ADTRAN EXPRESS XR/XRT

This section describes how to connect the Express XR/ XRT to a PC and how to install the Express Configuration Wizard software.

## Verify Switch Settings

Dip switches 1 and 2 located on the rear panel of the Express XR/ XRT allow certain settings to be physically configured. Figure 2-1 shows the location of the dip switches on the rear panel of the unit.



The factory default position for all switches is down (On) during initial installation.

```
SW 1: Off (Up) = 230.4 kbps
On (Down) = Autobaud (speeds up to 115.2 kbps)
```

If switch 1 is set to the Off position, the unit is set to operate at a DTE speed of 2304.4 bys. A special serial COM port using a 16650 UART is required while in this mode. If switch 1 is set to the On position, the unit will automatically adapt to the DTE rate (up to 115.2 kbps).



In order to configure the Express XR/XRT to operate at 230.4 kbps with Window 59 or Window 15 or A.O Duk-Up Networking, a new modes must be added from the Modens ison in the Centrol Penel. Exter the name for this new connection and select ADTRAN Express XR or XRT 230.4 Kbps & 16650 UART. See the section Installing Windows 59 Dial-Up Networking.

SW 2: Off (Up) = Factory Default

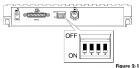
On (Down) = Normal (previous settings saved)

If Switch 2 is set to the Off position, the unit continues to use the factory default settings until Switch 2 is set to the On position. Also, area code, phone numbers, SPIDS, and stored numbers are cleared.

#### Express XRT Only:

SW 3: Off (Up) = Phone Volume Loud On (Down) = Phone Volume Normal

SW 4: Reserved for future use.

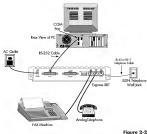


Dip Switches on Rear Panel

## Connecting the Express XR/XRT

- 1. Turn the computer off.
  - Using an RS-232 cable, (see the section Minimum Requirements) connect the end with the DB-25 connector to the port labeled RS-232 on the Express XR/ XRT rear panel.
  - Connect the other end of the RS-232 cable to an available serial COM port on the PC.
- Plug the small round end of the AC power cord into the jack labeled POWER on the Express XR/ XRT rear panel.
- Place the AC power cord plug into a 120 VAC electrical outlet. The Express XR/ XRT is now powered on.
- Plug the RJ-45 connector (large end) of the RJ-45 to RJ-11 telephone cable into the jack labeled ISDN on the rear of the Express XR/ XRT.

- Plug the RI-II connector (small end) of the RI-45 to RI-II telephone cable into the ISDN telephone wall jack. At this time the Express XRY XRT is powered on and the PWR LED should either be flashing or on solid. See the section IEDs for more information.
- Power on the computer.
   Go to the Express XR/XRT Software Installation procedure.



Standard ISDN Internet/Remote Access Application

## Express XR/XRT Software Installation

The installation procedure varies according to the PC operating system. If the PC is not already on, power on the PC, start Microsoft Windows and use the following installation procedure that applies to your operating system.

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#### Microsoft Windows 95 and Windows NT 4.0

## Windows 95 Plug and Play

- During the Windows 95 boot process, if the New Hardware Found screen appears indicating Unknown Devlee, select Driver from disk provided by hardware manufacturer. If the Windows 95 New Hardware Found screen does not appear, skip the rest of this section and go to the Win 95/NT 4.0 Courtal Partel Modem Intellation section.
- Insert the disk labeled Windows 95 and Windows NT into the 3.5" floppy disk drive.
- Click OK. The Install From Disk screen should appear.
   Click OK or use Browse to locate the correct disk drive.
- Select ADTRAN Express XR or XRT from the Drivers list.
   Click OK. Windows installs the INF file and a modem
- labeled ADTRAN XR or XRT on the COM port to which the unit is connected.
- Check for the device. From Start, choose Settings, then Control Panel, then double click Modems.
   The ADTRAN Express XR or XKT should be listed under the General tab in the Modems Properties dialog box.
- If the computer does not have a 16650 UART (or you are not sure
  it has a 16650 UART), select the ADTRAN Express XR or XRT,
  click on Properties, and change the Maximum speed from 230400
  - to 115200.

    9. Click OK.
  - Click Close.
     Go to the Express Configuration Wizard Installation section.

## Win 95/NT 4.0 Control Panel Modem Installation

For Windows NT 4.0, you must be a member of the administrator group to ustall a new modem.

- From the Start button, choose Settings, then choose Control Panel, then double click Modems.
- If a modem has not been installed on the computer previously, the modem installation process begins immediately. From this menu, choose Add to begin installation of the Express XR/ XRT.
- In the Install New Modern dialog box, check Don't detect my modern; I will select it from a list.

-

- 4. Click NEXT.
- 5. Click the Have Disk button.
- 6. Insert the disk labeled Windows 95 and Windows NT into the 3.5" floppy disk drive.
- 7. Click OK. 8. Select ADTRAN Express XR or XRT from the Drivers list.
- Click NEXT 10. Choose the COM port to which the Express XR/ XRT is
- attached from the list of available COM ports
- 11. Click NEXT. The modem.INF file is now installed. 12. Continue the installation by providing country, area code,
- and outside line access information as prompted. 13 Click NEXT
- 14. Click Finish to complete the modem installation process. 15. Select Close.
- 16. Go to the Express Configuration Wizard Installation section.

## Express Configuration Wizard Installation

The Express Configuration Wizard is a graphical user interface which allows you to configure and test the Express XR/ XRT with ease. Follow the installation procedure that applies to the operating system.

#### Microsoft Windows 95 and Windows NT 4.0

- From the Start button, choose Settings, then Control Panel, then double click Add/Remove Programs
  - 2. From the Install/Uninstall tab select the Install button. 3. Insert the disk labeled Windows 95 and Windows NT.
  - 4 Click NEXT
  - 5. If the disk is found click Finish, otherwise use Browse to first locate the disk. The Express Configuration Wizard
- begins installation. 6. Follow the step-by-step screen instructions throughout the installation process. Three options are available for installation during the Express Configuration Wizard installation: Express Configuration Program, INF Files, and HyperACCESS Communications Software. Figure 2-3 illustrates the three options.

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Installation Options

By default, the Express Configuration Wizard and INF files are installed. Click on the box labeled HyperAccess Communications Software if you wish to use HyperACCESS as your communications software. Otherwise, leave the box unchecked.

Once installation is complete, an ADTRAN group is created and placed in the Programs menu on the Start button. The software can be started by choosing the Express Configuration Wizard icon or it can also be started by double clicking on the ADTRAN Express Configuration (no located on the control panel)

#### Get On With It!

Go to the section Using the Express Configuration Wizard.

#### Microsoft Windows 3.1 and Windows NT 3.51

If running Windows 3.1, or version 1.2 or later of the Express Configuration Wizard, skip the Windows NT 3.51 INF File Installation section and go to Express Configuration Wizard Installation section.



If running Windows NT 3.51, install remote access service before following the INF file installation procedure.

#### Windows NT 3.51 INF File Installation

To install an ADTRAN Express XR/ XRT use the following procedure:

- Locate the modem.inf file. This file is normally located in the cd winnt35 system32t rus directory. See the Windows NT documentation for instructions on installing the Remote Access Service.
- In order to recover in case of a user mistake, create a backup of the modem.inf file.
   Using Notepad or another text editor, open the adtran.inf
- file on the Express Configuration Wizard disk labeled Windows 95 and Windows NT
- Copy the contents of the adtran.inf file to the Windows clipboard.
   Open the modem.inf file.
- Paste the contents of the clipboard (adtran.inf) to the end of the modern inf file.
- 7. Save the altered modem inf file.
- 8. Close the modem inf file.
- Restart the system.
   Go to the section Express Configuration Wizard Installation.

The Express XR/ XRT can now be configured for use with the Remote Access Service.

## **Express Configuration Wizard Installation**

### Microsoft Windows 3.1 and Windows NT 3.51

The Express Configuration Wizard is a graphical user interface which allows you to configure and test the Express XR/ XRT with ease. Follow the installation procedure that applies to the operating system.

- For Windows 3.1 operating systems, insert the ADTRAN Express Configuration Wizard disk labeled Windows 3.1 into your 3.5" disk drive. For Windows NT 3.51, insert the disk labeled Windows 95, Windows NT into your 3.5" disk drives.
- In Windows Program Manager, select the Run... option under the File menu.

...............

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- In the command line, type at setup (where a is the disk drive where the ADTRAN Express Configuration Wizard disk was inserted).
- Follow the screen prompts and insert disk(s) as requested.

Once installation is complete, an ADTRAN program group is created and placed in the Program Manager. The Express Configuration Wizard software can be started by double clicking on the Express Configuration icon in the ADTRAN program group. The ADTRAN Express Configuration Warzad software can also be started by double clicking on the Express Configuration icon on the Control Panel.

#### Get On With It!

Go to the section Using the Express Configuration Wizard.

### **Basic Telephone Service**

In addition to the computer connection, two analog devices such as a telephone, FAX, modem, answering machine, or caller ID box can be connected using the two POTS interfaces on the rear panel (RJ-II jacks labeled I and 2 with a diagram of a telephone above the iack).

### Supplementary Voice Services

Supplementary services such as call forwarding, caller ID, call return, call holding, three- or six-way conference, call transfer, and call waiting are fully supported by the Express XR/ XRT on a touch-tone telephone. These services are available only if included in the ISDN hine configuration and are implemented using the standard commands provided by the telephone commany.

#### Call Waiting

Call Waiting permits one voice call to be placed on hold while answering another voice call. Use the flash-hook to place the active call on hold and answer an incoming call. Hanging up terminates both calls. The call waiting tone can be disabled and enabled using a touch-tone phone as follows:

Disable call waiting: Press \*\* 0
Enable call waiting: Press \*\* 1

### **Conference Calling**

Conference Calling (also known as three-way calling) permits a conversation between three parties, each at different locations.

During a voice call, the call waiting tone signals a second incoming call. Flash-hook to place the first call on hold and answer the incoming call. Flash-hook again to retrieve the first caller. A third flash-hook conferences all three parties.

#### **Automatic Redial**

Automatic redial dials the last number dialed. This can be accomplished using a touch-tone phone as follows:

Redial last number: Press \*\* 5



When connecting to a National ISDN 1 switch, call conferencing and call transferring are assigned a unique feature identifier number. This number may not be the same in all areas. S-registers 90 and 91 contain the feature identifier numbers for conference and transfer. If these features do not work, contact your ISDN provider.

#### Phone Number Allocation

The Express XRT allocates ISDN phone number 1 to POTS port 1. Connect the primary telephone to POTS port 1 as shown in Figure 2-2.

ISDN phone number 2 is shared by the RS-232 port and POTS port 2, therefore only one can be used at a time.



ISDN data colls and external modem applications must be placed to ISDN phone number 2.

## Single Phone Number Operation

For AT&T 5ESS point-to-point lines and other lines with a single phone number, incoming voice calls are routed to POTS port 2 to allow for use of either a modem or a telephone. Service on POTS port 1 is not available.

## Using the Express Configuration Wizard

 From the Start button, choose Programs, then ADTRAN, then double click Express Configuration. After autodetection, the screen shown in Figure 2-4 is displayed; skip to Step 5. If the Express XEV XET cannot be auto-detected the error message shown in Figure 2-5 is displayed.



Figure 2-4
ADTRAN Express Configuration Screen



- If the error message shown in Figure 2-5 is displayed, click Cancel. The screen shown in Figure 2-4 is displayed.
- Select the Connection tab. The screen shown in Figure 2-6 is displayed.



Express Configuration Wizard Connection Tab

- Check the power and the cable connections then select the Auto-Detect button. If the error message shown in Figure 2-5 is displayed again, see the chapter Troubleshooting.
- Choose Wizard under the Configuration tab.
   Read the screen instructions and click NEXT.
- Verify the unit information and the COM port to which it is connected are shown correctly; choose NEXT.
- Enter the area code and ISDN phone numbers provided by the ISDN service provider. Since the ADTRAN Express XR/ XRT supports an Automatic SPID and Switch Detection algorithm, this is all the information required.
- 9. Click NEXT.

- Click NEXT to use Automatic SPID and Switch Detection or enter the Switch Type and service profile IDs (SPIDs) provided by the telephone company.
- Check the Auto-detect SPIDs/Switch Types option.
   Click NEXT.
- Choose the factory profile closest to your particular application. The Preview button can be used to view these settings.
- Click NEXT.
   To change the profile name for future reference select the
- Change Profile name option and enter a new name. Otherwise, the default name shown on the sereen is used. Ensure the telephone cable between the Express XR/ XRT ISDN connected and the walljack is connected before proceeding.
- Click Finish. The Auto-Detecting Service Profile IDs screen is displayed while the Automatic SPID and Switch algorithm executes.

After installation is complete the Express XR/ XRT is ready for use. If any error screens are encountered or the unit remains at Link Down for longer than 15 minutes, see the chapter Trouble-shooting.

## Auto-Detect SPIDs/Switch Type

Auto-detection of SPIDs and Switch Type greatly reduces the likelihood of time-consuming problems occurring during installation of the Express XR/ XRT. It evaluates common SPID formats based on the area code and phone numbers and reports success after placine at east call.



After installation is complete, the Express XR/XRT resets the ISDN line for a clean start. Therefore, the PWR/LINE LED may not be on solid (indicatine link up) for a few more seconds.

In the few cases where the procedure does not succeed, the nonstandard SPIDs may be entered at Step 10 of the preceding procedure (Using the Express Configuration Wizard).

## Using the Express Configuration Wizard Help

On-line help is available by clicking the Help button displayed in the Configuration screen. On-line help provides detailed information regarding such features as creating a custom profile, defining a user button, remote configuration, and testing.

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## **Express Configuration Wizard Tray Tool**

The Tray Tool is used for quick access to the Express Configuration Wizard and to enable or disable the external analog modem when used with an Express XRT.



The Express Configuration Wizard Tray Tool is provided only with the Windows 95 and Windows NT 4.0 versions of the Express Configuration Wizard.

To enable the Express Configuration Wizard Tray Tool, use the following procedure:

- Run the Express Configuration Wizard. See the section Using the Express Configuration Wizard.
- Close the Express Configuration Wizard.
- Once the Express Configuration Wizard is closed, the Windows 95 or Windows NT 4.0 taskbar will have a new icon in the Tray Tool. Figure 2-7 flustrates the new taskbar with the new icon in the Tray Tool.



Figure 2-7
Express Configuration Wizard Tray Tool

To prevent the Express Configuration Wizard Tray Tool from launching once the Express Configuration Wizard software is closed, uncheck the box labeled Add tray icon under the Preferences tab in the Express Configuration Wizard software (shown in Figure 2-8).



Figure 2-8
Preferences Tab

Three icons appear in the Tool Tray at different times representing three different states of the Express Configuration Wizard Tray Tool.

The icon illustrated in Figure 2-9 indicates the external analog modern is connected to the Express XRT and is enabled. Double clicking on this icon causes the Express Configuration Wizard Tray Tool to disable the external analog modern.

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external analog modem.



Figure 2-9
Express XRT Disabled, External Analog Modern Enabled

This icon is not available when using an Express XR. Double clicking on this icon, when using an Express XRT, enables the

The icon illustrated in Figure 2-10 indicates the external analog modem is not connected and/ or not enabled.

Double clicking on this icon enables the external modem when connected to an Express XRT. This is the default icon when in use with the Express XR.



Figure 2-10
Express XR/XRT Enabled, External Analog Modem Disabled

The icon illustrated in Figure 2-11 indicates the Express Configuration Wizard Tray Tool is in an unknown state. This icon may appear if the Express XRT is not connected to a COM port on the PC. Double clicking on this icon instructs the Express Configuration Tray Tool to refresh the connection status.



Figure 2-11 Unknown State

## **Express Configuration Tray Tool Menu**

When using the Express Configuration Wizard Tray Tool with the Express XRT, use the right mouse button and click on the icon. The menu in Figure 2-12 appears.



Figure 2-12
Express Configuration Wizard Tray Tool Menu

If the Express Configuration Wizard Tray Tool is used with an Express XR, a slightly different menu appears.

## Enable/Disable Modem

Enable or Disable the external analog modem. This option is only available when connected to an Express XRT. See the chapter Installing an Analog Modem for more information.

#### **Properties**

Launches the Express Configuration Wizard software.

## Refresh

Instructs the Express Configuration Wizard Tray Tool to refresh the icon status.

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## About

Displays version information.

#### Evie

Exits the Tray Tool

## Installing Windows 95 Dial-Up Networking

Dial-Up Networking for Windows 95 is most commonly used for connections to Internet Service Providers or other networks.

Use the following procedure to install Windows 95 Dial-Up Networking:

- From Start, choose Settings, then Control Panel, then double click Add/Remove Programs.
- Double click on the Communications option under the Windows Setup tab.
- 3. If not already selected, check Dial-Up Networking-
- Click OK to select these changes.
   Click OK to begin installation of Dial-Up Networking.
- Restart the computer.
   Once Windows boots, from Start, choose Settings, then
   Control Panel, then double click Network.
- From the Network list, verify the following components are installed: Dial-Up Adapter and TCP/IP for Dial-Up Adapter. If you intend to use your Express XRV XRT for Internet access, these should be the only components needed. Verify the software setup from your internet Service Provider or network administrator to ensure the networking components are set up properly.
- Click OK once you have verified these components are installed.
- To create a Dial-Up Networking connection select My Computer, then choose Dial-Up Networking. The first time Dial-Up Networking has been used, the Welcome to Dial-Up Networking menu appears.
- 11. Click NEXT.
- 12. Enter the name for this connection and select the ADTRAN Express XR or XRT from the modern list. You may configure DTE speed and server information by choosing the Configure button next to the selected modern.
- 13. Click NEXT.

- 14. In the Make a New Connection menu, enter the number to
  - 15. Click NEXT.
  - 16. Click Finish to complete the new connection setup.
- 17. To use this connection, select it from My Computer, Dial-Up Networking. Windows dails the number using the modern and properties as configured. When using the connection the first time, network log in information such as the user name and password must be entered. This information should be provided from the Internet Service Provider.

#### MACINTOSH CONFIGURATION

A Macintosh can be used to configure the Express XR/ XRT by using a terminal emulation package such as MicroPhone Pro™ and following the VT 100 configuration directions.

#### VT 100 TERMINAL EMULATION

The Express XE/ XRT can be configured using any communications package supporting VT 100 terminal emulation. To enterinto the menus, type ATIV Enter. To go to a particular menu, press the bot key sequence for that menu. The main branches of the menu tree and their hot keys are as follows:

STATUS (Ctrl + V) TEST (Ctrl + T) CONFIG (Ctrl + C) DIAL (Ctrl + D)



Ensure that the communications package is configured to pass these Control Sequences through to the Express XR/XRT.

To exit the menus, press Ctrl + X. The Ctrl + X command also places the unit back on-line if a call is connected.

Some features in the Express XR/ XRT do not immediately take effect upon selection. This prevents unintentional reconfiguration of the Express XR/ XRT during an active call. Items such as Protocol and Call Type take effect anly at the beginning of a new call.

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## VT 100 Configuration

- After connecting a VT 100 terminal enter the command ATIV followed by Enter. The Configuration screen is the first screen displayed. An illustration of this screen is shown in Figure 2-13.
- 2. Enter the area code.
- Enter ISDN phone number 1.
   Enter ISDN phone number 2.
- Enable Auto-Detect SPIDs/ Switch.
- View the status by using the key sequence Ctrl+V. An illustration of the status screen is shown in Figure 2-14.

Figure 2-13

VT 100 Terminal Configuration Menu

## VT 100 Terminal Status Buffer

The status buffer can be displayed at any time after entering the mean structure. Pressing Cod + V diplays the Express XW XRT Satus menu. The last 20 lastus messages generated during the Section of the Code of

Press Ctrl + C to return to the Configuration menu.

CRETITUDE STRIUS CRETITUPE CRETITUPE SELF TEXT SOFtware Pau Chicksys Exist Text Software Pau Chicksys Exist Mabber Loop Status Shus Droled EXIST COD OTT	Topics of States from   Topics   Topi
CtI-V STATUS	CHI-T TEST CHI-C CONFES CHI-D DIAL CHI-X EXIT

Figure 2-14
VT 100 Terminal Status Buffer Menu

V 1 100 Terminal Status Buffer Men

Chapter 2. Installation

# Chapter 3 Installing an Analog Modem

An external or internal analog modem can be connected to the Express XRT to access an Internet provider, BBS, or host server that does not support ISDN.

#### EXTERNAL ANALOG MODEM APPLICATION

In order to connect an external analog modem to the Express XRT, the following items are necessary:

- External analog modem
- RS-232 serial cable
- · RJ-11 to RJ-11 telephone cable



Incoming calls must use ISDN phone number 2 for external analog applications.

In addition to the RS-232 cable connecting the Express XRT to the PC, a separate RS-232 cable is required to connect an external analog modem to the Express XRT. This RS-232 cable is not supplied.

Figure 3-1 illustrates an external analog modem connected to the Express XRT. This setup requires only one PC COM port, and supports DTE rates of up to 115.2 kbps.

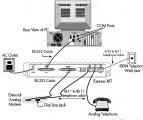


Figure 3-1 External Analog Modem Application

## Connecting an External Analog Modem

To connect an external analog modem to the Express XRT use the following procedure:

- Ensure the Express XRT is connected to the PC. See the section Connecting the Express XR/XRT for detailed instructions.
- Ensure the modern power is OFF before connecting it to the Express XRT.
- Connect one end of the RS-232 serial cable to the external analog modern.
- Connect the other end of the same RS-232 serial cable to the Express XRT port labeled MODEM. An illustration of a modem is positioned above the modem port.
- Connect one end of the RJ-11 to RJ-11 telephone cable to the telephone jack labeled 2 on the Express XRT. Positioned

above the jack is an illustration of a telephone above a modem.

- Connect the other end of the RJ-11 to RJ-11 telephone cable to the Dial Line or Line jack on the external analog modem. See the documentation with the external analog modem to determine which jack on the external analog modem is the Dial Line or Line jack.
- 7. Power ON the external analog modem.

The external analog modem is now connected to the Express XRT. In order to configure the external analog modem for use, set up the communications software to use the same COM port to which the Express XRT is connected.

If you are connecting a modem to the Express XRT that has altered y been in use by Windows 95, you are ready to use the external analog modem. The external analog modem can be enabled either through the Express Configuration Wizard or by using a VT 100 terminal emulation package. See the section Express Configuration Tray Tool Menu for more information on enabling and disability an analogo modem.

If you are connecting an external analog modem that has not been previously in use by Windows 95 see the section *Installing a* New External Analog Modem.

## Installing a New External Analog Modem

- Start the Express Configuration Wizard.
   Click Connect External Modern.
- Click Connect External Modem.
   Click Close
- 4. From Start, select Setting, then Control Panel, and double
- click Modems.
- 5. Click Add.
- 6. Select Don't detect my modem; I will select it from a list.
- 7. Click NEXT.
- Select the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
- 9. Click NEXT.
- Select the COM port to use with this modem. This will be the same COM port that is used by the Express XRT.
   Click NEXT
- 12. Click FINISH.

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- 13. Click Close.
- The external analog modern may now be used, or you may restart the Express Configuration Wizard and deselect the Connect External Modern option to enable the Express XRT.

## Configuring an External Analog Modem

If the modem does not support 29.04 kbps, Switch 1 on the back panel of the Express NRT must be 0 n (down) to install and use an external modem with the Express NRT. This limits the DTE speed to 115.2 kbps when using the Express NRT. This limits the DTE speed to 115.2 kbps when using the Express NRT with an external modem. To re-enable the 230.4 kbps operation for ISDN connections, set Switch 1 to the On position.

When using applications supporting Express XRT operation at 230.4 kbps with an external analog modem that does not support 230.4 kbps, attach the Express XRT to the high speed 16650 UART COM port and connect the external modem to a separate COM port. This allows the Express XRT to operate at 230.4kbps and the external modem to one rate at the reduced speed.

#### Required External Analog Modern Settings

There is one setting in the external modern that is required before trying to enable the modern with the Express Configuration Wizard. The Carrier Detect signal from the modern should be set to Normal (track the CD signal). This can be accomplished by using the AT command AT&CL. AT commands can be entered into the modern using the following procedure:

- <cr> indicates to press the Enter key on the keyboard.
- Open a terminal emulation session using HyperACCESS or HyperTerminal.
- Type AT\_L1 <cr>
- 3. Type AT <er>
- 4. Type ATI <cr>
- 5. Type AT &C1 <er>
- Type AT&W <er>
   Type AT L0 <er>

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## Controlling an External Analog Modem

There are three options for enabling and disabling an external modem: the Express Configuration Wizard, the WIN 95/NT 4.0 Tool Tray Icon, or a terminal emulation package. See the section Express Configuration Wizard Tray Tool for more information on enabling and disabling a modem.

Once the external analog modern is enabled, all further COM activity is transmitted to the external analog modern connected to the Express XRT modern port. The external analog modern RTS and CTS lines are switched over to the PC COM port directly when the Express XRT is commanded to enable the external modern port. This allows the external analog modern to provide flow control as normal.

When the external analog modem is disabled, all further COM port activity is processed by the ISDN terminal adapter within the Express XRT.

#### **Express Configuration Wizard Modem Enable**

Run the Express Configuration Wizard and select the Connect External Modem option under the Configuration tab. Figure 3-2 illustrates the Express Configuration Wizard Connect External Modem option.

See the section Express Configuration Wizard Tray Tool for more information on enabling a modern.

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Figure 3-2

Express Configuration Wizard: Connecting an External Modem

If the Express Configuration Wizard software cannot detect the external analog modem, the error message shown in Figure 3-3 is displayed. Ensure the external analog modem and the Express XRT are powered On and the external analog modem is properly connected to the Express XRT.



No Modem Attached Error Message

## Express Configuration Wizard Modern Disable

The external analog modem is disabled using the Express Configuration Wizard by deselecting the Connect External Modem option. Figure 3-2 illustrates the Connect External Modem option.

See the section Express Configuration Wizard Tray Tool for more information on disabling a modem.

#### Terminal Emulation Modem Enable

An alternative method is to use a terminal emulation package such as HyperACCES. In order to determine if an external analog modem is properly connected to the Express XRT, issue the AT command ATZ (followed by Enter). If an external analog modem is properly connected to the Express XRT, the Express XRT responds with the message MODEM ROUND (shown in Figure 3-4).

The ATIZ command is directed to the Express XRT not the analog modem itself. An ERROR occurs if the command is sent while the external analog modem is enabled.

If the external analog modem is not properly connected to the Express XRT, the Express XRT responds with the message NO MODEM FOUND.



Figure 3-4

HyperA CCESS: Verifying External Modem Connection

To enable an external analog modem, issue the AT command AT\_L1 (followed by Enter). Figure 3-5 illustrates a HyperACCESS session enabling an external analog modem.

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Figure 3-5
HyperA CCESS: Enabling an External Analog Modem

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#### Terminal Emulation Modern Disable

When using HyperACCESS or other terminal emulation package issue the AT command AT\_L0 (followed by Enter). Figure 3-6 illustrates a HyperACCESS session disabling an external analog modem.



HyperA CCESS: Disabling an External Analog Modem



If carrier detect (CD) is active (a call is connected) on the external analog modern when attempting to disable it, the Express XRT will not switch control from the modern port. The call must be hung-up (disconnected) to disactivate CD.

#### INTERNAL ANALOG MODEM APPLICATION

In order to connect an internal analog modem to the Express XRT the following items are necessary:

- Internal analog modem
- RJ-11 to RJ-11 telephone cable

Figure 3-7 shows how to connect an internal modem to the Express XRT.

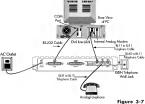


Figure 3-7
Internal Analog Modem Application

When using an internal analog modem and the Express XRT, two COM ports are assigned on the PC. Both COM ports are configured independently. See the manufacturer's documentation for internal analog modem configuration.

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#### Connecting an Internal Analog Modem

To connect an internal analog modem to the Express XRT use the following procedure:

- Ensure the Express XRT is connected to the PC. See the section Connecting the Express XR/XRT for detailed instructions.
- Connect one end of the RJ-11 to RJ-11 telephone cable to the telephone jack labeled 2 on the Express XRT. Positioned above the jack is an illustration of a telephone above a modem.
- Connect the other end of the RJ-11 to RJ-11 telephone cable
  to the Dial Line or Line jack on the internal analog modem.
  See the documentation for the internal analog modem to
  determine which jack on the internal analog modem is the
  Dial Line or Line jack.

## Chapter 4 Application Configuration

There are three methods available for configuring the Express XR/ XRT: Express Configuration Wizard, VT 100 terminal, or AT Commands.

Before configuring the Express XR/ XRT for any application, the Express XR/ XRT should be connected correctly for the application as described in the chapter Installation.

Some features in the Express XRV XRT do not take effect upon selection. This prevents unintentional reconfiguration of the Express XRV XRT during an active call. Items such as Bit Rate, Protocol, and Call Type take effect only at the beginning of a new call

Technical notes, documents and scripts can be found on the ADTRAN web home page at http://www.audtran.com under the Information Desk. These provide information on how to use ADTRAN products in specific applications on PC and Macintosh nlatforms.

#### FACTORY DEFAULT CONFIGURATION

The Express XR/ XRT is shipped configured as follows:

Auto Datest SBIDs	/ Switch Disabled
	National ISDN 1
	Data 64K
Auto Answer	Enabled
Call Screening	Answer Any
Call Routing	Speech/ Audio calls to POTS (XRT Only)
DTR Options	Ignore DTR
Flow Control	
Protocol	Eallback

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The Express XR/ XRT can be reset to the factory default settings by setting switch 2 to the Off (Up) position. See the section Switch Settings in the chapter Installation for more information.

#### PROFILE CONFIGURATIONS

Some common configurations are preset in the Express XRI XRI software as profiles. Most laterate service providers supporting ISDN also support PPP protocol. If connecting to an Internet service provider using one Bchannel, select Factory: Internet 64k which sets the protocol to PPP. If arrangements have been made with the Internet service provider to use two B channels, select Factory: Internet 128k, which uses multiling PPP proto-

Loading a factory profile has no effect on any SPID(s), ISDN Phone Number(s), or Switch Type settings already configured. The settings that are altered when applying a profile are shown as follows:

#### Factory: Internet 64k

Call Type	Data 64kbps
Auto Answer	Enabled
DTR Options	Ignore DTR
Flow Control	
Protocol Type	
DDD M-4-	Circle field DDD

## Factory: Internet 128k

Call Type	Data 64kbps
Auto Answer	Enabled
DTR Options	. Ignore DTR
Flow Control	Hardware
Protocol Type	PPP
PPP Mode	Aultilink PPP

#### Factory: Remote Access 64k

Call Type	Data 64kbp:
Auto Answer	Enabled
DTR Option	Ignore DTF
Flow Control	Hardwari
Protocol Type	CCITT V.12

Factory: Remote Access 128	
Call Type	Data 64kbps
Auto Answer	
DTR Options	Ignore DTR
Flow Control	Hardware
Protocol Type	Async BONDING

## EXPRESS CONFIGURATION WIZARD

This section describes how to use the Express Configuration Wizard software to configure the Express XR/ XRT for three common applications: Internet access, remote access, and bulletin board service (BBS) access.

The Express Configuration Wizard software and the application software such as Chameleon<sup>TM</sup> for Internet<sup>TM</sup> access or ShivaRemote for remote access should be installed on the computer.

The following procedures have been written for Windows 3.1 operating systems. Other operating systems may vary.

## Starting the Express Configuration Wizard Software

After installing the Express Configuration Wizard Software, use the following procedure to launch the software:

- In the Windows Program Manager, open ADTRAN program eroun.
- Double click on the icon labeled Express Configuration.
   The ADTRAN Express Configuration Wizard window is displayed.

#### Internet and Remote Access

Chameleon by NetManage is a Microsoft Windows software package commonly used for Internet access.

ShivaRemote is a software package developed by Shiva Corporation for remote access.

Use the following procedure to configure the Express XR/ XRT for Internet access using Chameleon or remote access using ShiyaRemote.

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#### Creating a Custom Profile

- In the ADTRAN Express Configuration window, create a New profile by choosing the New hutton and continuing through the steps in this procedure or choose the Wizard button and let the Express Configuration Wizard guide you through the setup (skip the rest of this procedure).
- Select an existing profile on which to base a new profile. To view the settings for a profile, click on the name of the profile and choose the Preview hutton.
- Once the setup parameters are displayed under the ISDN Line Setup tab, select the text in the Name of Profile box and enter a new name for the profile. For example: Joe's Internet Connection.
- Enter the following information (under the ISDN Line Setup tab) as provided by your telephone company:

Switch Type Area Code

using ShivaRemote.

ISDN Phone Number(s) Service Profile Identification Number(s)



- If the service profile identifiers (SPIDs) and switch type are unknown, check the box lobeled Auto-detect SPIDs/Switch and they are determined automatically once the OK button is selected.
- After completing the parameters in the ISDN Line Setup window, click on the Protocol tab.
   The Call Type should only be changed to Data 56 kbps if
- Data 64 kbps is not available in your area.

  7. Select PPP protocol if configuring for Internet access using Chameleon (or other Internet access package), or select Asyne BONDING protocol if configuring for remote access
- Choose the OK button. The new profile, now appears alphabetically in the profiles list of the ADTRAN Express Configuration Wizard window.

#### Defining a User Program Button

A button can be added to the ADTRAN Express Configuration Wizard window to automatically launch an application like Chameleon, ShivaRemote, or other data communications packages.



ADTRAN has developed a variety of technical support nates and modem scripts for popular data communication packages such as Procomum Plus\*, pcANYWHERE\*\*, ReachOut\* and more. These con be found on the ADTRAN home page (http://www.adtran.com) under the ISDN information Desk.

The following procedure explains how to create a button for the profile created in the previous procedure:

- Select the profile from the profile list in the ADTRAN Express Configuration Wizard window.
- Choose the Edit button.
- 3. Choose the Advanced tab.
- Choose either the User Program 1... or User Program 2... hutton.
- 5. Choose the Change Program... button.
- 6. Use the Drives and Directories fields to navigate to the executable file. The executable file for Chameloon is custom.exe and the default location is chaetomagic custom. The executable file for ShivaRemote is connectw.exe and the default location is chabital connective are.
- Once the executable file has been selected, choose the OK button in the Open window.
- The User Program window is displayed again and the name field can be changed to give the button being created a different name. If no name is entered, a button is created with a default name of the executable file.
- 9. Choose the OK button to update the profile settings.

The User Program button previously selected is updated in the ADTRAN Express Configuration Wizard window to reflect the new profile name. To launch the application, choose this button

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and follow the application documentation for complete setup information.

## **BBS Applications**

To access a bulletin board service a new profile will need to be created and the protocol of the bulletin board service must be known. HyperACCESS is a Microsoft windows communications package, included with the ADTRAN Express Configuration Wizard software, for use in accessing bulletin board services. To define a custom HyperACCESS session use the following procedure:

#### Defining a Custom HyperACCESS Session

The following procedure explains how to create a custom HyperACCESS session that can be launched using an icon in the HyperACCESS Phonebook menu.

- Choose the HyperAccess button in the ADTRAN Express Configuration Wizard window. The Phonebook window is displayed.
- Press the New button in the Phonebook window. The Description window is displayed.
- 3. Type in a name for the session in the System Name box.
- Choose an icon for the session in the Icon box.
- 5. Choose the OK button.
- Verify and enter the following settings:
  - Phone Number to Dial Baud Rate COM Port Modern
- 7. Choose the OK button.
- Choose the Establish a Connection button on the tool bar (the first button on the left). Once connection is established, Connected is displayed at the bottom of the Session window.
- When the session is complete, disconnect the call by choosing the Break a Connection button on the tool bar (second

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button from the left). Disconnected is displayed at the bottom of the Session window.

- 10. Save the file by selecting Save in the File menu.
- 11. Select Close in the File menu.
- This custom session can now be used by double-clicking on the new icon just created.



# Chapter 5 Troubleshooting

#### TROUBLESHOOTING GUIDELINES

This section provides troubleshooting techniques to possible problems that may be encountered while operating the Express XR/ XRT. If problems persist contact ADTRAN technical support for assistance (see the back cover of this manual).

#### Power/Line LED is Off

Indicates a problem with the power to the unit. Verify the power cord is connected to the Express XR/ XRT and is plugged into a known working 120 volt AC electrical outlet.

### Power/Line LED Flashes and B1 and B2 LEDs are Off

This indicates a problem with the physical connection of the ISDN line from the local telephone company to the Express XR/ XRT.

- Verify the large end of the RJ-45 to RJ-11 telephone cable (included with the Express XR/ XRT) is connected to the ISDN connector on the rear panel of the Express XR/ XRT.
- Verify the small end of the RJ-45 to RJ-11 telephone cable is connected to the ISDN telephone wall jack installed with Basic Rate ISDN.
- 3. Contact the local telephone service provider.

## Power/Line LED, B1, and B2 LEDs Flash Green

This indicates a configuration problem. Verify the following information is correct:

- Switch Type
- · Service Profile Identifiers (SPIDs)
- ISDN Phone Numbers

This information can be viewed by choosing the Status Register button under the Diagnostics tab of the ADTRAN Express Configuration Wizard window or the Configuration Screen in the VT 100 menu system. The Link Status should indicate Link Up it all configuration information is correct and the unit is properly connected. If the link status is good and calls still control to placed, review the section for Dial-Up Connection Problems.

Auto-Detect can be used under the Wizard button in the AD-TRAN Express Configuration software (or by using the Auto-Detect SPIDs/Switch option in the Configuration screen of the VT 100 menus) to automatically detect the SPIDs and the Switch Type.

Look for the following with the COM port setup:

- · IRQ conflicts.
- Wrong DTE speed.
- Use Microsoft diagnostics (msd.exe) to verify the COM port has 16550 UART (for speeds of 115.2 kbps and below) or a 16650 UART (for speeds up to 230.4 kbps).
- Proper COM driver is installed (not provided) to support DTE speeds above 19.2 kbps.
- Verify the correct protocol is selected:
- · PPP or V.120 generally for Internet applications
- V.120 or Async BONDING for work-at-home

## Dial-Up Connection Problems

Many connection problems can be diagnosed by viewing the status buffer message returned from the ISDN network and the Express XR/ XRT. These messages are accessed by choosing the Status Buffer button in the Diagnostics tab of the ADTRAN Express Configuration window. The Status buffer can also be accessed using the key sequence Ctrl-V in the VT 100 menu system. Issue the AT command ATIV from a terminal emulation package such as HyperACCESS to invoke the VT100 menu system.

#### Auto-detect Switch/SPIDs Remains at Link Down

The Link Down condition persisting for longer than 15 mutes indicates a problem with the ISDN line provided from the telephone company. The ISDN physical layer device has not been able to synchronize to the network. Ensure the EL951s IL-II telephone cashle is correctly installed between the Espress XWR XITs pages West and the ISDN wall jock and that the Espress XWR XITs layers DWR and the ISDN wall jock and that the Espress XWR XITs will never with the wall jock does not have ISDN installed on the two model pass tips, rings, the Espress XWR XIT will never synchronize to the Kelphone switching equipment. Call the local results of the ISDN line for pages and have then device the ISDN line for

### Express XR/XRT Not Detected

If the Express Configuration Wizard cannot detect the Express XR/ XRT verify the following:

- 1. The Express XR/ XRT is powered on.
- 2. No other Windows applications are running that could be using the COM port to which the Espress RRY IXT is attached. A Windows application does not have to be active to tee up a COM port, be sure to check the Windows 195 Taskbar for any suspended applications (such as HyperTerminal and HyperAcCESS) that may be using the COM port. If any are minimized, these must be elseed before starting the Espress Configuration Wizard.
- If you are operating the Express XR/ XRT at 230.4 kbps, ensure that switch 1 on the rear panel is off. This is required for operation at 230.4 kbps. Also, confirm that the computer has a 16650 UART.

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### External Analog Modem Not Detected

If the Express Configuration Wizard cannot detect the external analog mode verify the following:

- 1. The external analog modem is powered on.
- The external analog modem is properly installed and configured for use with the Express Configuration Wizard. See Configuring an External Modem for more details on the required settings.

## Difficulty with 230.4 kbps Operation

If the Express XR/ XRT does not work when the DTE rate is set to 230.4 kbps inside Windows, verify the following:

- Verify that switch 1 on the back of the Express XR/ XRT is set to off (up).
- Verify that a high speed serial eard with a 16650 UART is being used and the software drivers to support the extended hand rate tables are installed.

## **Dial-Up Networking Difficulty**

If Windows 95 Dial-Up Networking cannot talk to the Express XRV XRT, check the modem configuration for the Express XRV XRT. Ensure the bit rate for the DTE is set correctly. If the PC is not equipped with a 1650 UART then the fastest DTE operation speed is 115.2 kbps. Ensure the speed is not higher than the PC and modem can support.

# Appendix A AT Commands and S-Registers

#### AT Commands

While a call is not established, the DTE port accepts AT commands. During this time, the CD signal is inactive. When a call is established, the port is used for data. This data mode is indicated by the CD signal a civieve. The Express XBV XRT can be configured and controlled with AT commands from a serial port similarly to analog modems.

To cair data mode and enter command mode, the serial port unsat transmit a proper except exquence to the Express XRV XRT. A specified time delay must occur between the last data character and the first except sequence character. This is the guard register. The command of the

Once command mod is entered, AT commands can be transmitted to the Express XRV XRT to configure most of the options, dial remote Express XRV XRTs or initiate tests to check both the Express XRV XRT and the network connections. All command lines must begin with the AT character set in either capital or lower case letters. To return an active call to the on-line state type ATD.

The command line may contain a single command or a series of commands after the AT attention code. AT commands \_L1 and \_L0 are exceptions and must be on a separate line followed by Enter. When a series of commands are used, the individual

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commands may be separated with spaces for readability. The maximum length for a command line is 40 characters. Each command line is executed by the Eipress XR/XRT apon receipt of a terminating character. The default terminating character is a carriage extern (ASCII 008), but it can be changed by writing a different value to register S. Before his terminating character is backspace character (ASCII 008) to erase errors so the proper commands can be entered.

## **Using an AT Command**

Type AT followed by the letter of the command and numeric value of the setting desired and then press Enter. The following command returns the software version of the unit:

ATT1

#### Using S-Registers

The configuration of the Express XR/ XRT can be changed or reviewed with S-registers. See the section S-Register List in this chapter for a description of each S-register and its corresponding range of values.

## Reading an S-Register

Type ATS followed by the number of the S-register to be read followed by a question mark and press Enter.

ATSO:

## Reading an S-Register String

The Express XR/ XRT uses S-register strings to store strings of digits for stored phone numbers, SPIDs, etc. Type ATSS followed by the number of the string S-register to be read followed by a question mark and press Enter.

ATSS80

## Changing an S-Register

Type ATS followed by the number of the S-register to be changed, an equal sign, the numeric value to be assigned to the register, then press Enter.

AISU-2

## Changing a String S-Register

Type ATSS followed by the number of the string S-register to be changed, an equal sign, the numeric string to be assigned to the register, then press Enter.

ATSS80=5551212

### Dialing a Call using the AT Command Processor

To dial a call using the DTE terminal and AT commands type ATD, ATDT, or ATDP and the telephone number on one line and press Enter.

ATD5551212

To end an active call with the AT command processor press the break in key sequence +++ or the redefined key then type ATH and press Enter to hang up the line.

Appendix A. AT Cammands and S-Registers

Command	Function
A	Answer. Places the Express XR/ XRT in answer mode.
AT!S	Displays Status Buffer.
AT!SI	Displays Link Status
ATIV	Configuration Menu
ATIZ	Detect a modem connected to the Express XRT.
D	Dial. Precedes the telephone access number [ATD5551212].
Н	Hang up. Disconnects the current call.
10	Identify unit. Commands the unit to display model number.
п	Identify software. Commands the unit to display software version.
0	On-line. Commands the unit to go back on line.
S	S Register.
SS	S String register
Z	Reset. Resets the AT command processor
&W	Save. Save current configuration to EEPROM
***	Break in. Break in AT command processor during an active call. The break in key is defined in S2.
Carrier Detect (C	D) Control Line Options
&C0	CD forced on
&C1	CD normal.
&C2	CD off with local disconnect (LOCD).
&C3	CD off with link down.
Data Terminal Re	eady (DTR Control Line Options)
&D0	Ignore DTR
&D1	DTR off forces command.
&D2	Idle when off. DTR off forces idle (On allows auto answer).

#### Function Command

#### Generic Unit Configurations

- &F0 Factory Default (fallback auto-protocol detect)
- &FI Internet 64K &F2 Internet 128K
- &F3 Remote access 64K
- &F4 Remote access 128K
- &F7 Configures unit for Dial 57.6k async
- &F8 Configures unit for Dial 115.2k async &F11 Configures unit for FALLBACK

#### Calling Number Identifiers

- &N0 Number 1. Read far-end phone number 1 if service
- subscribed from telephone company &N1 Number 2. Read far-end phone number 2 if service subscribed from telephone company.

## Clear-To-Send (CTS) Control Line Options

- &R0 Follows RTS
- &R1 Forced CTS
- Data Set Ready (DSR) Control Line Options 8.90 DSR forced on
- DSR if call up &S1 &S2 DSR off if link down

### Accessing Stored numbers for Dialing Options\*

- Stored number 0 Stored number 1 8/7.2 Stored number 2
- Stored number 3 &Z4 Stored number 4
- 8:Z5 Stored number 5 276 Stored number 6 Stored number 7

&Z.8

Stored number 8 &Z9 Stored number 9

\*These presets are invoked by &Z0 through &Z9 AT commands. They access the stored numbers used for dialing.

#### Command Function

### Local Echo Options ΕO

- Echo off. Does not allow command characters typed to be displayed on the screen.
- EI Echo on. Allows the command characters typed to be displayed on the screen.

#### AT Command Response Message Options

- 00 Response messages on Response messages off
- AT Command Response Message Types
- Numeric response messages Verbal response messages
- AT Command Connect Message Options
  - xn Simple connect message
  - X1-7 Connect messages with bit rate
- Ready-To-Send (RTS) Control Line Options
  - DO 1 mS delay \_D1 18 mS delay

## ISDN Switch Type Options

- 80 SI
- DMS-100 S2 National ISDN-1

#### Data Flow Control Options

1.00

LI

No flow control ١ò١ Software flow control (XON/ XOFF)

XR/ XRT modem port.

- 102 1 Q3
- Hardware flow control (RTS/ CTS) factory default \ Q4 Software from DCE only

## DTE and Modern Interface Selection

- LO Disable external analog modem connected to the Express
  - XR/ XRT modem port. Enable external analog modem connected to the Express

#### S-REGISTER LIST

SO ..... AUTO ANSWER Determines how the Express XR/ XRT answers an incoming call.

0 = Disable (Express XR/ XRT does not answer call).

- 1 = Enable (Express XR/ XRT answers all calls).
- 2 = Dump all calls.
- S2..... ESCAPE....... Determines which key or character (in CHARACTER

ASCII code) defines the escape command. The standard escape character is a plus (+) sign (ASCII value of 43 decimal). To change the character set, set S2 to the desired ASCII value. Range = 0 to 127

S3..... END OF LINE .... Determines which key or character (in CHARACTER ASCII code) ends a command line. The standard end-of-line character is the carriage return (ASCII value of 13 decimal). Range = 0 to 127

CHARACTER

S4..... LINE FEED ....... Determines which key or character (in ASCII code) advances the cursor to the next line after ending a command line or after an Express XR/ XRT message. The standard character is the line feed (ASCII value of 10 decimal).

Range = 0 to 127S5 ..... BACK SPACE .... Determines which key moves the cursor back one space to erase a character. The standard CHARACTER character is the backspace (ASCII value of 8 decimal).

Range = 0 to 127

S7 ..... CONNECT ........ Determines how long the Express XR/ XRT waits TIME for an outgoing call to be answered.

- 15 = 15 seconds 30 = 30 seconds
- 60 = 1 minute 120 = 2 minutes240 - 4 minutes
- S12... ESCAPE TIME... Determines the delay required immediately before and after entering the escape command for the Express XR/ XRT to recognize and

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	execute the command.
S14 MISC BITS	Range = 0 to 127  Miscellaneous bits (bit 8 is most significant bit).  Bit = 1: Estables on screen choo of AT commands.  Bit = 0: Disables on screen choo of AT commands.  Commands.  Commands.  The propose from the Express XW XWIT.  Bit = 1: Disables AT responses from the Express XW XWIT.  Bit = 1: Linables AT responses to be displayed at the Express XW XWIT.  Bit = 1: Linables AT responses to be displayed as mameric form.  Bit = 1: Linables AT responses to be displayed as mameric form.  Bit = 1: Linables AT responses to be displayed as mameric form.
S15 ASYNC BONDING	Asynchronous BONDING method. 0 = ADTRAN revision 0 (default) 1 = Multi-vender option
S22 MSG BITS	. Miscellaneous message bits (bit 8 is most significant bit).  Bit 5 = Bit 6 = Bit 7 = 1 Allows connect message with baud rate.  Bit 5 = Bit 6 = Bit 7 = 0 Connect message without baud rate.
S25 DTR DETECT TIME	Determines time, in hundred the of a second, that must elapse before the Express XR/ XRT recog- nizes a change in DTR. Range = 0 to 255
S27 PPP MODE	. Value determines whether or not PPP will be a single-link or multilink connection.  0 = Single-link operation (default)  1 = Multilink operation  2 = Use compression
S30 DTE CTS	Controls the operation of the DTE connector CTS line. 0 = Follows RTS
S31 D TE RTS	1 = Force CTS  Controls operation of the RTS line.
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- 0 = 1 ms delay
- 17 = 18 ms delay
- S32... DTE DSR ....... Controls the operation of the Data Set Ready
  - signal on the DTE connectors. 0 = Force DSR on always
    - 1 = DSR off OOS + Test
    - 2 = DSR off Link Down
- S33... DTF CD ...... Controls the operation of the Carrier Detect line
- on the DTE connectors.
  - 0 = Force CD on always
  - 1 = CD is active during a call (Normal

  - 2 = Off with LOCD 3 = Off link down
- S34... DTE DTR ...... Determines how the Express XR/ XRT responds

## to changes in DTR. This is a bit-manned regis-

- 0 = Ignore DTR
- 1 = Force AT command mode when DTR is off
- 2 = Dump incoming call when DTR is off
- 4 = Hang up incoming call when DTR is off
- 8 # Hang up outgoing call when DTR is off 16 = Answer incoming call when DTR is on
- 28 Idle when off 32 = Dial SN0 when DTR is on
  - 64 = Dial SNO when DTR transitions from off to

endpoint before deciding the Async BONDING

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- on S40 ... BOND TXINIT .. Specifies the number of seconds the originating endpoint attempts to detect the Async BOND-ING negotiation pattern from the answering
  - call has failed 0 to 255, 10 sec is default.
- S41 ... BOND TXFA ..... Specifies the number of seconds both endpoints attempt to detect the async BONDING frame pattern when a call is connected before deciding the async BONDING call has failed. When operating with other manufacturer's async BONDING equipment it may be necessary to lengthen this timer so that it matches TXADD01.

0 to 255, 10 sec is default. Express XR/XRT Quick Stort Guide

## TXADD01

S42... BOND ...... The number of seconds both endpoints wait for the additional call to be connected at the end of negotiation before deciding the async BOND-ING call has failed. When dialing overseas it may be necessary to lengthen this timer to allow for slower call routing 0 to 255, 50 sec is default

S43 ... BOND TXDEO .. The number of seconds both endpoints attempt to equalize the network delay between the bearer channels before deciding the Async BONDING call has failed. 0 to 255, 50 sec is default

S44 ... BOND TANULL The number of seconds the answering endpoint attempts to detect the Async BONDING negotiation pattern from the originating endpoint before aborting to clear channel mode. It may be necessary to shorten this timer if the DTE equipment connected to the Express XR/ XRT also has timer constraints for completing non-BONDING parameter negotiation.

0 to 255, 10 sec is default S45 ... BOND TCID ..... The number of seconds both endpoints attempt to negotiate agreeable values for bearer channels and channel capacities before deciding the async BONDING call has failed. 0 to 255, 5 sec is default

S52 ... SWITCH TYPE .. Selects the network switch type for dial service. 0 = AT&T 5ESS

1 = Northern Telecom DMS-100

2 = National ISDN-1

S53 ... CALL TYPE ...... Call type (Dial service only). 0 = Speech

1 = Audio 2 = 56 Kbps data

3 = 64 Kbps data

S54 ... PROTOCOL ...... Rate adaption protocol type.

TYPE 2 = Async BONDING

6 = V.120

11 = FALLBACK 12 = PPP async-to sync conversion

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....... Allows the Express XR/ XRT to screen incoming

SCREENING calls  CALL Molecular Screen incoming calls  O = Answer any call  1 = Answer only calls from numbers matching those stored in SN0 through SN9.
SS60 SPID1 LOC SPID string location.
SS61 SPID2 LOC SPID string location.
SS62 LDN1 LOC ISDN phone number string location.
SS63 LDN2 LOC ISDN phone number string location.
S65 AUTOSPID Sets the AutoSpid determination feature.  0 = Disable (default)  1 = Enable
SS67 AREA CODE Area code location.
\$71 _ DTERATE
S73 DTE PARITY Selects the number of asynchronous parity bits.  0 = None 1 = Odd 2 = Even
S74 DTE STOP Selects the number of asynchronous stop bits.  0 = 1 stop bit  1 = 1.5 stop bits  2 = 2 stops bits
S75 DTE FLOW Selects asynchronous flow control.
0 = None 1 = XON/ OFF from DTE controls DCE 2 = XON/ OFF from DCE controls DTE

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S58... CALL.....

```
3 = Hardware
```

12 = Software

The following are the string locations for stored numbers 0 - 9:

SS80 SN0 LOC ...... Stored number 0 string

SS81 SN1 LOC ............ Stored number 1 string. Used for second number dialed in a multilink connection.

SS82 SN2 LOC ...... Stored number 2 string SS83 SN3 LOC ....... Stored number 3 string

SS86 SN6 LOC ..... Stored number 6 string

this ID

SS89 SN9 LOC .............. Stored number 9 string

S90... CONFERENCE.. NI-1 feature identification number for
ID conferencing. See the ISDN service provider for

S91... TRANSFER ID .. NI-1 feature identification number for transferring. See the ISDN service provider for this ID.

S93... CALL TYPE ....... Determines how incoming call is routed when ROUTING connected to a point-to-point ISDN line.

0 = Route all call types to DTE
(XRT ONLY) 1 = Route Speech call types to POTS
2 = Route Speech and Audio call types to

POTS

S94...LOCAL TONES. Forces the POTS interface to generate all tones.

Bit 0 = 0:In-band tones from ISDN switch (when available)

Bit 0 = 1: All tones generated locally
Bit 1 = 0: Warnings to POTS when unavailable
Bit 1 = 1: Disable all warnings to POTS

S118. CHAP Enable ..... 32 = CHAP enabled 0 = CHAP disabled (Windows 95 setting)

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# Appendix B LEDs

#### **LEDs**

The Express XR/ XRT front panel contains five LEDs associated with the DTE port and the ISDN interface as shown in Figure B-1 and described in Table B-A.



Figure B-1 Front Panel LEDs

Table B-A Express XR/XRT LEDs

LED	Color	Description
B1 ar B2	Slaw Green Flash	Attempting SPID registration.
	Fast Green Flash	Attempting TEI registration.
	Off	Ready. Na data traffic.
	Salid Green	B channel passing data (in-use).
	Salid Amber	Laapback pratacal test
		(ane ar bath channels).
	Amber Flash	Remate test ariginate.
PWR/Line	Green (On Salid)	Link established.
		Calls can be placed.
	Off	Na Pawer.
	Flashing	Link is nat established.
		Calls cannot be placed.
TD	Green	Transmit Data (TxD).
RD	Green	Received Data (RxD).

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# Appendix C Status Buffer Messages

# 2047 BERT orig Test remote originated 2047 BERT (bit error rate test) pattern.

# 2047 loopbk ansr

Test remote answered 2047 BERT pattern.

#### Answer

The EXPRESS XR answered a call on either the first or second channel. The calling phone number is displayed if available.

# ACCESS\_INFO\_DISCARDED The network was unable to deliver access information to the far

end.

## Area Code Reg'd

Area code required for Auto Spid determination.

#### AutoSpid Active

Unit is attempting automatic detection of switch type and SPID numbers.

# AutoSpid Disable The user has stopped the automatic SPID detection process.

AutoSpid Failed

#### Autospia rane

Automatic determination of switch type and SPID numbers failed.

### AutoSpid Passed

Automatic determination of switch type and SPID numbers succeeded.

#### AutoSwitch YYY

Switch type YYY detected during AutoSpid determination. (YYY can be DMS, NI-1, or AT&T)

# Back to online

Express XR went back on line.

#### Bad async BPS

The Bonding protocol determined that the selected asynchronous bit rate is not supported.

#### **Bad AT numeric**

User issued an AT command with an argument that was out of range.

Bad call type Express XR placed a call with an improper call type.

Bad DTE Baud
The DTE bit rate does not match a valid bit rate for the protocol selected

#### BAD INFO ELEM

Call control error.

#### Bad phone number

Express XR/ XRT attempted to call an invalid phone number.

# BEAR\_CAP\_NOT\_AVAIL The bearer channel requested is not available.

BEARER CAP NOT AUTH

# Bearer capability requested is not authorized.

Bearer Mode? Incoming call is not of a type the Express XR/ XRT can accept.

# Bearer Info Cap?

Incoming call information transfer capability is not known.

#### BONDING (+/-XXX)

The amount of bytes or corrected delay between the B2 and B1 Bearer channels (XXX can range from -8000 to +8128).

#### **BPS** mismatch Bonding negotiation found a bit rate mismatch.

### Break to AT cmd

User issued a break-in request,

### **Break ignored**

User issued an extra break-in request.

### BUSY

The called number is busy.

### B-X disconnected

B-channel disconnected. X can be 1 or 2 representing the appropriate B-channel.

#### CallID 1 in use

The Express XR/ XRT tried to place a call using SPID 1 when SPID 1 was already in use.

#### CallID 2 in use

The Express XR tried to place a call using SPID 2 when SPID 2 was already in use.

### Call lost

Held call could not be retrieved.

#### **Call not ringing** User executed an answer command (ATA) but there was not a

call present.

# CALL REJECTED

The call has been rejected by the ISDN network. mand user issued an unknown AT command

#### Can't go online Express XR/ XRT cannot go back on line. Unknown AT com-

CHAN DOES NOT EXIST The user asked for a bearer channel that is not present.

## CHAN NOT IMPLEMENTED

The network or far end does not support the bearer capability requested.

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#### CHANNEL\_UNACCEPTABLE

The channel requested has not been subscribed.

Received an incoming call from a third party during negotiations with a far-end BONDING unit on the use of the second Bearer channel

#### Connect Timeout

Call attempt does not connect in x amount of time. The number called is not ISDN (warning only).

#### DEST NOT ISDN

DEST OUT OF ORDER The called number is out of order

Dial The Express XR/ XRT placed a call on either the first or second channel. The number called is displayed following the message.

#### Disconnect

The call on either the first or second channel was disconnected from the network. The far-end phone number is displayed if available. Ensure flow control setting match on both terminal adapters.

#### Disconnect Req

Far-end unit disconnected during BONDING negotiation.

DTR not up Express XR/ XRT tried to place a call in a dialing mode that

## requires DTR to be in an active state, but it is not. Dump call

The Express XR/ XRT could not accept an incoming call because it was already involved in a call.

An incoming call on either the first or second channel was discarded by the Express XR/ XRT. The calling number is displayed if available.

#### FACILITY\_NOT\_IMPLEMENT

The network does not support the requested supplementary service.

#### FACILITY NOT SUBSCRIBED

The channel type requested has not been subscribed.

#### FACILITY REJECTED

A facility requested by the user cannot be provided by the network

# Factory Reset 0

Unit defaulted to factory configuration.

#### FlowCtl mismatch Bonding negotiation determined a flow control mismatch.

FlowCtl required

Bonding negotiation determined that flow control needs to be optioned on.

#### Hangup

The call on either the first or second channel was disconnected by the Express XR/ XRT. The far-end phone number is also displayed.

#### Hold

Voice call is on hold ID = XXXX

# Calling party number.

INCOMING CALL BARRED The network will not allow an incoming call.

#### INCOMPATIBLE DEST

The called number cannot accept the type of call that has been placed.

### INTERWORKING\_UNSPEC

A non-ISDN network sent an unspecified message. Remote configuration failed due to incorrect password.

#### Inv Password

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#### INVALID\_CALL\_REF Call control error.

#### INVALID FLEM CONTENTS

Call control error.

### INVALID\_MSG\_UNSPEC

Invalid message: protocol error.

# INVALID NUMBER FORMAT

The dialed number has an invalid format.

### L1 not up

The network interface is not active.

#### L2 not up The data link layer interface is not active.

#### L3 not up The call control interface is not active.

L2 #2 not up The data link layer interface for a second call (BONDING) is not

### active.

L3 #2 not up The call control layer interface for a second call (BONDING) is

## not active LDN TOO LONG

The local directory number entered has too many digits.

#### Login failed Unable to connect to remote unit on remote configuration

attempt.

#### MANDATORY IE LEN ERR Mandatory information element length error.

#### MANDATORY\_IE\_MISSING Mandatory information element missing.

MULTILINK PPP UP

### Unit connected with Multilink PPP.

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#### Need 64K call

The BONDING protocol requires the Express XR/ XRT to be configured for 64K data call types.

# NETWORK BUSY

The ISDN switch is busy and unable to process a call.

#### NETWORK CONGESTION

The phone network is currently congested.

# NETWORK\_OUT\_OF\_ORDER The phone network is out of order.

-----

# No calling ID Calling party number not provided.

NO\_CIRCUIT\_AVAILABLE
The requested bearer channel is not available.

# NONEXISTENT MSG

Nonexistent/ undefined message received from network.

#### NO ROUTE

#### NO ROUTE DEST

The phone network was unable to find a route to the destination number.

### No Sreg number

Attempted to change an S-register but did not specify a specific S-register (example: ATS=1).

#### No Sreg value Attempted to change an S-register but did not specify a value

(example: ATS= ).

#### No String Space Stored number string space is full.

NO USER RESPONDING

#### The dialed number is not responding.

NORMAL CLEARING

The network is disconnecting the current call.

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#### NOT end2end ISDN

The path that the call was routed over is not ISDN from end-toend (warning only).

#### NUMBER CHANGED

The number dialed has been changed.

#### OUTGOING CALL BARRED

The network will not allow the outgoing call to be placed.

#### Phone # Reg'd

Phone number required for AutoSpid determination.

#### PPP COMPRESSION UP Unit connected with compression.

PPP LINK LOOPBACK Network link is looped backed.

# **PPP Timeout**

PPP negotiation failed.

PROTOCOL ERROR Call control error.

### PUMPIO: dpump-quit Rate adaption stopped due to DTE error. Rcv Cause XXX

# Undefined cause message received.

REQ CHANNEL NOT AVAIL The channel type requested is currently not available.

#### Remote not ISU

Bonding negotiation determined the far-end unit is not another ISU product.

#### RESOURCE UNAVAIL

The requested resource is unavailable.

#### RESP TO STAT ENQ

Response to status enquiry.

# Restarting Rate Unit restarts DTE rate.

#### Retrieve

Voice call is retrieved from a holding state.

#### Ring

An incoming call on either the first or second channel (third channel if call waiting) entered the Ring state. The calling phone number is displayed if available.

#### 5 cmd not = or ? Proper syntax not used.

Troper symax not use.

#### SERVICE NOT AVAIL

The requested service is not available.

### SOURCE NOT ISDN

The incoming calling party is not ISDN (warning only).

# TANULL expired Bonding timer TANULL expired. Received call from non-

BONDING equipment.

#### TEMPORARY\_FAILURE

The network has temporarily failed, try the call again.

# TIMER\_EXPIRY Call control error.

TXADD01 expired Bonding timer TXADD01 expired.

### TXDEQ expired

B-channel delay equalization during bonding failed.

# TXFA1 expired Bonding timer TXFA1 expired.

-

# TXFA2 expired Bonding timer TXFA2 expired.

# TXINIT expired Bonding timer TXINIT expired; called non-BONDING equip-

ment.

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# UNASSIGNED NUMBER

The phone number dialed does not exist.

#### Unknown AT cmd

User issued an unknown AT command.

#### USER ALERT NO ANS Ringing call is not answered.

USER BUSY

# The dialed number is busy.

# V120 connected

The V.120 rate adaption successfully connected to the far-end unit.

#### V120 Timeout V.120 negotiation failed.

#### WRONG MESSAGE Call control error.

WRONG MSG FOR STATE

Call control error.

# Appendix D Loop Status Messages

This appendix lists the status line messages and their definitions. Messages shown entirely in capital letters are generated by the ISDN network. Messages with lower case letters are generated by the Express XR/ XRT.

### AutoSpid X

The SPID is being attempted by the AutoSpid determination. X starts at 0 and counts up for each SPID tried.

# Call Connect B1 Bearer channel 1 is connected and is active.

Call Connect B2

#### Bearer channel 2 is connected and is active.

Call Connect B1/B2

### Bearer channels I and 2 are active.

Disconnecting
The current phone call is being disconnected (hung up).

#### Getting TEI #1

The Express XR/ XRT is receiving its first TEI from the network.

#### Getting TEI #2 The Express XR/

The Express XR/ XRT is receiving its second TEI from the network.

#### Link Down

The network interface is not in sync.

### Network Loopback

The Express XRV XRT has been commanded to perform an ISDN loopback toward the network.

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## Ready

The unit is ready to make or accept a call.

### Register SPID #1

The Express XR/ XRT is registering its first SPID with the network.

# Register SPID #2

The Express XR/ XRT is registering its second SPID with the network.

### Ringing

The phone number just dialed is ringing.

# XXXX nnnn A rate adaption is running at the bit rate specified by nnnn.

xxxxx Quitting

# A rate adaption protocol is turning off.

xxxxx Ready
A rate adaption protocol is ready.

xxxxx Setup

A rate adaption protocol is setting up.

#### YYYY

ISDN switch-type selected.

## xxxxx can be any of the following:

#### **Bonding** Bandwidth on demand industry users group protocol.

PPP
Point-to-noint rate adaption protocol.

### V120

V.120 rate adaption protocol.

# Appendix E Connector Pinouts

PIN 13

PIN 1

**ÿ**⊙FEMALE PIN 14

PIN 25

Figure E-1

RS-232 Interface

Table E-A

RS-232 Interface

eld D D S	0	Shield for cable Transmitted Data Received Data Request to Send
D S		Received Data
S	0	
		Request to Send
	O	Clear To Send
R		Data Set Ready
3	O/I	Signal Ground
D		Carrier Detect
'R	i	Data Terminal Ready
1		Ring Indicator
	SR	G IIO D O III

41200 15311 1

Express XR/XRT Quick Start Guide

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PIN 1

PIN 13 MALI PIN 25



PIN 14

Figure E-2

Modem Interface

Table E-B

Modem Interface

Pin	Name	1/0	Description
1	Shield		Shield for cable
2	RD	0	Received Data
3	TD	I	Transmitted Data
4	RTS	0	
5	CTS	İ	
7	SG		Signal Ground
8	CD	I	Carrier Detect
20	DTB	0	

# The RJ-11 POTS ports apply to the Express XRT only. Table E-

## RJ-11 POTS Port Interfaces

POTS 1 Into	erface	Pin 1		
		Pin 2		
		Pin 3	R1	
PIN 1 F	IN 6	Pin 4	TI	
ZIIIK		Pin 5		
5.7		Pin 6		

POTS 2 Interface	Pin 1	
	Pin 2	
	Pin 3	R2
PIN 1 PIN 6	Pin 4	T2
ars	Pin 5	
N	may a	

### Table E-D

# RJ-45 ISDN Line Interface

Pi	n 5	Tip

Figure E-3
Express XR and XRT Ground Pinouts

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Appendix E. Connector Pinouts



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> > Registration form continued inside.

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Serial Numbers			□ Cor			□ NEC			
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Transportation/Utilities/Con-	Wholesole tran			u use the G	Dukk St	ort Guide		_	
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☐ Other	-			bloshootina			H Yes	II No	
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Other				andition: vipment a	rive in a	hear	□ Yes	LI No	
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