



jetspeed 100



ADSL NETWORK TERMINAL DEVICE

USER'S MANUAL

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Contents

INTRODUCTION	3
Introduction to ADSL technology.....	3
jetSpeed 100	4
FAMILIARIZATION WITH jetSpeed 100	5
INSTALLING jetSpeed 100	9
What you need	9
ADSL over POTS	10
ADSL over ISDN	13
Cabling the jetSpeed 100	14
Software installation	16
Installation in Win 98&98SE	17
Installation in Win 2000/XP	25
Configuration and Monitoring of jetSpeed 100	34
PPPoA and PPPoE configuration	34
Configuring TCP/IP settings	35
Control and Status application "CSA"	36
CSA application quick guide.....	37
Layer Status LED Description	38
Accessing the advanced CSA windows	38
Uninstall the modem's drivers	39
OPERATION OF jetSpeed 100	40
OPERATION OF jetSpeed 100i	42
TECHNICAL CHARACTERISTICS	44
DECLARATION OF CONFORMITY.....	46
US FCC Notice	46
FCC Part 15 class B Statement.....	46
FCC Part 68 Statement	46

List of Figures

Figure 1: The jetSpeed 100 in the network	4
Figure 2: jetSpeed 100 General View	5
Figure 3: Cables included in jetSpeed 100 package	6
Figure 4: The label on the bottom of jetSpeed 100/100i	7
Figure 5: Receptacles at the back view of jetSpeed 100	8
Figure 6: Existing telephone cabling with POTS only	10
Figure 7: Central splitter (POTS)	10
Figure 8: Low pass filter (LPF)	10
Figure 9: Use of distributed Low Pass Filters (LPF)	11
Figure 10: Use of a T junction plus the distributed low pass filters	11
Figure 11: Low pass filter connected to your telephone set	12
Figure 12: Use of a central splitter (POTS)	12
Figure 13: The Central Splitter (ISDN)	13
Figure 14: Use of a Central Splitter (ISDN)	13
Figure 15: Cabling the jetSpeed 100 to the ADSL line	14
Figure 16: Cabling the jetSpeed 100 to the PC	15
Figure 17: Indications of LEDs and operation of jetSpeed 100	41
Figure 18: Indications of LEDs and operation of jetSpeed 100i	43

INTRODUCTION

Introduction to ADSL technology

ADSL (Asymmetric Digital Subscriber Line) technology provides simultaneous high-speed Internet access and regular phone or ISDN services over the existing telephony twisted copper pairs already running all the way from the CO (Central Office) to the subscriber's house. More specifically, it transforms the preinstalled phone cable in a superhighway for data communications, without interfering with the telephone or ISDN service. In this way, it can satisfy the consumers' demand for faster Internet connection and new multimedia applications such as Video on Demand, Video Conferencing and Voice over IP.

ADSL, because of the high-bit rate supported, addresses the Internet user, the home subscriber (residential and SOHO) and the Small and Medium Enterprise (SME). The bit rates that ADSL can achieve come up to 8Mbps for the downstream connection (Central Office side towards subscriber) and up to 864 kbps for the upstream connection (subscriber side towards Central Office). This asymmetry suits perfectly the needs of Internet applications that usually demand much more bandwidth for downloading than uploading.

It should be noted that the maximum attainable bit rate is directly influenced by the condition of the copper cable and the distance between the Telephone Exchange and the subscriber's premises.

INTRACOM invests thoroughly in the xDSL technologies and brings up solutions that offer cost-effective broadband access for all the POTS and ISDN subscribers. Such a solution is the jetSpeed family of ADSL Network Terminal Devices:

- **jetSpeed 100** (ADSL over POTS Terminal Device with USB interface)
- **jetSpeed 100i** (ADSL over ISDN Terminal Device with USB interface)
- **jetSpeed 500** (ADSL over POTS Router with USB and Ethernet interfaces)
- **jetSpeed 500i** (ADSL over ISDN Router with USB and Ethernet interfaces)
- **jetSpeed 600** (ADSL over POTS Router with USB and 4-port Ethernet hub)
- **jetSpeed 600i** (ADSL over ISDN Router with USB and 4-port Ethernet hub)

jetSpeed 100

This ADSL Network Terminal Device is available in two versions: either for ADSL over POTS services (jetSpeed 100) or ADSL over ISDN services (jetSpeed 100i)

jetSpeed 100 is a cost effective ADSL network terminal device with USB interface that takes full advantage of the ADSL technology, the ATM backbone and the IP infrastructure in order to deliver broadband connections. In fact, the jetSpeed 100 USB external modem allows data rates up to 150 times faster than traditional analogue voice band modems and 65 times faster than ISDN counterparts. Furthermore, data connections are established immediately and the long waiting for traditional modems to establish dial-up connection is a thing of the past.

jetSpeed 100 is the ideal solution for home users and telecommuters, as it offers true plug-and-play installation, easily performed in one step, to Windows based home PCs via the USB interface. The Universal Serial Bus is today's most popular computer peripheral interface, which due to its high-speed bus enables realization of broadband, high performance applications. In addition, the modem jetSpeed 100 does not require an external power supply, as it is powered via the USB bus.

Configuration and control of the jetSpeed 100 device is achieved easily and efficiently through a host software application that accompanies every unit. The user-friendly Windows based graphical environment enables initialisation and configuration of the unit with a minimal effort required from the user.

The connection of jetSpeed 100 to the subscriber and the ADSL line is shown in Figure 1.

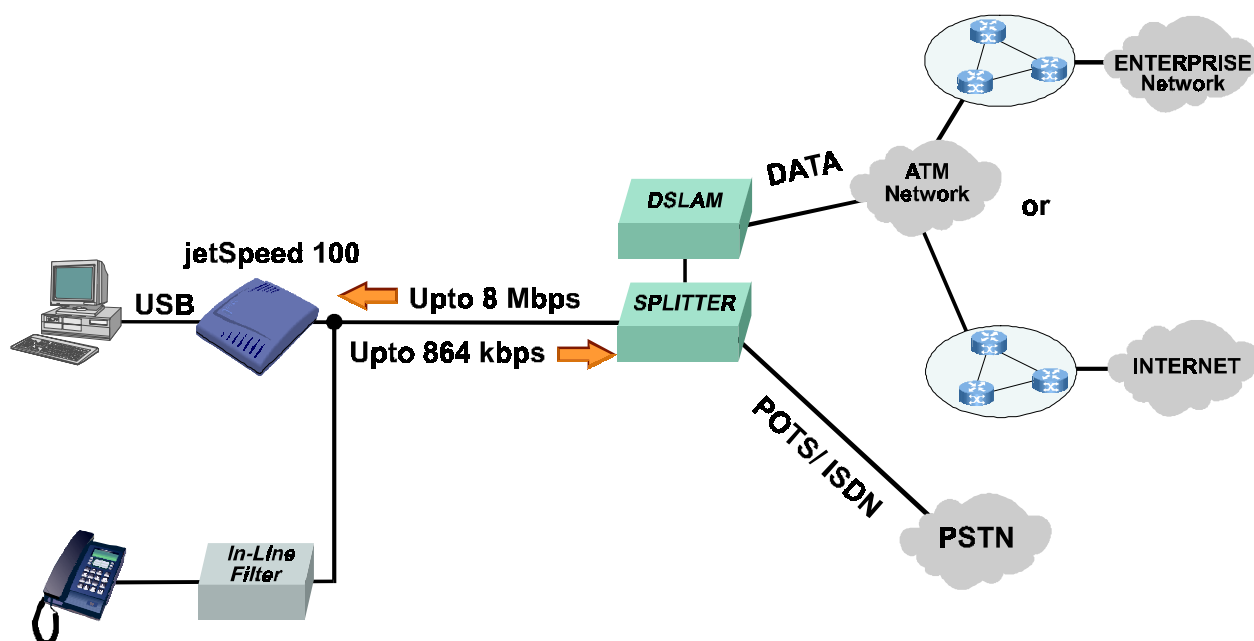


Figure 1: The jetSpeed 100 in the network

FAMILIARIZATION WITH jetSpeed 100

jetSpeed 100 has the following features:

- simultaneous lifeline voice-telephone support (jetSpeed 100)
- simultaneous lifeline ISDN-BRA support (jetSpeed 100i)
- operating mode ADSL Full rate or ADSL lite
- elegant design, available in multiple colours
- connectivity to Windows based home PCs via USB interface
- powered from the USB bus
- plug and play installation
- local management via a user-friendly Windows application



Figure 2: jetSpeed 100 General View

Check your jetSpeed 100 or jetSpeed 100i package for the following items:

- jetSpeed 100 or jetSpeed 100i modem
- the stand for vertical support
- a cable for connection to the PC and another one for connection to the ADSL line (it is the telephone line with the ADSL service enabled) (see Figure 3).
- the user's manual you are holding.
- a CD-ROM containing the installation software and the user's manual as pdf document.

In the event of damaged or missing items, contact your local product dealer for further instructions.

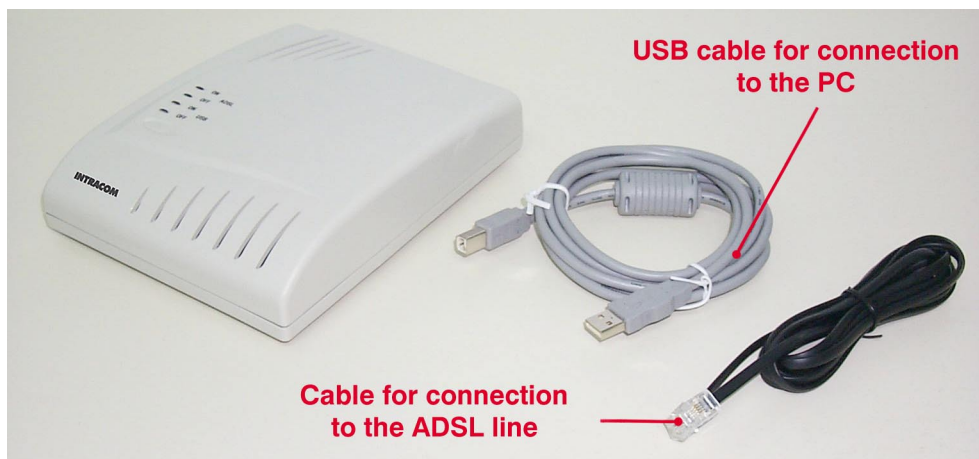


Figure 3: Cables included in jetSpeed 100 package

In order to identify your model (jetSpeed 100 or jetSpeed 100i) please follow the instructions below:

Step	Action
1.	Turn your modem upside-down
2.	Take a look at the label on the bottom of the modem
3.	The model (jetSpeed 100 or 100i) is indicated on this label.

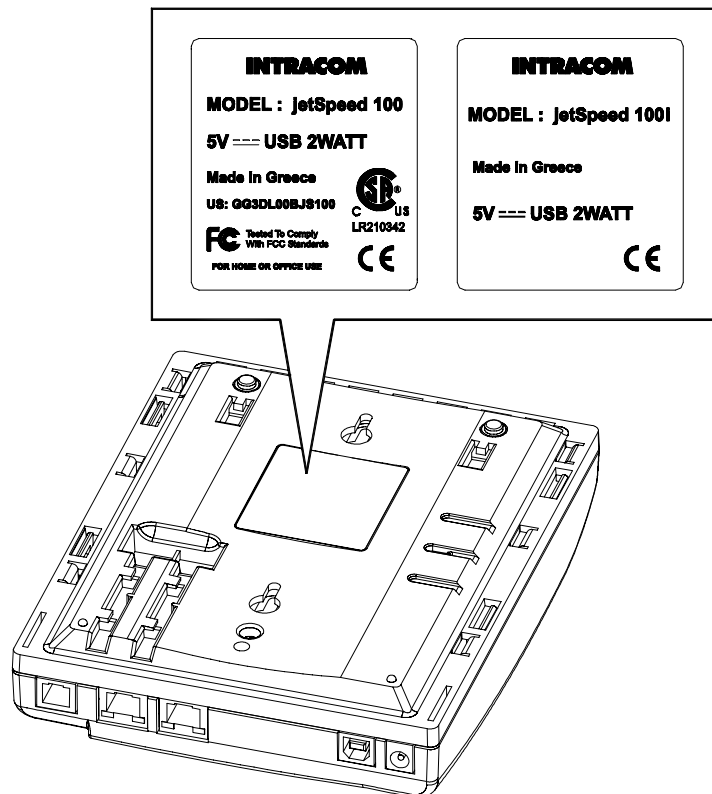


Figure 4: The label on the bottom of jetSpeed 100/100i

jetSpeed 100 is equipped with:

- an RJ-11 jack port for the ADSL line connection.
- a USB port to connect the personal computer (PC).
- two groups of LEDs, one for the ADSL line and another one for the USB connection.



Figure 5: Receptacles at the back view of jetSpeed 100

Please refer to the “Operation of jetSpeed 100” and “Operation of jetSpeed 100i” sections for a detailed description of the LED status.

INSTALLING jetSpeed 100

What you need

- For the installation and operation of jetSpeed 100, you need a PC meeting the following **minimum** requirements:
 - one of the following Operating Systems (OS) must be readily installed on your PC: Microsoft Windows 98, Windows 98 Second Edition (98SE), Microsoft Windows Millennium (ME) or Microsoft Windows 2000 or Microsoft Windows XP. You may need the Windows 98/98SE/ME/2000/XP CD-ROM during the installation of jetSpeed 100 software.
 - for Windows 98/98SE/ME, Pentium processor 166 MHz, or higher (or compatible) and 32 MB of memory, or more.
 - for Windows 2000 and Windows XP, Pentium II processor, or higher (or compatible) and 128 MB of memory, or more.
 - 30 MB of free hard disk space.
 - one high-powered USB port, i.e. a USB port capable of powering the connected jetSpeed 100 device. Make sure you are not using low-powered USB port to connect the jetSpeed 100. In case you are not sure of the type of USB port, see the user's manual of your PC or USB port hub.
- Furthermore, once you have jetSpeed 100 installed correctly, you can use it to connect to the Internet. You must have also an account to an Internet Service Provider (ISP) for Internet access. In order to connect to the Internet, there are two sets of data you need to know. The one set concerns ATM settings while the other set concerns TCP/IP settings. The NAP (Network Access Provider) and the ISP (Internet Service Provider) should provide to you this data as in the paragraphs describing the jetSpeed 100 software installation (see in next pages), you will be asked to fill in the relative fields.
- Finally, you need the ADSL service enabled in your telephone line.

ADSL over POTS

A common home telephony cabling is depicted in the following figure:

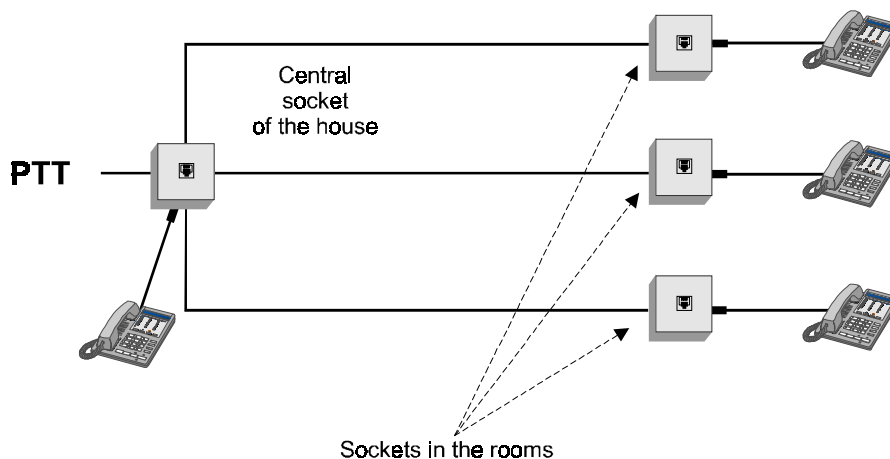


Figure 6: Existing telephone cabling with POTS only

In order to decouple the ADSL and the telephone signals, you will need a central splitter or a low pass filter (LPF).



Figure 7: Central splitter (POTS)

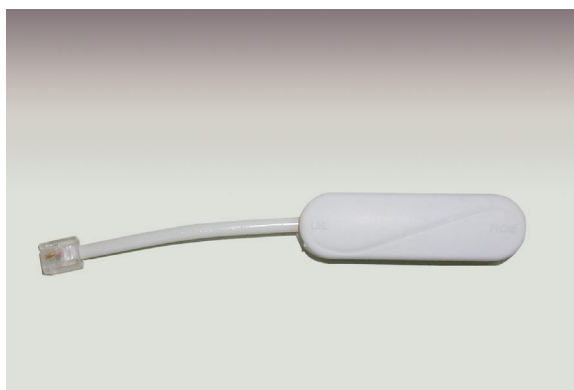


Figure 8: Low pass filter (LPF)

The use of distributed LP filters is shown in the following figures:

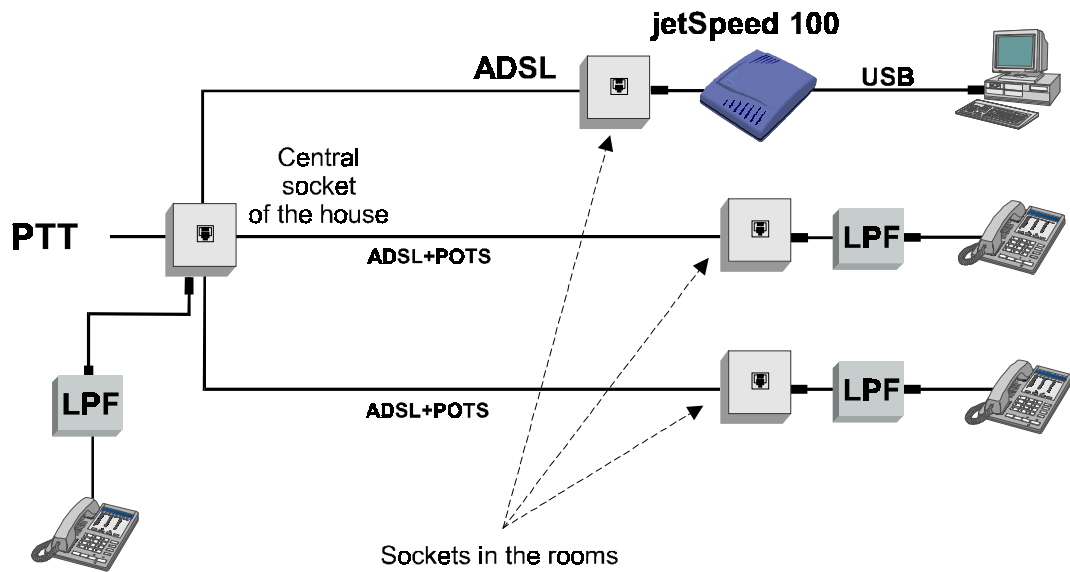


Figure 9: Use of distributed Low Pass Filters (LPF)

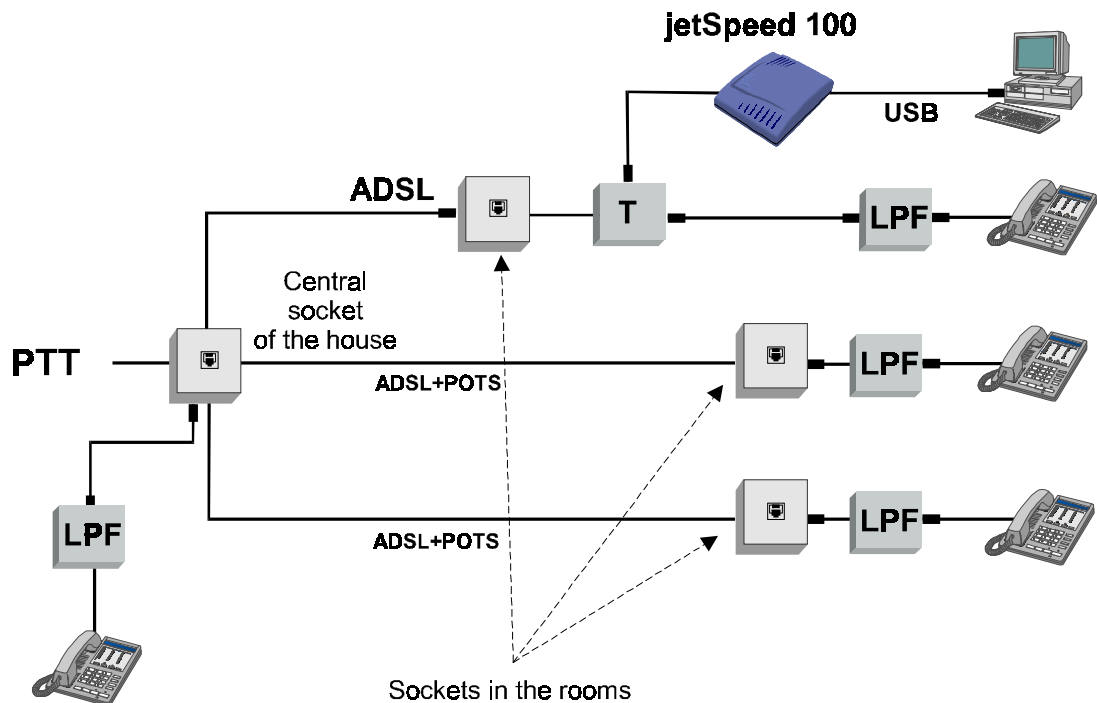


Figure 10: Use of a T junction plus the distributed low pass filters



Figure 11: Low pass filter connected to your telephone set

The use of distributed LP filters simplifies the installation procedure, as there is no need for intervention in the existing cabling of the house. Alternatively, a central splitter can be used as shown in the figure below:

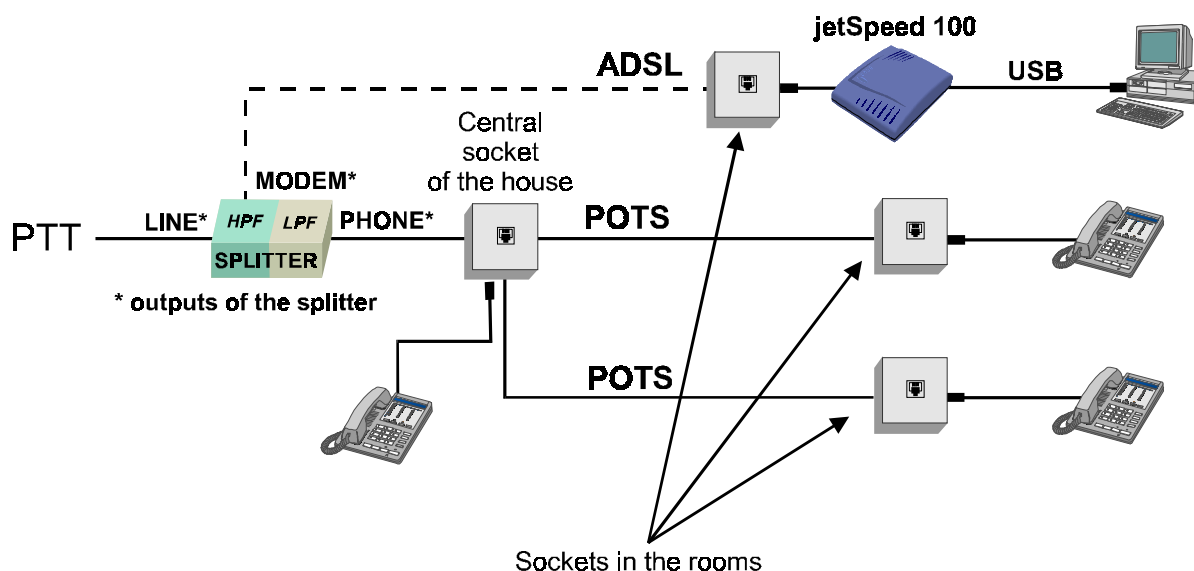


Figure 12: Use of a central splitter (POTS)

ADSL over ISDN

In case of an ISDN connection, it's necessary to use the ISDN Central Splitter.



Figure 13: The Central Splitter (ISDN)

The relative solution is depicted in the following figure:

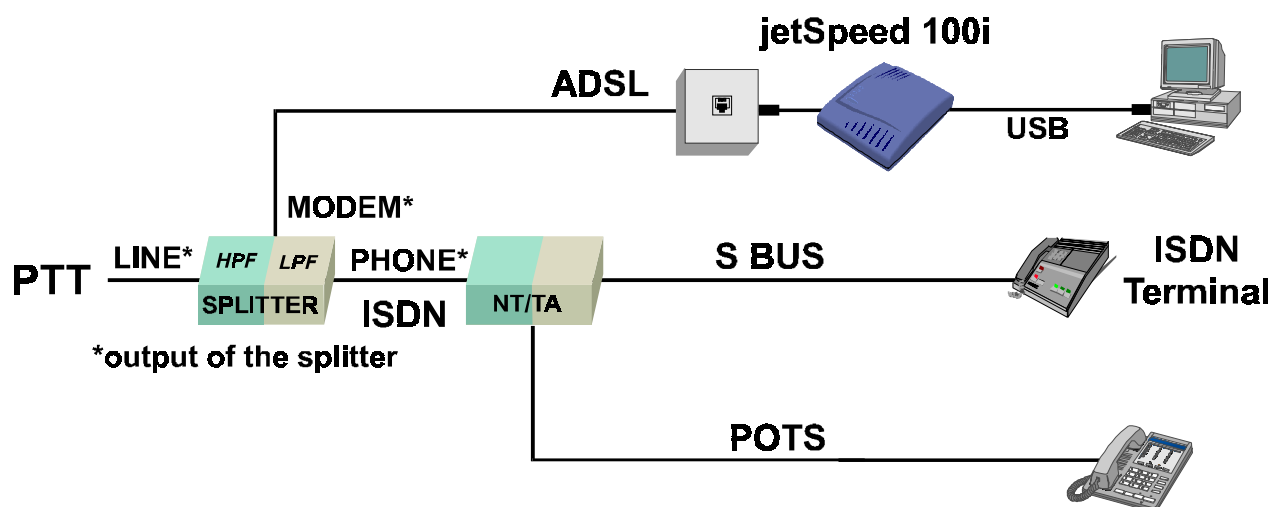


Figure 14: Use of a Central Splitter (ISDN)

Attention! The installation of the central splitter (either POTS or ISDN services) should be performed only by qualified installation personnel. The splitter has to be installed before the central socket of the house and next to it, if it is possible, so as the already existing cable from the central socket up to the jetSpeed 100 installation point is used. If it is not possible, a new cable should be installed between the splitter and the jetSpeed 100.

Cabling the jetSpeed 100

In order to cable the jetSpeed 100, perform the following steps:

- Plug the ADSL cable into the ADSL port (RJ11) of the jetSpeed 100.
- Plug the other end of the ADSL cable into the wall telephone socket.



Figure 15: Cabling the jetSpeed 100 to the ADSL line


- Plug the USB cable into the USB port of the jetSpeed 100.
- Plug the other end of the USB cable into the PC's USB port. This port is marked with the typical USB symbol  .



Figure 16: Cabling the jetSpeed 100 to the PC

Software installation

jetSpeed 100 can be easily set up and function with commonly used operating systems like Win98&98SE, WinME, Win2000 and Win XP. It supports the “Plug and Play” function of the USB standard.

In the following pages, there is a full description of the software installation in Win98&98SE and in Win2000. Choose the appropriate paragraph, according to the operating system of your PC. Similar installation procedures are also applicable in the case of Win ME and Win XP.

For the most updated information concerning jetSpeed 100, please visit the helpdesk at INTRACOM's website “jetSpeed.intracom.gr”.

Note: The same installation procedure is applicable in the case of both jetSpeed 100 and jetSpeed 100i

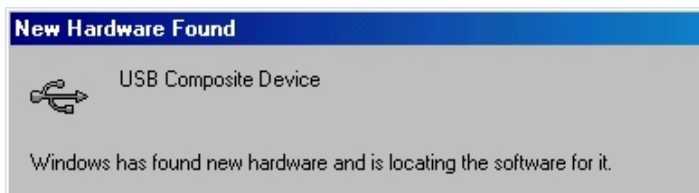
Note: Depending on the Operating System and actual configuration of the host PC, small differences to the installation procedure that is described in the next paragraphs may be observed.

Installation in Win 98&98SE

Be sure that you have the jetSpeed 100 CD-ROM or the jetSpeed 100i CD-ROM. Installation is performed in two steps.

1st step.

Plug the jetSpeed 100 USB cable into the PC's USB port and start the PC. As Windows recognise the jetSpeed 100 device during start up, the "New Hardware Found" window will appear.



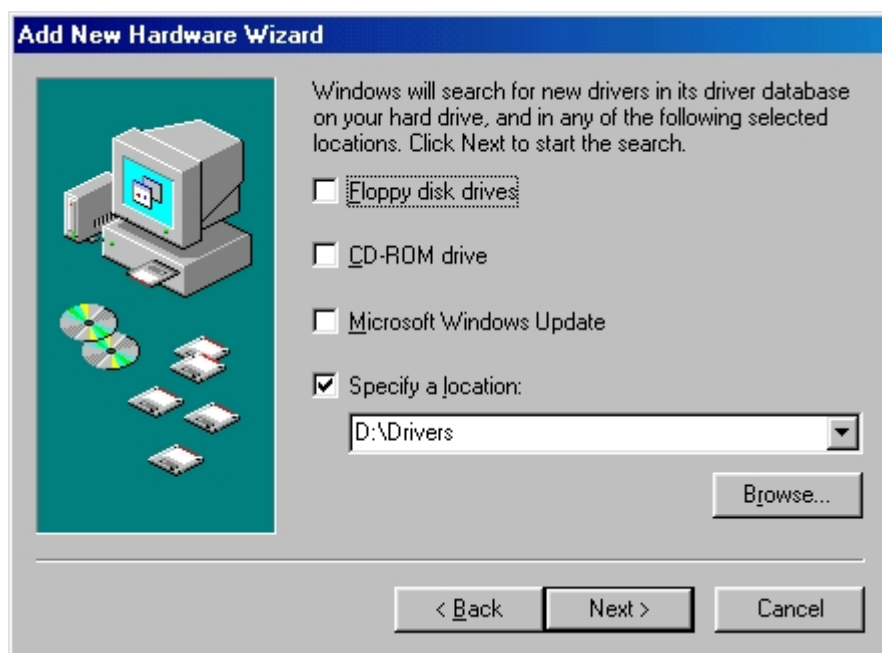
Windows have detected the jetSpeed 100 ADSL modem.



The **Add New Hardware Wizard** opens. Click "Next".



Select the option **Search for the best driver for your device (Recommended)** and click “Next”.



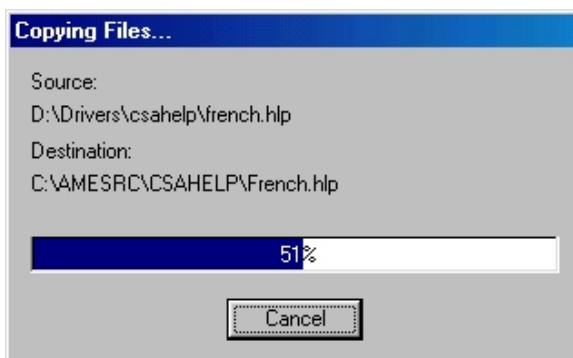
Select **Specify a location** only. Click on “Browse” button and guide the Wizard to the appropriate location (folder “Driver” in jetSpeed 100 CD-ROM). Click “Next” to start the search for your driver.



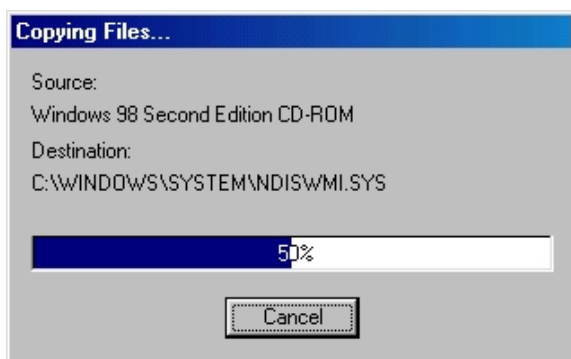
Windows will display a message notifying you that an updated driver for your modem was found. Click "Next" to start the installation procedure.



Windows informs you that the driver will be installed. Click "Next" to continue.



The driver copy procedure is now in progress.



During the driver installation, you may be asked to insert the Win98 installation CD-ROM.

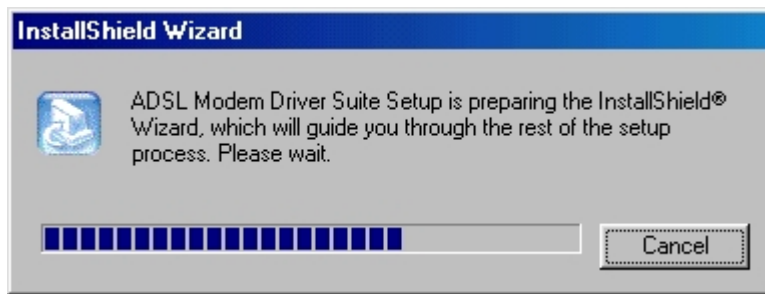


The driver installation has been completed. Click the "Finish" button to close the installation wizard.

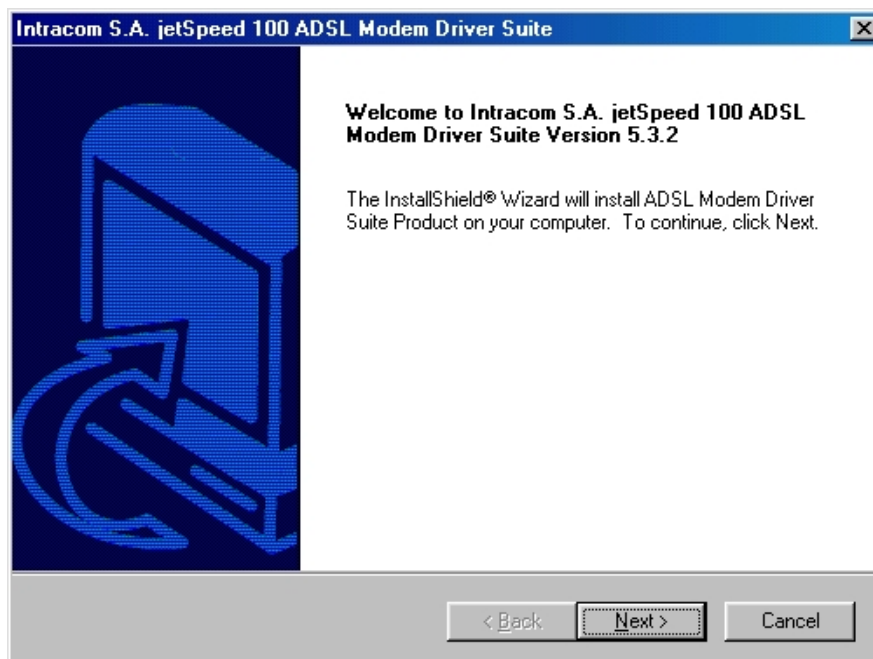


In order to proceed with the configuration, you have first to restart your PC. Press "Yes" to reboot your PC.

2nd step



The **InstallShield Wizard** opens.



Click "Next" to continue.

Intracom S.A. jetSpeed 100 ADSL Modem Driver Suite

Driver Components

Please select the driver type you want

☐ RFC 1483

☐ PPPoA

☐ PPPoE

Please enter Virtual Path Identifier and Virtual Circuit Identifier

VPI VCI

Select the appropriate driver type from the available list and enter the ATM VPI and VCI as defined by your Network Access Provider (NAP). Click "Next" to continue.

Intracom S.A. jetSpeed 100 ADSL Modem Driver Suite

Please select the framing type

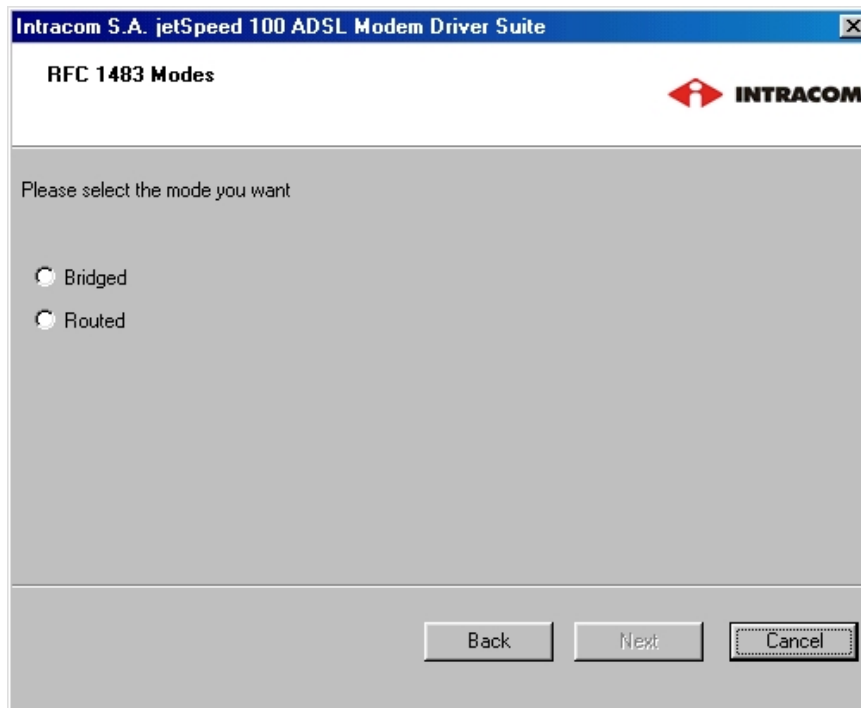
☒ LLC

☐ VCMUX / NULL

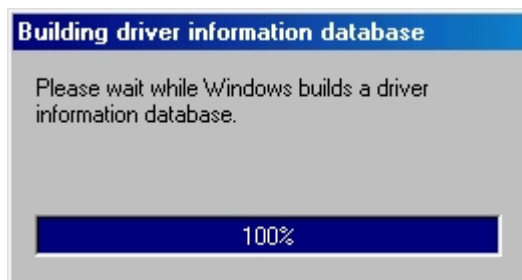
InstallShield

Choose the framing type (also defined by your NAP). Click "Next" to continue.

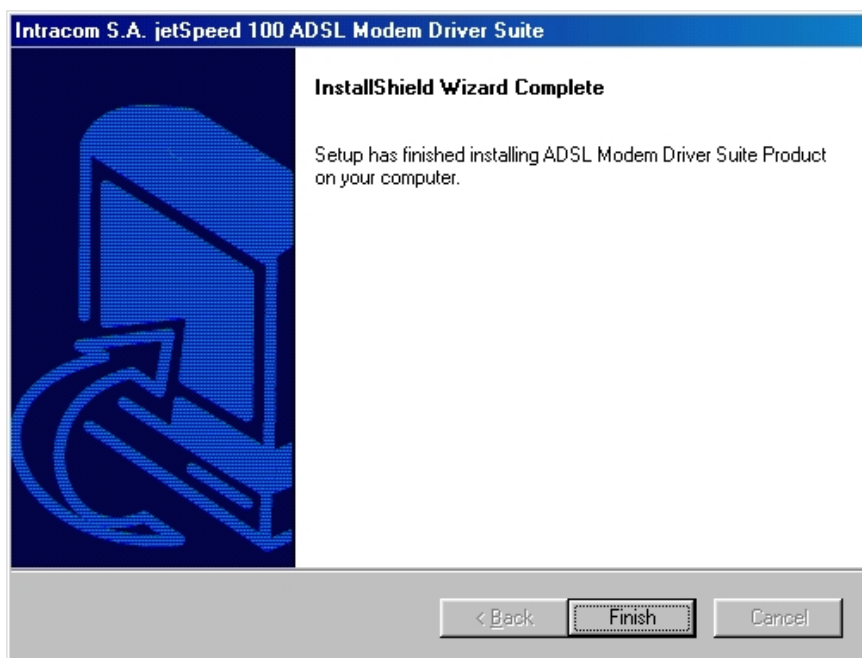
Note that only in the case of the RFC 1483 driver the following screen will appear:



Choose the appropriate mode as defined by your Network Access Provider (NAP) and press “Next” to continue.



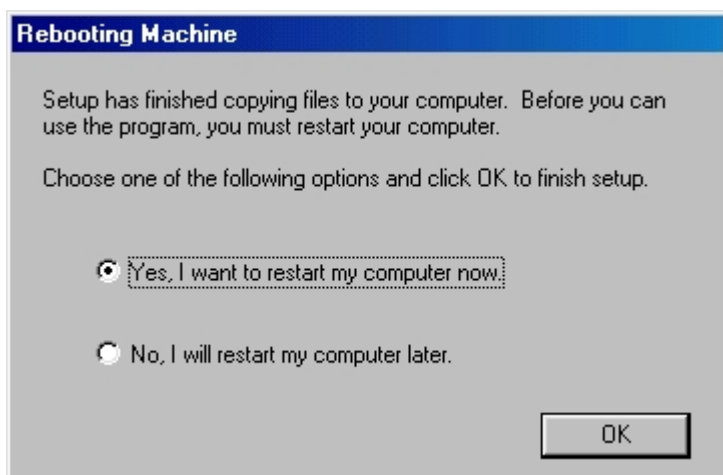
During the installation procedure several pop-up screens will be displayed, showing the installation's progress.



The installation of the jetSpeed 100 driver has been completed.

Click on “Finish”.

The following window informs that you must restart your PC so as the changes are activated.



Select **Yes, I want to restart my computer now.**

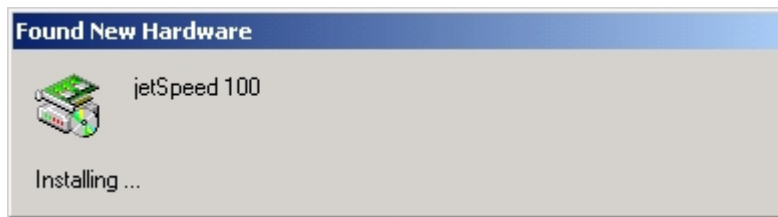
Click “OK” to restart your computer.

Installation in Win 2000/XP

Be sure that you have the jetSpeed 100 CD-ROM or the jetSpeed 100i CD-ROM. Installation is performed in two steps.

1st step.

Plug the jetSpeed 100 USB cable into the PC's USB port and start the PC. As Windows recognise the jetSpeed 100 device during start up, the "Found New Hardware" window will appear.



Windows have detected the jetSpeed 100 ADSL modem.

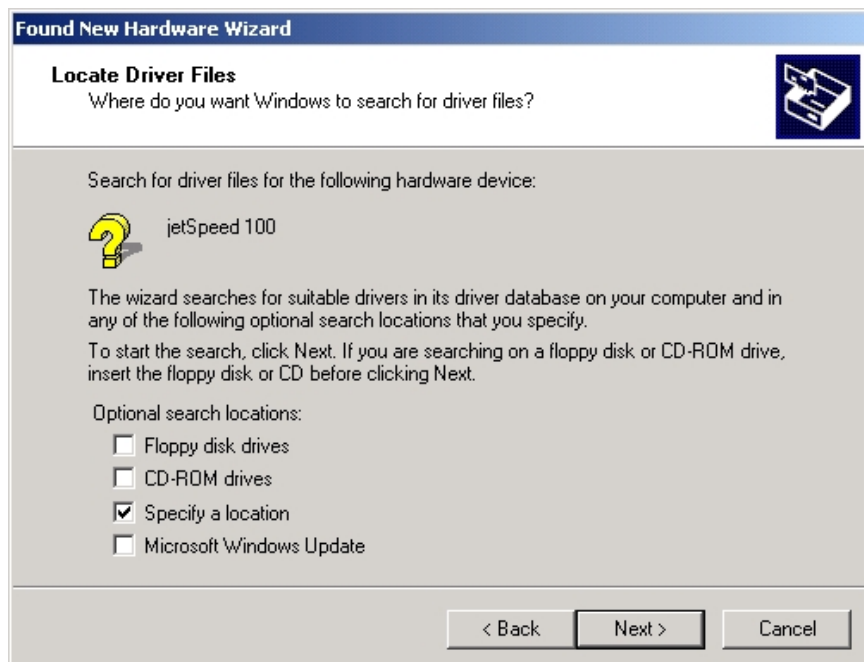


The **Found New Hardware Wizard** opens.

Click the "Next" button.



Select the option **Search for a suitable driver for my device (Recommended)** and click "Next".

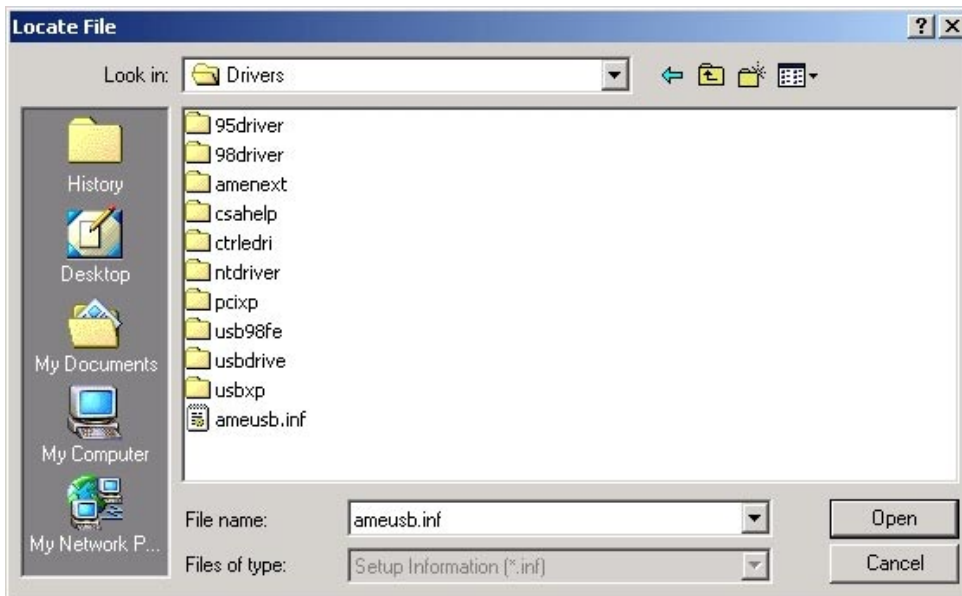


Select **Specify a location** option.

Select the folder "Driver" on jetSpeed 100 CD-ROM and click "Next" to continue.



Click on "Browse" button and the following window will appear.

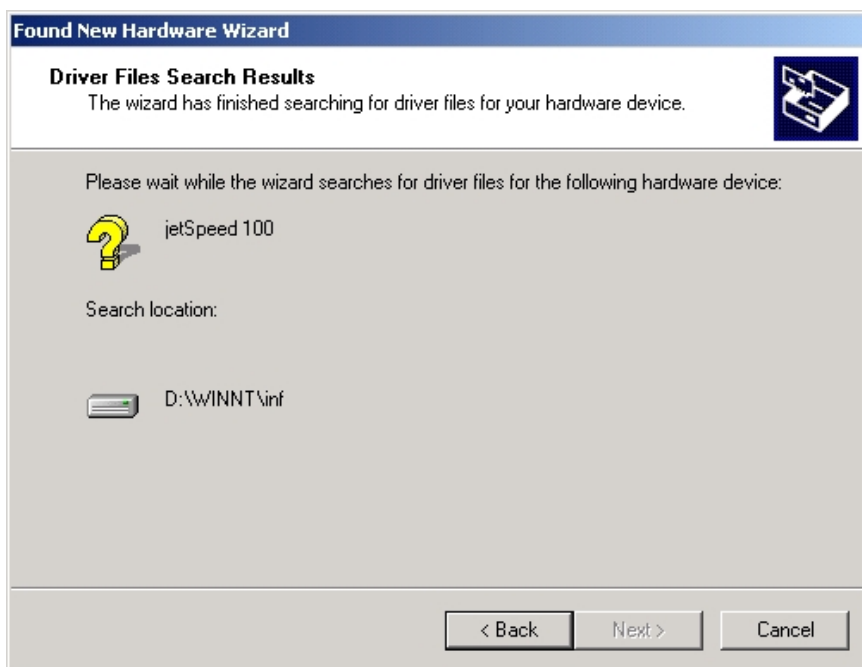


Guide the Hardware Wizard to the folder "Drivers" in jetSpeed 100 CD-ROM,

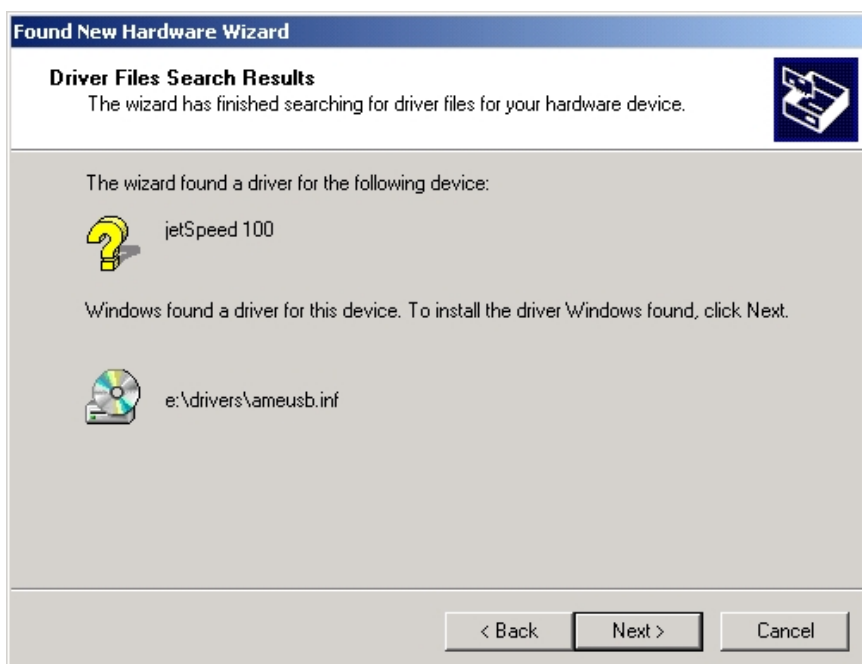
Click "Press" to continue.



Click "OK" to continue.

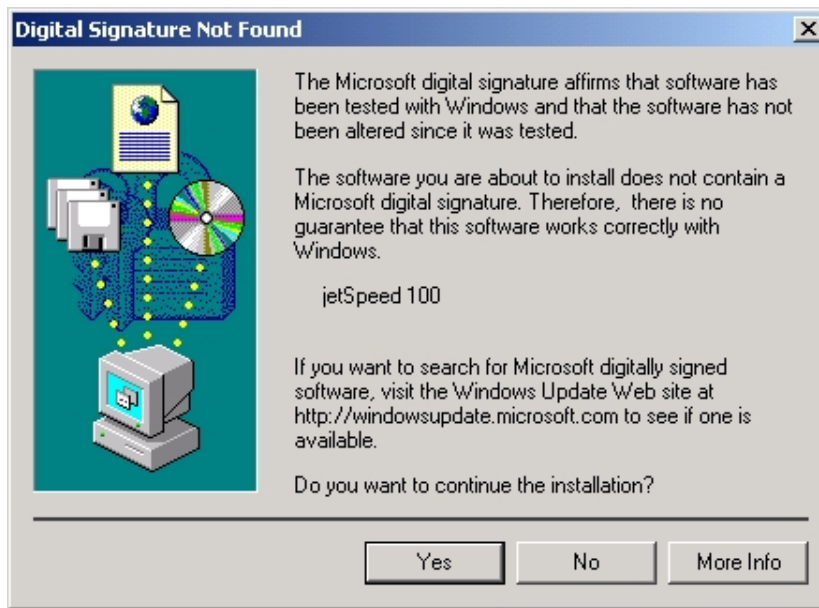


Wait until Windows find the appropriate driver file.

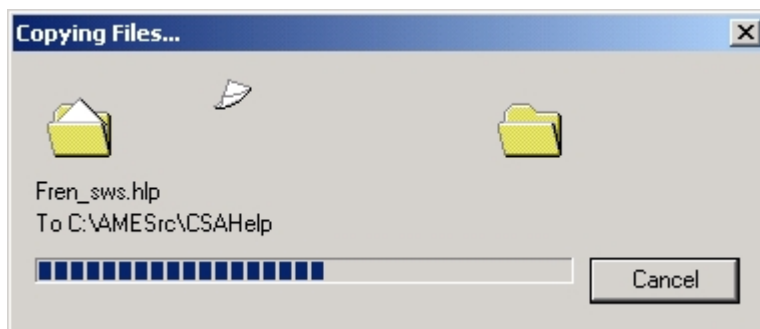


Windows have found the driver for the jetSpeed 100.

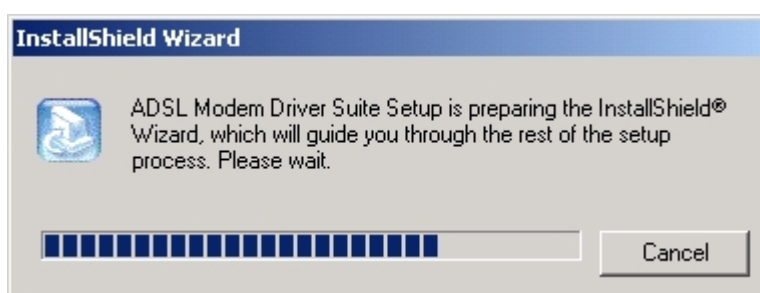
Click "Next" to continue.



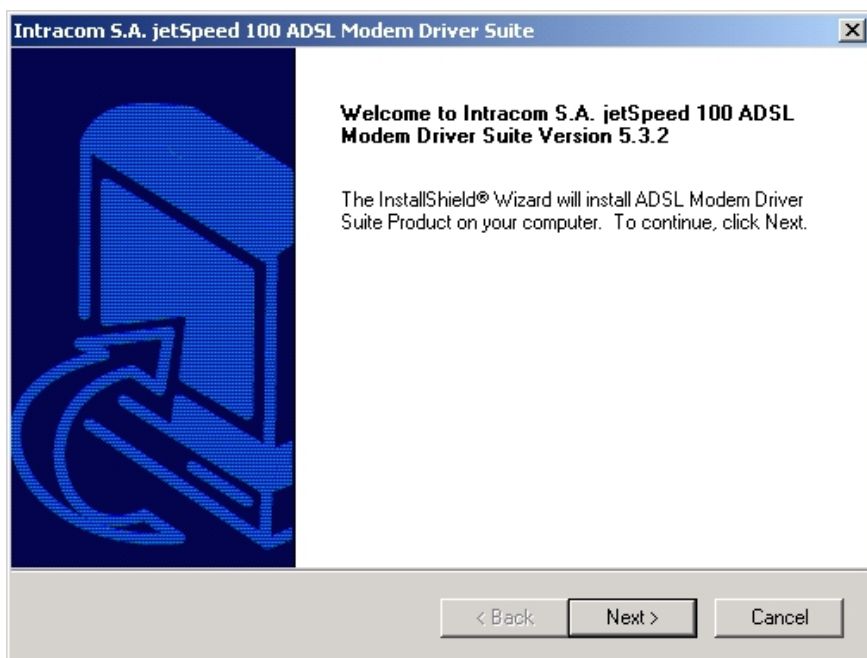
The **Digital Signature Not Found** screen appears. Windows will ask you if you want to continue with the installation. Click "Yes" to continue the installation procedure.



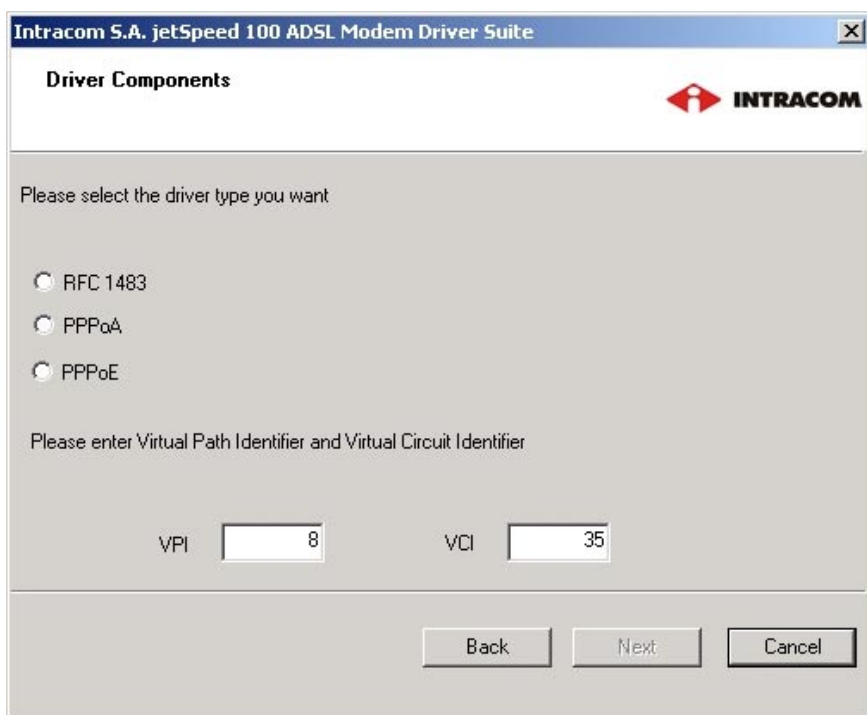
Windows are copying the necessary files, in order to complete the installation procedure.



The **InstallShield Wizard** opens.

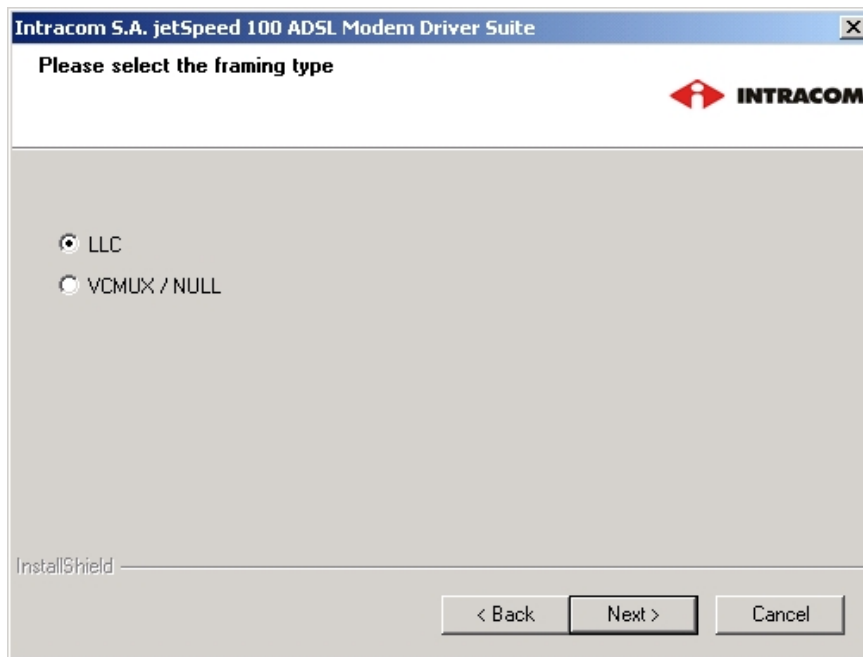


Click "Next" to continue.



Select the appropriate driver type from the available list and enter the ATM VPI and VCI as defined by your Network Access Provider (NAP).

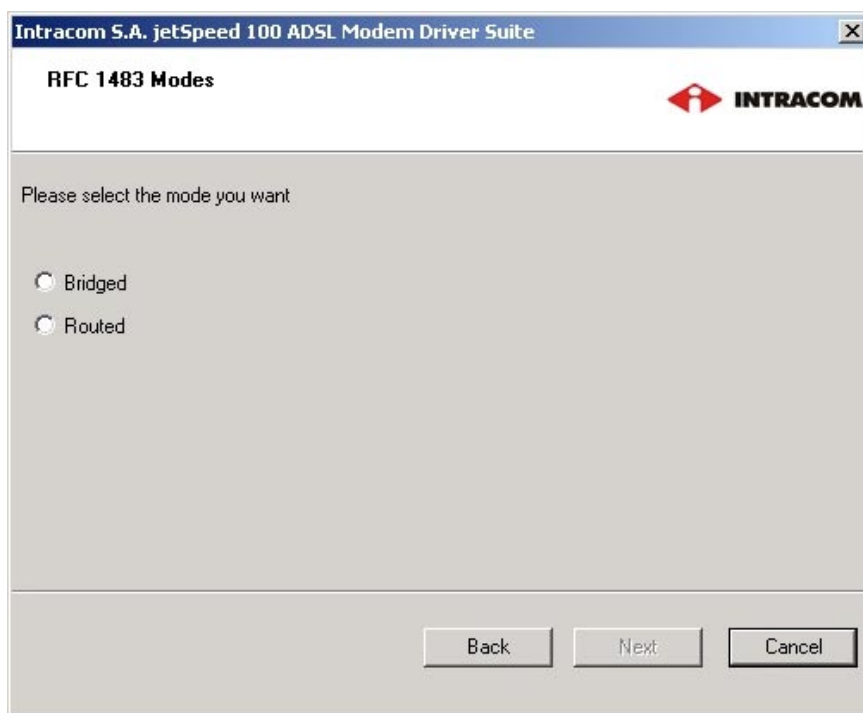
Click "Next" to continue.



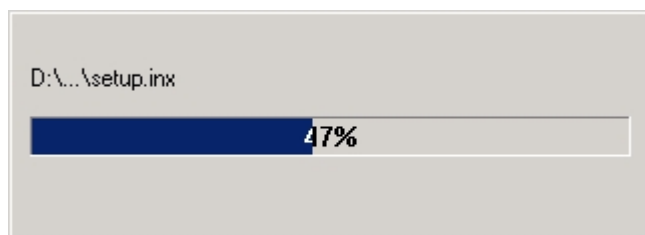
Choose the framing type (also defined by your NAP).

Click "Next" to continue.

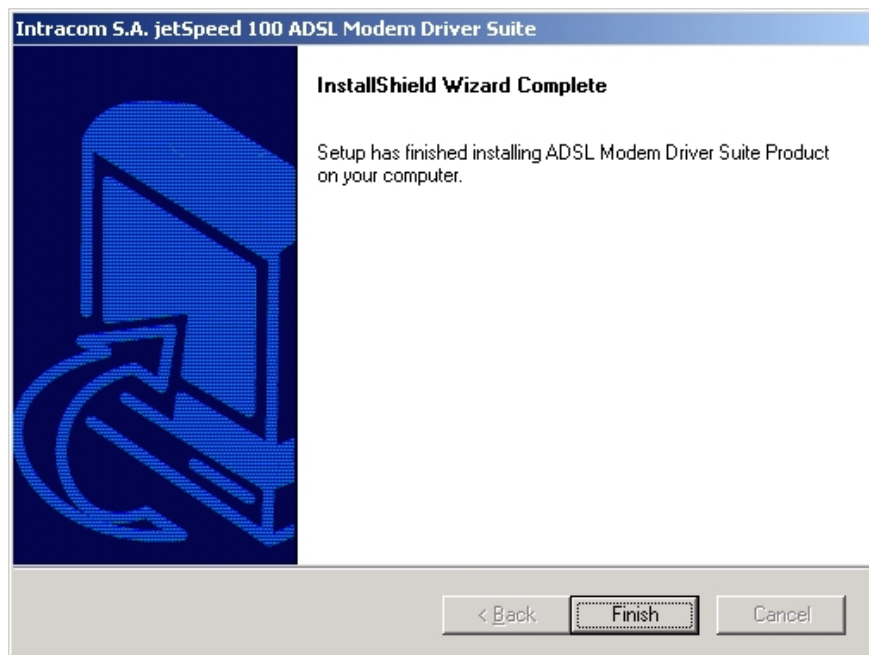
Note that only in the case of the RFC 1483 driver the following screen will appear:



Choose the appropriate mode as defined by your Network Access Provider (NAP) and press "Next" to continue.

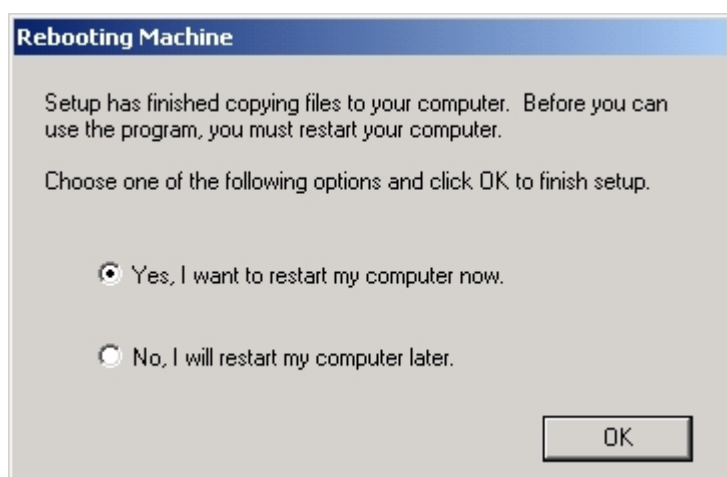


All the necessary files and programs for the modem jetSpeed 100 will be copied.



Click "Finish" to exit the **InstallShield Wizard**.

The following window informs that you must restart your PC so as the changes are activated.



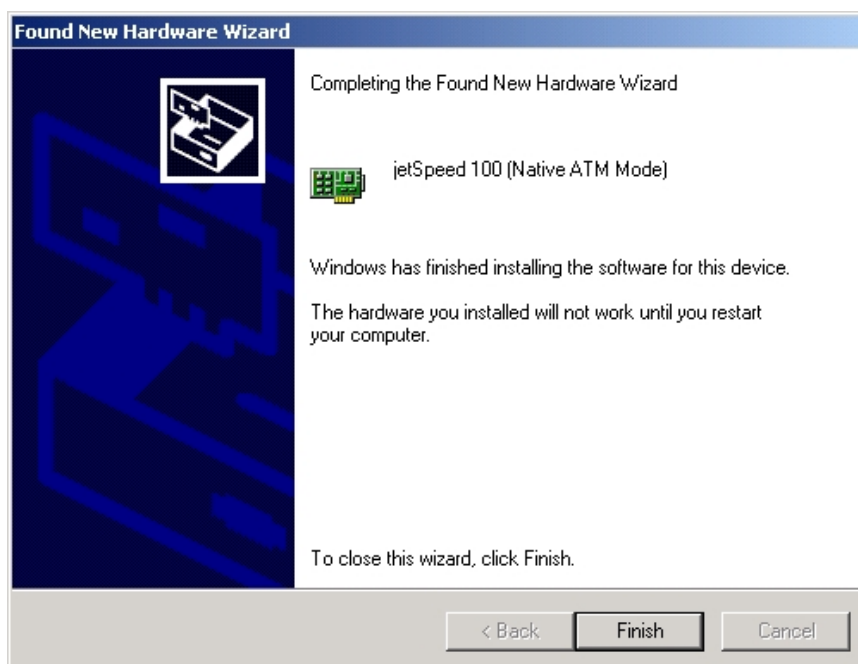
Click "OK" to restart your computer.

2nd step.

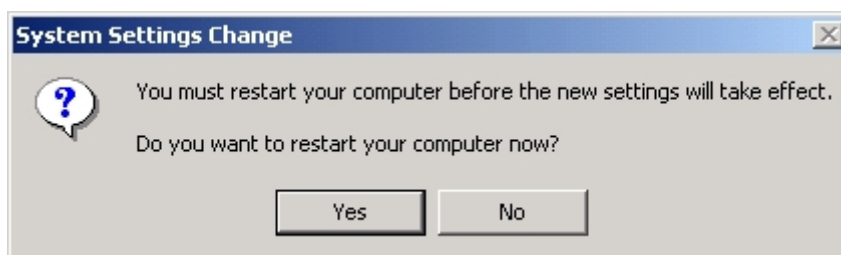
Once your computer has been restarted, the following screen will inform you that the installation procedure is still going on.



After a few seconds the installation shall be completed.



Click "Finish" to exit the **Found New Hardware Wizard** and restart your computer once again.



Click "Yes" to restart your system.

Configuration and Monitoring of jetSpeed 100

After completion of jetSpeed installation two new icons will appear on your desktop.



The first icon is the shortcut of the ADSL connection (appears only if PPPoA or PPPoE protocol has been installed).



The second one is the DSL icon, which appears in the task bar and indicates the status of the ADSL connection. The Control and Status Application (CSA) of your ADSL modem can be accessed by double clicking the DSL icon.

PPPoA and PPPoE configuration

In order to configure your connection after you have installed jetSpeed 100 you can:

Double click on DialUp shortcut icon named “ADSL” on your desktop (see above). One of the screens below (depending on the version of Windows) will appear.

Windows 98

The "Connect To" dialog box in Windows 98. It has a title bar with a question mark and a close button. Below the title bar is a small icon of a computer and modem, followed by the text "ADSL". There are three input fields: "User name:" with "adsl_user", "Password:" with masked characters, and "Phone number:" with "p8,35". There is a checked checkbox for "Save password". Below these is a "Dialing from:" dropdown menu set to "New Location" and a "Dial Properties..." button. At the bottom are "Connect" and "Cancel" buttons.

Complete the requested information (User name and Password) and press “Connect” to enable your connection. The data (VPI, VCI) for the field “Phone number” shall be given to you by your NAP.

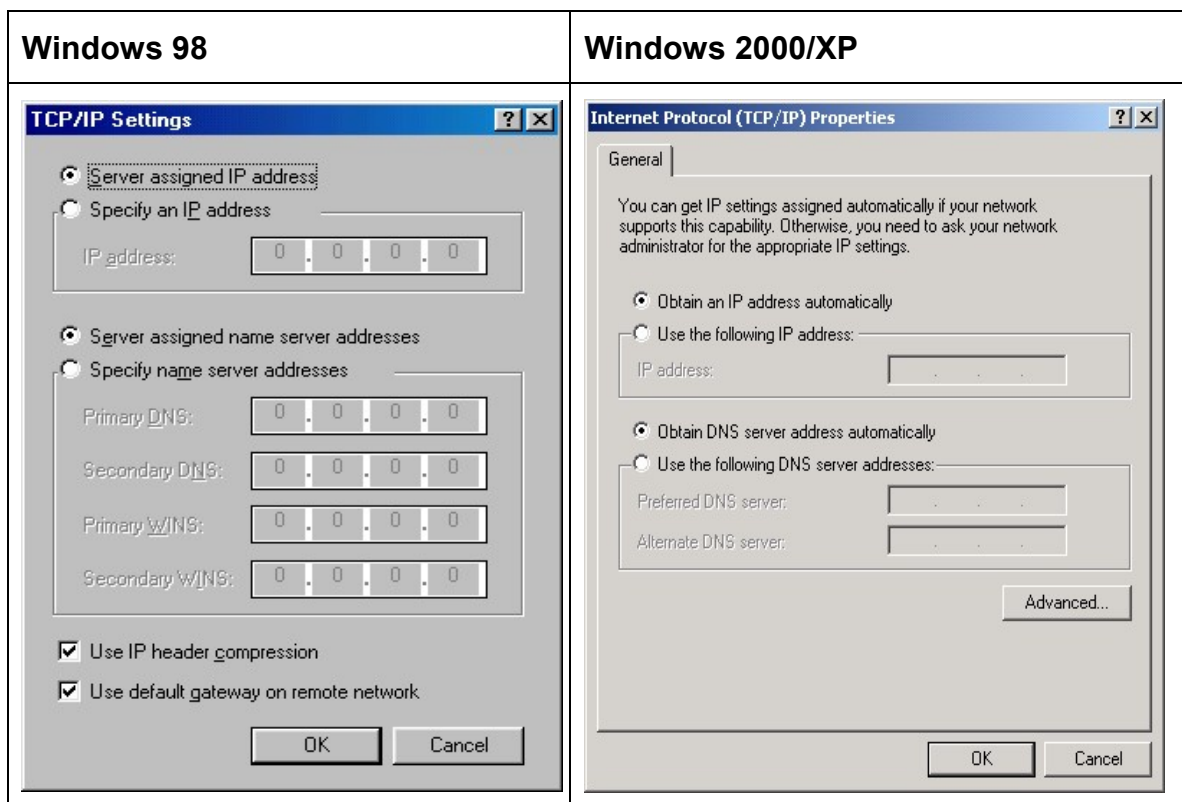
Windows 2000/XP

The "Connect ADSL" dialog box in Windows 2000/XP. It has a title bar with a question mark and a close button. The background features a globe and a computer monitor. There are two input fields: "User name:" with "adsl_user" and "Password:" with masked characters. There is a checked checkbox for "Save Password". At the bottom are "Dial", "Cancel", "Properties", and "Help" buttons.

Complete the requested information (User name and Password) and press “Dial” to enable your connection. The data (VPI, VCI) for the field “Phone number” shall be given to you by your NAP.

Configuring TCP/IP settings

In case of automatic IP address assignment leave the default settings as seen below.



In case of static IP assignment please follow the procedure below.

Step	Action	Step	Action
1	Double click on "My Computer"	1	Select "Start → Settings → Network and Dial-up Connections"
2	Double click on "Dial-Up Networking"	2	Right click on the ADSL icon and select "Properties"
3	Right click on the ADSL icon and select "Properties"	3	Select the tab "Networking"
4	Select the tab "Server types"	4	Click on "Internet Protocol (TCP/IP)"
5	Click on TCP/IP settings	5	Select "Use the following IP address" in order to assign an IP address
6	Select "Specify an IP address" in order to assign an IP address		

Do the same in DNS fields, if you want to enter DNS IP addresses.

Control and Status application “CSA”

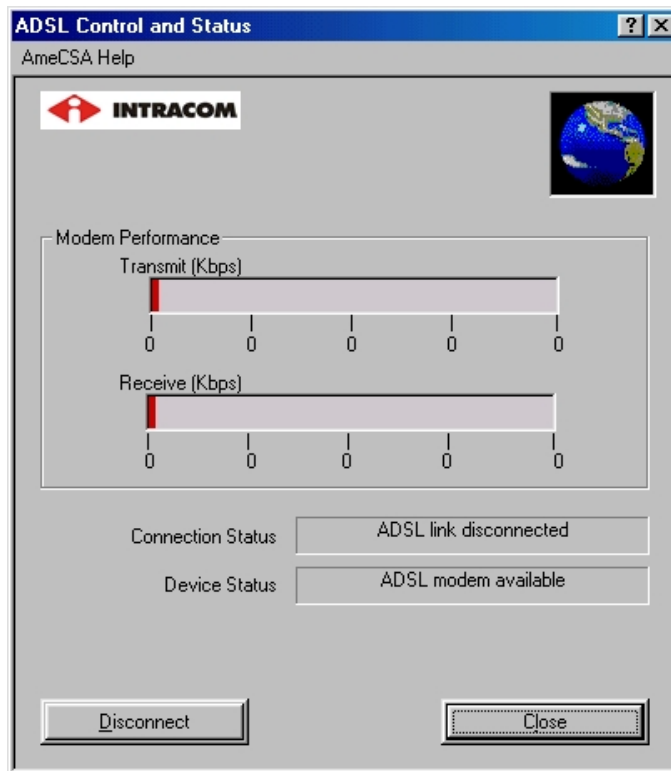
The user interface of jetSpeed 100 is realized through Control and Status Application (CSA). You can access the CSA by double clicking on the CSA icon in the system tray. The color of this icon varies, according to the status of your ADSL connection.

Color	Condition
Black	The modem is not available.
Red	The modem is disconnected.
Blue	The modem is waiting for initialization.
Yellow	The modem is initializing.
Green	The modem is connected and fully functioning.


You can activate the CSA application either through Control Panel or through the path “*Start → Programs → ADSL modem driver → Add CSA tray icon*”. By default the CSA icon will appear on your system tray, after the completion of jetSpeed 100 installation.

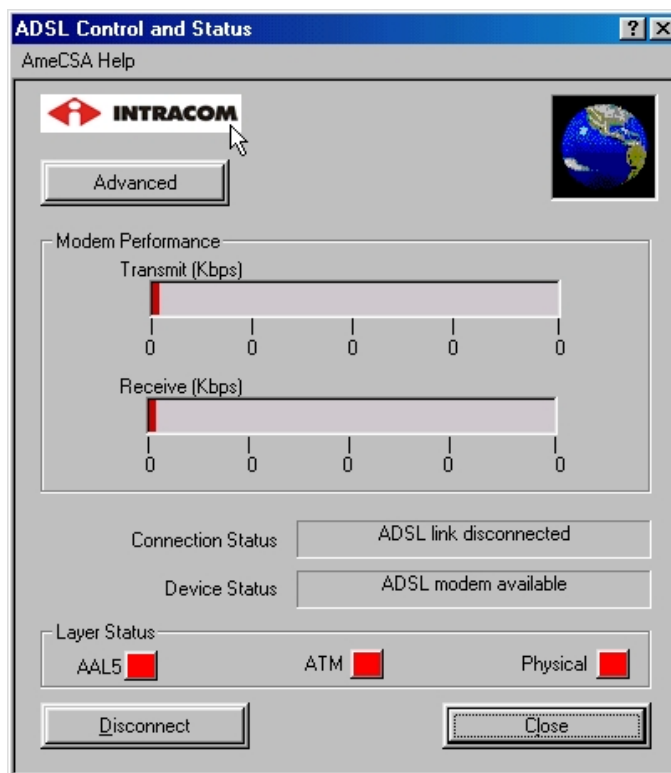
The CSA tray icon also provides pop-up text that gives you information regarding the status of your ADSL connection, when the mouse cursor is placed over the CSA icon.

CSA application quick guide



This is the main screen of CSA. It provides information about the current status of the ADSL connection.

Online help for every item can be displayed by clicking on  button in the right up corner of the main window. Place then, the mouse cursor over the item you want to ask help for and click on it. A pop-up text will provide you the relative help topic.



A number of hidden options regarding the ADSL modem exist also in CSA.

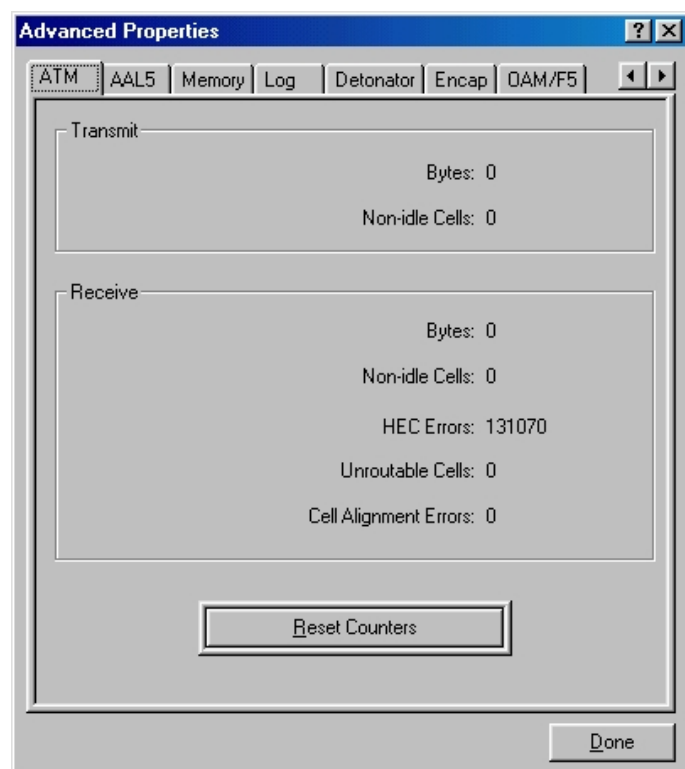
In order to access these options press and hold down the **Ctrl+Shift** keys and do a left click on the **Intracom** logo. The Advanced button and the Layer Status LED's will appear immediately (see image above).


Layer Status LED Description

LED	Colour	Description
AAL5 Layer Status	Bright green	The AAL5 layer is connected.
	Dark green (or Black)	The modem is disconnected
ATM Layer Status	Bright green	The ATM layer is connected.
	Dark green (or Black)	The modem is disconnected
Physical Layer Status	Bright green	The modem is connected
	Red	The modem is disconnected

Accessing the advanced CSA windows

The CSA Advanced windows provide access to performance and diagnostics information. In order to access the Advanced Windows click on “Advanced” button and the following windows will be displayed.

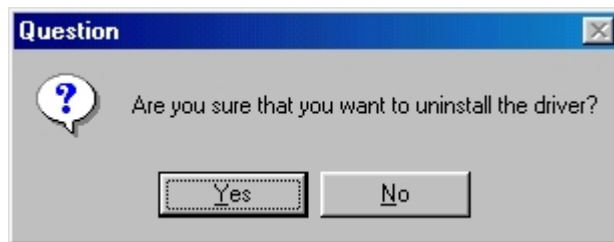


Online help for every item can be displayed by clicking on  button in the right up corner of the main window. Place then, the mouse cursor over the item you want to ask help for and click on it. A pop-up text will provide you the relative help topic. By clicking on “Done” button you will end the diagnostic session and return to the main CSA window.

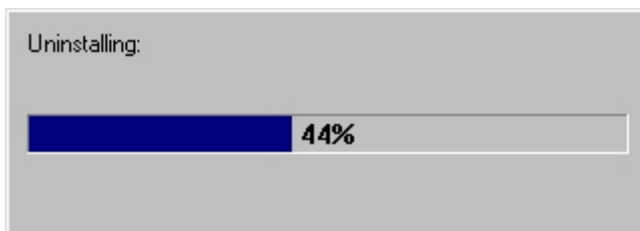
Uninstall the modem's drivers

In order to uninstall the drivers of jetSpeed 100, perform the following:

- Remove the USB cable from the USB port
- Select “Start→ Programs→ ADSL modem driver→ Remove ADSL modem driver” and the following window will appear.

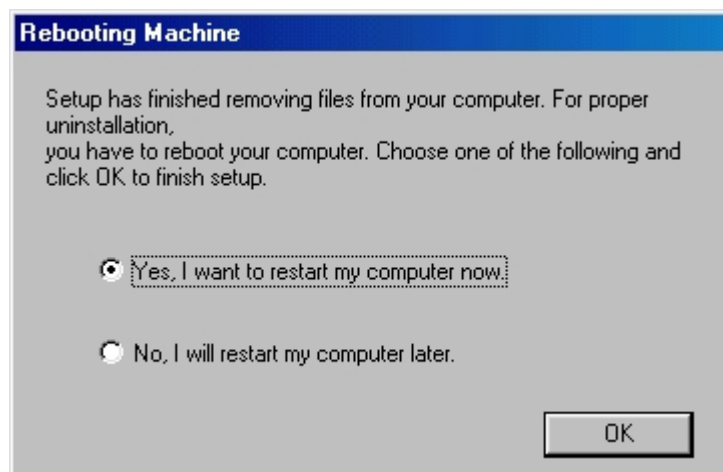


- Click “Yes” if you want to uninstall the modem's driver.



The uninstalling procedure is removing the appropriate files.

- In order to complete the driver's removal, it is necessary to restart your computer.



- Select “Yes, I want to restart my computer now.” and then click “OK”.

The system restarts. You have successfully uninstalled the jetSpeed 100's modem driver.

OPERATION OF jetSpeed 100

After you have cabled jetSpeed 100 to the telephone line and to your PC and before installing the appropriate driver, you will see the "OFF USB" LED at the top view of jetSpeed 100 flashing. The "OFF USB" LED will continue flashing during the installation procedure (SITUATION 1).

When you have installed the appropriate driver, jetSpeed 100 attempts to achieve ADSL synchronization and the "ON ADSL" LED is flashing (SITUATION 2).

After a short time and if jetSpeed 100 has achieved synchronization, you will see the "ON ADSL" LED to be permanently on. At this state, if no data is received/transmitted the "ON USB" LED will stay off (SITUATION 3). Otherwise if data is being received/transmitted the "ON USB" LED will be flashing (SITUATION 4).

Here in, it is worth to be mentioned that, for any reason, you have disconnected the ADSL line manually or via the software, all LED will go off (SITUATION 5).

For your facility, in the next page, the LED status of jetSpeed 100 is depicted.

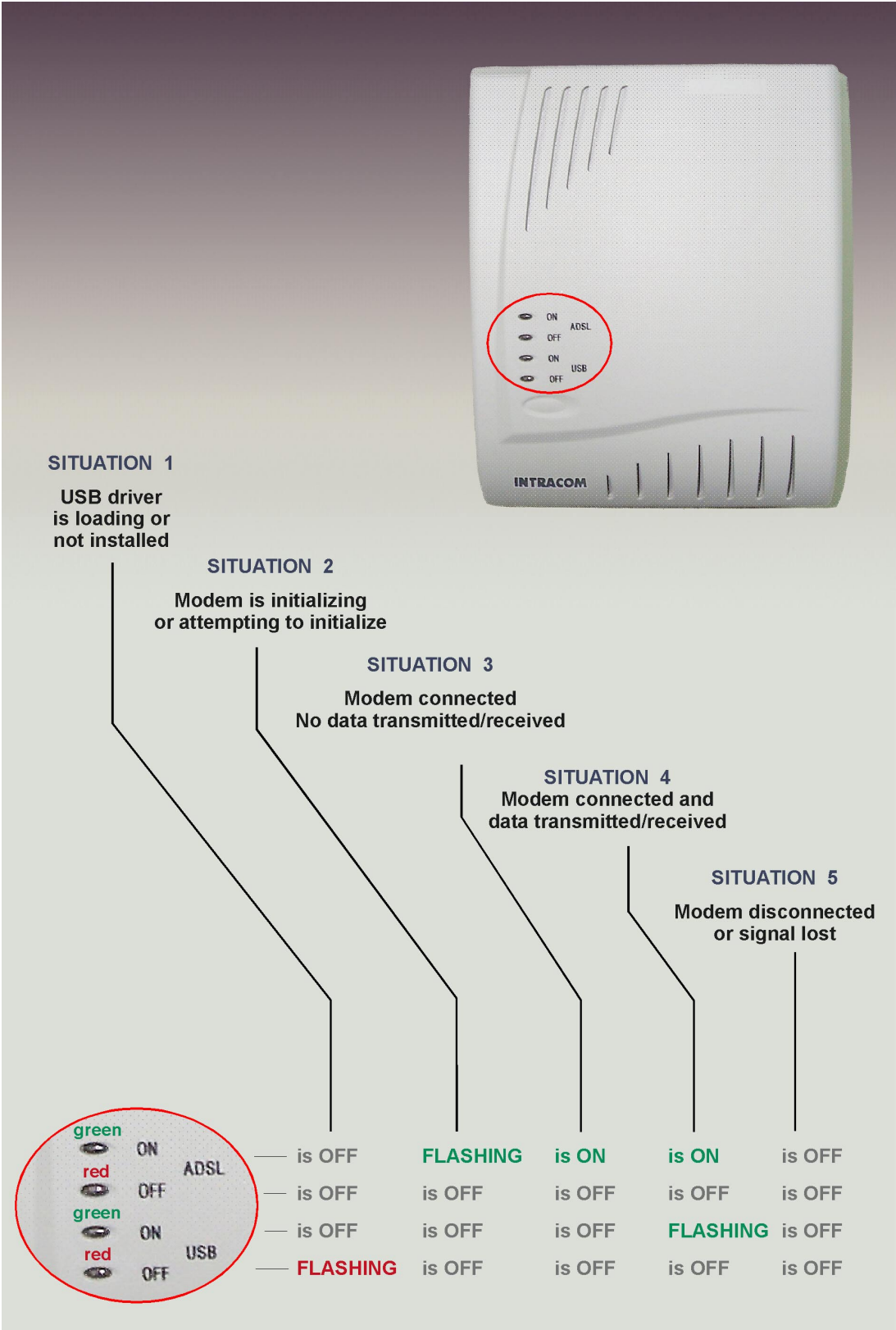


Figure 17: Indications of LEDs and operation of jetSpeed 100

OPERATION OF jetSpeed 100i

After you have cabled jetSpeed 100i to the telephone line and to your PC and before installing the appropriate driver, you will see the “OFF USB” LED at the top view of jetSpeed 100i to be *on*. (SITUATION 1)

When you have installed the appropriate driver, you will see the “ON ADSL” LED flashing and the “ON USB” LED to be permanently *on*, as jetSpeed 100i is trying to synchronize to the ADSL line. (SITUATION 2)

After a short time and if jetSpeed 100i has achieved synchronization, you will see the “ON ADSL” and “ON USB” LEDs to be *on*. (SITUATION 3)

Herein, it is worth to be mentioned that if, for any reason, you have disconnected the ADSL line manually or via the software, you will see the “ON ADSL”, “OFF ADSL” and “ON USB” LEDs to be *on*. (SITUATION 4)

For your facility, in the next page, the LED status of jetSpeed 100i is depicted.

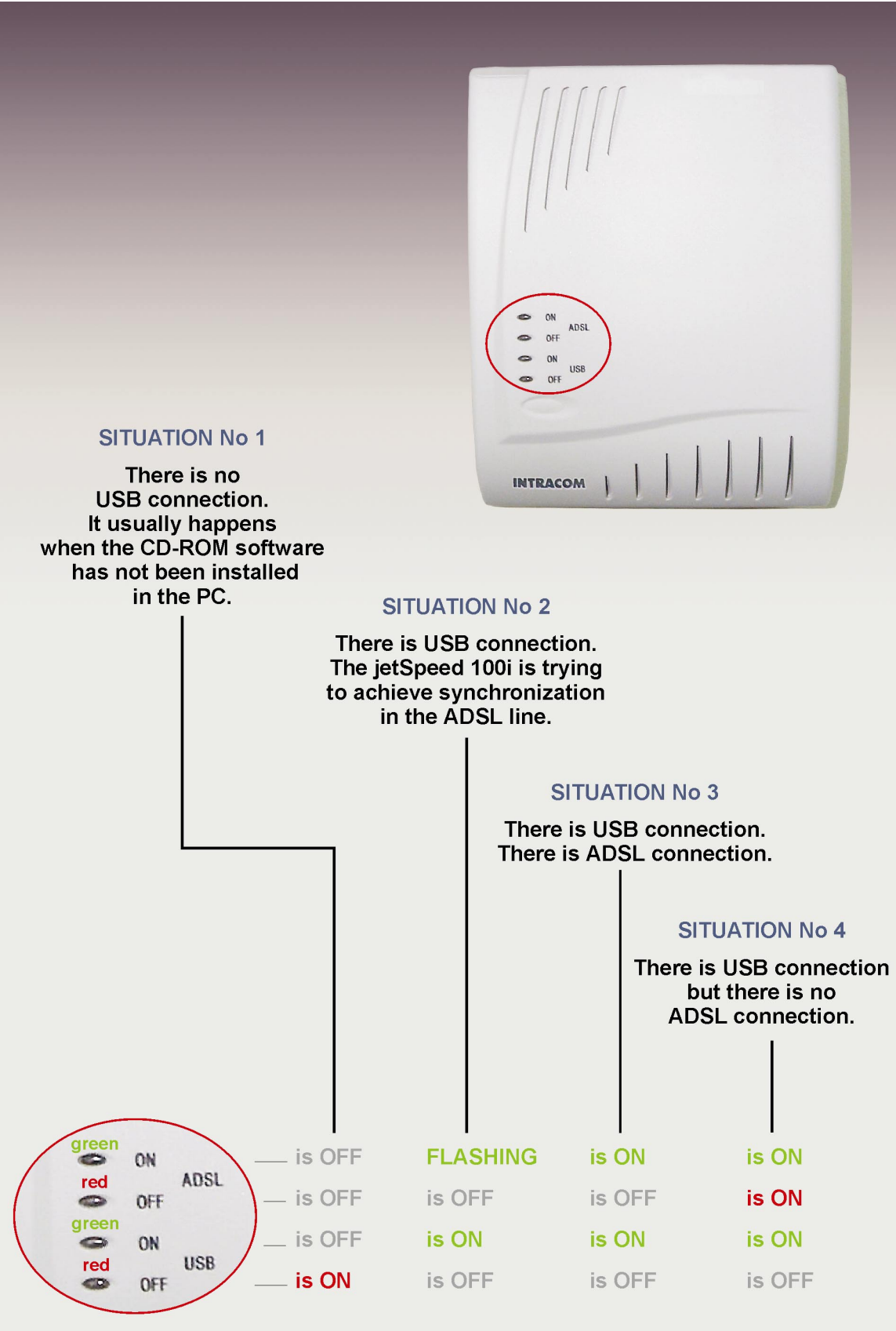


Figure 18: Indications of LEDs and operation of jetSpeed 100i

TECHNICAL CHARACTERISTICS

Hardware Characteristics

Support of ADSL over POTS (jetSpeed 100)

Support of ADSL over ISDN (jetSpeed 100i)

Operation with central splitter or splitterless (with in-line filters)

PC Interface USB, specification 1.1

WAN Interface standard RJ-11 connector

Power Supply requirements supplied via the USB bus

ADSL Transmission Characteristics

♦ *Data Rates*

-G.dmt ADSL

1) Downstream 32 to 8032 kbps (32 kbps increments)

2) Upstream 32 to 864 kbps (32 kbps increments)

-G.lite ADSL

1) Downstream 32 to 1536 kbps (32 kbps increments)

2) Upstream 32 to 512 kbps (32 kbps increments)

jetSpeed 100 is fully compliant with G.lite (G.992.2 Annex A),
G.dmt over POTS (G.992.1 Annex A),
ANSI T1.413 Issue 2

jetSpeed 100i is fully compliant with G.dmt over ISDN (G.992.1 Annex B)

Modem Software

ATM Termination / AAL5 encapsulation

PPP over ATM (RFC 2364)

IETF RFC 1483 encapsulation over AAL5, bridged and routed.

PPP over Ethernet (RFC 2516)

**Host PC
Characteristics*****Support for Windows 98,
98SE, 2000, ME, XP.***

- for Windows 98/98SE/ME, Pentium processor 166 MHz, or higher (or compatible) and 32 MB of memory, or more
- for Windows 2000 or Windows XP, Pentium II processor, or higher (or compatible) and 128 MB of memory, or more
- 30 MB of free hard disk space
- one high-powered USB port

Plug-and-Play Installation**Management and
Ease of Use*****Local Management via Windows Application******Support for ADSL Forum MIB*****Mechanical
Characteristics*****Dimensions***45mm x 145mm x 180mm
(HxWxD)**Environmental
Conditions*****Operating Temperature***-5 °C to 45 °C / ETS 300019-2-
3 class 3.2***Humidity***Up to 95%RH,
0°C to 45°C**Electromagnetic
Compatibility and
Safety*****In compliance with***EN 55022
EN 55024, EN 60950
FCC Part 68, FCC Part 15
UL 1950, IC CS03, ULc

DECLARATION OF CONFORMITY

US FCC Notice

FCC Part 15 class B Statement

In compliance with the Federal Communications Commission (FCC), the following FCC Part 15 Regulations are provided regarding the installation and operation of the jetSpeed 100/100i ADSL Modem.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

FCC Part 68 Statement

This equipment complies with Part 68 of the FCC Rules. A label is attached to the equipment that contains, among other information, its FCC registration number and ringer equivalence number. If requested, this information must be provided to the telephone company.

This equipment uses the following USOC Jack: RJ-11.

An FCC compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack, which is FCC Part 68 compliant. Connection to the telephone network should be made by using the standard telephone jack.

The REN is useful to determine the quality of devices that may be connected to the telephone line and still have all of those device wring when your telephone number is called. In most, but not all areas, the sum of RENs should not exceed 5. To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

If the equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

In the event this equipment should fail to operate properly, disconnect the unit from the telephone line. Try using another FCC approved device in the same telephone jack. If the trouble persists, call the telephone company repair service bureau. If the trouble does not persist and appears to be with this unit, disconnect the unit from the telephone line and discontinue use of the unit until it is repaired. Please note that the telephone company may ask that you disconnect the equipment from the telephone network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

The user must use the accessories and cables supplied by the manufacturer to get optimum performance from the product.

No repairs may be done by the customer. If trouble is experienced with this equipment, please contact your authorized support provider for repair and warranty information. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved. This equipment cannot be used on telephone company provided coin service. Connection to Party Line Service is subject to state tariffs.

Abbreviations

AAL5	ATM Adaptation Layer 5
ADSL	Asymmetrical Digital Subscriber Line
ATM	Asynchronous Transfer Mode
CO	Central Office
DNS	Domain Name Server
DSLAM	Digital Subscriber Line Access Multiplexer
FTP	File Transfer Protocol
IETF	Internet Engineering Task Force
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
LAN	Local Area Network
LLC	Logical Link Control
NAP	Network Access Provider
PPPoA	Point to Point Protocol over ATM
PPPoE	Point to Point Protocol over Ethernet
RFC	Request For Comment
SME	Small to Medium Enterprises
SOHO	Small Office Home Office
TCP	Transmission Control Protocol
USB	Universal Serial Bus
VCI	Virtual Circuit Identifier
VPI	Virtual Path Identifier
WAN	Wide Area Network



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