ISDN Terminal Adapter

User Manual

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Nov 2001. Rev 02

Contents

Chapter 1. Introduction

Features

The ISDN (Integrated Services Digital Network) is the standard for carrying both data and voice simultaneously over the existing telephone network. Compared with conventional analog network, ISDN network transmits digital signal at higher speed between the central office (phone company) and the customer premises. Aside from quick connection, ISDN also provides a more reliable and stable digital connection.

The ISDN terminal adapter (TA) is an external ISDN modem providing easy and affordable access to Internet via ISDN. Either home users or SOHO (Small Office Home Office) can enjoy the higher performance of ISDN with the simplicity of a terminal adapter.

Internet and Remote Network Access

With the ISDN TA, you can connect your computer to the Internet over an ISDN line at speeds of up to 128 kbps. With virtually no delays, you can serf the Internet, access online services or utilize the network resources back at the office through remote access.

Analog Device Ports (voice models only)

Voice models (e.g. TAU400E/TAS400E/TAS403E) come with analog device ports. You can use these ports to connect regular telephones, modems or fax machines to your ISDN TA. Calls to and from these analog devices are carried over your ISDN line. This saves you the expense of installing a separate analog phone line.

Ease of Use

You can connect the ISDN terminal adapter to a serial port on your computer and easily configure the TA with terminal emulation program. You can also configure your TA by standard modem AT commands.

Package Checklist

In your ISDN terminal adapter package, you will find the following items:

- ☑ ISDN terminal adapter
- ☑ Installation CD
- ☑ RJ-45 cable (6 feet, for ISDN connection)
- ☑ RJ-11 cable (for a/b port connection on voice model only)
- ☑ Quick Installation
- ☑ RS-232 serial cable (for PC connection)

☑ Power adapter

☑ DSU (**Japan only** for ISDN S/T interface, optional)

System Requirements

- IBM PC or compatible
- 486 CPU or better
- 16 MB RAM or more
- Windows 95(OSR2) / 98 / Me / NT4.0 / 2000 /XP
- CD-ROM drive

Chapter 2. Before Installation

The installation requirements depend on the models of your ISDN TA. Refer to the table below to have a general overview of your ISDN TA model.

Model	ISDN Interface	Voice Model (with TEL port)	NT1 Device
TAS 200E	S/T	×	✓
TAU 200E	U	×	×
TAS 400E/403E	S/T	✓	✓
TAU 400E	U	✓	×

To ensure a successful installation, please prepare the following items before proceeding.

Subscribe for an ISDN BRI (Basic Rate Interface) Line

Before using the ISDN terminal adapter, you need to subscribe for an ISDN BRI from your telephone service provider. Your line is installed by your local telephone company.

NOTE: For North America and Japan only, if your adapter has an S/T-interface, you need a separate network terminating device (NT1) to connect your ISDN line.

Collect Information about Your ISDN Line

Upon your subscription for an ISDN BRI Line, your ISDN service provider will supply the following information:

- ISDN central switch type
  ISDN switch type usually depends on your geographic location.
- ISDN phone numbers
- SPIDs (Service Profile Identifiers), *North America only.*

Internet Access Account

To access Internet through ISDN TA, you must get an Internet access account from your local ISP (Internet Service Provider) with ISDN access service. Your ISP should provide you with the following information:

- user name and password
- dial-up ISDN number of the ISP
- TCP/IP properties: host name, domain name, domain name server address, IP address, and gateway address (some properties might not be necessary)

Terminal Emulation Program

To configure the ISDN TA, you need a terminal emulation program, such as HyperTerminal, Terminal, ProComm, etc.

Chapter 3. Connecting ISDN Terminal Adapter

Connecting Procedures

The connecting procedure depends on the type of adapter you have. Be sure to turn off your computer before proceeding. Follow the steps below to connect the cables to your adapter.

1. Terminator Setup (for models with S/T interface only)

   ISDN S/T interface can support up to 8 ISDN terminals and connect to the ISDN network via NT1 device. Only one ISDN S/T device can be set to the terminator enabled. Normally the ISDN terminal that is farthest from NT1 should have the terminator enabled.

   To setup the terminator with provided DIP switch:

   Single ISDN device connected to NT1

   If the ISDN TA is the only device connected to NT1, keep the default setting to enable the terminator. (The 1 and 2 DIP switch are set to '**ON**'.)

   Multiple ISDN devices connected to NT1

   If there are other ISDN devices connected to NT1, set the DIP switch (1 and 2) to '**OFF**'.

2. Connect to ISDN wall jack

   - S/T Interface
     Connect the port labeled **S/T** on the rear of the TA and the NT1 interface with RJ45 cable. Then insert the ISDN BRI line into the NT1 socket and the ISDN wall jack.
   - U Interface
     Plug one end of the RJ-45 cable to **U** port of the TA, and plug the other end to the ISDN wall jack.

   NOTE: Please kindly be informed that even RJ-45 connector has 8 pins and RJ-11 has 4 or 6 pins, but you can still plug the cable from wall jack with RJ-11 connector into the RJ-45 jack on the **U** port of the TA. The U interface works as well.

3. Connect to analog devices (for models with TEL interface only)

   If your ISDN TA model comes with **TEL** interface, connect cables from analog devices (such as telephone, G3 fax, modem, or answering machine) to **LINE1** or **LINE2**. The RJ-11 extension cable supplied allows for two analog devices to be simultaneously connected.

   NOTE: In the UK, an adapter is provided to convert from the UK type 103 plug to

the US RJ11 plug. The REN (Ringer Equivalence Number) drive capability or parallel ring number is 3, so you can connect up to 3 analog devices, assuming each device has a REN of 1.
Please note that the POTS analogue ports on the device, in common with most PBX, terminal adapters and fax switches, supply a reduced ring voltage. That is to say the ring voltage is lower than that provided on a standard PSTN phone line. This does mean that in very rare circumstances some analogue equipment may not be able to detect an incoming call.

4. Connect to your computer.

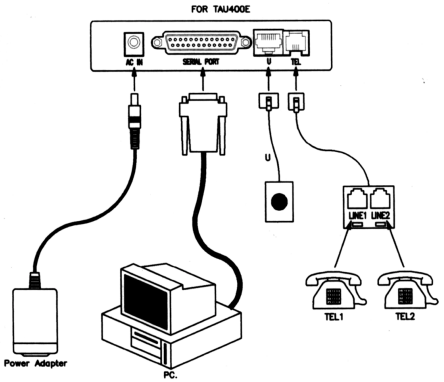
   Connect one end of the RS-232 serial cable to the port labeled **SERIAL PORT** on the rear of the TA, and the other end to the appropriate serial port on your computer.

5. Connect the AC/DC adapter connector to the **AC IN/DC IN** jack on the rear of the TA, then plug the adapter into an AC/DC power outlet.

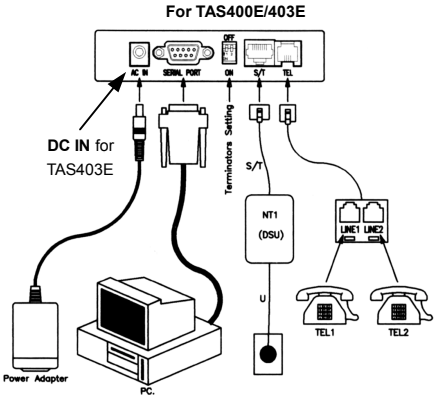
Connection Diagram

The diagrams below illustrate typical connection on various ISDN TA models. Refer to appropriate diagram corresponding to you model.

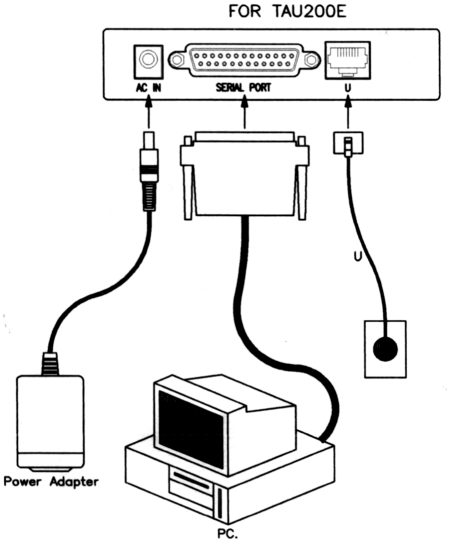
Option 1: For TAU400E



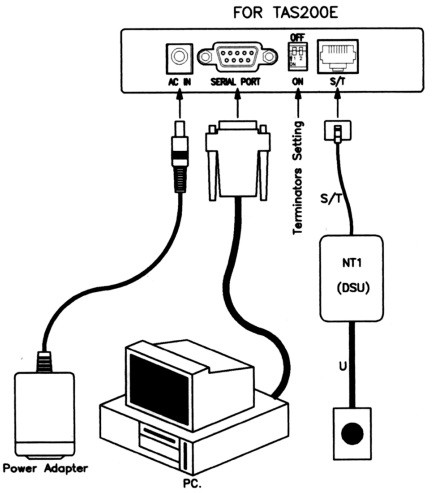
Option 2: TAS400E/TAS403E:



Option 3: For TAU200E



Option 4: For TAS200E



Chapter 4. Installation and Setup Under Windows 95/98/Me

This section describes detailed procedures of installation and setup as outlined below for Windows 95/98/Me users.

Step 1 Installing Driver for ISDN TA

After starting Windows, system will automatically detect the terminal adapter, you should follow the on-screen instructions to finish the driver installation.

Step 2 Configuring ISDN TA by 'ISDN Utility Program'

Once the ISDN TA driver is installed, you will need to edit its settings according to your requirements.

Step 3 Adding Virtual Modem

You can install the ISDN TA as virtual modem according to your requirement.

Step 4 Creating Dial-Up Connection

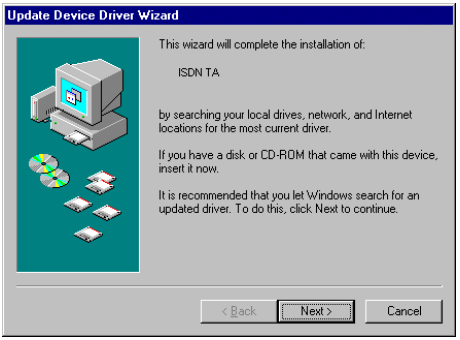
This section will guide you through the steps of creating a Dial-Up connection. You can access Internet or remote network once the connection is established.

Step 1 Installing Driver for ISDN TA

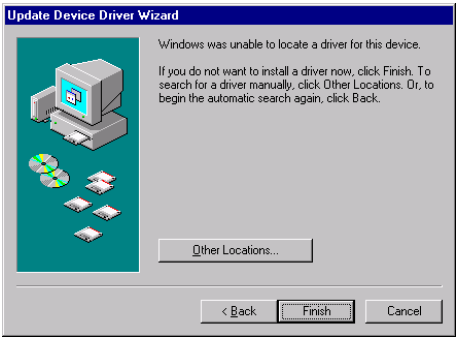
After hardware connection, power on the ISDN TA and then your computer. Follow the step-by-step instructions below to perform installation and setup procedures.

Under Windows 95

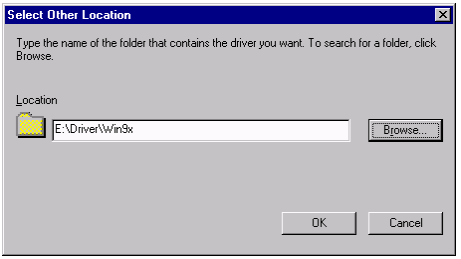
1. Windows 95 will automatically detect the ISDN TA. Click **Next**.



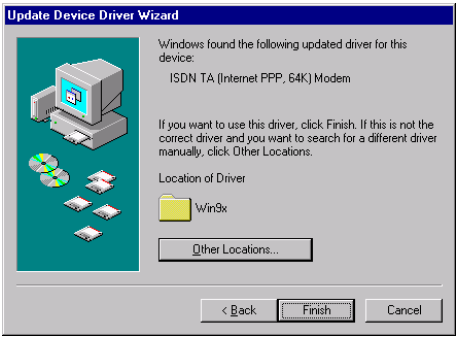
2. Click **Other Locations**.



3. Click **Browse** to locate the path to the driver: **E:\Driver\Win9x** where E: is your CD-ROM drive letter. Then click **OK**.



4. Click **Finish**.



Now, you are done with driver installation. Please proceed to ‘Step 2 Configuring ISDN TA by ‘ISDN Utility Program’ on page 14.

Under Windows 98

1. Windows will detects the ISDN TA. Click **Next**.

2. Select **Search for the best driver for your device** and then click **Next**.

3. Select **Specify a location** and click **Browse** to locate the path to the driver: **D:\Driver\Win9x** where D is your CD-ROM drive letter. Then click **Next**.

4. When Windows finds the driver, click **Next**.

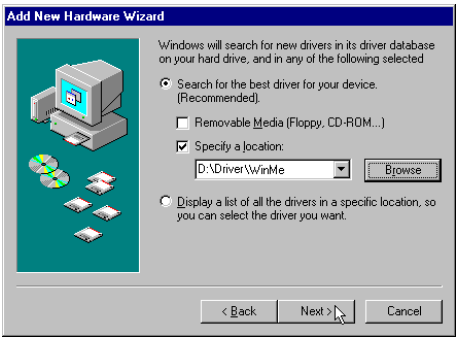
5. Click **Finish**.

Now, you are done with driver installation. Please proceed to Step 2 Configuring ISDN TA by ‘ISDN Utility Program’ on page 14.

Under Windows Me

1. When prompted with **Add New Hardware Wizard**, select **Specify the location**…and then click **Next**.

2. With **Search for the best driver…** selected, check ONLY **Specify a location**. Click **Browse** to locate the path to the driver: **D:\Driver\WinMe** where D: is your CD-ROM drive letter, then click **Next**.



3. Windows will find the driver for this device; click **Next** to continue.

4. Click **Finish** to complete installing the driver.

Step 2 Configuring ISDN TA by 'ISDN Utility Program'

The ISDN TA's default parameters are suitable for most configurations. However, if you need to configure your ISDN TA for special-purpose requirements, refer to "Chapter 8 Using ISDN Utility Program" on page 49 for instructions.

Step 3 Adding Virtual Modem

After driver installation, an Internet PPP modem for 64K access is installed automatically. You can manually add more than one virtual modem according to your connection requirements.

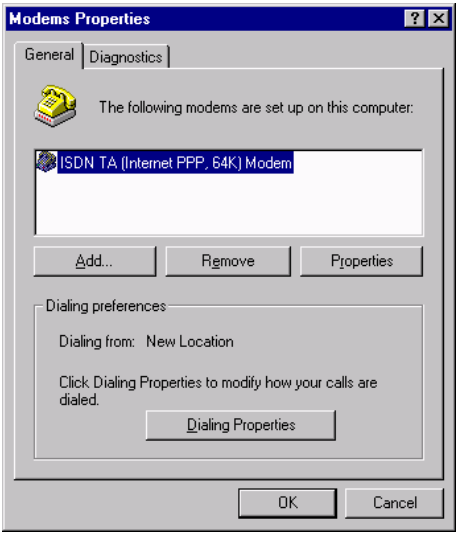
1. Select **Start** > **Settings** > **Control Panel** > **Modems**.

   Only for Windows 98/Me:

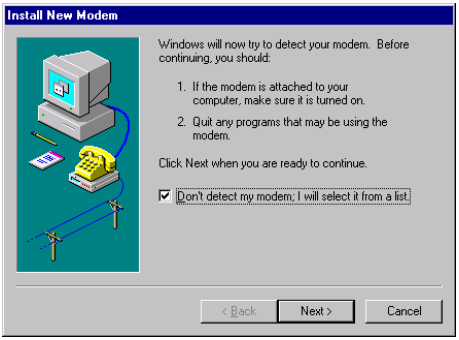
   If this is the first time you open Dial-Up Networking, the **Location Information** window will appear. Enter related information and then click **Close**.

2. When **Modem Properties** window appears, click **Add**.

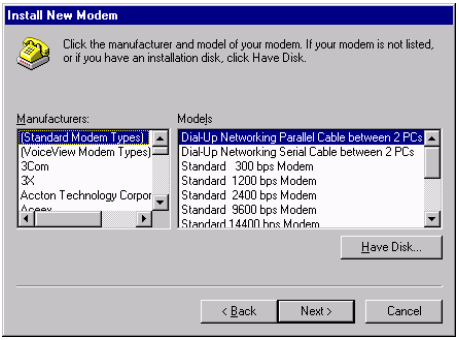
Note: You should find **ISDN TA(Internet PPP,64K) Modem** among your modem list, which is installed during driver installation.



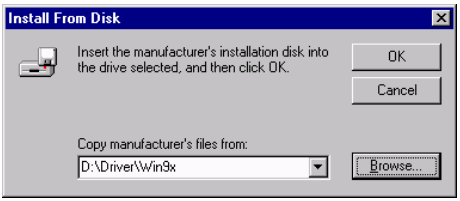
3. Check **Don't detect my modem; I will select it from a list** and then click **Next**.



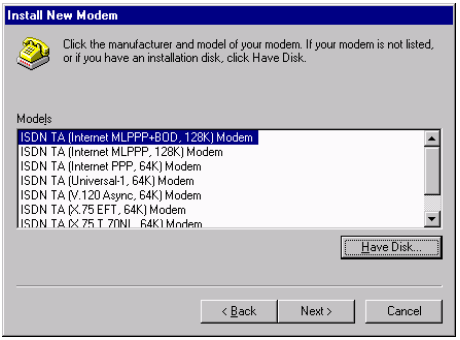
4. Click **Have Disk**. Insert the installation CD into your CD-ROM drive.



5. Click **Browse** to specify the path to the driver: **D:\Driver\Win9x** (or **WinMe** for Windows Me) where D is your CD-ROM drive letter, then click **OK**.



6. Select the modem type you require from the list and then click on **Next**.



NOTE:

You can add more than one virtual modems one by one manually. Each modem will automatically connect to the appropriate protocol as the modem name specified when you make a connection via the modem you selected.

The purpose of each modem type supported is described as follows:

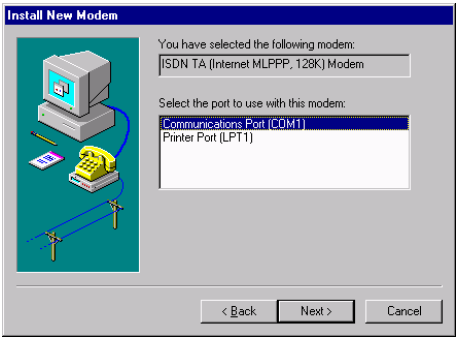
- **The ISDN TA (Internet PPP, 64K) Modem** is used for 64K Internet Access. The used protocol in B channel is PPP.
- **The ISDN TA (Internet MLPPP, 128K) Modem** is used for 128K Internet Access. The used protocol in B channels is MultiLink PPP.
- **The ISDN TA (Internet MLPPP +BOD, 128K) Modem** is used for 128K Internet Access. The used protocols in B channels are MultiLink PPP and Bandwidth on Demand (BOD). This means you may have a voice call while 2 B channels are used by MultiLink PPP **Internet** Access. The modem will drop one B channel automatically and make a voice call through this free B channel. After finishing the voice call, the modem will check the data flow in used B channel and connect another B channel automatically if usage rate is high.
- **The ISDN TA (X.75 Transparent, 64K) Modem** is used for BBS Access and file transfer. The used protocol in B channel is X.75 Transparent.
- **The ISDN TA (X.75 T.70NL, 64K) Modem** is used for BBS Access and file transfer. The used protocol in B channel is X.75 T.70NL.
- **The ISDN TA (X.75 EFT, 64K) Modem** is used for BBS Access and file

transfer (EFT: Euro File Transfer). The used protocol in B channel is X.75 ISO8208.

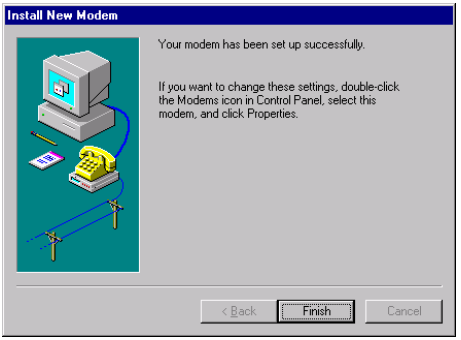
- **The ISDN TA (Universal-1, 64K) Modem** is used for the general purpose. The protocol can be specified by using the ATBn command (Check the AT command on "Chapter 9 AT Commands & Result Codes") before making a connection. Without any ATBn setting, this Universal modem use 64K HDLC as the default protocol.
- **The ISDN TA (V.120 Async, 64K) Modem** is used for V.120 ISDN connection.

7. Link this modem to the Com port which connects to the ISDN TA. Click **Next**.

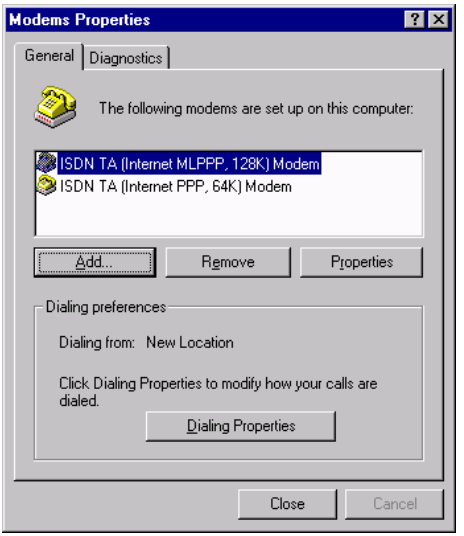
   For Windows 95 only, if your location information is never entered before, the **Location Information** window will appear. Enter related information and then click **Next**.



8. Click **Finish**.

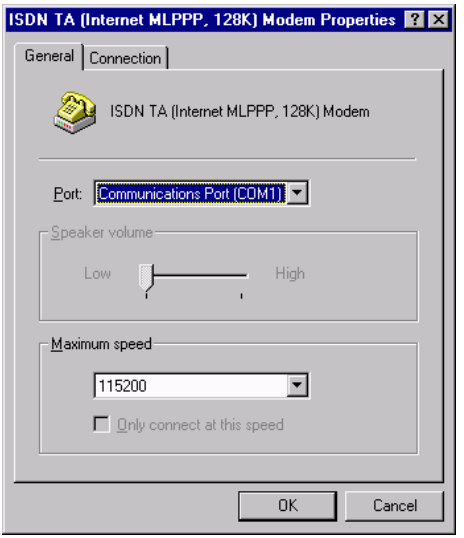


9. You will return to **Modems Properties** window. Highlight the ISDN TA modem you just installed and click **Properties** to verify its configuration.



Configuring the Virtual Modem Property

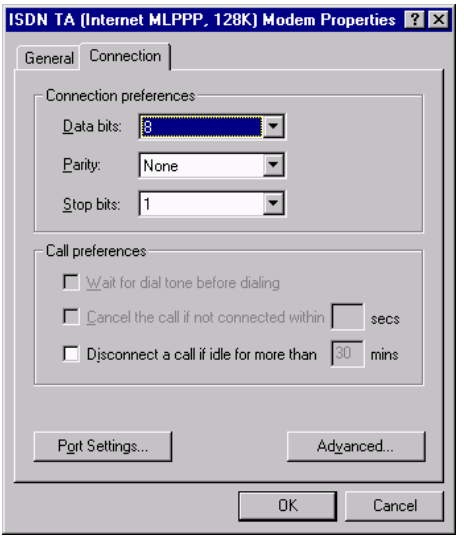
10. Under **General** tab, set **Maximun speed** to **115200**.



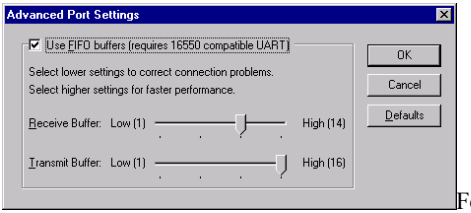
11. Click **Connection** tab and configure the parameters as the following:

- Data bits: 8
- Parity: None
- Stop bits: 1

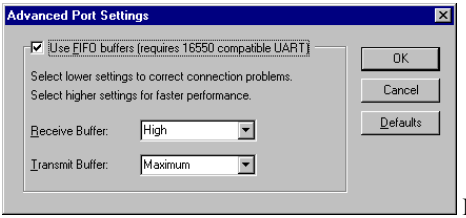
Then click **Port Settings**.



12. Enable **Use FIFO buffers** and then click **OK**.

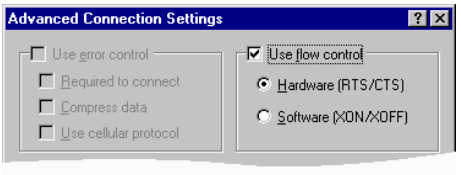


For Windows 95/98



For Windows Me

13. Returning to **Connection** tab, click **Advanced** tab. Select **Use flow control** and enable **Hardware (RTS/CTS)** option. Click **OK**.



14. When returning to **Connection** tab, click **OK**. Then click **Close** to exit **Modems Properties** window.

Whenever you want to configure the properties of the ISDN modem, follow the steps:

1. Click **Start** > **Settings** > **Control Panel** > **Modems**.
2. Select the ISDN TA modem you want to configure, then click **Properties**.

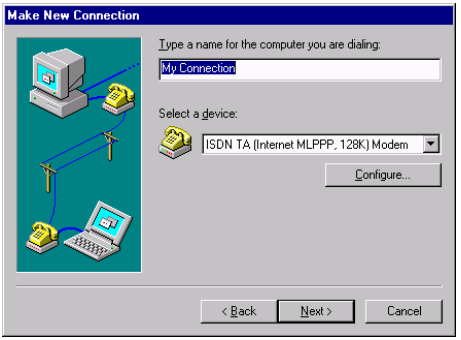
Step 4 Creating Dial-Up Connection

1. From the desktop, double-click **My Computer** and then **Dial-Up Networking**.

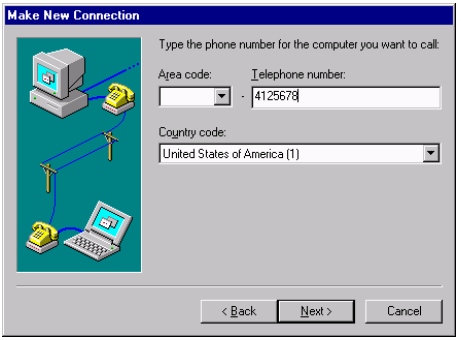
   If **Dial-Up Networking** is not installed on your computer, click **Start** > **Settings** > **Control Panel** > **Add/Remove Programs** > **Windows Setup** > **Communications**, check **Dial-Up Networking**, then follow the on-screen instructions to proceed.

2. If this is your first connection, click **Next**. Otherwise, double-click **Make New Connection**.

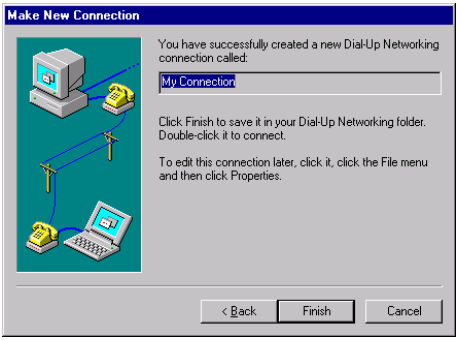
3. In the **Make New Connection** window, type a name for this connection and select appropriate device from the list. Click **Next**.



4. Enter the telephone number of your ISP and then click **Next**.



5. Click **Finish** and then an icon is created for this connection.



Connecting to Internet or Remote Network

1. From the desktop, double-click **My Computer** and then **Dial-Up Networking**.
2. Double-click the icon for the connection you created for ISDN TA.
3. In the **Connect To** dialog box, enter **User name** and **Password** specified by your ISP or network administrator. Click **Connect**.
4. The server will verify your user name, password and register you on the server.

5. When the connection is established, the **Connected to** dialog box appears.

You are now able to use the Internet tools to access the Internet or network tool to access remote network.

With problems after connecting such as the line is dropped or you cannot access the

Internet/ remote network, verify your network settings with your ISP or network administrator.

Chapter 5. Installation and Setup under Windows NT4.0

After hardware connection, turn on your computer and start Windows NT. If your Windows NT has installed the PNPISA before, Windows NT should detect an ISDN TA and request for the driver. Please check **Do not install a driver** and follow the instructions below.

Step 1 Configuring ISDN TA by 'ISDN Utility Program'

The ISDN TA's default parameters are suitable for most configurations. However, if you need to configure your ISDN TA for special-purpose requirements, refer to "Chapter 8 Using ISDN Utility Program" on page 49 for instructions.

Step 2 Install Your ISDN TA as a Modem

Take note of following items before proceeding:

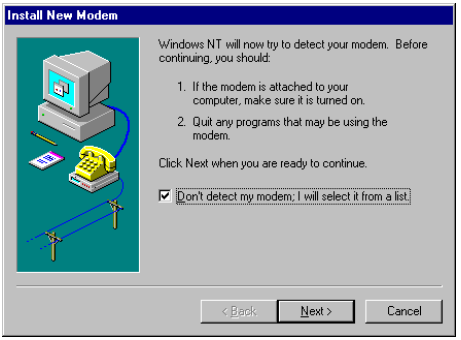
- **Remote Access Service (RAS)**

  Before proceeding, it is recommended to install the RAS (also known as Dial-Up Networking). You can install it with at least one modem. Any modem will do; it is only needed to install the ISDN TA and can later be removed. Check Windows NT documentation for information on installing RAS.
- Have the information on ISP and network handy. You may be prompted for the information during installation.

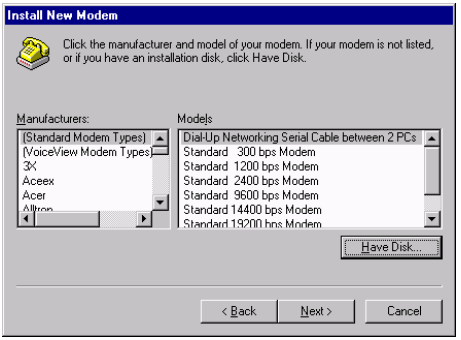
Follow the steps below to install the ISDN TA as a modem:

1. Click **Start** > **Settings** > **Control Panel**. Double-click the **Modems** icon.
2. If you have installed a modem previously, the **Modem Properties** window appears; click **Add**. Otherwise, go to Step 3 directly.

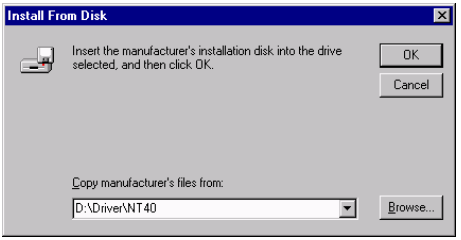
3. In **Install New Modem** dialog box, check **Don't detect my modem…** and then click **Next**.



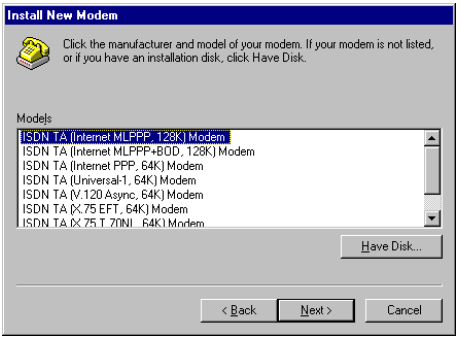
4. Click **Have Disk**. Insert the installation CD into your CD-ROM drive.



5. Click **Browse** to specify the path to the driver: **D:\Driver\NT40** where D is your CD-ROM drive letter, then click **OK**.



6. Highlight the model you want to install and click **Next**.



NOTE:

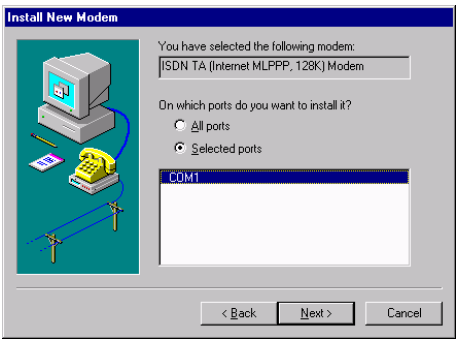
You can add more than one virtual modems one by one manually. Each modem will automatically connect to the appropriate protocol as the modem name specified when you make a connection via the modem you selected.

The purpose of each modem type supported is described as follows:

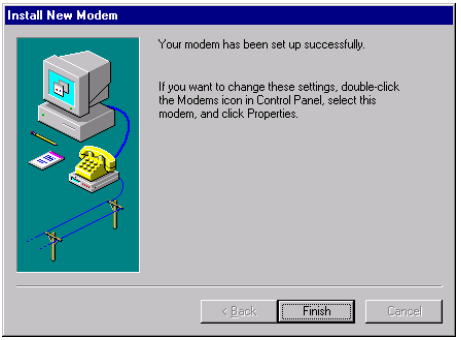
- **The ISDN TA (Internet PPP, 64K) Modem** is used for 64K Internet Access. The used protocol in B channel is PPP.

- **The ISDN TA (Internet MLPPP, 128K) Modem** is used for 128K Internet Access. The used protocol in B channels is MultiLink PPP.
- **The ISDN TA (Internet MLPPP +BOD, 128K) Modem** is used for 128K Internet Access. The used protocols in B channels are MultiLink PPP and Bandwidth on Demand (BOD). This means you may have a voice call while 2 B channels are used by MultiLink PPP **Internet** Access. The modem will drop one B channel automatically and make a voice call through this free B channel. After finishing the voice call, the modem will check the data flow in used B channel and connect another B channel automatically if usage rate is high.
- **The ISDN TA (X.75 Transparent, 64K) Modem** is used for BBS Access and file transfer. The used protocol in B channel is X.75 Transparent.
- **The ISDN TA (X.75 T.70NL, 64K) Modem** is used for BBS Access and file transfer. The used protocol in B channel is X.75 T.70NL.
- **The ISDN TA (X.75 EFT, 64K) Modem** is used for BBS Access and file transfer (EFT: Euro File Transfer). The used protocol in B channel is X.75 ISO8208.
- **The ISDN TA (Universal-1, 64K) Modem** is used for the general purpose. The protocol can be specified by using the ATBn command (Check the AT command on "Chapter 9 AT Commands & Result Codes") before making a connection. Without any ATBn setting, this Universal modem use 64K HDLC as the default protocol.
- **The ISDN TA (V.120 Async, 64K) Modem** is used for V.120 ISDN connection.

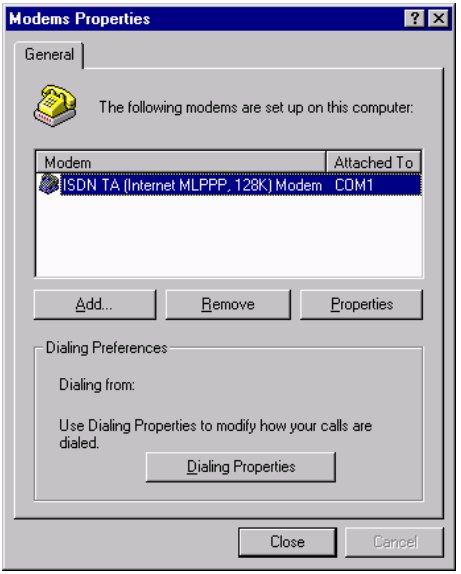
7. Highlight the COM Port the ISDN TA is connected to. Click **Next**.



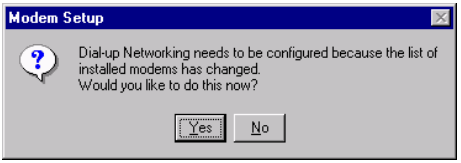
8. Click **Finish**.



9. Click **Close** to exit the **Modems Properties** window.

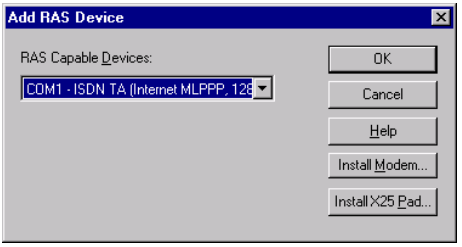


10. When prompted to setup the modem, click **Yes**.

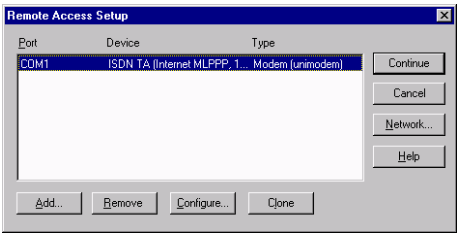


11. In the **Add RAS Device** window, select the ISDN modem you just installed and click **OK**.

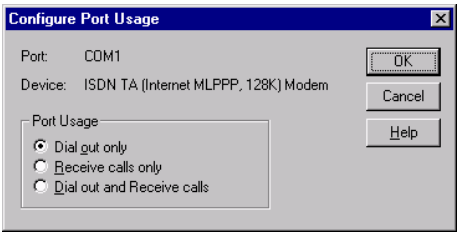
    If you do not see this screen, proceed to next step directly.



12. With your ISDN modem selected, click **Configure**.



13. Select required port usage and then click **OK**.

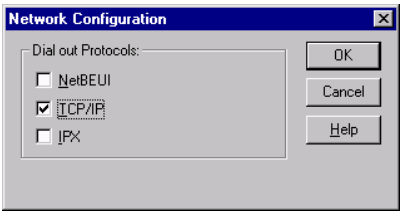


14. When returning to **Remote Access Setup** window, click **Network**.

15. Different **Network Configuration** dialog box will appear according to the port usage you select in Step 13.

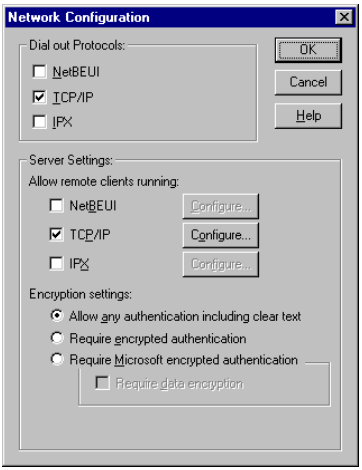
    - Option 1: **Dial out only** is selected

      Check the protocol you required. If you are going to access Internet, check **TCP/IP** usually. Then click **OK**.



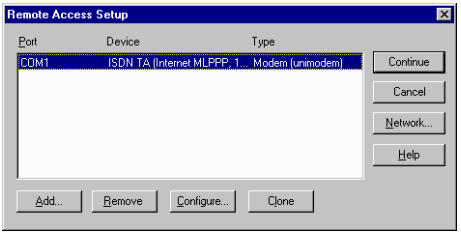
- Option 2: **Receive calls only** or **Dial out and Receive calls** is selected

  Check your ISP to set the network settings. Also check that you have enabled **Allow any authentication including clear text**; then click **OK**. Several dialog boxes will appear according to your network settings. Follow the on-screen instructions to set the settings.



16. Click **Continue** and you are done with installation.

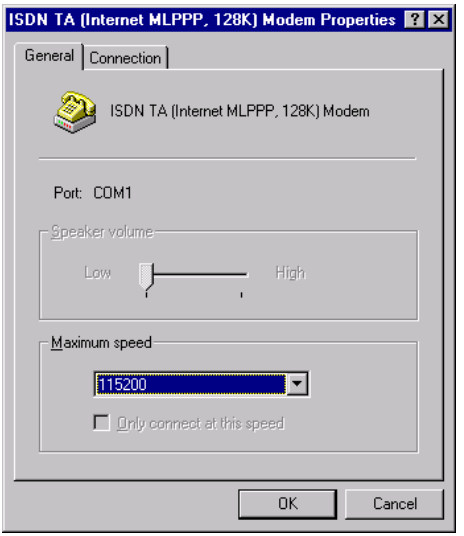
    If you are prompted for Windows NT files, specify the location of Windows NT files and click **Continue**.



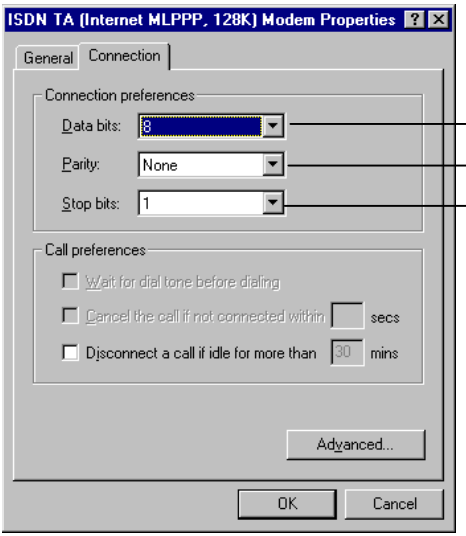
17. When asked to restart your computer, click **Yes**.

Step 3 Configuring the Modem Property

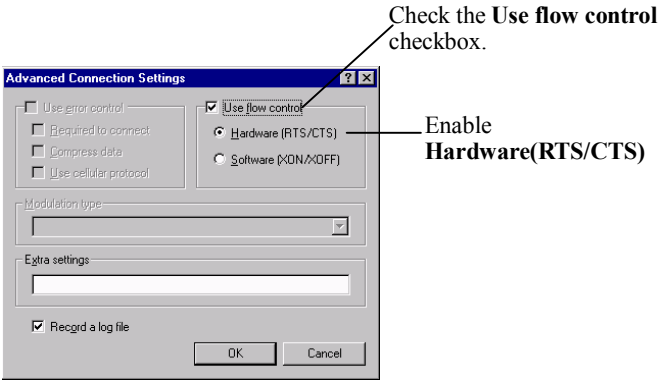
1. Select **Start** > **Settings** > **Control Panel** > **Modems** .
2. Highlight the ISDN modem you want to configure and then click **Properties**.
3. Under **General** tab, set **Maximun speed** to 115200.



4. Click **Connection** tab and configure the parameters as the following:



5. Click **Advanced** and configure the parameters as the following:



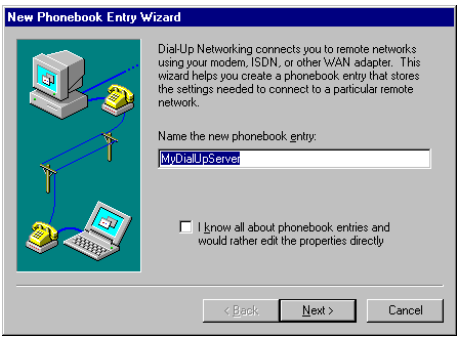
Step 4 Creating Your Dial-Up Network Connection

1. From the desktop, double-click **My Computer** and then **Dial-Up Networking**.

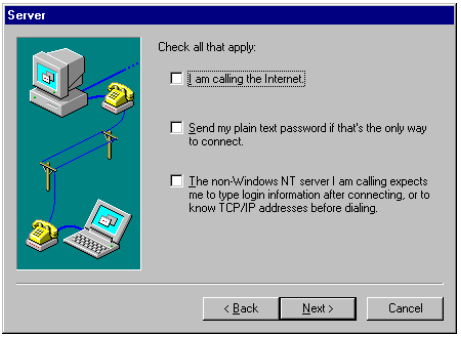
2. If this is the first time you open **Dial-Up Networking**, a message box prompts you to add an entry to the phonebook. Click **OK**.

   If this is not the first time you open **Dial-Up Networking**, click **New**.

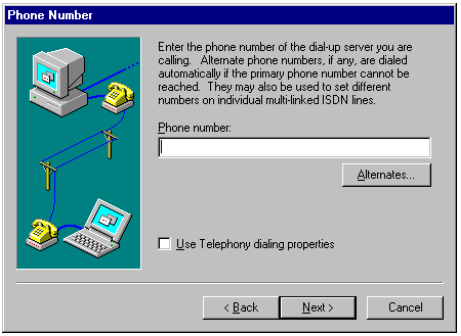
3. The **New Phonebook Entry Wizard** window appears. Enter a name for the new phonebook entry and then click **Next**.



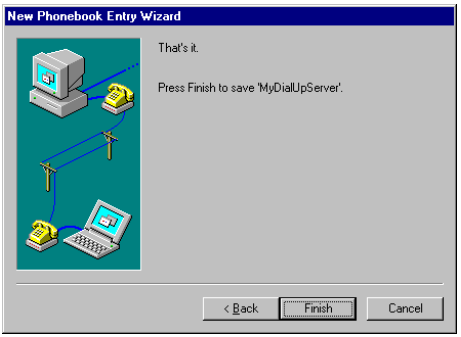
4. Check applicable statement, then click **Next**.



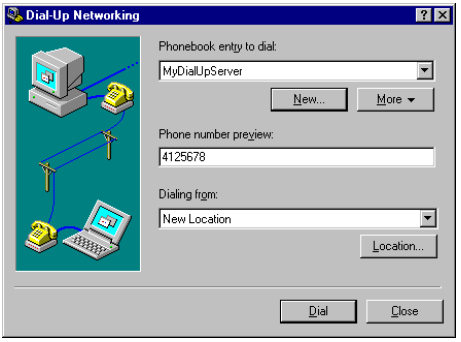
5. Enter the phone number of your ISP and click **Next**.

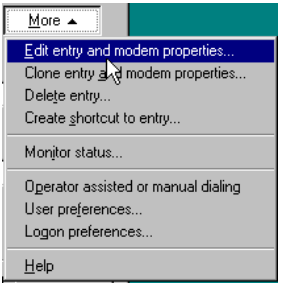


6. Click **Finish**.

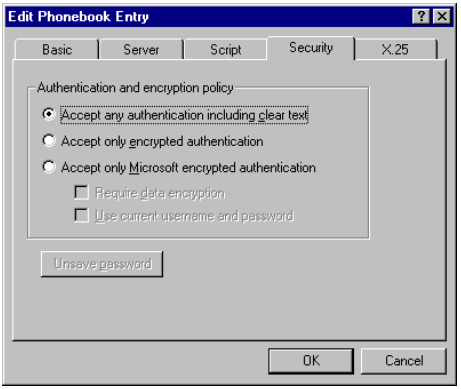


7. Click on **More** and select **Edit entry and modem properties…** from the pull down list.

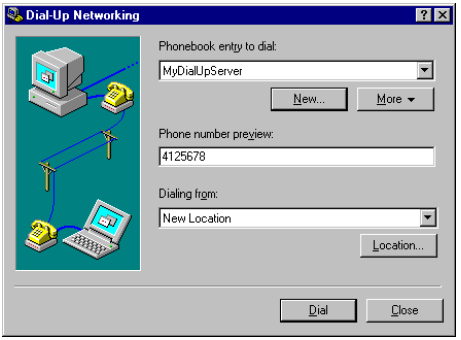




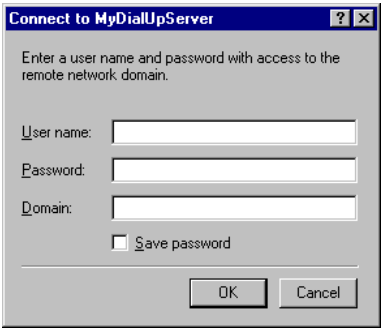
8. Click **Security** tab and check **Accept any authentication including clear text** box. Then click **OK**.



9. Click **Dial** to make a connection.



10. Enter your **User name** and **Password**, then click **OK**.



The system will dial and connect to your ISP at either 128k or 64k depending on your setup. The server will verify your login name, password, and register you on the server. If connection is successfully established, you are able to use the Internet tools to access the Internet or network tool to access remote network.

When double-clicking the small icon of **Dial-Up Networking** at Windows taskbar, the **Dial-Up Networking Monitor** will show the connection status including connection speed, etc.

With problems after connecting such as the line is dropped or you cannot access the Internet/ remote network, verify your network settings with your ISP or network administrator.

Configure Dial Entry and Modem Properties

If you need to configure more parameters for your dial entry, follow the procedures below.

1. From the desktop, double-click **My Computer** and then **Dial-Up Networking**.
2. When **Dial-Up Networking** window appears, select your dial entry from **Phonebook entry to dial** field and then click **More**.
3. Select **Edit entry and modem properties…** from the pull down list.
4. Click required tab and configure needed settings; click **OK**.
5. When returning to **Dial-Up Networking** window, click **Close** to finish configuration or click **Dial** to make a connection.

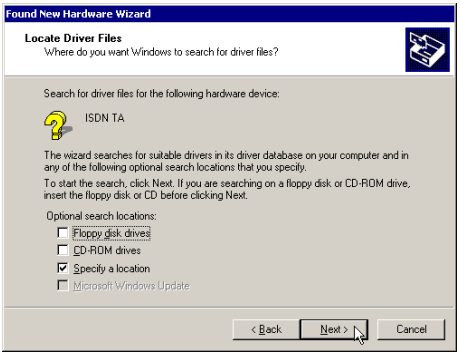
Chapter 6. Installation and Setup under Windows 2000

Step 1 Installing Driver for ISDN TA

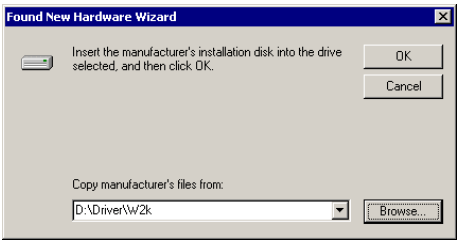
1. When prompted with **Found New Hardware Wizard**, click **Next** to continue.

2. Select **Search for a suitable driver…** and click **Next**.

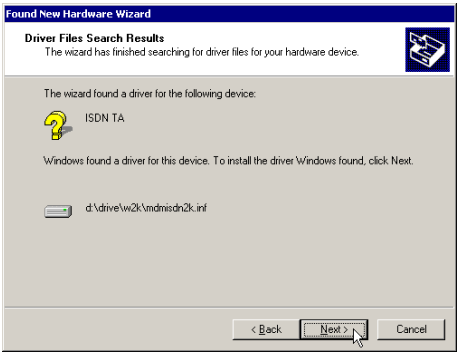
3. Check **Specify a location** and then click **Next**.



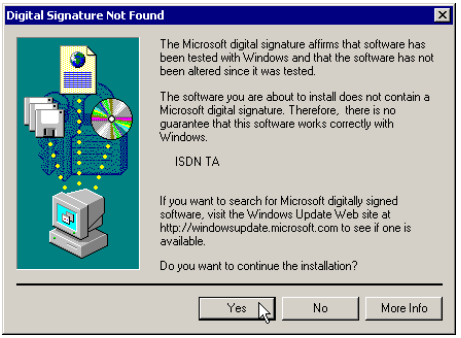
4. Insert the installation CD into your CD-ROM drive. Click **Browse** to specify the path to the driver: **D:\Driver\W2K** where D is your CD-ROM drive letter, then click **OK**.



5. Windows will find the driver; click **Next**.



6. When prompted with **Digital Signature Not Found**, click **Yes**.



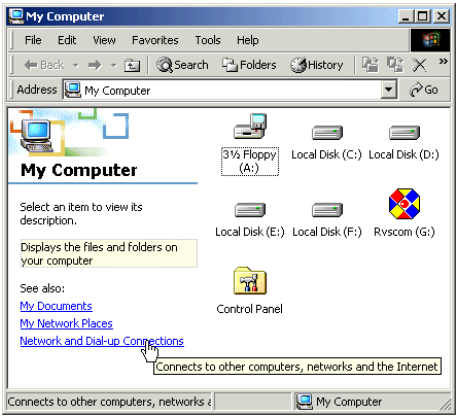
7. Click **Finish** to complete the installation.

Step 2 Configuring ISDN TA by 'ISDN Utility Program'

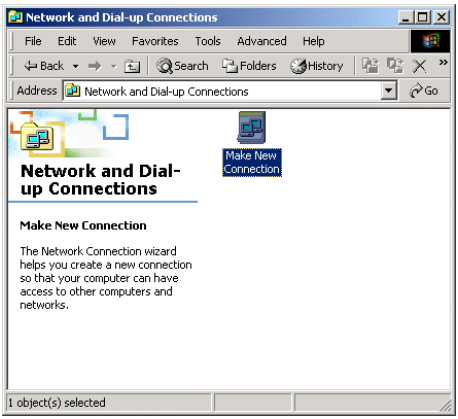
The ISDN TA's default parameters are suitable for most configurations. However, if you need to configure your ISDN TA for special-purpose requirements, refer to "Chapter 8 Using ISDN Utility Program" on page 49 for instructions.

Step 3 Creating Dial-up Connection

1. From your desktop, double-click **My Computer** and then **Network and Dial-up Connections**.

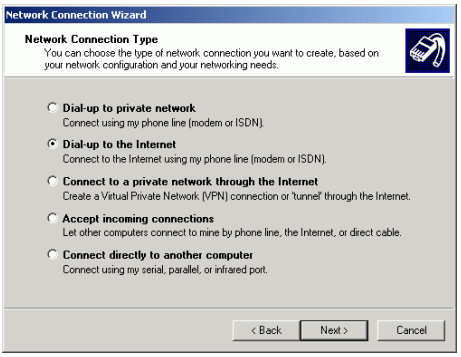


2. Double click **Make New Connection** icon. If this is the first time you make new connection, **Location Information** window will appear. Enter related information and click **OK**. Returning to **Phone And Modem Options** window, click **OK**.

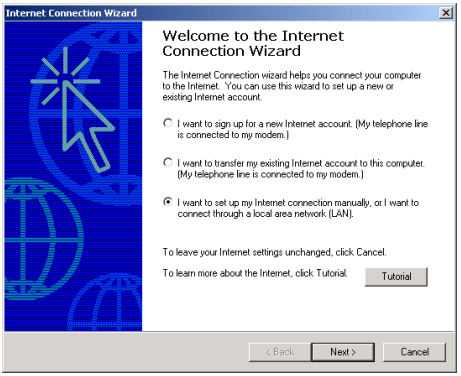


3. Click **Next**.

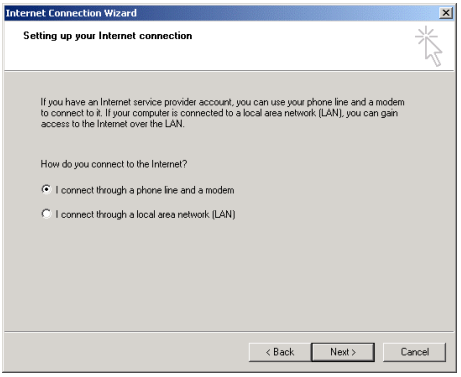
4. Check **Dial-up to the Internet** and then click **Next**.



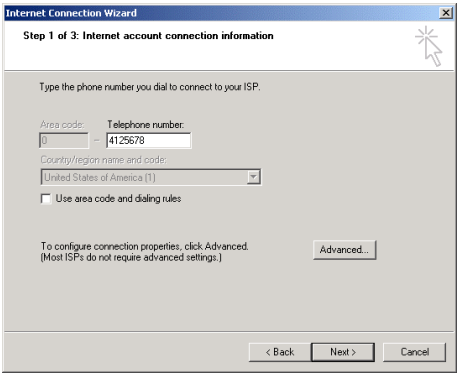
5. Check **I want to set up my Internet connection manually…** and click **Next**.



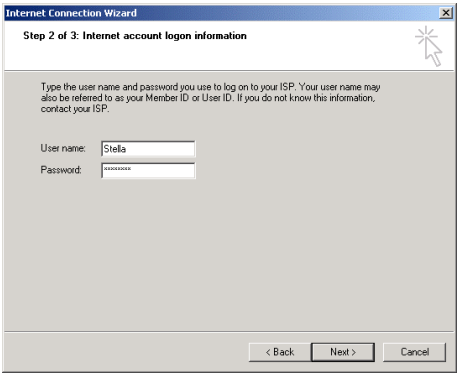
6. Check **I connect through a phone line and a modem** and click **Next**.



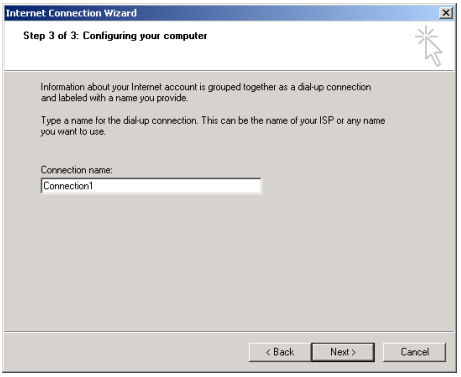
7. Uncheck **Use area code and dialing rules**. Enter the telephone number provided by your ISP and then click **Next**.



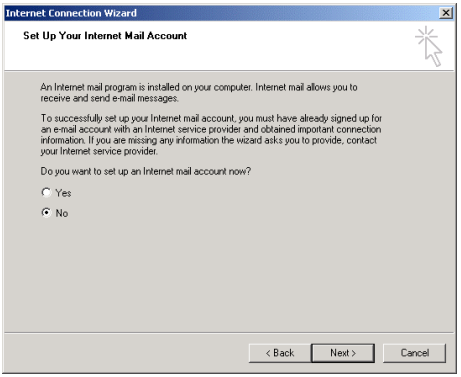
8. Enter **User name** and **Password** provided by your ISP and then click **Next**.



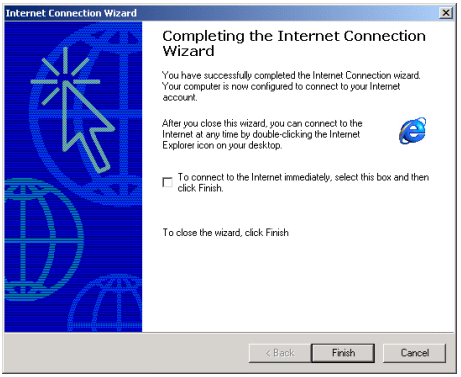
9. Type a name for the dial-up connection and click **Next**.



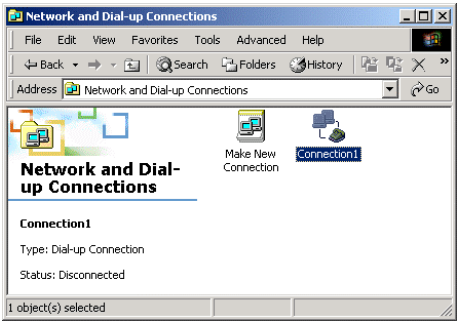
10. When prompted to set up your Internet mail account, select **No** and click **Next**.



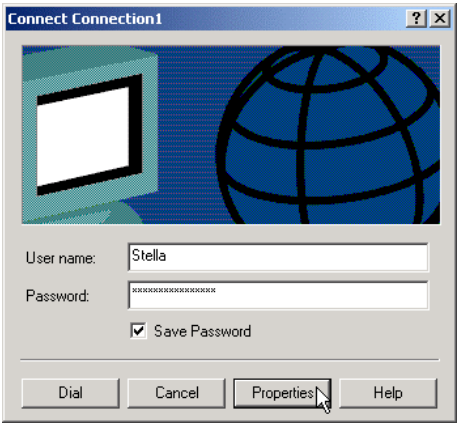
11. Uncheck **To connect to the Internet immediately…** and click **Finish**.



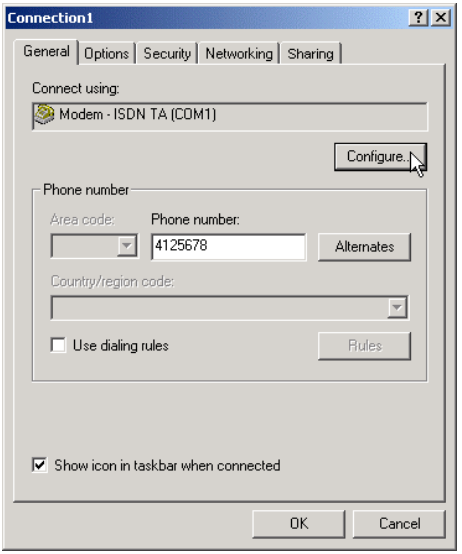
12. Double-click the icon of the dial-up connection your created previously.



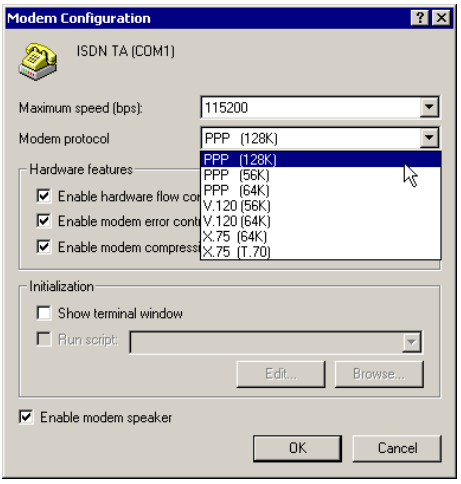
13. Click **Properties**.



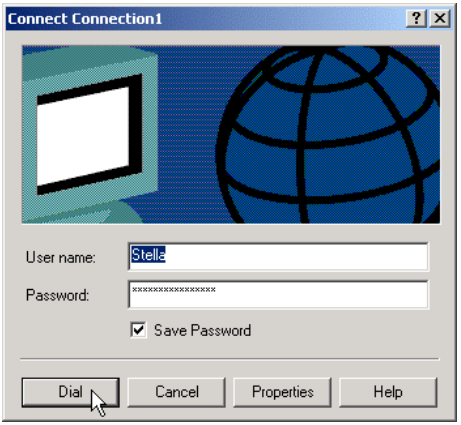
14. Under **General** tab, click **Configure**.



15. Click the drop-down menu of **Modem protocol** and select the protocol you need. Then click **OK**.

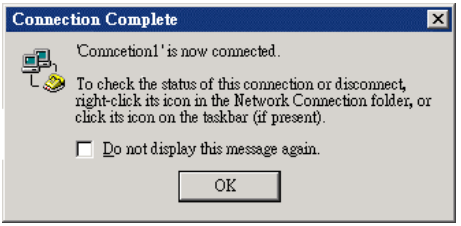


16. Click **OK** to return to **Connect** window. Click **Dial** to make a connection.

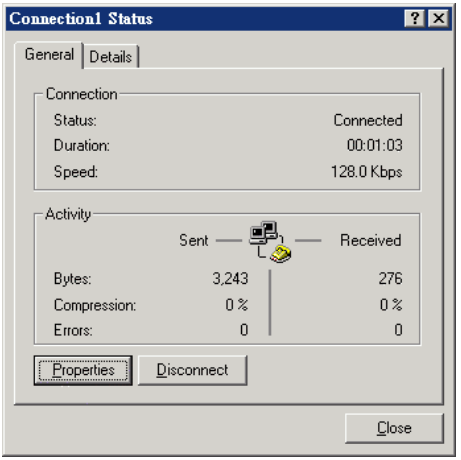


17. Wait for verifying username and password.

18. When the connection is complete, click **OK**.



19. You can monitor the status of connection via the following screen.



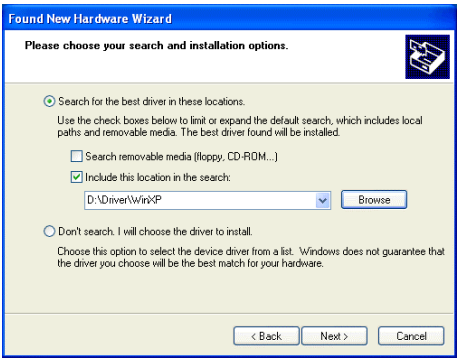
Now you are able to use the Internet tools to access the Internet or network tool to access remote network. Enjoy the Internet resource with ISDN super speed now.

Chapter 7. Installation and Setup under Windows XP

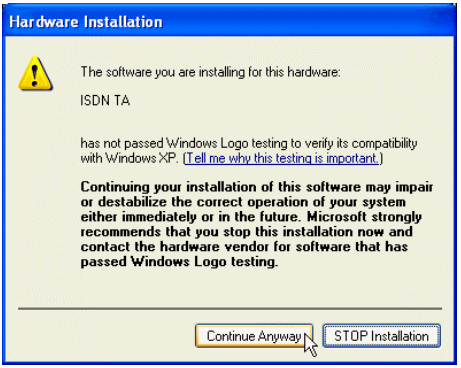
Step 1 Installing Driver for ISDN TA

1. Windows will detect the ISDN TA. Select **Install from a list or specific location (Advanced)** and click **Next**.

2. Insert the installation CD into your CD-ROM drive. With **Search for the best driver in these locations** selected, check ONLY **Include this location in the search**. Click **Browse** to specify the path to the driver: **D:\Driver\WinXP** where D is your CD-ROM drive letter, then click **Next**.



3. When compatibility warning screen appears, click **Continue Anyway**.



4. Click **Finish**.

Step 2 Configuring ISDN TA by 'ISDN Utility Program'

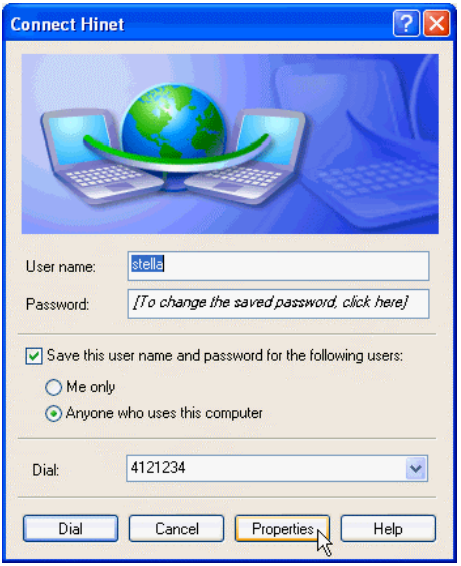
The ISDN TA's default parameters are suitable for most configurations. However, if you need to configure your ISDN TA for special-purpose requirements, refer to "Chapter 8 Using ISDN Utility Program" on page 49 for instructions.

Step 3 Creating Dial-up Connection

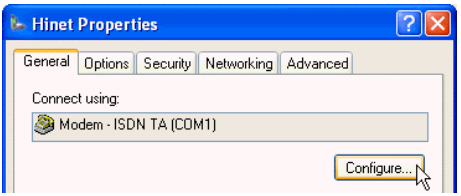
1. From your desktop, double-click **My Computer, Control Panel**, then **Network Connections**.
2. Under **Network Tasks** item, click **Create a new connection**.
3. Click **Next**.
4. Select the network connection type, e.g., **Connect to the Internet**, and then click **Next**.
5. Select **Set up my connection manually** and click **Next**.

6. Select **Connect using a dial-up modem** and click **Next**.
7. Enter the name of your ISP and click **Next**.
8. Enter the phone number (the information should be provided by your ISP), and click **Next**.
9. Enter the **User name** and **Password** given by your ISP. Confirm your password and then click **Next**.
10. Click **Finish**.
11. When the **Connect** window pops up, click **Properties**.

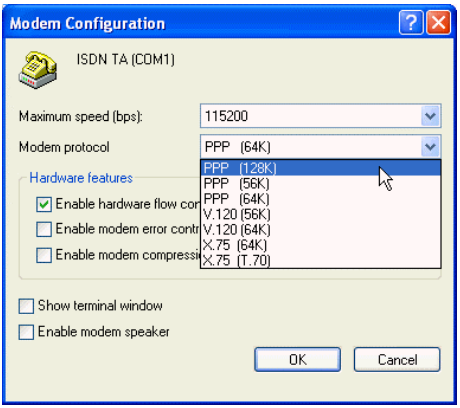
Note: You may also access the **Connect** window by **My Computer** > **Control Panel** > **Network Connections** > double-click the icon for your dial-up connection.



12. Under **General** tab, click **Configure**.



13. Click the drop-down menu of **Modem protocol** to select the protocol you need and click **OK**.



14. Then return to the **Connect** window. Click **Dial** to make a connection. Wait for verifying username and password. When the connection is complete, you are able to use the Internet tools to access the Internet or network tool to access remote network. Enjoy the Internet resource with ISDN super speed now.

Chapter 8. Using ISDN Utility Program

The ISDN TA's default parameters are suitable for most configurations. However, you may need to configure your ISDN TA for specific requirements.

This chapter describes how to configure the ISDN TA by provided 'ISDN Utility Program' through terminal emulation program, such as Procom, Telex, HyperTerminal and so on.

NOTE: You should have your ISDN TA driver installed prior to configuring the ISDN TA. You may also refer to the AT commands to control the system parameters directly.

Getting Started

1. Start the terminal emulation program and select the same COM port assigned to the ISDN TA for the program.
2. Configure the parameters of your terminal emulation program as the following values:
   - Baud Rate: 115200
   - Data Bit: 8
   - Parity Check: None
   - Stop Bit: 1
   - Flow Control: RTS/CTS (Hardware)
3. Issue the following AT command at the prompt and then press enter:

   AT@

   The main menu of **ISDN Utility Program** appears.

4. Select required item from the main menu and use the function keys shown at the bottom of the screen to configure your ISDN TA.

Upgrade New Firmware

After you download new firmware, you can upgrade the firmware by terminal emulation program. The interactive procedure will lead you to complete the upgrade procedure.

1. The strings below will be shown when you enter the **Upgrade New Firmware** screen:

   Are you sure to upgrade the new firmware <Y/N>:_

   Press **Y** to enter upgrade procedure. If you press **N**, you will return to ISDN Utility Program.

2. The below strings will be shown on the screen:

   ISDN TA upgrade procedure starts:
   Erase current driver <Y/N>:_

   Press '**Y**' to continue.

   If you select '**N**', you will exit this upgrade procedure and then the version number, current selected protocol and speed in B channel will be prompted. If there is no driver (firmware) in flash memory, the tool will inform you to finish the upgrade procedure.

3. The tool starts to erase the driver in flash memory and you will see the strings below:

   Erasing ISDN driver……(wait about 5 seconds)
   Finish erase procedure
   Waiting for new firmware through ASCII mode transmission
   If you want to exit upgrade procedure, press '$' to exit now.

   Then select the transmission type with ASCII mode (text mode) and specify the new firmware filename (with extension of ABS). For example, select **Transfer** > **Send Text File** and specify the filename in HyperTerminal. During the transmission, the below strings will be shown.

   Compare S0-record OK
   Load Addr = ######

   If you press '**$**', you still need to return to step 2 to restart upgrade procedure.

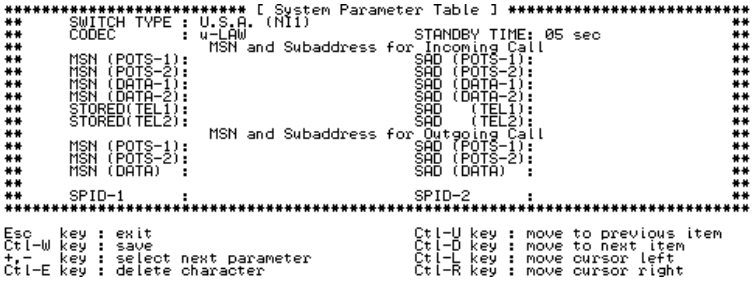
4. Do not press any key during transferring the file; otherwise you will interrupt the normal procedure. After the file is transferred completely, the below strings will be shown on the screen:

   Compare S5-record OK
   Finish upgrade procedure
   Press 'N' to exit this program and go into AT command mode.
   ISDN TA upgrade procedure starts:
   Erase current driver <Y/N>:_

   Select '**N**' to finish upgrading and exit upgrade procedure. The version number, current selected protocol and speed in B channel will be prompted. If you select '**Y**', return to step 3 to restart erasing the driver in flash memory.

Set System Parameter

The system parameter screen is shown as below.



The following parameters can be configured:

Parameters	Description
SWITCH TYPE	Set the country or ISDN switch type which meets your local telephone company requirement.
CODEC	Specify your country code upon different telecommunications standards. • A_Law: for countries follow European telecommunication standards. • u_Law: for countries follow the US telecommunication standards, If you are using AT commands: ATCODEC=0 for a_Law and ATCODEC=1 for u_Law.
STANDBY TIME	Specify the time period between dialing the last digit and sending a call request. It is suggested to leave it as default.
MSN (Incoming)	This parameter is used for ISDN switches supporting MSN (Multiple Subscriber Number) service. MSN service is supported by some European telephone companies. If you enter the number here, then the called telephone number (called party number) of the incoming call will be required to match the MSN value, otherwise no service will answer or accept this incoming call. If you want to answer any incoming calls, please leave it blank. **Note:** In the UK, using ISDN2 or ISDN2e only the significant digits of the MSN number are sent to the terminal adapter. Usually this is the last digit only e.g. if your ISDN phone number is 01234 496778 then the number to be entered in the MSN field is 8, <u>not</u> the full ISDN number. This means that this line will only respond to your particular ISDN phone number that ends in 8. All other numbers will be rejected. If your telecomms company sends down the last two digits for the MSN number then you must enter both the last digits.

Parameters	Description
MSN (Outgoing)	This parameter is used to tell ISDN central switch that this call is made by this telephone number and bill to this telephone number.
SPID	*For North America only.* Please check with your ISDN service provider if it is necessary. Enter the corresponding SPIDs (Service Profile Identifiers) specified by your ISDN service provider. Enter either one or two SPID numbers depending on your switch type for your ISDN line.
SAD	Abbreviation of Sub-Address. It is almost the same as MSN. It may be available or not, depending on your ISDN phone company.

Notes:
For the incoming data call, the ISDN TA will get the used B channel protocol, called party number and subaddress from the SETUP packet. If there is no used B channel protocol in SETUP, TA will detect the protocol such as V.120, X.75, and HDLC in B channel automatically (Please refer to the AT&AP command for the detail.). If there are parameters set in MSN, Subaddress, and Protocol (please refer to AT&ZIr=m*n*p command), these parameters will be checked during the incoming SETUP packet's values. If the MSN values are matched(Please refer to AT&ZI? Command), then the ISDN TA will accept this call, otherwise this call will be rejected.

Set Protocol Parameter

The protocol parameter screen is shown below.

```
************************ [ Protocol Parameter Table ] ************************
**                            Profile_0                                     **
**      BIT_TRANSPARENT     -- Packet Size: 2000                             **
**      HDLC                -- Packet Size: 1024                             **
**      V.120               -- Packet Size: 256         Window Size: 7       **
**      X.75 (Transparent)  -- Packet Size: 2048        Window Size: 1       **
**      X.75 (T.90NL)       -- Packet Size: 128         Window Size: 7       **
**      X.75 (ISO8208)      -- Packet Size: 1024        Window Size: 7       **
**                            Profile_1                                     **
**      BIT_TRANSPARENT     -- Packet Size: 2000                             **
**      HDLC                -- Packet Size: 1024                             **
**      V.120               -- Packet Size: 256         Window Size: 7       **
**      X.75 (Transparent)  -- Packet Size: 2048        Window Size: 1       **
**      X.75 (T.90NL)       -- Packet Size: 128         Window Size: 7       **
**      X.75 (ISO8208)      -- Packet Size: 1024        Window Size: 7       **
******************************************************************************

Esc   key : exit
Ctl-W key : save
Ctl-U key : move to previous item
Ctl-D key : move to next item
+,-   key : select next parameter
```

These protocols are used in the B channel. You can set the packet size and window size to meet the requirement of remote site or for better performance. For convenience, you may store the settings for different purposes into profile 0 or profile 1. Therefore, you can select one of these profiles to speed up the configuration and usage. Please refer to the chapter of AT command set for related information.

Chapter 9. AT Commands & Result Codes

The terminal adapters support Communication interface (RS-232C). It allows applications to access the terminal adapters as an analog modem. We provide the extra AT commands to enable ISDN features such as HDLC, X.75, V.120, or Async to Sync PPP (as the list below).

The following AT Commands are provided to control the ISDN connections, line protocols and call handling. You should use these parameters to change your application setup-strings to access the terminal adapters with the correct protocol and settings.

AT Command Set

Command	Samples	Description
ATA		Answer an incoming call
ATBn		Select protocol of transmission in B channel
	ATB0	64K HDLC
	ATB20	V.120 Async.
	ATB3	X.75 Transparent, the same as ATB30
	ATB30	X.75 Transparent
	ATB31	X.75 T.70 NL
	ATB32	X.75 EuroFT
	ATB4	Async PPP to Sync PPP conversion
	ATB41	Async to Sync PPP conversion in MLPPP mode, compatible with Microsoft ISDN Accelerator pack
	ATB42	Async to Sync PPP conversion in MLPPP mode with Bandwidth on Demand (BOD)
	ATB5	Bit Transparent (This command is only used for RVS-COM's soft-G3Fax)
ATCODEC		Set or display the codec of POTS
	ATCODEC=n	n = 0 for A_Law n = 1 for u_Law
	ATCODEC?	Display the current settings
ATDn		Dial a telephone number
	ATD7693007	Dial telephone number 7693007

Command	Samples	Description
ATDL		Redial the last dial number
ATEn		Echo characters when in command mode
	ATE0	Echo off
	ATE1	Echo on
ATHn		On-Off Hook
	ATH	On-Hook, Disconnect (same as ATH0)
	ATH1	Off-Hook
ATIn		Display Driver information
	ATI0	Display version number, selected protocol, connected speed (same as ATI)
	ATI1	Display switch type, codec, SPIDs, standby time, MSN..
	ATI2	Display the last connection status including call direction, used protocol, disconnection cause, and used time period for POTS interface.
	ATI3	Display the last connection status including call direction, used protocol, speed, disconnection cause, and used time period for DATA interface.
ATO		On-Line command, switch to on-line mode from command mode
ATP		Set or display the country or switch type
	ATP=n	n= 0 -> Australia 1 -> Belgium 2 -> China 3 -> Colombia 4 -> Denmark 5 -> Dutch 6 -> Euro ISDN 7 -> Finland 8 -> France 9 -> Germany 10 -> Israel 11 -> Italy

Command	Samples	Description
		12 -> Japan 13 -> Korea 14 -> Korea-CountrySide 15 -> Singapore 16 -> Slovenia 17 -> South Africa 18 -> Spain 19 -> Sweden 20 -> Swiss 21 -> Taiwan 22 -> U.K. 23 -> USA (AT&T Multi-P) 24 -> USA (AT&T P-T-P) 25 -> USA (NI-1) 26 -> USA (NI-2) 27 -> USA (NTI/DMS)
	ATP?	Display the country or switch type
ATQn		Return the result code
	ATQ0	Return the result code
	ATQ1	Does not return the result code
ATSr		Set or display the register value
	ATS0=1	Set register 0 to 1, (S0=0, disable the auto-answer mode)
	ATSr?	Display register r content
	ATS1?	Register 1 is read only, display the ring count
	ATS2	Escape code character (default S2=43, ASCII “+”)
	ATS3	Carriage return character (default S3=13, representing a carriage return)
	ATS4	Line feed character (default S4=10, representing “ CTRL J” or the line feed character)
	ATS5	Back space character (default S5=8, representing “ CTRL H”)
	ATS7	Wait for carries after dial (default S7=30 seconds)

Command	Samples	Description
	ATS12	Escape code guard time (default S12=50)
	ATS25	Delay to DTR (default S25=5)
	ATS30	Disconnect the connection automatically if there is no data transmission in n*10 seconds (n=0 to 255, default S30=0, it will not disconnect the connection)
	ATS37	Send the Low Layer Compatibility (LLC) information for data call S37=0 for not sending LLC (default) S37=128 for sending LLC
	ATS38	Windows size of HDLC 56K or 64K
	ATS39	Packet size of HDLC 56K or 64K from 1 to 2048
	ATS40	Windows size of V.120
	ATS41	Packet size of V.120
	ATS44	Window size of X.75 (Transparent)
	ATS45	Packet size of X.75 (Transparent) from 1 to 2048
	ATS46	Window size of X.75 T.70 NL
	ATS47	Packet size of X.75 T.70 NL from 1 to 2048
	ATS50	Window size of X.75 EuroFT
	ATS51	Packet size of X.75 EuroFT from 128 to 2048
	ATS53	Average data flow from 1000 to 7000 bytes (default 4, it means 4000 bytes) Active the second channel if average data flow is over 4000 bytes in 10 seconds. This register is only available in MLPPP BOD mode, ATB42.
	ATS54	Time period from 5 to 20 minutes Disconnect the second channel if average data flow below N bytes (set by ATS53) in 5 minutes. This register is only available in MLPPP BOD mode, ATB42.
	ATS55=n	Select the ring pattern for POTS 1, n=0 to 7 pattern # Ring ON Ring Off 0 0.5 second 0.5 second 1 0.5 1.0 2 0.5 1.5

Command	Samples	Description
		3 1.0 1.0 4 1.0 2.0 5 1.0 3.0 6 2.0 2.0 7 2.0 3.0
	ATS56=n	Select the ring pattern for POTS 2, n=0 to 7 Pattern description is the same as above.
ATSPID		Set or display the SPID
	ATSPID0=n	Set first entry of SPIDs to n
	ATSPID1=n	Set second entry of SPIDs to n
	ATSPIDm?	Display the m-th entry of SPID, m=0,1
ATSTBY	ATSTBY=n	Set the standby time n=3 to 10
	ATSTBY?	Display setting value of the standby time
ATUPG		Download the new driver into TA, please follow the instruction shown in the screen to finish all of procedures.
ATVn		Verbose command
	ATV0	Return digit result code
	ATV1	Returns word result code
ATXn		Enable extended result code
	ATX0	Disable the extended result code
	ATX1	Enable extended result code
ATZ		Reset and store back the profile 0
	ATZn	Reset and store back the profile n, n=0,1
AT&ABn		Baudrate detection
	AT&AB0	Detect baudrate automatically, same as AT&AB (default)
	AT&AB1	Disable auto-baudrate detection and fix to current baudrate
	AT&AB?	Display the current baudrate
AT&APn		Incoming protocol detection
	AT&AP0	Disable incoming protocol auto-detection.

Command	Samples	Description
	AT&AP1	Detect incoming protocol automatically
+++		Escape command
AT&Cn		Control DCD
	AT&C0	Keep always the DCD line ON (the same as AT&C)
	AT&C1	DCD line is active if connected
AT&Dn		Control DTR
	AT&D0	Ignore the DTR, assume DTR is always ON.
	AT&D2	DTR OFF will cause the ISDN TA to hang up
AT&E		Select the line speed in the B channel
	AT&E0	64K bps
	AT&E1	56K bps
AT&F		Reset registers to factory setting, default value
AT&Kn		DTE/Modem Flow Control
	AT&K0	Disable DTE/DCE flow control
	AT&K3	Enable RTS/CTS DTE/DCE flow control
	AT&K4	Enable XON/XOFF DTE/DCE flow control
	AT&K6	Enable RTS/CTS and XON/XOFF DTE/DCE flow control
AT&Nn		Select the voice type
	AT&N0	Select the SPEECH as the voice type (TAS400E default)
	AT&N1	Select the 3.1K Audio voice type (TAS403E default)
AT&Tn		n = 0 for clearing the conformance test setting n = 1 for setting the loopback test for conformance test. This command is used for PTT approval only.
AT&TEST		Self-diagnostic of device
AT&V		View profile
AT&W	AT&Wn	Write active configuration to profile n, n=0,1
AT&Y	AT&Yn	Load profile n when power on, n=0,1
AT&ZIr=n*m*p		Set the called party number for screening incoming call (MSN). “n” is the local telephone number, “*” is the sub address symbol (option), if needed, “m” is

Command	Samples	Description
		the sub address (option). The second "*" is option. If needed, the p is the protocol indicator. P = 0 for accepting all protocols with auto-detection = 2 for receiving V.120 protocol only = 3 for receiving X.75 Transparent only = 4 for receiving X.75 T.70NL only = 5 for receiving X.75 EFT (Euro File Transfer)only = 6 for receiving HDLC (such as PPP…) only Where the r=0,1, to 3, the 0 for POTS 1, 1 for POTS 2, and 2 to 3 for DATA port. The maximum length of MSN is 18 digits and 8 digits for subaddress. For example, if you want to set a MSN with a specific protocol (X.75 Transparent) for incoming call, you may enter this command as AT&ZI2=81722043**3 (no subaddress).
	AT&ZI? AT&ZIr?	Display the setting values, r=0,1,2 to 3
AT&ZOr=n*m		Set the calling party number for outgoing call. "n " is the local telephone number, "*" is the sub address symbol, if needed (option), and "m" is the sub address (option). Where the r=0,1,2, the 0 for POTS 1, 1 for POTS 2, and 2 for DATA port.
	AT&ZO? AT&ZOr?	Display the setting values, r=0,1,2
AT#C		Caller ID setting
	AT#C?	Display the current Caller ID mode
	AT#C0	Disable Caller ID
	AT#C1	Enable Caller ID
	AT#C2	Enable to display CallerID;CallerSub; CIP;CalledID;CalledSub
AT#Tn		This command used for some ISDN central office switches, the incoming call doesn't indicate the called party number even though the MSN number had been assigned. This will cause inconvenience for the user. This command provided for the user to

Command	Samples	Description
		Enable/Disable Ring on POT1/2. The setting value will return to the default (Enable) when you turn off TA unless you store setting to the profile 0 and profile 1.
	AT#T0=0	Disable Ring on POTS1
	AT#T0=1	Enable RING on POTS1
	AT#T1=0	Disable Ring on POTS2
	AT#T1=1	Enable RING on POTS2
	AT#T0?	View the setting on POTS1
	AT#T1?	View the setting on POTS2
A/		Repeat the last AT command
AT@		To configure the switch type, codec, SPID, MSN by an user-friendly interface

TAS403E Specific AT Commands Set

Command	Samples	Description
ATCIDr=n		Caller ID on analog port control. Where r=0 or 1, the 0 for POTS1, 1 for POTS2. Where n =0 : disable Caller ID function. =1 : enable FSK signal based Caller ID (default) =2 : enable FSK (V.23) signal based Caller ID =10 : enable DTMF signal based Caller ID for Denmark The setting is auto saved into EEPROM.
	ATCIDr?	Show current setting, r=0 or 1
ATCWr=n		Commands for enable/disable Call Waiting functions. Where r=0 or 1, the 0 for POTS1, 1 for POTS2. Where n =0 : disable Call Waiting Function. =1 : enable Call Waiting Function. (default) This setting can be saved to profile 0 or 1, by AT&W

Command	Samples	Description
	ATCWr?	Show current setting, r=0, 1

Result Code List

Result Code	Result String	ATX0	ATX1
0	OK	o	o
1	CONNECT	o	x
2	RING	o	o
3	NO CARRIER	o	o
4	ERROR	o	o
7	BUSY	o	o
8	NO ANSWER	o	o
82	CONNECT 56000/V120 ASYNC.	x	o
84	CONNECT 56000/X.75 TRANS.	x	o
85	CONNECT 56000/X.75 T.70NL	x	o
86	CONNECT 56000/X.75 EuroFT.	x	o
87	CONNECT 56000/HDLC	x	o
88	CONNECT 56000/Async. to Sync. PPP	x	o
89	CONNECT 56000/Async. to Sync. MLPPP	x	o
90	CONNECT 112000/Async. to Sync. MLPPP	x	o
92	CONNECT 64000/V120 ASYNC.	x	o
94	CONNECT 64000/X.75 TRANS.	x	o
95	CONNECT 64000/X.75 T.70NL	x	o
96	CONNECT 64000/X.75 EuroFT.	x	o
97	CONNECT 64000/HDLC	x	o
98	CONNECT 64000/Async. to Sync. PPP	x	o
99	CONNECT 64000/Async. to Sync. MLPPP	x	o
100	CONNECT 128000/Async. to Sync. MLPPP	x	o

Chapter 10. Supplementary Service (TAS403E)

In TAS403E device, we provide the supplementary service and others. You may connect analog phone or device to a/b (POTS) port and get the following functions.

Note: The following features depend on the service items provided by your telephone service provider and whether you have applied. Contact your service provider for more information.

1. **making a call**

   You may make call as usual.

2. **receiving a call**

   Incoming call will be accepted and forwarded to A/B (POTS) port if you do not set any MSN to filter incoming call or the correct telephone number of incoming call (same as MSN setting). Then you will get a RING signal, you can pick up the handset to have a conversation with remote partner.

3. **feature phone function**

   a. **Hold/Retrieve a call**

   You can hold a talk for a moment and retrieve it back again. Have a call now and want to hold the call.

   - Press flash key to get HOLD.

   If you want to retrieve it back,

   - Press flash key again to RETRIEVE call back to start conversation.

   b. **Suspend/Resume a call**

   You can suspend current call and move to other place to pick up the call again. Have a call now and want to enable this function.

   Procedure:

   - Press "**4*" 4 digits with continual 1 to 4 digits of CALL-IDENTITY and "#" at the end in the keypad of phone to enable suspend this call.

     For examples, CALL-IDENTITY is 1234

     "**4*1234#"

   - Hang up the phone.
   - Then you may go to other place and have an ISDN device with analog function which connecting to the same ISDN line.
   - Press "**5*" 4 digits with the same CALL-IDENTITY and "#" at the end as suspend a call to pick up the phone and talk again.

For examples, CALL-IDENTITY is 1234

"**5*1234#"

It is a good feature to move around with the same call.

c. Explicit Call Transfer

You can transfer voice call to another partner. Have a call now and want to get this function.

Procedure:

- Press the FLASH key to get a HOLD function.
- Make a call
- Press "**6#" to transfer the first call to the second call.
- Hang up the phone.

d. 3-Way Conference

It is good feature to have a 3-way conference with other two partners. You may have a talk now, hold the talk, make another call and join two partners in the same call. Have a call now and want to make a 3-way conference.

Procedure:

- Press the flash key to get a HOLD function.
- Make an outgoing call successfully.
- Tell partner that you will start 3-way conference and press "**7#".

  OR

  Press "3" to make 3-way conference.

  These two methods are depended on local ISDN switch provider.

If you want to terminate this 3-way conference,

- Tell partner that you will terminate 3-way conference and press "**8#".

  OR

  Hang up the phone.

Appendix A Specifications

☑ **ISDN Interface:**

1. U Interface (TAU400E/TAU200E)

Line	two-wire, full duplex
Line Code	2B1Q
Connector	RJ-45 * 1

2. S/T Interface (TAS400E/TAS403E/TAS200E)

Line	four-wire, full duplex
Line code	AMI
Connector	RJ-45 * 1

Support Japan DSU (for Japan model type only)

☑ **Data Port Interface:**

Physical interface	RS-232
Data Rate	Async. Up to 230.4kbps
Connector	DB9(TAS model)or DB25 (TAU model) female * 1

☑ **Analog Interface:** (for TAS(U)400E/TAS403E only)

Analog port	two R-interface port
power feeding	25V, 25mA
Ring Signal	20Hz, 56Vrms
REN	3
Dialing method	Tone, Pulse
Connector	RJ-11 * 2

☑ **LED Indicators:**

1.	Power status lamp	PWR
2.	Analog phone status lamp	T1,T2 (for TAS(U)400E/TAS403E only)
3.	ISDN line status lamp	LK
4.	Carrier detector lamp	CD
5.	Data port receiving data lamp	RD
6.	Data port transmitting data lamp	SD

7. Multi-channels status lamp MP
8. Auto answer status lamp AA

☑ **Power Adapter:**

Input voltage 120Vac/Vdc or 230Vac

☑ **D Channel Signaling Protocol Compatibility**

1. AT&T 5ESS, Nortel DMS-100
2. US NI-1 & NI-2
3. ETSI, French Deltas, German Deltas
4. Japan INS-64

☑ **B Channel Protocol Compatibility**

1. Voice (for TAS(U)400E/TAS403E only)
2. Data (56K, 64K, 112K or 128K HDLC)
3. V.120
4. X.75
5. Async. PPP to Sync. PPP conversion
6. MultiLink PPP
7. MultiLink PPP with Bandwidth on demand (BOD)
8. B channel protocol auto-detection for V.120, X.75, HDLC for incoming call

The specification is subjected to change without notice. All brand and product names are acknowledged as trademarks of their respective companies.

Appendix B CAPI20 Interface

With CAPI interface, you can use any ISDN application such as RVS-COM, ZOC that requires a CAPI driver. For example, you can get Soft-G3Fax, Telephony, File Transfer functions through RVS-COM.

For your convenience, CAPI drivers are included in the installation CD. Before you install this CAPI20 device driver, the ISDN TA should be installed and configured as described in previous chapters.

This section will describe the CAPI installation and configuration using Windows 95/XP as example. For other operation system, the install process and the interface of CAPI will be somewhat different, but the function is the same.

Installing CAPI20 Driver for Windows 95

You may follow these steps to install CAPI20 device driver:

1. Insert the installation CD into your CD-ROM drive.
2. Click **Start** > **Settings** > **Control Panel** > **Add New Hardware**.
3. When wizard appears, click **Next** .
4. Select **No** to prevent Windows from searching for your new hardware and click **Next**.
5. Highlight **Other devices** and click **Next**.
6. Click **Have Disk**.
7. Click **Browse** to locate the driver: **x:\TA\CAPI\Win95** and then click **OK**.
8. The model of the hardware will list. Click **Next.**
9. Click **Finish** to compete the installation.
10. When prompted to restart your computer, click **Yes**.

Installing CAPI20 Driver for Windows XP

1. Click **Start** > **Settings** > **Control Panel** > **Add Hardware**.
2. When **Add Hardware Wizard** window appears, click **Next**.
3. Wait while the wizard searches, then follow the on-screen instructions as below:
   Select **Yes, I have already connected…** and click **Next**.
   Select **Add a new hardware device** from the list and click **Next**.
   Select **Install the hardware…** and click **Next**.

Select **Network adapters** from the list and click **Next**.

4. Click **Have Disk**. Then click **Browse** to locate the CAPI driver **x:\TA\CAPI\WinXP** and click **OK**.

5. Select **ISDN Adapter (UART Active)** and click **Next**.

6. Click **Next** to start installation. A couple of compatibility warning messages may appear; click **Continue Anyway** to proceed.

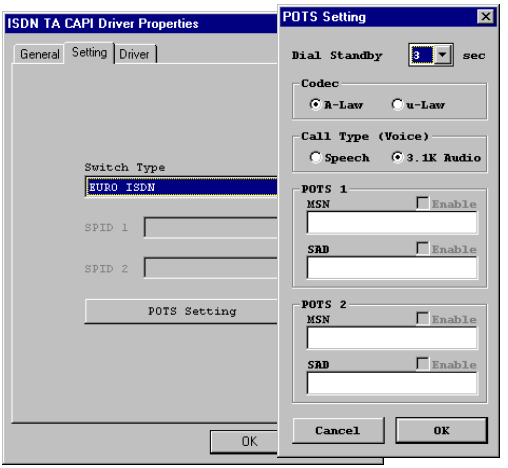
7. Click **Finish** to complete the CAPI installation.

Configuring CAPI20 for Windows 95

1. Click **Start** > **Settings** > **Control Panel** > **System** > **Device Manager** > **ISDNLink** > **ISDN TA CAPI Driver > Properties**.

2. In the properties of this CAPI driver, click **Setting** tab. You can set the system parameters including **Switch Type** and **SPID** which is available according to the **Switch Type** you select.

3. Click **POTS Setting** to configure your POTS setting. You can set **Dial Standby sec**, **Codec**, **Call Type (Voice)**, **MSN** and **SAD** (subaddress) for POTS ports. For more information, please refer to "Set System Parameter" on page 51. If you check the **Enable** option for POT port, it means the analog devices connected to POTS ports will not receive any incoming call (no ring tone) if the called party number (telephone number) does not match **MSN** and/or **SAD** settings.

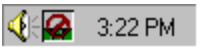


ISDN Monitor

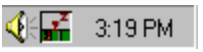
Whenever you start Windows 95, the ISDN Monitor is launched automatically with its icon located on the right side of the taskbar.

NOTE: If the icon of ISDN Monitor is not displayed, from the taskbar click **Start** and **Run** to open the **Run** dialog box. Type **linksts** in the dialog box and click **OK** to start up ISDN Monitor.

If you see the symbol appearing inside the icon as a stop sign, this means the device driver can not reach the ISDN terminal adapter. You should check the power and cable of ISDN external adapter for first step troubleshooting.



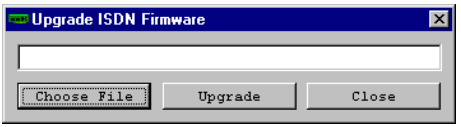
If you see tiny Z signs over the icon, this means there is no CAPI application running which requires the CAPI20 device driver. At this time, you can access your ISDN TA through COM port such as COM2 directly.



Right-click the ISDN Monitor icon and the menu is displayed. You may execute following functions from the menu:

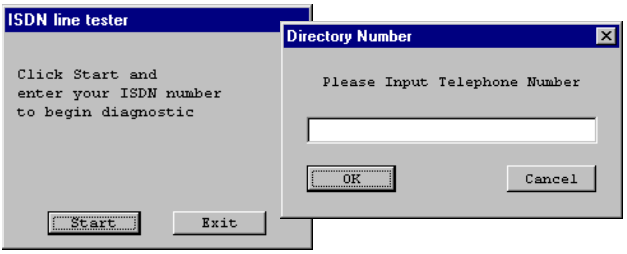
Upgrade Firmware

Before upgrading the firmware, please make sure there is no user accessing this device. Also, close any ISDN application that is running. Then specify the new firmware file name and its directory by selecting **Choose File** and start the upgrade action by clicking **Upgrade**. When upgrade is finished, manually restart your computer to use the new firmware. It is easier and user-friendly to upgrade firmware than using AT command set.



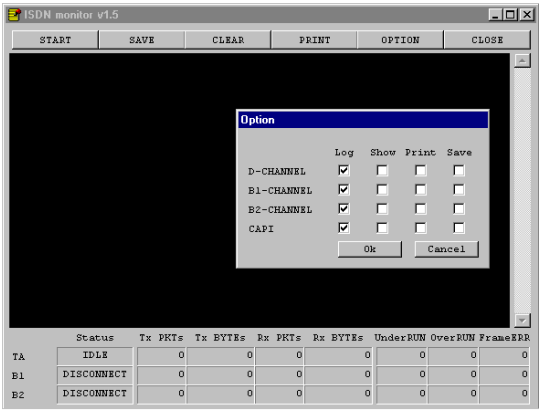
Linetest

When entering the **ISDN line tester** window, click **Start**. You will be prompted to input your **ISDN Telephone Number** for doing a loopback test from your site to ISDN switch and back to your site. This function is to check the ISDN line installation and TA configuration.



Log

If you start a CAPI20 application, the stop and Z signs will be off and will function as ISDN monitor which can record the D, B1, B2, and CAPI messages in the ISDN line and CAPI driver.

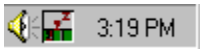


Note: If you use RVS-COM as CAPI20 application, please install the ISDN CAPI adapter (access the ISDN device through CAPI interface), not the ISDN terminal adapter (which accesses the ISDN device through physical COM port).

Uninstall the CAPI20 Device Driver

If you wish to remove the CAPI device driver from your system, you may follow these steps to uninstall CAPI20 device driver:

1. Exit (close) the ISDN Monitor.



   To enable this function, move your cursor to this icon and click the right button of mouse. Select the **Exit** function.

2. Run the remove program (e.g., **SWP95.EXE** for Windows 95; **SWP2000.EXE** for Windows 2000) located in the CAPI directory on the installation CD. This will completely remove the ISDN drivers from your PC.

3. Finally reboot your windows for the changes to take effect.

Appendix C Glossary

AT commands

ATtention Codes. AT commands are used to configure and operate the ISDN modem. These commands can be sent either automatically or manually through your communications software.

B Channel

An ISDN communication channel that bears or carries voice, circuit, or packet conversations at 64 kbps.

BRI

Basic Rate Interface. A kind of ISDN line contains two B channels, each with 64 kbps for data and voice transmission, and a single D channel (16 kbps) which is used for signaling and call progress messages.

CAPI

Common ISDN Application Programming Interface. It is a standard interface installed on your PC which takes control of various ISDN services, such as voicemail, Eurofile transfer, fax, telephony, etc. Users can use the applications based on this standard interface to handle the communication over ISDN connections.

D-Channel

An ISDN communication channel used for sending information between the ISDN equipment and the ISDN central office switch at 16 kbps.

G3 FAX

Group 3 FAX. It is a type of FAX transmission most common in use today. Group 3 can be supported over ISDN by an application making a voice-type call to a remote FAX machine.

ISDN

Integrated Services Digital Network. ISDN provides a digital telephone service which allows both data and voice communication over the same telephone line and at higher speed than the traditional POTs service.

MSN

Multiple Subscriber Number. The MSN service is provided by your ISDN service provider. It allows you to have several phone numbers for your ISDN line. You can assign different numbers to the various features (virtual devices) that your TA can provide.

Multi-link PPP

Allows you to combine two or more B-channels into a single, faster PPP connection. With Multi-link PPP, you can have a 128 Kbps PPP connection over a Basic Rate ISDN line.

NT1 Device

Network Termination 1 Device. A device that connects to your ISDN hardware and also works as a converter between an ISDN U-interface and an ISDN S/T-Interface. An NT1 converts a line from a 2-wire to a 4-wire connection. Some ISDN adapters have an NT1 already built into them, therefore spare users the expense of external NT1 device.

With a S/T outlet interface, you need an NT1 device connecting to the ISDN switch. In the UK, and in many European countries, the NT1 device is supplied by the telephone company.

POTS

Plain Old Telephone Service. Also known as analog telephone service, it is the basic telephone service used to access the public switched network.

PPP

Point-to-Point Protocol. PPP provides a standard method of transmitting data through the Internet. PPP is used for communication between a computer and an Internet service provider.

S/T-interface

A four-wire ISDN interface. The S/T interface is the part of an ISDN line that connects to the terminal equipment.

SPID

Service Profile Identifier. It is a set of numbers assigned to your ISDN line by your phone company and is applicable to North America only. The central office switch use SPIDS as unique identification numbers for each ISDN line, so it can determine where to send calls and signals. Typically, if your ISDN line has only one telephone number, a SPID is not required.

TA

Terminal Adapter. A device that connects a PC or other equipment to an ISDN line.

U-interface

A two-wire ISDN interface. The U interface is the most common ISDN interface and extends from the central office.