



DMI-128ESU+
ISDN TERMINAL ADAPTER (TA)

User's Guide

Rev.01 (February, 2004)

LIMITED WARRANTY

LIMITED WARRANTY

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Product Type	Warranty Period
Product (excluding power supplies and fans), if purchased and delivered in the fifty (50) United States, or the District of Columbia (“USA”)	As long as the original purchaser still owns the product
Product purchased or delivered outside the USA	One (1) Year
Power Supplies and Fans	One (1) Year
Power Adapter	Ninety (90) days
Spare parts and spare kits	Ninety (90) days

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Products that have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed;

Initial installation, installation and removal of the product for repair, and shipping costs;

Operational adjustments covered in the operating manual for the product, and normal

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1. Introduction

The ISDN TA (Integrated Service Digital Network Terminal Adapter) is a communication product for the Internet and digital communication era. It provides high speed and high quality transmission. The TA supports two analogs and one digital port. The two analog ports act like two regular telephone lines, which can be connected to regular telephone, answering machine, fax and modem products. Also, the TA can provide flexible functions like: supplementary service, call screening, speed dial and global call function to meet user's requirements. The digital port with the RS232 link can be connected to PC to support data communication with remote site. It supports many protocol selection such as V.110, V.120, X.75, X.25 on D channel, PPP (Point-to-Point Protocol), MLPPP (Multi-Link PPP), BACP (Bandwidth Allocation Control Protocol) / BOD (Bandwidth On Demand) function. With the MLPPP, the entire 128k ISDN bandwidth can be used to access the Internet. The BOD function can utilize dynamic bandwidth demand under MLPPP connection. Under MLPPP data connection, the TA will automatically release one B channel for voice communication when the user picks up the phone to make a call and returns to two B channels for MLPPP when the phone hangs up. With the BACP function, the 128k capacity of ISDN can be utilized fully. The TA is equipped with channel bundling feature which allows the user to use both B channels to maximize the 128k bandwidth for data transmission.

The TA complies with ITU-T Q.921, Q.931 for D channel protocol, and provides switching type selections for different countries. Following are the switch types supported by the TA:

*Euro-ISDN EDSS1	
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The TA is equipped with flash EPROM for easy future software upgrade through RS232 port.

2. Features

- **Support MLPPP to utilize the full 128K ISDN capacity**
- **Support BACP/BOD for dynamic bandwidth demand**
- **Up to 230.4K DTE speed**
- **One standard RJ11 modular jack for U interface**
- **Selectable terminating resistance (100 Ohm) inside battery pack**
- **1 standard RJ45 modular jack for S/T interface to NT1 (EURO ISDN)**
- **Two analog ports with RJ11 modular jack**
- **One RS232 data port with DB9-Sub male connector**
- **One USB -port for Windows 98SE/ ME /XP and Windows 2000**
- **LED indication**
- **Inner Communication**
- **Receive Priority, Call Screen, Speed Dialing function**
- **ITU-T V.110, V.120, X.75, X.25 on D protocol**
- **Channel bundling function**
- **Switching type selection**
- **Hardware CTS/RTS, Software Xon/Xoff Flow Control**
- **Network supplementary service**
- **Local supplementary service**
- **Easy setup from telephone keypad for analog phones**

3. Outlet Description

3.1 Front Panel



LED indications on Front Panel along with their colour description

1. **POWER:** ON- 'GREEN' means TA is working on Mains Power.
ON -'RED ' means TA is working on Battery Power.
2. **CONNECT:** ON -'GREEN' means TA is connected to the network at 64K.
ON- 'RED' means TA is connected to the network at 128K (MLPPP).
3. **DTR/USB:** ON -'RED' means terminal is connected to PC via DTE (Serial Port).
ON -'GREEN' means terminal is connected to PC via USB port.
4. **TX/RX:** This LED becomes 'ON' when data is being sent or received.
5. **LINE:** 'ON'-When TA is connected to S/T interface of NT1. (S0 bus)

3.2 Rear Panel Connection

1. DTE DB9-SUB male connector RS232 and USB

Connect to PC or DTE equipment.

Use only one connection port (USB / Serial) at a time to connect to PC.

2. Analog Port TEL-A, TEL-B

Connect to the regular telephone, answering machine or fax machine.

3. AC Power plug

Connect to DC 5V adapter

4. ST

ST interface connection. You can connect to ST interface of NT1 (of ISDN Line), or connect other ISDN TA phone with S/T interface to make a multi-drop bus connection.

5. FG (Frame Ground)

Optional and not connected in this model

3.3 Side panel

Battery Backup

In case of sudden loss of local power, the TA has a battery power backup solution. A total of 6 AA batteries are required to backup the TA. ***Please make sure all 6 batteries are placed correctly, in the correct polarity.*** (Use Alkaline Batteries for proper operation)

Battery Mode Operation

In case of sudden loss of local power, the TA will switch to battery backup mode automatically. (If all 6 batteries had been installed properly.) Under the battery backup mode, all 3 data and analog ports can be operated normally.

In battery backup mode, with average brand new batteries, the TA can last at least 6 hours in standby or it can run one analog port continuously for about 1 hours.

Changing Batteries

Please inspect batteries if the TA does not work properly under battery backup mode. If the battery is low, please replace batteries. We suggest the user to replace all 6 batteries together.

4 Connection Method

4.1 Connection Procedures

1. Plug in AC power adapter DC 5V 2.8A
2. Connect the ST interface RJ45 modular jack to ISDN port with the RJ45 cable.
3. Connect RS232 cable between TA and PC or TA and USB but not both.
4. Plug in the regular telephone to analog port A or B with RJ11 cable.
5. Connect other ST ISDN phone or TA device with RJ45 cable
 - A. With this connection method user can use V110, V120, X.75, X.25 protocol to communicate with other TA.
 - B. Use PPP or MLPPP to connect with ISP (Internet Service Provider) for Internet access.
 - C. Use regular telephone make calls
 - D. Use inner communication between analog port TEL-A and TEL-B.

4.2 Connection With Telephone / Fax

- Locate an available RJ11 modular jack telephone outlet.
- Take one end of the modular cord supplied with the TA and plug it into the analog port TEL-A or TEL-B modular jack on the back of the TA.
- Plug the other end of the modular cord into the modular jack on the regular telephone/fax.

4.3 Connection With PC

- Use the attached RS232 cable to connect TA 's DTE port and PC 's RS232 port or use USB port with Windows 98 SE/Me/2000/XP
- If the connector type of PC 's RS232 port does not match, you may need to use the 9-to-25 gender changer to connect between the RS232 cable and PC

4.4 Connection With Modem

- Connect the telephone to modem's port labeled with PHONE then connect modem's LINE port to TA's TEL A or TEL B port

4.5 Multi-Drop Connection

To make a multi-drop bus connection, you can connect the two TAs by the RJ45 cable

4.6 Connection Notification

Do not connect two or more telephones on the same port. It will affect the Impedance of the telephone set.

5 Installing The TA

5.1 Packing List

Unpack your TA and make sure that you have the following items:

- ◆ TA main unit
- ◆ Female RS232 cable and USB cable
- ◆ Power adapter 230 V ac DC 5V 2.8A
- ◆ S/T interface cable
- ◆ User's manual
- ◆ Windows driver disk

When you opened your package, make sure that all of the above items are included in good order. If any of the components were damaged, please contact your dealer immediately.

5.2 What Else You Need

In order to complete your data communication system, you will need the following items:

1. Some type of communication software, if not included (like dialup network).
2. An ISDN U-interface line from the local PTT NT1. This TA gets connected to the ST interface of the NT1 (which is supplied by your PTT).

5.3 Installing The TA

The following instruction explained how to install the TA with a PC or PC compatible computer. If you install the TA into a different computer, refer to the manual that came with or contact your dealer for instructions and assistance.

IMPORTANT:

In PC environment, two serial devices configured to use the same COM port or IRQ may conflict. Existing multi-I/O cards usually occupies COM1 and COM2 using IRQ4 and IRQ3 respectively. Whereas the COM port setting must be unique, the IRQ can be shared provided that the related COM port is not being used. For example, if the PC's COM2 which uses IRQ3 is not attached to any device (print or mouse, etc.), then your TA can be set to use COM4 with IRQ3. For maximum flexibility, your PC supports IRQ2, 3, 4, 5, and 7. However, IRQ2, 5 and 7 should be used only if you have no other choice. Not all PCs and DOS versions support these IRQs. IBM PC/AT computers and compatibles should be able to use IRQ5 or 7. Check with your PC dealer or PC manual for more information.

Turn off the power on the personal computer.

Refer to section 4 to select the adequate method for connection.

5.4 Tips On Configuring Windows 98SE/Me/NT/2000/XP

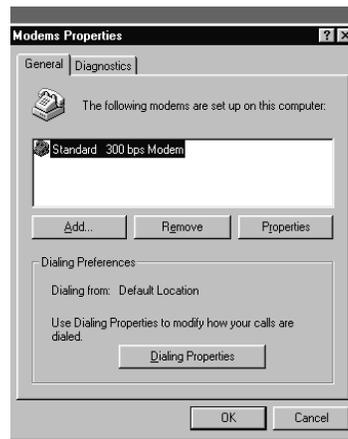
The following tips will guide you through configuration of the TA on your PC, in the Windows environment, in a step-by-step manner, with windows screen shots. Proceed with choosing the correct COM port for your TA.

While installing the ISDN TA through USB port, first install the USB -to-Serial converter drivers. Then follow the same procedure of installing the modem as shown in Windows **98SE/Me/NT4/2000/XP (RS232 cable connected)** procedure.

For other DTE configurations, please refer to the PC manufacturer manual or contact your local dealer.

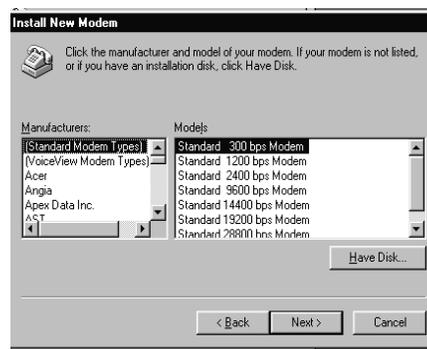
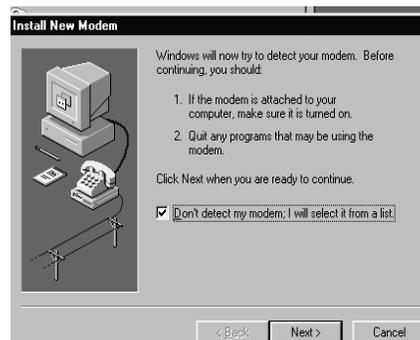
5.4.1 Window 98SE/Me/NT4/2000 (RS232 cable connected)

1. Choose 'My Computer' icon.
2. Open the 'Control Panel' menu box as shown on the right hand side.



3. After double click Modem icon, 'Modems Properties' box appear and show the existing modems, which has been installed previously.
4. Click 'Add' button to add the TA.

5. Tick the box (Don't detect my modem) Click "Next" to select TA's driver.

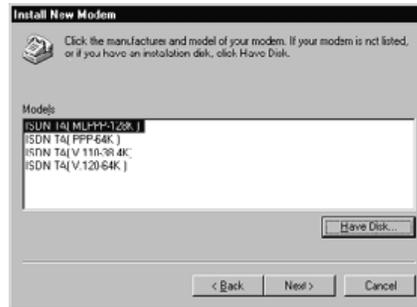


6. In 'Install New Modem', click on 'Have Disk' button and put ISDN TA driver disk to corresponding drive.

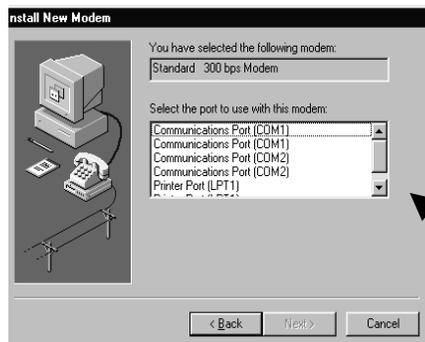
7. Press 'OK' if the location of driver disk is correct.
Otherwise you may press 'Browse' button to change.



8. Select the modem to be installed.
For 64K select "ISDN TA (PPP-64K)"
For 128K select "ISDN TA (MLPPP-128K)"



Click 'Next' to continue.



9. Choose an available COM port which is available (It should not conflict other devices) and click 'Next' button.

**** IN CASE OF USB port installation, select the USB port, shown in the drop-down list .. after the USB-to-serial converter is installed**

10. Press 'Finish' to complete setup.



5.5 Windows 98SE/Me/2000/XP (USB cable connected)

1. Power Plug into power plug and wait 5 seconds and the plug USB cable into USB connector of PC and DMI-128ESU+.

2. Windows will recognise the new USB device and will ask drivers for for new USB device. Correct path is Floppy A:. So define search path so that you specify the installation driver's path A:\.
3. **After USB -drivers installed just add the modem driver into system as you installed in previous section and select the COM -port, which was created By USB to Serial driver installation.**
4. **Power adapter is needed when USB -connector in use because of Analog ports ringing signals**

5.5.1 Linux operating systems with RS 232

1. Use KPPP program and directly TTY port where TA is installed
Or any similar
2. Set port 230400 or 115200 DTE speed 8, N, 1
3. CTS/RTS setting ON
4. PPP / 64K connection AT%A2=5
5. ML PPP 128K AT%2=6
6. In this case do not use IP -header compression
7. If device is not working the slow down AT -command sending speed and response wait time.

5.5.2 USB Installation Procedure for Win 2000

(USB SERIAL CONVERTER):



1. Win2000 will detect the DMI-128ESU+ and bring you to the Found New Hardware Wizard.



2. Click 'Next' to continue.



3. Select the first item-**Search for a suitable driver for my device [recommended]**

4. Click 'Next' to continue

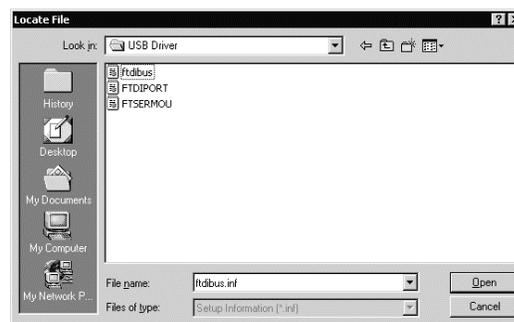


5. Click the **Specific location** in the Checkbox.

Click 'Next' to continue.



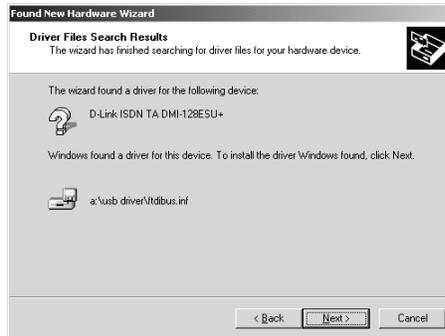
6. Click the 'Browse' button.



7. Choose the location as A:\USB Drivers. Select the file ftdibus.inf and click 'open'.



8. Click 'OK' button.



9. Click 'Next' to continue.

Note: For correct Locations on the screen, please follow remarks indicated on the side of the screen snap-shots.



10. The USB Serial Converter is now installed. Click 'Finish' button

Installation of USB Serial Port (In Win 2000)



1. Win2000 will detect the USB Serial Port and bring you to the Found New Hardware Wizard



2. Click 'Next' to continue.



3. Select the first item-**Search for a suitable driver for my device [recommended]**

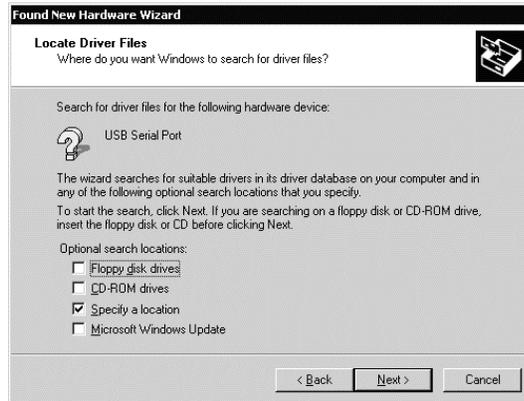
4. Click 'Next' to continue



6. Click the 'Browse' button.

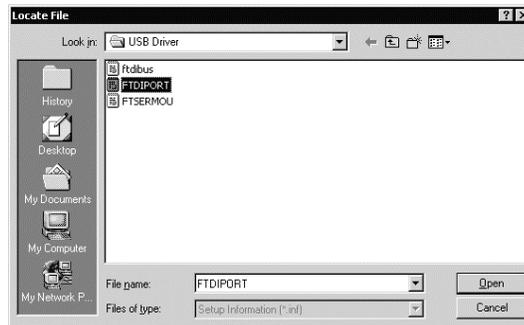


8. Click 'OK' button.



5. Check the **Specify a location** checkbox.

Click 'Next' to continue.



7. Choose the location as A:\USB Drivers.

Select the file FTDIPOINT and click 'Open'.

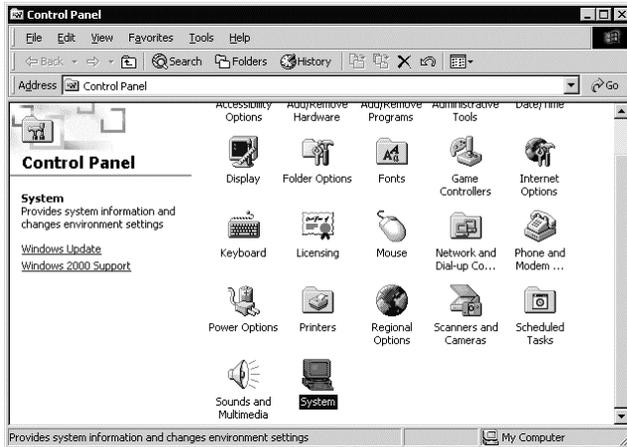


9. Click 'Next' to continue.

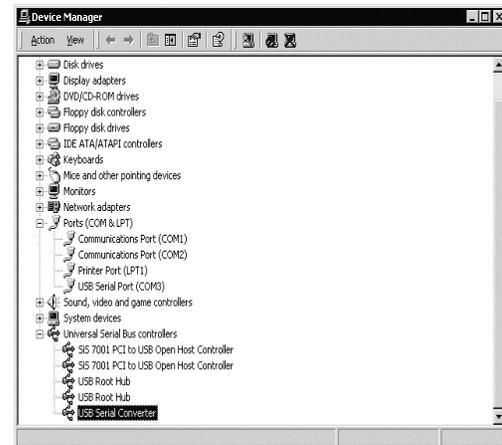
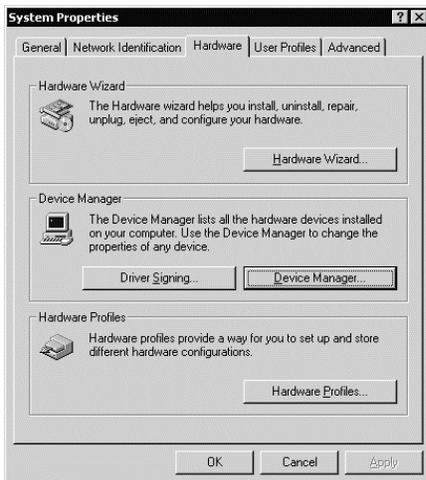
Note: For correct Locations on the screen, please follow remarks indicated on the side of the screen snap-shots.

10. The USB Serial Port is now installed.

Click 'Finish' button



11. Go to the Control Panel, and in System, to ensure correct installation of the USB modem



To Ensure that correct installation has taken place, check that in Device manager, when you expand **Universal Serial Bus Controllers** you get **USB Serial Converter** and when you expand **Ports(COM & LPT)** you get **USB Serial Port(COM 3)**.

This installation procedure is similar for the WIN 98 SE and WIN ME environment.

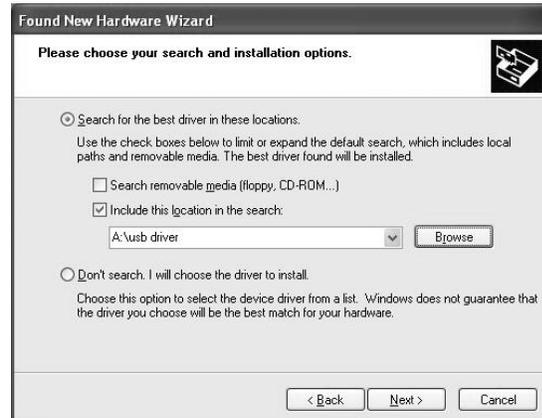
AFTER THIS, FOLLOW THE PROCEDURE IN SECTION 5.4.1 FOR INSTALLING THE MODEM DRIVERS.

5.5.3 USB Installation Procedure for Win XP

(USB SERIAL CONVERTER):



1. Win XP will detect the DMI-128ESU+ and bring you to the Found New Hardware Wizard.



2. Select the second checkbox and give the correct path for the drivers, A: if the drivers are on floppy disc.
3. Click 'Next' to continue



4. This wizard will search for the required drivers in the given path.



5. Click "Continue anyway" to proceed to install the "USB High Speed Serial Converter".



6. The USB High Speed Serial Converter is now installed. Click 'Finish' button

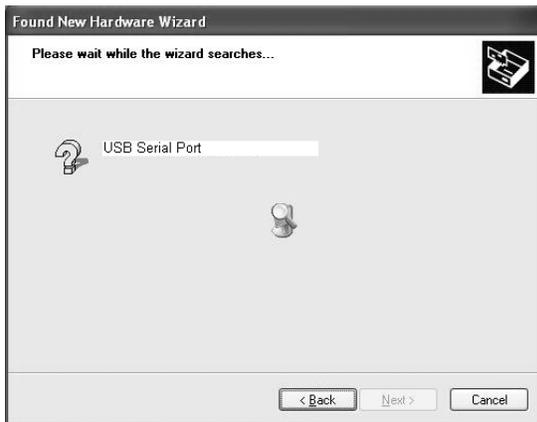
Installation of USB Serial Port (In Win XP)



1. After installing USB High Speed Serial Converter DMI-128ESU+, the wizard will bring you to the Found New Hardware “USB Serial Port”.



2. Select the second checkbox and give the correct path for the drivers, A: if the drivers are on floppy disc.
3. Click ‘Next’ to continue



4. This wizard will search for the required drivers in the given path.



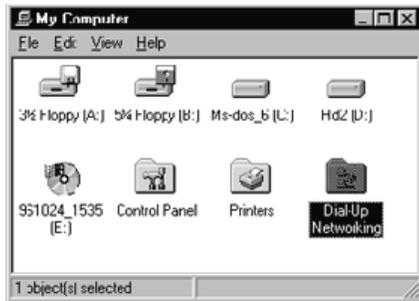
5. Click “Continue anyway” to proceed to install the “USB Serial Port”.



6. The USB Serial Port is now installed. Click ‘Finish’ button

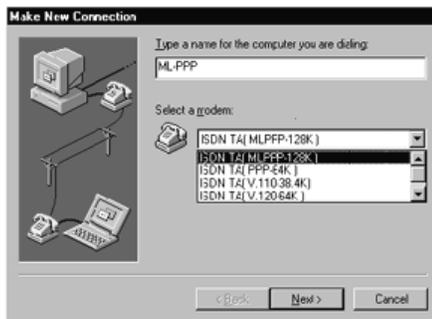
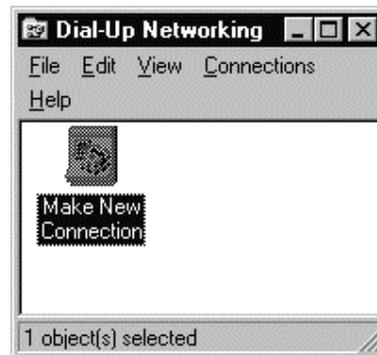
5.5.4 Tips on configuring your Dial-Up Network

After you setup the ISDN TA driver completely. The next step is going to have your Dial-Up network working. Following tips will guide you how to configure your Dial-Up Network with Windows 98SE/Me/2000



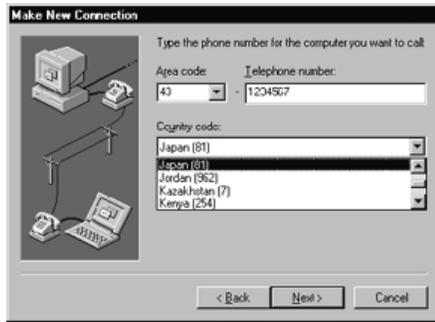
- 1) Ensure that you have installed Dialup server and Dial-Up Networking in your windows environment (Win 98SE).
2) In Win NT ensure that RAS (Remote Access Server) is installed.
3) Choose Dial-Up Network icon from 'My Computer' window.

2. Click the 'Make New Connection' icon twice to create a connection.



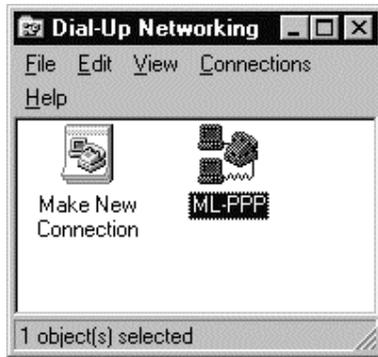
3. Choose a protocol for ISDN TA and give a name for this connection and press 'Next' button.

Note! If you use ML PPP 128K driver then TCP/IP header compression has to be off
And DNS -values has to be set up correctly in TCP/IP properties.



4. Enter the correct country, area code and phone number (The phone number depends on the ISP you selected) Then press 'Next' ,if asked

5. Reconfirm the New connection and press Finish button.



6. The new connection of ML-PPP has been completed and a new icon will appear. You may make future modifications by checking the contents of function.

5.6 Verifying Your Connection

Start a communication program (HyperTerminal) and place the computer in terminal mode. Refer to your computer manual to find out the appropriate commands to do so.

Follow these procedures to verify your installation:

1. Type

AT [Enter]

If your system is operating properly, the **TA** will respond with 'OK' message to your screen and will wait for the next command.

2. Use your communication software to prepare your computer to dial a data call. For example, you can test the data connection under V.110 protocol with the following procedures.

AT%A2 = 1 ; Select V.110 communication protocol.

ATD 5552121 ; Where 5552121 is the called party's telephone number with V.110 protocol setting.

After ATD5552121 you can see the TX/RX LED is lighted and then, the 'CONNECT' or 'NO CARRIER' message will be displayed.

CONNECT; Means **TA** connected with the Called Party.

NO CARRIER; Means **TA** did not connect with the Called Party, may be due to Called Party busy.

6. AT COMMAND

6.1 Description of AT Command

Hayes command set is a standard for Hayes modem commands for its Smart modem 300. Most modem manufactures adopted this command set in order to have Hayes compatible. The command set used by the Smart modem 300, as well as most modems or TAs today (with a few additional new advanced commands), is known as the AT command set. AT stands for attention, and is placed in front of actual content of command so that the TA knows what follows is an command directed at the modem or TA. With the exception of some “A/” and “+++” command, “AT” command is the process to place command to the TA.

Different modems or TA’s may have slightly different command sets, but generally speaking, most of the TAs follow the standard set by Hayes.

6.1.1 AT Command

When you connect terminal equipment (like PC) with the TA, after typing AT command ending with [ENTER] key, TA will process the command and then return the result code to the terminal equipment. Each AT command must starts with “AT” and end with [ENTER] key (with the exception of “A/” and “+++” commands).

Command Format

The following is the format of AT command:

AT	Command	Value	Command	Value	CR	LF
----	---------	-------	---------	-------	----	----

Result code has two styles (Verbose and Numeric). The following are their formats:

CR	LF	Result code(Verbose)	CR	LF
Result code (Numeric)		CR		

S register

The S register is used to store the settings including

- auto answer mode
- escape sequence character
- V.110 connect speed etc.

If you want to change the value of S register, you can use the ATS command.

6.2 AT Command

6.2.1 AT Command Overview

Command	Description	Default
ATA	Manual answer	
ATD	Dialing	
ATEn	Echo command	ATE1
ATH	Hang up	
ATIn	Interrogate the TA product status	
ATL	Dialing the latest number	
ATO	Return to on line state	
ATQn	Return result codes select	ATQ0
ATSn=x	Set S register	
ATVn	Verbose mode	ATV1
ATWn	Connection message format select	ATW0
ATXn	Result code set select	ATX0
ATZn	Reset recall user profile	
AT&Cn	CD signal control	AT&C1
AT&Dn	ER signal control	AT&D2
AT&F	Recall factory default setting	
AT&Kn	Flow control	AT&K3
AT&Sn	DR signal control	AT%S0
AT&Vn	Display system configuration	
AT&Wn	Write user profile	
AT&Yn	Load user configuration when power on	AT&Y0
AT%A2=n	Data port protocol selection Default is PPP 64K	AT%A2=5
AT%A5=n	Set enbloc or overlap sending mode when dialing telephone number	AT%A5=0
AT%D	Data port setting display	
AT%DC	Show disconnect cause, source, charge	
AT%FAPPS	Re-Flash the new software	
AT%N=x	Set data port directory number / sub-address	
AT%Sn	Data port call screen function enable	AT%S1
AT%Z1	Software reset	
AT\$AA n	Set analog port A voice information capability in answer mode	AT\$AA2
AT\$AN=x	Set analog port A directory number / sub-address	
AT\$AO n	Set analog port A voice information capability in originate mode	AT\$AO0
AT\$AP n	Dial pause set up for analog port A	AT\$AP1
AT\$AS n	Screen incoming call for analog port A	AT\$AS1
AT\$BA n	Set analog port B voice information capability in answer mode	AT\$BA2
AT\$BN=x	Set analog port B directory number / sub-address	
AT\$BO n	Set analog port B voice information capability in originate mode	AT\$BO0
AT\$BP n	Dial pause set up for analog port B	AT\$BP1
AT\$BS n	Screen incoming call for analog port B	AT\$BS1
AT\$CC	Display advice of accumulate charge	
AT\$CD	Display all analog port setting	
AT\$CG n	Global call select setting	AT\$CG2
AT\$CI n	Enable inner communication	AT\$CI1
AT\$CP n	Receiver priority setting	AT\$CP1
AT\$CS n	Select supplementary service function	AT\$CS1
AT\$CZ n	Initialize charge	

AT\$CFn	Call forwarding function select	AT\$CF1
AT*CFAn	Enable call forwarding for analog port A	AT*CFA0
AT*CFBn	Enable call forwarding for analog port B	AT*CFB0
AT*CFGn	Enable call forwarding under global call	AT*CFG0
AT*CFA=	Set call forwarding number for analog port A	
AT*CFB=	Set call forwarding number for analog port B	
AT*CFG=	Set call forwarding number for global call	
AT\$EUn	Set a-law or u-law coding	AT\$EU1
AT\$ESN	DTMF START CODE "A"	AT\$ES1
AT\$ERN	Set CID between 1 st and 2 nd ring	AT\$ER1
AT\$ACn	Enable to send caller ID for analog port A	AT\$AC1
AT*BCn	Enable to send caller ID for analog port B	AT\$BC1
AT*IDn	Enable to send caller ID for data port	AT*ID1
AT\$EDN	Setup DTMF caller ID or FSK	AT\$ED1
AT*W=n	Save settings to flash memory	
ATUn	Resource BOD setup	ATU1
A/	Repeat last command	
+++	Escape sequence from data mode	

6.2.2 AT Command List

* means default setting

Command	Description	Value	Remark
ATA	Manual answer Answer an incoming data call		
ATD	Dialing Dial the destination number Max main address: 20 digits Max sub-address: 5 digits	0-9 +	ATD4125678+ 123 <ul style="list-style-type: none"> Dialing digits Sub-address delimiter
ATDSn	Speed dialing	0-19	Speed dialing number
ATEn	Echo command Define whether characters are echoed back from the TA to the DTE within command mode.	0 *1	<ul style="list-style-type: none"> No echo Echo
ATH	Hang up Hang up the connection		Type ATH during the RING will reject the call
ATIIn	Interrogate the TA product status	0 1 3 6	<ul style="list-style-type: none"> Requests the TA product code Checksum value ROM Part Numbers and Revision Supported switching type
ATL	Dialing the latest number		ATD4125678 Then ATDL will dial 4125678 again
ATO	Return to on-line state		Return from command mode to data mode
ATQn	Return result codes select Defines whether or not the TA will issue result codes to the DTE	*0 1	<ul style="list-style-type: none"> Result code returned Not returned
ATSn=x	Set S register Change S register value	n x	<ul style="list-style-type: none"> S register number Setting value
ATVn	Verbose mode Defines the form of result codes returned by the TA	0 *1	<ul style="list-style-type: none"> Numeric form responses enabled Verbose responses enabled (English responses)
ATWn	Connection message format select Defines the type of (extended) negotiation result codes to return.	*0 1	<ul style="list-style-type: none"> Negotiation codes reported in 1 line format : (CONNECT) 3 line format (Hayes format) (CONNECT xxx) (PROTOCOL xxx) (CARRIER xxx)
ATXn	Result code set select Description Select the result code set.	*0 1	<ul style="list-style-type: none"> Data result codes 0-4 enabled All supported data result codes Enabled
ATZn	Reset/recall user profile The user configuration stored in the non-volatile memory is recalled to become the active configuration.	0 1	<ul style="list-style-type: none"> Reset the TA and recall user profile Reset the TA and load default value (Except stored dial number, own-address, sub-address and accumulated charge)
AT&Cn	CD signal control Defines what the TA outputs as the DCD (CD) signal on the DTE interface	0 *1	<ul style="list-style-type: none"> DCD (CD) signal on at all time. (TA's DCD signal follow PC's DTR) DCD (CD) signal on at only communication time.(DCD signal high during communication time)
AT&Dn	DTR signal control Defines how the DTR (ER) signal is interpreted by TA.	0 *2	<ul style="list-style-type: none"> DTR signal consider on at all time. (TA won't detect DTE's DTR, TA consider DTR is always on) TA will detect DTE's DTR (ER) Signal

AT&F	Recall factory default setting		The factory configuration contained in the ROM is loaded to become the TA's configuration.
AT&Kn	Flow control	0 *3 4	<ul style="list-style-type: none"> No flow control Hardware flow control (RTS/CTS) Software flow control (Xon/Xoff)
AT&Sn	DR signal control Defines how the DSR (DR) signal is handled by the TA	*0 1	<ul style="list-style-type: none"> TA's DSR (DR) signal follows DTE's DTR DSR (DR) signal on at only communication time. (DSR signal high during communication time)
AT&Vn	Display system configuration Cause the TA to display its current configuration	0 2	<ul style="list-style-type: none"> Displays the current configuration Display Directory Numbers and all stored phone numbers
AT&Wn	Write user profile The TA's active configuration will be stored into the non-volatile memory as User profile	0 1	<ul style="list-style-type: none"> Write user profile 0 Write user profile 1
AT&Yn	Load user configuration when power on	0 1	<ul style="list-style-type: none"> Use user profile 0 as active Profile when power up Use user profile 1 as active Profile when power up
AT&Zn=x	Register speed dial number	n x	<ul style="list-style-type: none"> n = 0-19 x = telephone number
AT%A2=n	Data port protocol selection Select the protocol on BOD channel	1 2 4 *5 6 8 14	<ul style="list-style-type: none"> V.110 V.120 X.25 on D PPP MLPPP X.75 Channel Bundling
AT%A5=n	Enbloc/overlap sending mode Select the sending method for telephone number (refer also AY*W0, AT*W1)	*0 1	<ul style="list-style-type: none"> Overlap sending The dialing telephone will be sent to network after TA detect the ending digit Enbloc sending The dialing telephone number will be sent to network immediately whenever the user dialing each digit
AT%D	Data port setting display		Display all corresponding setting
AT%DC	Show disconnect cause, source, charge		Display the disconnect reason and connection fee
AT%FAPPS	Re-Flash the new software		
AT%N=x	Set data port directory number / sub-address (eg. AT%N=12345678 + 12345)	x	<ul style="list-style-type: none"> x=telephone number main - address: max 20 digits sub - address: max 5 digits
AT%Sn	Data port call screen function enable	0 *1	<ul style="list-style-type: none"> Accept incoming call if the calling party number is in the call screen table. Accept all incoming call
AT%Z1	Software reset		Reset all internal state of TA
AT\$AAn	Set analog port A voice information capability in answer mode	0 1 *2	<ul style="list-style-type: none"> Accept speech Accept 3.1kHz audio Accept both
AT\$AN=x	Set analog port A directory number / sub-address (Not used in Finland) Eg. AT\$AN1234567812345	x	<ul style="list-style-type: none"> X = telephone number Main - address: max 20 digits Sub - address: max 5 digits

AT\$AOn	<i>Set analog port A voice information capability in originate mode</i>	*0 1	<ul style="list-style-type: none"> Select speech Select 3.1kHz audio
AT\$APn	<i>Dial pause set up for analog port A</i>	*1 2 3 4	<ul style="list-style-type: none"> 5sec 9sec 11sec 13sec
AT\$ASn	<i>Screen incoming call for analog port A</i>	0 *1	<ul style="list-style-type: none"> Accept incoming call if the calling party number is in the call screen table. Accept all incoming call
AT\$BAn	<i>Set analog port B voice information capability in answer mode</i>	0 1 *2	<ul style="list-style-type: none"> Accept speech Accept 3.1kHz audio Accept both
AT\$BN=x	<i>Set analog port B directory number / sub-address</i> (eg. AT\$BN=12345678 + 12345)	x	<ul style="list-style-type: none"> x = telephone number main - address: max 20 digits sub - address: max 5 digits
AT\$BOn	<i>Set analog port B voice information capability in originate mode</i>	*0 1	<ul style="list-style-type: none"> Select speech Select 3.1kHz audio
AT\$BPn	<i>Dial pause set up for analog port B</i>	*1 2 3 4	<ul style="list-style-type: none"> 5sec 9sec 11sec 13sec
AT\$BSn	<i>Screen incoming call for analog port B</i>	0 *1	<ul style="list-style-type: none"> Accept incoming call if the calling party number is in the call screen table. Accept all incoming call
AT\$CC	<i>Display advice of accumulate charge</i>		Display advice of accumulate charge (data port, analog port A, analog port B)
AT\$CD	<i>Display all analog port setting</i>		Display all of the setting for analog port A and B
AT\$CGn	<i>Global call select setting</i> If the incoming call did not contain the called party number then TA had to determine ring mechanism	0 1 *2	<ul style="list-style-type: none"> Ring TEL-A only Ring TEL-B only Ring both TEL-A and TEL-B
AT\$CIn	<i>Enable inner communication</i>	0 *1	<ul style="list-style-type: none"> Disable inner communication Enable
AT\$CPn	<i>Receiver priority setting</i> This function only available when set AT\$CG2	*1 2 3	<ul style="list-style-type: none"> Ring TEL-A/B alternatively Ring TEL-A 10 times first Ring TEL-B 10 times first
AT\$CSn	<i>Select supplementary service function</i>		Note: Follow chapter 10.
AT\$CZn	<i>Initialize charge</i> AT\$CZn =MM-DD-YY	1 2 3	<ul style="list-style-type: none"> Initialize TEL-A to zero charge Initialize TEL-B to zero charge Initialize data port to zero charge
AT\$CFn	<i>Call forwarding function select</i> Select call forwarding by local or Network.	*1 2 3 4 5	<ul style="list-style-type: none"> Local call forwarding Network forwarding, ID=32 Network forwarding, ID=33 Network forwarding, ID=34 Network forwarding, ID=35
AT*CFAAn	<i>Enable call forwarding for analog port A</i>	*0 1	<ul style="list-style-type: none"> No forwarding If the incoming call is for TEL-A, it will forward automatically to the phone number defined by AT*CFA=xxxxxx
AT*CFBn	<i>Enable call forwarding for analog port B</i>	*0 1	<ul style="list-style-type: none"> No forwarding If the incoming call is for TEL-B, it will forward automatically to the phone number defined by AT*CFB=xxxxxx

AT*CFGn	<i>Enable call forwarding under global call</i>	*0 1	<ul style="list-style-type: none"> No forwarding If the incoming call is a global call it will forward automatically to the phone number defined by AT*CFG=xxxxxx
AT*CFA=x	<i>Set call forwarding number for analog port A</i>	x	<ul style="list-style-type: none"> x=forward phone number
AT*CFB=x	<i>Set call forwarding number for analog port B</i>	x	<ul style="list-style-type: none"> x=forward phone number
AT*CFG=x	<i>Set call forwarding number for global call</i>	x	<ul style="list-style-type: none"> x=forward phone number
AT*Ln Or AT\$EU1	<i>A-law or u-law coding select</i>	*0 1	<ul style="list-style-type: none"> A-law coding For European, China, Australian and etc U-law coding For American, Japan and etc
AT*W0=n	<i>Set the dialing interpretation of '#'</i>	*0 1 2	<ul style="list-style-type: none"> '#' is interpreted as a normal digit '#' is interpreted as a sub-address delimiter '#' is interpreted as an ending digit. In enbloc sending mode TA will send the dialing number after received the ending digit or after timeout
AT*W1=n	<i>Set the dialing interpretation of '*'</i>	*0 1 2	<ul style="list-style-type: none"> '*' is interpreted as a normal digit '*' is interpreted as a sub-address delimiter '*' is interpreted as an ending digit. In enbloc sending mode TA will send the dialing number after received the ending digit or after timeout A-law coding For European, China, Australian and etc
AT\$EDx	<i>Set DTMF caller id to analog ports</i>	0 *1	<ul style="list-style-type: none"> Fsk caller ID DTMF caller ID (Finland)
AT\$Esx	<i>DTMF CALLER ID start code</i>	D *A B	<ul style="list-style-type: none"> A -LETTER START CALLER ID SEQUENCE IN FINLAND
AT\$ER1	<i>Caller ID between 1st and 2nd ring</i>	Forced	<ul style="list-style-type: none"> Default always
AT\$ACx	<i>Enable to send caller ID for analog port A</i>	0 *1	<ul style="list-style-type: none"> Not to send TEL - A telephone number under outgoing call Send TEL - A telephone number
AT\$BCx	<i>Enable to send caller ID for analog port B</i>	0 *1	<ul style="list-style-type: none"> Not to send TEL - B telephone number under outgoing call Send TEL - B telephone number
AT*Idn	<i>Enable to send caller ID for data port</i>	0 *1	<ul style="list-style-type: none"> Not to send data port telephone number under outgoing call Send data port telephone number
ATUn	<i>Resource BOD setup Enable/Disable the resource BOD function</i>	*0 1	<ul style="list-style-type: none"> Disable resource BOD function Enable resource BOD function
A/	<i>Repeat last command TA will re-execute the most recently received command line</i>		This command does not use the AT prefix nor does it require a carriage return to enter
+++	<i>Escape sequence from data mode</i>		Escape from the data mode

6.3 S Register

Number	Meaning	Range	Unit	Description	Default
0	Auto answer	0 1 - 255	Time	<ul style="list-style-type: none"> Manual answer Auto answer the incoming data call after defined counting 	0
1	RING count	0 - 255	Time	<ul style="list-style-type: none"> Stored the RING count 	0
2	Escape character	0 0 - 127	ASCII	<ul style="list-style-type: none"> Disabled Use the ASCII value as escape character 	43
3	Carriage Return	0 - 127	ASCII	<ul style="list-style-type: none"> Use the ASCII value as CR 	13
4	Line Feed	0 - 127	ASCII	<ul style="list-style-type: none"> Use the ASCII value as LF 	10
5	Back Space	0 - 32	ASCII	<ul style="list-style-type: none"> Use the ASCII value as BS 	8
12	Escape sequence Prompt time	0 1 - 255	20ms	<ul style="list-style-type: none"> Do not check guard time Check guard time 	50
25	DTR detection time	0 - 255	0.01sec	<ul style="list-style-type: none"> DTR recognized time 	20
26	CS delay time	0 - 255	0.01sec	<ul style="list-style-type: none"> Delay between lost carrier and Hang up (RTS to CTS) 	1
37	V.110 speed set	5 6 15 17 27 50		<ul style="list-style-type: none"> 5 = 1200bps 6 = 2400bps 15 = 4800bps 17 = 9600bps 27 = 19200bps 50 = 38400bps 	50
107	Throughput BOD criteria (monitor B - ch throughput)	0 - 6	10kbps	<ul style="list-style-type: none"> 0 = do not monitor 1 = 10kbps 2 = 20kbps 3 = 30kbps 4 = 40kbps 5 = 50kbps 6 = 60kbps 	0
141	BOD - Add monitor Time	0 - 255	Sec	Average calculation time for adding one B - ch	5
143	BOD - Add last time	0 - 255	Sec	The throughput must greater than S107 and lasted S143 time, after Such criteria, TA will add one B-ch connection	30
144	BOD - Cut monitor Time	0 - 255	Sec	Average calculation time for dropping one B-ch	5
146	BOD - Cut last time	0 - 255	Sec	The throughput must less than S107 and lasted S146 time, after such criteria, TA will drop one B-ch connection	30

6.4 Result Code

Data Result Code	Word Format	Description
0	OK	Normal response
1	CONNECT	Connected
2	RING	Incoming call ringing
3	NO CARRIER	No carrier detected
4	ERROR	Error operation
7	BUSY	Busy state
5	CONNECT 1200	1200bps connection
10	CONNECT 2400	2400bps connection
11	CONNECT 4800	4800bps connection
12	CONNECT 9600	9600bps connection
14	CONNECT 19200	19200bps connection
28	CONNECT 38400	38400bps connection
18	CONNECT 57600	57600bps connection
19	CONNECT 64000	64000bps connection
20	CONNECT 115200	115200bps connection
21	CONNECT 230400	230400bps connection
46	CARRIER 1200	1200bps carrier detected
47	CARRIER 2400	2400bps carrier detected
48	CARRIER 4800	4800bps carrier detected
50	CARRIER 9600	9600bps carrier detected
54	CARRIER 19200	19200bps carrier detected
56	CARRIER 38400	38400bps carrier detected
39	CARRIER 48000	48000bps carrier detected
57	CARRIER 57600	57600bps carrier detected
59	CARRIER 64000	64000bps carrier detected
83	PROTOCOL: V.120	V.120 connection
85	PROTOCOL: V.110	V.110 connection
86	PROTOCOL: PPP	PPP connection
88	PROTOCOL: MLPPP	MLPPP connection

7. Easy Setup From Telephone Keypad

The TA provides an easy configuration way through the analog port. If you use TEL-A port then you can setup the corresponding attributes **only** for TEL-A. If you are using TEL-B then you can setup the configuration for TEL-B only.

Easy Setup Operation	Meaning	Value	Description
Press Flash / R first ** 1 2 8	Enter into programming Mode		Instruct TA to enter into programming mode
Flash/ On-hook	Cancel setting		Cancel the current operation
* *	Store setting into active profile		Save the current setting into active memory profile
# * #	Store setting into Non-volatile memory		Save the current setting into NV-RAM
0 0 * n	Global Call Select	n=0	Ring TEL-A only
		1	Ring TEL-B only
		2	Ring TEL-A and TEL-B
0 1 * n	Inner Communication	n=0	Disabled inner communication
		1	Enabled
0 2 * n	Receive Priority	n=1	No receive priority
		2	Ring TEL-A first
		3	Ring TEL-B first
0 5 * n	Factory Default		
0 7 * n	Call Forwarding Criteria	n=1	Call is forwarding when received an incoming global call (without called party number)
		2	Call is not forwarding when received an incoming global call
		3	Call is forwarding when received an incoming call for TEL-A
		4	Call is not forwarding when received an incoming call for TEL-A
		5	Call is forwarding when received an incoming call for TEL-B
		6	Call is not forwarding when received an incoming call for TEL-B
0 8 * n	Local/Network Call Forwarding	n=1	Local call forwarding
		2	Network forwarding, ID=32
		3	Network forwarding, ID=33
		4	Network forwarding, ID=34
		5	Network forwarding, ID=35
0 9 * n * x	Forwarding Number	n=1	Global call forwarding no.
		2	TEL-A call forwarding no.
		3	TEL-B call forwarding no.
1 0 * x	Register Telephone Number	x=tel number	Register telephone number for TEL-A/TEL-B
1 1 * n * x	Register Call Screen Number	n=1-5 x=tel number	Register call screen number for TEL-A/TEL-B
1 2 * n	Enable Caller-ID	n=0	Do not send out caller-ID when made an outgoing call
		1	Send out caller-ID when made Outgoing call

7.1 Entering Programming Mode

To enter into the programming mode from telephone sets, please follow the steps below:

- A) Use regular telephone set with DTMF -codes and plug into analog port A (TEL-A) or B (TEL-B)
- B) Pick up the telephone you and wait for dial tone.
- C) Press flash / R -button and then **** 1 2 8** on the telephone keypad then you will hear a confirmation tone which indicate that the TA is now under the programming mode.

7.2 Setup Configuration

To setup the corresponding settings, please check the above **Easy Setup Table** and execute the following steps.

- A). Press **0 0 * 0** to set global call select - ring TEL - A only (for example)
- B). Press *** *** to store the setting into active profile.
- C). Repeat the procedure A) and B) for other settings.
- D). When finished with all settings, press *** # *** to store all the updated settings into the non - violate Memory.

7.3 Storing The Setting

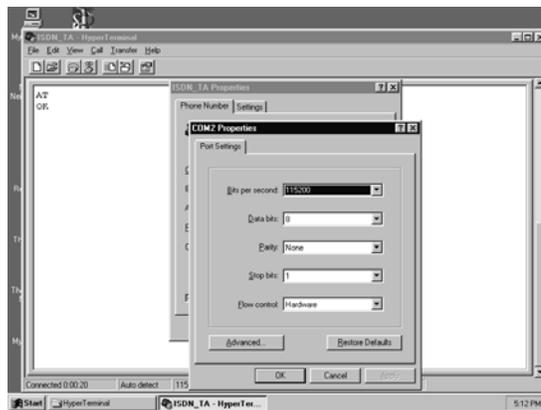
After you performed the *** # *** sequence, even when there is a power outage. The modified settings will still stored in the non-violate memory. After power resumes, you can recall the setting from user profile 0 or 1. If you hang up the phone before you execute the *** # *** sequence, then the TA will abort from the programming mode and return to idle mode.

8. Re-Flash the New Software

8.1 Normal Re-Flash Procedure

To provide the upgraded software function in the future. The TA had been installed with the flash EPROM for re-flash the new software function. Usually you should get the zipped (.ROM) file from your local dealer directly or from your local agent's Web Home Page. After you get the .ROM file please follow the following procedure carefully.

- (1) Use any terminal program that support ASCII file transfer function, like HyperTerminal.
- (2) Enter into the terminal mode and make sure that the terminal program had set the following configuration.
 - . 115200-baud rate
 - . 8 data bit, no parity, 1 stop bit (8N1)
 - . CTS/RTS hardware flow control



- (3) Type AT and check TA responded with "OK"
 - (4) Type AT%FAPPS the screen will display the following message.
 - AT%FAPPS Application Upgrade
 - FLASH PROGRAM VERSION 1.4
 - Erase and reprogramming flash EPROM contents (y/n)?
 - (5) If you enter "n" then screen displayed "Reset modem to continue".
You need to power off and power on AFTER flashing TA to restart.
- If you type "y" the screen will display:

```
*** WARNING ***  
Erasing Flash Memory  
Flash EPROM Upgrade Procedure  
Ready for ASCII download  
CTS (hardware) flow control  
38400,8,N,1  
>
```

- (6) After you see the ">" character is appeared, you should select the new upgraded

You must follow the procedures as below step-by-step.

(1) Power off TA.

(2) Check the RS232 cable is connected with PC well.

(3) Change the Terminal program to 38400 baud, 8N1, CTS/RTS hardware flow control.

(4) Entering the terminal mode again.

(5) Power on TA again, you will see the screen display:

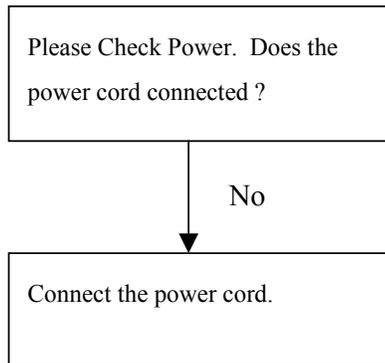
“ Erase and reprogramming flash EPROM contents (y/n) ?

(6) Enter “y” and follow the steps from 8.1 (6) as stated above. Then you can still finish the re-flash procedure. And you will see “38400, 8, N, 1” instead of “115200, 8, N, 1”. Due to the baud rate is slower therefore it takes about 10 minutes to finish re-flash.

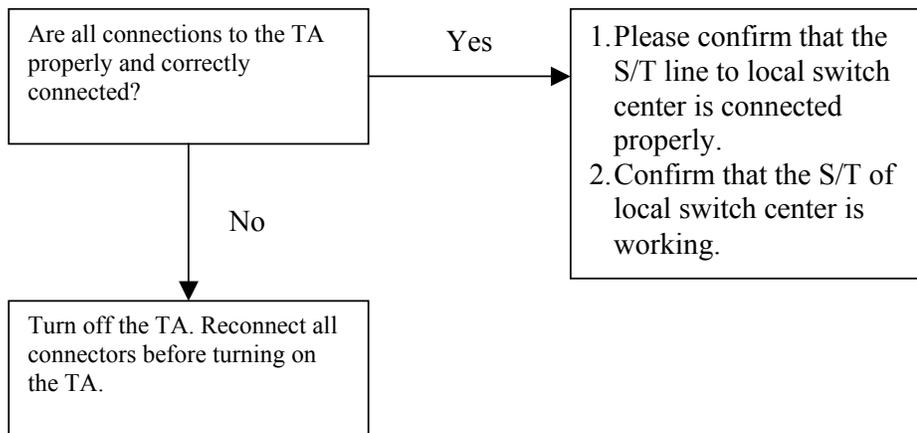
9 Trouble Shooting

Here are some flow charts of troubleshooting, which may help you resolve frequently encountered installation problems.

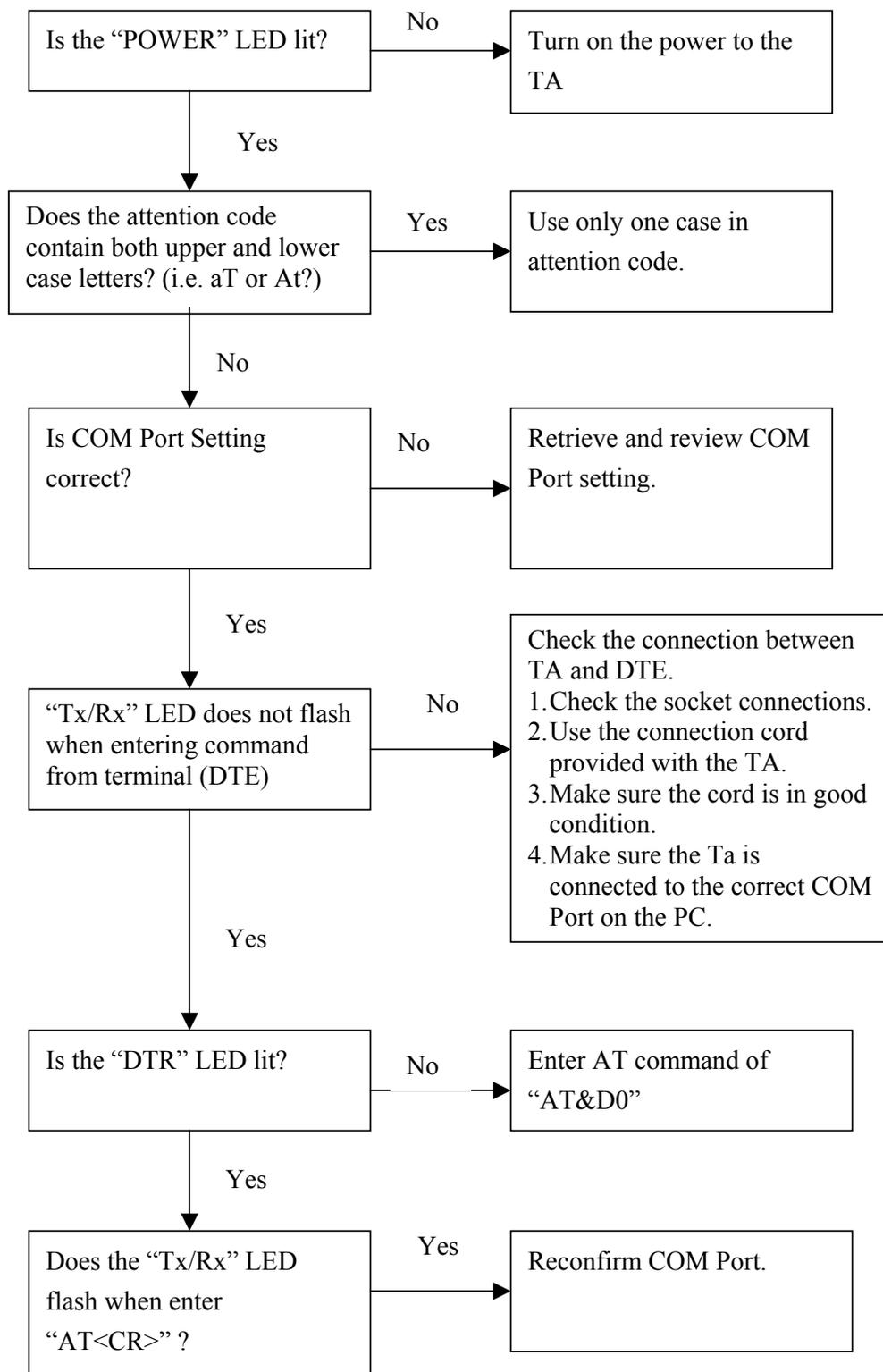
9.1 Power Switch On but POWER LED is not lit.



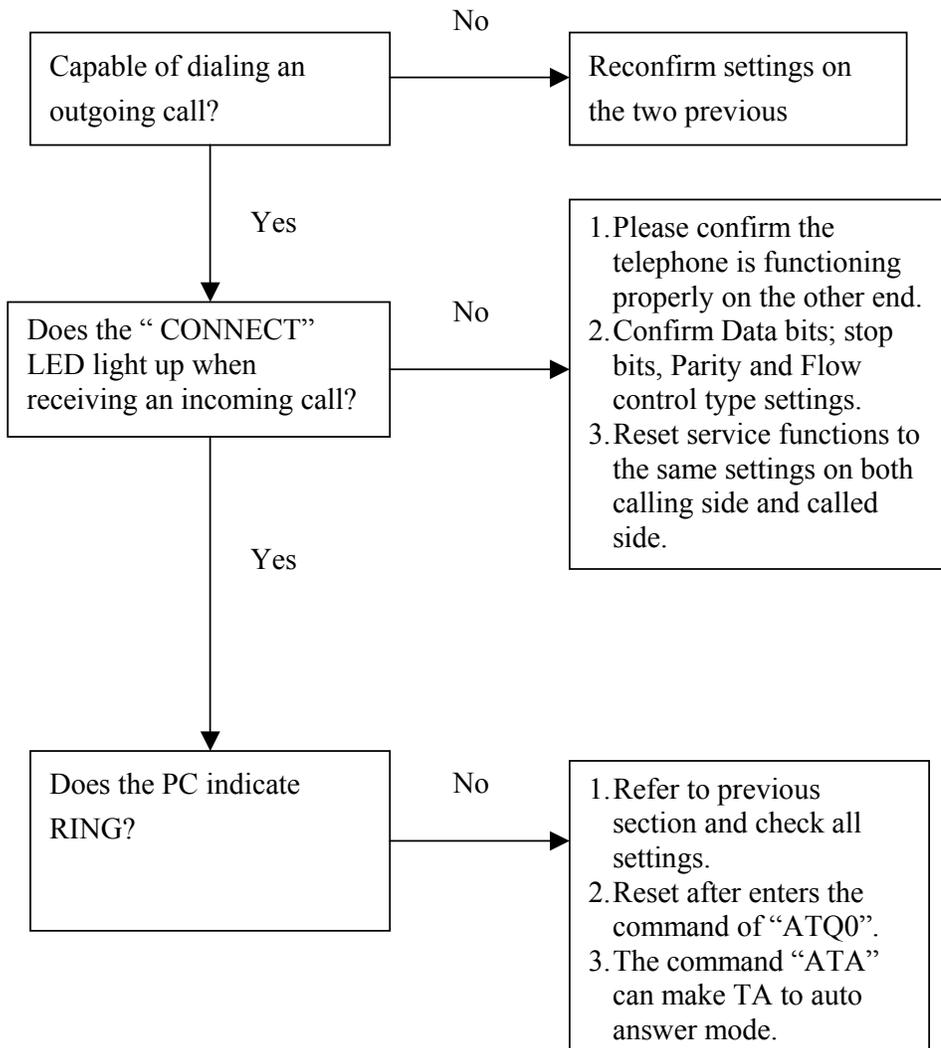
9.2 DTR LED not lit, and the TA does not connect.



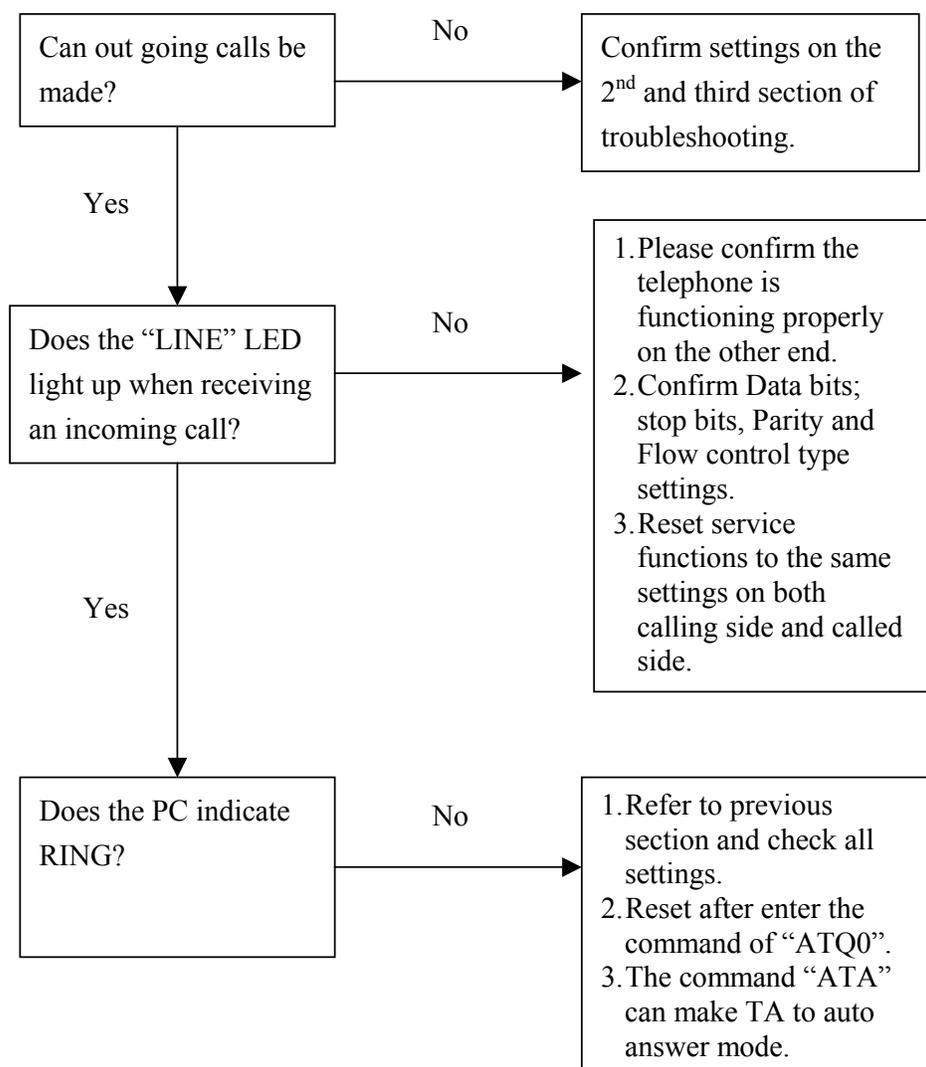
9.3 Type "AT", but the TA does not respond with "OK" message



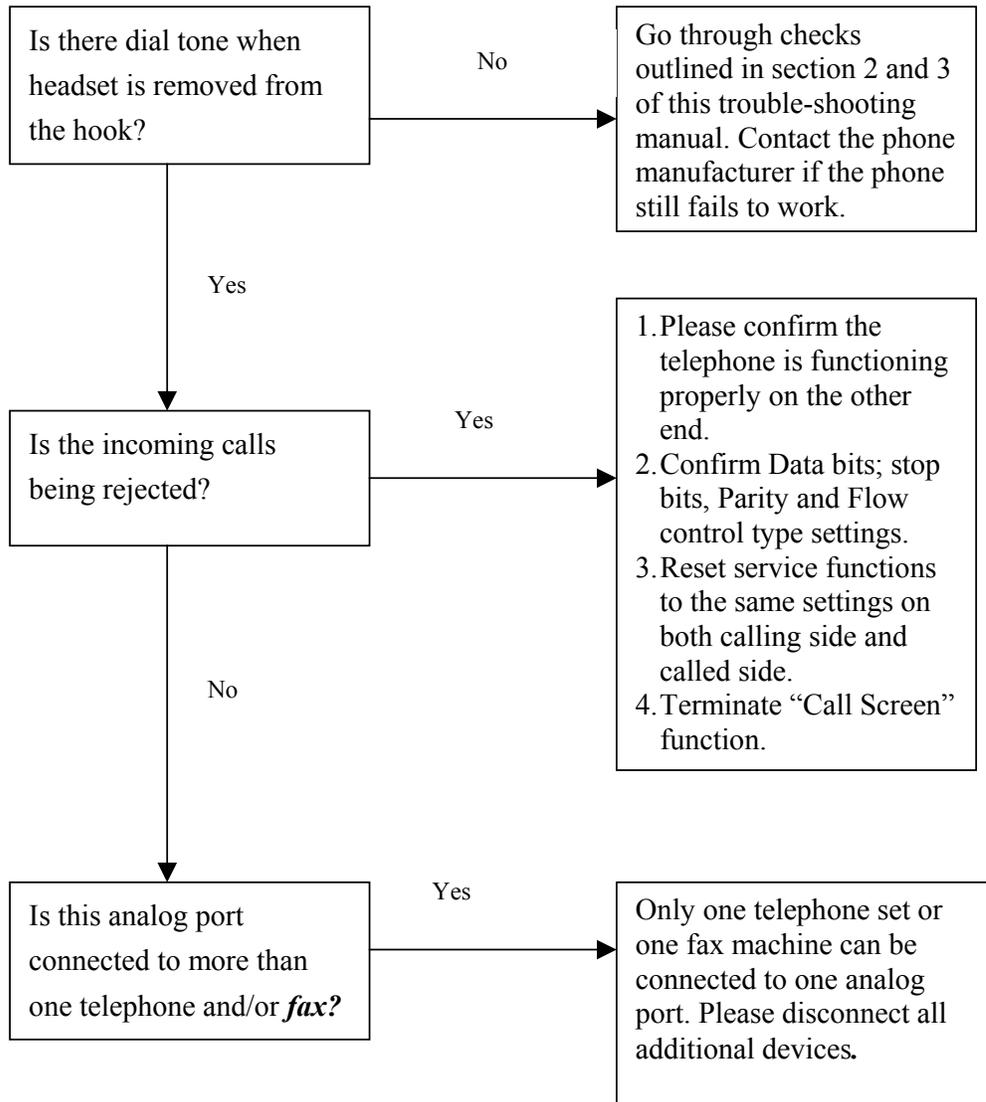
9.4 Using ATD to call, but "NO CARRIER" is displayed.



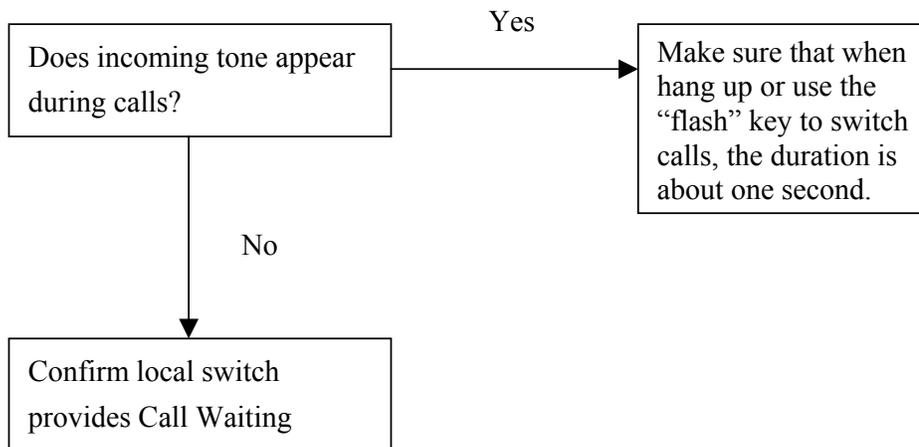
9.5 Can not Accept Incoming Data Call



9.6 Unable to Accept Incoming Voice Call



9.7 Can Not Use Call Waiting



9.8 Self Diagnostics

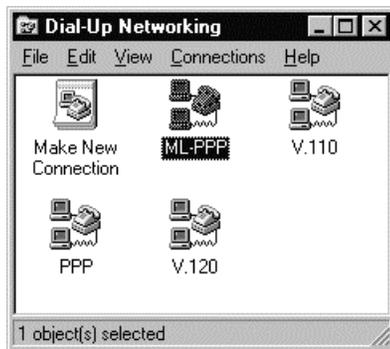
Power On Self-Diagnostic

The TA is installed with power-on self-diagnostic functions. After the power is switched on, the TA will perform the following self-test diagnostics.

Item	Description
ROM	Inspect ROM's to CHECK ROM size
RAM	Inspect RAM's read/write operations

- ◆ **Do not turn off power during self-diagnostic.**
- ◆ **If a problem occurs during self-diagnostic, the POWER LED will continue flashing after the test.**

Before you test the ISDN TA, there are some things need to be noted as shown below:



1. Select the correct transfer protocol you are going to dial, make sure that these models have been set already. (See Chapter 5.6 for reference)

2. Make sure the right User name, Password and Dial-Up number (i.e. Telephone number provided by ISP) are used and click the connect button.



3. The Dialog Box shows dialing the connection.

4. Ensure the following Properties in the Dial-Up Networking.

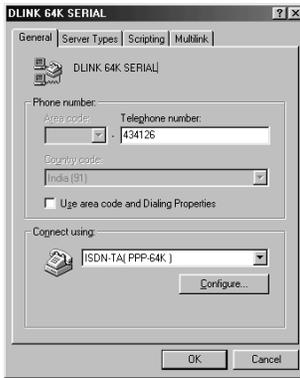


Fig: 1

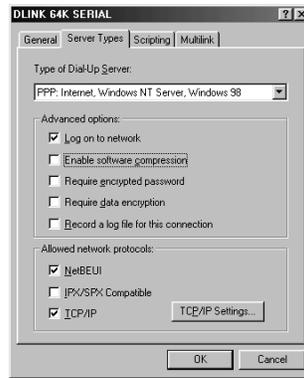


fig: 2

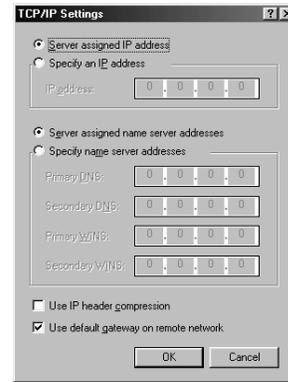


fig: 3

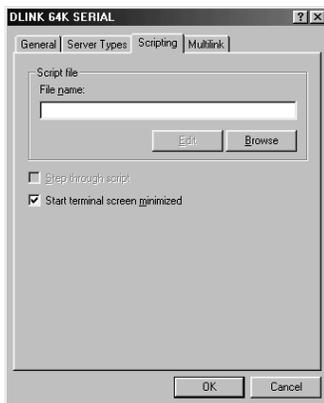


Fig: 4

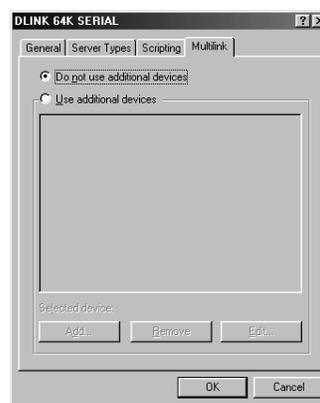


fig: 5

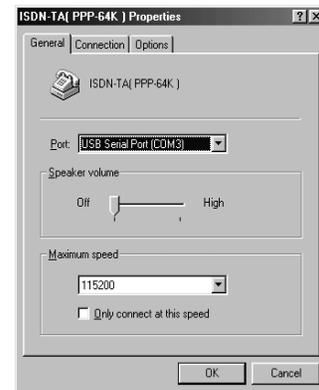


fig: 6

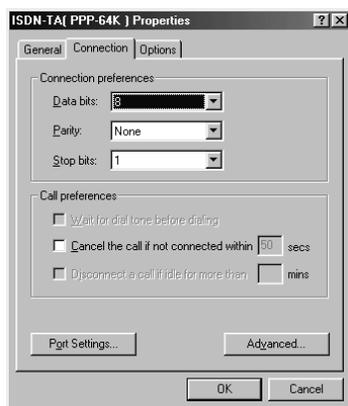


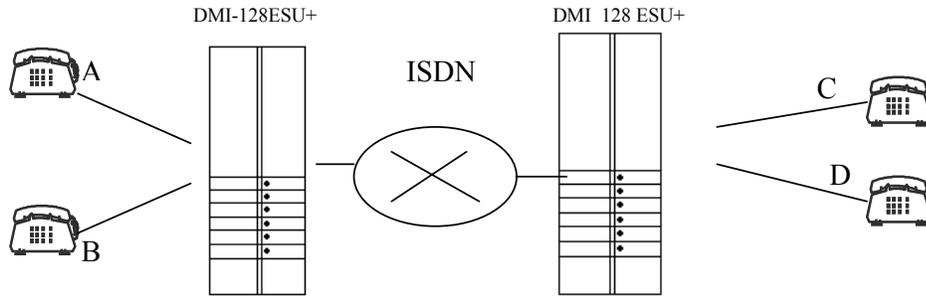
Fig: 7

In fig 2-**Uncheck Enable software compression.**

In fig 3- **Uncheck Use IP header compression.**

In fig 6- **Select the correct port where ISDN TA is installed.**

10. Supplementary Service Function



The supplementary services will require Analog phone having flash timing set to 600 msec. (flash=600 msec). Check with your Telco (PTT) for supplementary service availability. Follow the AT Command in Chapter 6 along with this procedure.

10.1 Definition

AT\$CII	Set inner communication enable	
AT\$CS1	No Network/Local supplementary service function provided	
AT\$CS2	Only Network supplementary service function provided	
AT\$CS3	Only Local supplementary service function provided	
LIT	Local incoming tone	<ul style="list-style-type: none"> ◆ 400Hz tone ◆ 0.125sec on, 0.1sec off, 0.125sec on, 0.1sec off, 3.55sec off repeated
BT	Busy tone	<ul style="list-style-type: none"> ◆ 400Hz tone ◆ 0.5sec on, 0.5sec off continually
DT	Dial tone	<ul style="list-style-type: none"> ◆ 400Hz tone ◆ Continual
RBT	Ring-back tone	◆ Receive from Network ISDN switch
IRBT	Inner ring-back tone	<ul style="list-style-type: none"> ◆ 60ms on, 50ms off, 60ms on, 3250ms off, repeated ◆ 400 HZ tone
IR	Inner ring	<ul style="list-style-type: none"> ◆ 25Hz ring signal ◆ When TA detects an inner communication and sends ring signal to TEL-A/B by clicking the ringing relay ◆ Ringing period is same as IRBT
ICR	Incoming ring	<ul style="list-style-type: none"> ◆ 25Hz ring signal ◆ When TA accepts an incoming call and sends ring signal to TEL-A/B/C by clicking the ringing relay ◆ Ringing period is 1sec on, 2sec off repeated
HT	Holding tone	◆ Send by Network ISDN switch
Waiting first dial digit time	<ul style="list-style-type: none"> ◆ After TEL-A/B off hook, TA sends DT to TEL-A/B ◆ If after 25 seconds TA did not receive any dialing digit, TA send BT to POTS-A/B 	
Flash signal recognition time	<ul style="list-style-type: none"> ◆ TA detects Flash-Hook signal from TEL-A/B ◆ Flash timing to be set to 600 msec on POTS A/B for correct operation. 	

On-Hook signal recognition time	<ul style="list-style-type: none"> ◆ TA detects a Flash-Hook signal from TEL-A/B ◆ If Flash-Hook time ≥ 2.2 sec then it is a correct On-Hook signal
<i>Ideal mode</i>	◆ On-hook, disconnected and no any event occurred to the POTS interface
<i>Talk mode</i>	◆ Off-Hook and talking with only one other party

10.2 Making an Outgoing Call

Case No	Representation
0	When A is in the idle mode <ol style="list-style-type: none"> 1. A off-hook 2. A hears TA's DT 3. A dials the telephone number of C 4. TA2 rings C (if C is in idle mode, TA2 sends ICR to C) 5. A hears Network's RBT 6. C off-hook (TA2 stops ICR) 7. A talks to C (A is in talk mode with C)
1	When A at Case 0, step 3 <ol style="list-style-type: none"> 1. If C is busy 2. A hears TA's BT 3. A on hook 4. A returns to idle mode
1.1	When A at Case 1, step 2 <ol style="list-style-type: none"> 1. A flash 2. A go to Case 0, step 2
2	When A at Case 0, step 2/3/4/5/6 <ol style="list-style-type: none"> 1. A on-hook 2. A is disconnected 3. A returns to the idle mode
3	When A at Case 0, step 4 <ol style="list-style-type: none"> 1. A flash 2. TA2 stops to ring C 3. A go to Case 0, step 2
4	When A at Case 0, step 6/7 <ol style="list-style-type: none"> 1. A flash 2. C is disconnect 3. C hears Other TA's BT 4. A go to Case 0, step 2
5	When A at Case 0, step 7 (talk mode) <ol style="list-style-type: none"> 1. A on-hook 2. C hears Other TA's BT 3. A is disconnected 4. A returns to idle mode
6	When A at Case 0, step 7 (talk mode) <ol style="list-style-type: none"> 1. C on-hook 2. C is disconnected 3. A go to Case 1, step 2

To hear the PTT telephone line dial tone on lifting the telephone A or B OFF-HOOK, use the following command in HyperTerminal. i.e. AT%A5=0.

To hear the ISDN TA's internal dial tone on lifting the telephone A or B OFF-HOOK, use the following command in HyperTerminal. i. e. AT%A5=1.

10.3 Making an Incoming Call

Case No	Representation
0	When A is in idle mode 1. TA receives an incoming call to A 2. TA rings A (TA sends ICR to A) 3. A off-hook 4. A talks to the originated party (talk mode)
1	When A is in (1) Outgoing call , Case 0, step 1/2/3 1. TA receives an incoming call to A 2. TA reject the incoming call 3. A still at (1) Outgoing call , Case 0, step 1/2/3 (A's state is not changed)

10.4 Making an Inner Communication

- | |
|--|
| <ul style="list-style-type: none"> . TEL-A calls TEL-B by dialing * * 0 . TEL-B calls TEL-A by dialing * * 0 |
|--|

To enable inner communication give the following command in HyperTerminal. i.e. AT%A5=1&W ...(after using this command, you will save the current inner communication settings even after powering OFF the TA)

10.5 Making a Local Call Waiting

Case No	Representation
0	When A is in talk mode with C 1. A Talks to C (occupy one B-ch for example B1-ch) 2. D calls A 3. A hears TA's ICT 4. A flash 5. C holds (C hears LHT from TA) 6. A talks to D (B2-ch, if C use B1-ch then D should use B2-ch) 7. A flash 8. D holds (D hears silent from TA) 9. A go to Case 0, step 1

10.6 Making a Local Call Transfer

Case No	Representation
0	When A is in talk mode with C 1. A talk to C 2. A flash +2 3. C hold (hears silent from TA) 4. A dial * * 0 5. TA rings B 6. B off-hook 7. B talks to C 8. A hears TA's BT 9. A returns to idle mode
1	When A at Case 0, step 5 1. if B is busy (off-hook or talking with somebody) 2. A hears TA's BT 3. A flash 4. A talks to C (A is in talk mode with C)
2	When A at Case 1, step 2 1. A on hook 2. TA rings A 3. A off-hook 4. A talks to C (A is in talk mode with C)

10.7 Making a Local 3 Party Conference

- Same operating sequence with network 3 party conference.

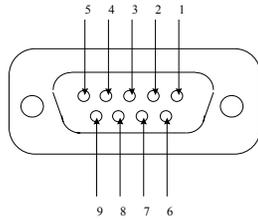
Case No	Representation
0	<p>When A and D is in talk mode</p> <ol style="list-style-type: none"> 1. A talks to D 2. A press flash key then press 1 3. D hears holding tone 4. A hears TA1's dial tone 5. A calls C 6. C off-hook 7. A and C is in talk mode 8. A press flash then press 0 <p>A, D, C are in 3 party conference</p>

10.8 Making a Local Call Forwarding

Case No	Representation
0	<ol style="list-style-type: none"> 1. Set AT\$CF1 for local call forwarding 2. Set AT*CFG1 to enable global call forwarding 1. Set AT*CFA1 to enable call forwarding for A 2. Set AT*CFB1 to enable call forwarding for B 3. Set AT*CFG=xxxxxx for the global call forwarding number (If TA received an incoming call but without called party number then this call is named global call) 4. Set AT*CFA=xxxxxx for A call forwarding number only 5. Set AT*CFB=xxxxxx for B call forwarding number only
1	<p>When TA received an incoming global call</p> <ol style="list-style-type: none"> 1. TA will inform network to forward this incoming call to the number specified by AT*CFG=xxxxxx (For example, if set AT*CFG= to D then D will be ringed) <p>Note: <i>If there is no B-ch available, then TA will reject the local call forwarding. Calling party will hear BT.</i></p>
2	<p>When TA received an incoming call directly for A</p> <ol style="list-style-type: none"> 1. TA will inform network to forward this incoming call to the number specified by AT*CFA=xxxxxx (For example, if set AT*CFA= to D then D will be ringed) <p>Note: <i>If there is no B-ch available, then TA will reject the local call forwarding. Calling party will hear BT.</i></p>
3	<p>When TA received an incoming call directly for B</p> <ol style="list-style-type: none"> 1. TA will inform network to forward this incoming call to the number specified by AT*CFA=xxxxxx (For example, if set AT*CFA= to D then D will be ringed) <p>Note: <i>If there is no B-ch available, then TA will reject the local call forwarding. Calling party will hear BT.</i></p>

APPENDIX

APPENDIX 1 DCE 9Pin D Type Connector Definition



Pin	Signal Name	Direction	Description
3	SD, Send Data	→	DTE send data to TA
2	RD, Receive Data	←	TA send data to DTE
7	RS, Request to Send	→	DTE request to send data
8	CS, Clear to Send	←	TA inform DTE can to send data
6	DR, Data Set Ready	←	TA is ready receiving command from DTE
5	SG, Signal Ground	←	TA signal ground (GND)
1	CD, Carrier Detect	←	TA inform DTE that has a call incoming already
4	ER, Data Terminal Ready	→	DTE is ready, it can working now
9	CI, Ring Indication	←	Incoming ring indication

Terminating Resistor Settings (DIP Switch inside Battery Compartment)

	<p>Switch SW2</p> <p>DIP Switch 1,2 - ON (default) =100 ohm Terminating Resistor</p> <p>DIP Switch 1,2 - OFF =0 ohm Terminating Resistor</p> <p>DIP Switch 3 - OFF (default) =N.A Keep in OFF Mode</p> <p>DIP Switch 4 - OFF (default) =N.A Keep in OFF Mode</p> <p>The Terminating Resistor of 100 ohm should be set in the DMI-128ESU+, when your NT1 is set to 100 ohms, in the point-to-point connection, between NT1 and TA.</p>
--	---

APPENDIX 2 Disconnect Cause Indication

	Class No.	Description
Normal Event	001	Unassigned (unallocated) number
	002	No route to specified transit network
	003	No route to destination
	006	Channel unacceptable
	007	Call awarded and being delivered in an established channel
	016	Normal call clearing
	017	User busy
	018	No user responding
	019	User alerting no answer
	021	Call rejected
	026	Non-selected user clearing
	027	Destination out of order
	028	Incomplete number
	029	Facility rejected
	030	Response to STATUS ENQUIRY
Resource Unavailable	031	Normal, unspecified
	034	No circuit/channel available
	038	Network out of order
	041	Temporary failure
	042	Switching equipment congestion
	043	Access information discarded
	044	Requested circuit/channel not available
Service or option not available	047	Resource unavailable, unspecified
	049	Unable to use QOS
	050	
	057	Bearer capability no authorized
	058	Bearer capability not presently available
Service or option not implemented	063	Service or option not available
	065	Bearer capability not implemented
	066	Channel type not implemented
	069	Requested facility not implemented
	070	Only restricted digital information bearer capability is available
Invalid message	079	Service or option not implemented, unspecified
	081	Invalid call reference value
	082	Identified channel does not exist
	083	A suspended call exists, but this call identity does not Exist
	085	No call suspended
	086	Call having the requested call identity has been cleared
	088	Incompatible destination
	091	Invalid transit network selection
Protocol error	095	Invalid message, unspecified
	096	Mandatory information element is missing
	097	Message type non-existent or not implemented
	098	Message not compatible with call state or message type non-existent or not implemented
	099	Information element non-existent or not implemented
	100	Invalid information element contents
	101	Message not compatible with call state
	102	Recovery on time expiry
Inter-working	111	Protocol error, unspecified
	127	Inter-working, unspecified

APPENDIX 3 Specification

Rate	<ul style="list-style-type: none"> • 2B +D Basic Rate (BRI)
Type	<ul style="list-style-type: none"> • External
S/T interface	<ul style="list-style-type: none"> • ITU-T I.430 S/T-interface • 4-wire • 2 x S/T-interface port • AMI line coding • RJ45 modular jack • Terminating resistance selectable for 100 Ohm or none
Connection (To NT1)	<ul style="list-style-type: none"> • Point-to-multipoint, point to point.
Analog port	<ul style="list-style-type: none"> • 2 x analog ports • RJ11 modular jack • ITU-T G.711 a-law • 25Hz, 59Vrms ringing signal: 1-sec on, 2-sec off • Tone Generation <ul style="list-style-type: none"> • Dial tone: 400 +/- 20 Hz • Busy tone • Holding tone • Incoming tone • -59VDC • DTMF dialing • DTMF Caller ID
Data port	<ul style="list-style-type: none"> • 1 x data port • DB - 9SUB male connector or USB for Windows 98/2000 • Auto - baud detection • DTE speed <ul style="list-style-type: none"> • 1200/2400/4800/9600/19200/38400/57600/115200/230400 bps • Communication speed <ul style="list-style-type: none"> • Sync: 64000/128000 bps • Async: 1200/2400/4800/9600/19200/38400 bps • Hardware RTS/CTS flow control • Software Xon/Xoff flow control • 1 * USB port
Protocol	<ul style="list-style-type: none"> • V.110 • V.120 • PPP 64K • ML-PPP 128K • X.75 • X.25 on D • Soft-Fax • Channel bundling • BACP/BOD

Switching	<ul style="list-style-type: none"> • Euro ISDN (EDSS1)
LED	<ul style="list-style-type: none"> • Power: Power on indication • CONNECT: connected to ISDN Network • DTR: DTE ready • TX/RX: Data transmitting/receiving • LINE: ISDN Line is connected to TA
Power	<ul style="list-style-type: none"> • 230VAC, 50-60 Hz, o/p: DC 5V 2.8A • 6 x AA battery (Alkaline)
Maintenance	<ul style="list-style-type: none"> • Power on self-diagnostic • Flash EPROM for software upgrade • Minimum operation mode • Factory default setting • User profile saving in non-volatile memory
EMI	<ul style="list-style-type: none"> • CE EMI Class-2
Operation	<ul style="list-style-type: none"> • 0 to 40 degree C
Humidity	<ul style="list-style-type: none"> • 10 to 95% RH
Dimension	<ul style="list-style-type: none"> • 55mm(W) x170mm (D) x155mm (H)
Weight	<ul style="list-style-type: none"> • 0.8Kg

APPENDIX 4:REGISTRATION CARD

Print, type or use block letters.

Your name: Mr./Ms _____
 Organization: _____ Dept. _____
 Your title at organization: _____
 Telephone: _____ Fax: _____
 Organization's full address: _____

 Country: _____
 Date of purchase (Month/Day/Year): _____

Product Model	Product Serial No.	* Product installed in type of computer (e.g., Compaq 486)	* Product installed in computer serial No.

(* Applies to adapters only)

Product was purchased from:
 Reseller's name: _____
 Telephone: _____ Fax: _____
 Reseller's full address: _____

Answers to the following questions help us to support your product:

- Where and how will the product primarily be used?
Home Office Travel Company Business Home Business Personal Use
- How many employees work at installation site?
1 employee 2-9 10-49 50-99 100-499 500-999 1000 or more
- What network protocol(s) does your organization use?
XNS/IPX TCP/IP DECnet Others _____
- What network operating system(s) does your organization use?
D-Link LANsmart Novell NetWare NetWare Lite SCO Unix/Xenix PC NFS 3Com 3+Open
Banyan Vines DECnet Pathwork Windows NT Windows NTAS Windows '95
Others _____
- What network management program does your organization use?
D-View HP OpenView/Windows HP OpenView/Unix SunNet Manager Novell NMS
NetView 6000 Others _____
- What network medium/media does your organization use?
Fiber-optics Thick coax Ethernet Thin coax Ethernet 10BASE-T UTP/STP
100BASE-TX 100BASE-T4 100VGAnyLAN Others _____
- What applications are used on your network?
Desktop publishing Spreadsheet Word processing CAD/CAM
Database management Accounting Others _____
- What category best describes your company?
Aerospace Engineering Education Finance Hospital Legal
Insurance/Real Estate Manufacturing
Retail/Chainstore/Wholesale Government Transportation/Utilities/Communication VAR
System house/company Other _____
- Would you recommend your D-Link product to a friend?
Yes No Don't know yet
- Your comments on this product?

PLEASE
PLACE STAMP
HERE

TO: _____

D-Link®

D-Link Offices

- AUSTRALIA D-LINK AUSTRALIA**
Unit 16, 390 Eastern Valley Way, Roseville, NSW 2069, Australia
TEL: 61-2-9417-7100 FAX: 61-2-9417-1077
TOLL FREE: 1800-177-100 (Australia), 0800-900900 (New Zealand)
URL: www.dlink.com.au E-MAIL: support@dlink.com.au, info@dlink.com.au
- CANADA D-LINK CANADA**
#2180 Winston Park Drive, Oakville, Ontario, L6H 5W1 Canada
TEL: 1-905-829-5033 FAX: 1-905-829-5095 BBS: 1-965-279-8732 FREE CALL: 1-800-354-6522
URL: www.dlink.ca E-MAIL: techsup@dlink.ca FTP: [ftp.dlinknet.com](ftp://ftp.dlinknet.com)
- CHILE D-LINK SOUTH AMERICA**
Isidora Goyechea 2934 of 702, Las Condes, Santiago - Chile S.A.
TEL: 56-2-232-3185 FAX: 56-2-232-0923 URL: www.dlink.cl E-MAIL: ccasassu@dlink.cl, tsilva@dlink.cl
- CHINA D-LINK CHINA**
2F., Sigma Building, 49 Zhichun Road, Haidian District, 100080 Beijing, China
TEL: 86-10-88097777 FAX: 86-10-88096789
URL: www.dlink.com.cn
- DENMARK D-LINK DENMARK**
Naverland 2, DK-2600 Glostrup, Copenhagen, Denmark
TEL: 45-43-969040 FAX: 45-43-424347 URL: www.dlink.dk
E-MAIL: info@dlink.dk
- EGYPT D-LINK MIDDLE EAST**
7 Assem Ebn Sabet Street, Heliopolis Cairo, Egypt
TEL: 202-2456176 FAX: 202-2456192 URL: www.dlink-me.com
E-MAIL: support@dlink-me.com, fateen@dlink-me.com
- FRANCE D-LINK FRANCE**
Le Florilege #2, Allee de la Fresnerie
78330 Fontenay le Fleury France
TEL: 33-1-302-38688 FAX: 33-1-3023-8689 URL: www.dlink-france.fr
E-MAIL: info@dlink-france.fr
- GERMANY D-LINK Central Europe/D-Link Deutschland GmbH**
Schwalbacher Strasse 74
D-65760 Eschborn, Germany
TEL: 49-6196-77990 FAX: 49-6196-7799300
URL: www.dlink.de BBS: 49-(0) 6192-971199 (Analog) 49-(0) 6192-971198 (ISDN)
INFO LINE: 00800-7250-0000 (toll free) HELP LINE: 00800-7250-4000 (toll free)
REPAIR LINE: 00800-7250-8000 E-MAIL: info@dlink.de
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Off Cst Road, Santacruz (E), Bombay - 400 098 India
TEL: 91-22-26526696/26902210 FAX: 91-22-26528914 URL: www.dlink.co.in
E-MAIL: techsupport@dlink-india.com ; service@dlink.india.com
- ITALY D-LINK ITALIA**
Via Nino Bonnet No. 6/b, 20154 Milano, Italy
TEL: 39-02-2900-0676 FAX: 39-02-2900-1723 URL: www.dlink.it
E-MAIL: info@dlink.it
- JAPAN D-LINK JAPAN**
10F, 8-8-15 Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan
TEL: 81-3-5434-9678 FAX: 81-3-5434-9868 URL: www.d-link.co.jp
E-MAIL: kida@d-link.co.jp
- RUSSIA D-LINK RUSSIA**
Michurinski Prospekt 49, 117607 Moscow, Russia
TEL: 7-095-737-3389, 7-095-737-3492 FAX: 7-095-737-3390
URL: www.dlink.ru E-MAIL: vl@dlink.ru
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1 International Business Park, #03-12 The Synergy, Singapore 609917
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- S. AFRICA** **D-LINK SOUTH AFRICA**
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